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CONDUCTED BY

**H. H. STATHAM,**

FELLOW OF THE ROYAL INSTITUTE OF BRITISH ARCHITECTS.

◆◆◆

"EVERY man's proper mansion-house, and home, being the theater of his hospitality, the seate of selfe-fruition, the comfortablest part of his own life, the noblest of his sonne's inheritance, a kind of private princedome, nay, to the possessors thereof, an epitome of the whole world, may well deserve, by these attributes, according to the degree of the master, to be decently and delightfully adorned." ◆ ◆ ◆ ◆ ◆ ◆ ◆ ◆ ◆

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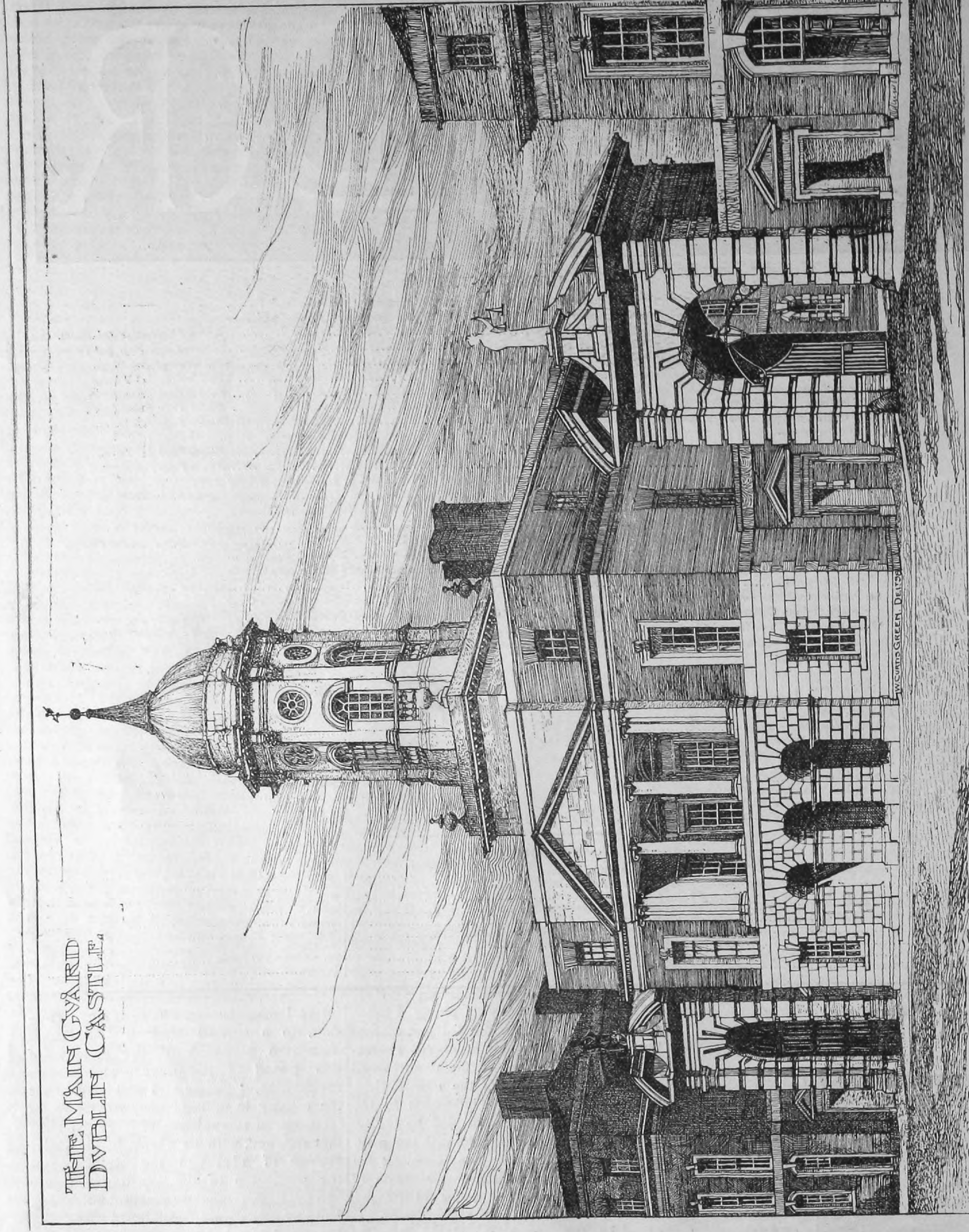
## *The Architecture of Our Large Provincial Towns.*

### XX.—DUBLIN.

THE history of Dublin in its early stages of gradual growth, in its half century of transient splendour and in its passing stage of decline, is all recorded, for architects at least, not so much in the dull pages of a chronicle as in the actualities of its streets and monuments.

The appearance of the river and the steep rise to the castle suggests the early settlement, while the antiquarian eye detects in the crypt of the neighbouring Christ Church Cathedral the actual lower part of the walls of the church built by the Danish settlers. To them is due the unique setting out of its east end, erected by the succeeding Anglo-Normans in an otherwise purely English manner. St. Patrick's, situated just without the walls, though equally English in character, stands as a record of the rivalries and divergencies of opinion of the new settlers. At a later epoch Dutch influences in old brick houses with gables, divided by hollow sweeping curves and crowned with low pediments, remind us of the conquest of William III. and of the last struggle of James II. French influences in interior work are to be traced to the Huguenots, expelled by the revocation of the Edict of Nantes, while Italian artificers, attracted by the dilettanti tastes of travellers amongst the nobility, have left evidences of their skill.

The great epoch of the latter half of the eighteenth century is marked on all sides not only by notable monuments, such as the old Houses of Parliament, the Four Courts and the Customs House, but also by the noble squares lined with great houses whose flat brick façades do not reveal, to the casual passer-by, the wealth and display of their internal magnificence. Even in 1776, however, to a shrewd observer like Arthur Young, a suspicion of the solidity of this period of prosperity suggests the exclamation, "Happy if I find throughout the country in diffused prosperity the rightful source of this splendour!" The decline that followed, with its climax in the Great Famine of 1846 and the shrinkage of the population of the island by nearly two millions, produced a practical absence of building enterprise in Dublin. In less than ten years' time, however, the establishment of the branch banks from the north of Ireland, and some revival in church building, brought about a change. The introduction of tramways caused a movement of the population out to the suburbs which is still in progress, and the gradual transformation of Ireland from a purely agricultural to a semi-industrial country will surely in time restore a sounder, if less magnificent, degree of prosperity to the capital. In the changes which the future will produce it will be well if the old monuments and houses do not pass



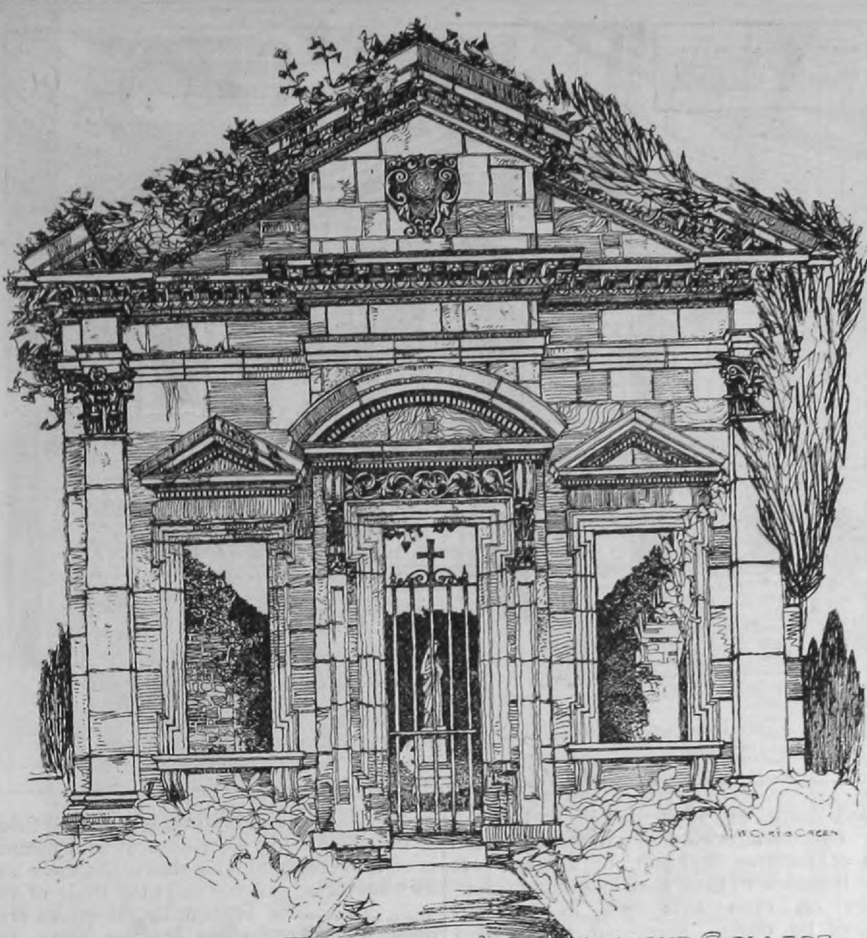
THE MAIN GUARD DUBLIN CASTLE.

W. CURTIS GREEN, DELT.

from the safe, if distressing, stage of neglect into the more destructive phase of modernising improvement.

Dublin is a city which, despite the irregularity of its growth, has nevertheless retained a definiteness of plan, which renders it an easy city for the traveller to visit. Possessing an approximately circular shape, as defined by its circular road, it is bisected through its centre by the River Liffey, whose quay walls form main thoroughfares in addition to the waterway itself. Sackville-street, towards the centre of the northern half of the circle, and running at right angles to its quays, forms the best possible centre of the town, and the Nelson Column half-way down its length, at the intersection of an important cross street, is a suitable starting point of many of its tramways.

So much praise has been bestowed upon Sackville-street, mainly deserved by its splendid width of 120 ft., that the architect is likely to be disappointed, and not unnaturally so, because he will expect something more than mere laying out to justify the claims made on its behalf. In reality, it compares best with Portland-place; its superiority to that street in picturesqueness being due to the portico of the General Post Office (*see* lithograph), which advances over the footway on the left-hand side of the Nelson Column already mentioned, and which is balanced on the other side by the lofty mass of a large draper's shop, which, though not particularly interesting in itself, still by its height and mass serves to raise the general sky-line in an imposing fashion at this point. The Nelson Column (1808) is a heavy Greek Doric shaft (20 ft. diameter) standing on a high square pedestal, into which it appears to sink owing to the absence of any base, an



A ROOFLESS TEMPLE AT ALL-HALLOWS COLLEGE.

instance of correctness of style being preserved at the expense of common sense. In the upper and older portion of Sackville-street the plain brick fronts have been mostly altered on the ground floor for shops. These shop fronts, where not of the usual wood-cased pattern, are unfortunately of a heavy style not in relation with the upper and older portions. At the extreme top end, on the right hand side, is a new bank of rather vivid red terra cotta and brick work (Mr. W. Stirling, architect). At No. 42, on the right hand side coming down, an old ground story remains. At No. 50, lower down on the right hand side, is an old doorway leading into an ample vestibule.

No. 54 has a Greek Ionic lower story, near to which is an old house with strongly-marked tablets between the first-floor windows and wrought-iron balconies. Opposite is a branch post-office, where the new ground-floor shop front is framed into three wide openings by granite piers, with small engaged columns on pedestals, the filling in consisting of arcuated oak framing split up with sash bars. The attempt is an interesting one, and the untreated oak combines well with the unpolished grey granite. Mr. H. Pentland, one of the Surveyors to the Board of Works, is credited with these branch offices, which are again referred to later on. Near the Post Office the Standard Life Office has a large six-columned Greek Corinthian portico in granite, on a high basement formed by the ground story of the building. The portico has a pediment containing some figures, representing the wise and foolish virgins, by Mr. R. Steel, R.S.A., the architect being Mr. James Bryce, of Edinburgh. The General Post Office portico is rendered rather aimless by the entrance being now round the corner in the side street. The architect was F. Johnson (1815); the detail of the building is very heavy, the main cornice, passable over the order, is seen where continued upon the plain walls of the wings to be unusually clumsy. The Grecian ornament of the frieze has a metallic character by its sharp relief when seen in sunlight. The "Scottish Amicable," lower down, has a quiet arched shop front and entrance in unpolished grey granite.

At the lower end of the street is the O'Connell monument (*see* lithograph), good in general design, though the sculpture seems rather tame. Some rather weak-looking wrought iron railings surround the base, and the ugly standards of the overhead tramway cables flank the statue and confuse the lines of its sculpture. The O'Connell bridge, which carries the street across the river, is of a splendid width. The design is a very good one, and is that of James Gandon (1791), except only that it has been made level and widened. Looking up the river is the startling apparition of a bridge devoted to advertisements; down the river the dome of the Customs House rises proudly above its surroundings, but here again a lattice girder railway bridge cuts its lines, obliterating the upper half of its supporting order. Across the bridge is Westmoreland-street, running straight to the Bank. At the right-hand corner the Dublin Port and Tax Office has a curious ground story in a flat treatment in granite of small Ionic pilasters with panels over; the block at the other extremity of this side of the street has a similar treatment; these being traces of the original entresol, 7 ft. high over the shops, which the Commissioners who laid out this and the neighbouring street on uniform lines used to enforce long after the custom of living over the shop had died out. The opposite angle at this upper end of the street has the Gothic London and Lancashire Insurance Office, by Mr. O'Callaghan, in stone, with an angle turret and gabled dormers, having rather a French character throughout. The Scottish Widows' Office, by Sir Thomas Deane, at the lower corner of the street, on the left-hand side, is in red stone with polished red granite shafts to the windows, the style being of a mixed character, a round arched Italian influenced by Venetian ideas. There are heavy balconies balustraded as at Venice, and supported on profusely carved stone corbels to the second floor, where two round-arched windows have double granite shafts on the centre pier, the openings being enclosed above with semi-pediments formed by straight-lined labels. A console cornice above the next story combines with an architrave-like string below, to frame the upper windows into a deep frieze. Turning round with the sweep of the road on the left is the Provincial Bank of Ireland, by the late W. Murray; the ground story is in seven arched bays on a high plinth; above are two stories enclosed in a Corinthian order with a central pediment, enclosing some bold sculpture representing Commerce and Agriculture bringing tribute to the genius of Banking. Beyond, in the centre of the road, is a prickly monument to Sir P. Crampton, Bart., a former Surgeon-General, combined with a drinking-fountain, which is inscribed as follows:—

> "It but feebly represents
> The sparkle of his genial fancy,
> The clearness of his spotless honour,
> The flow of his boundless benevolence."

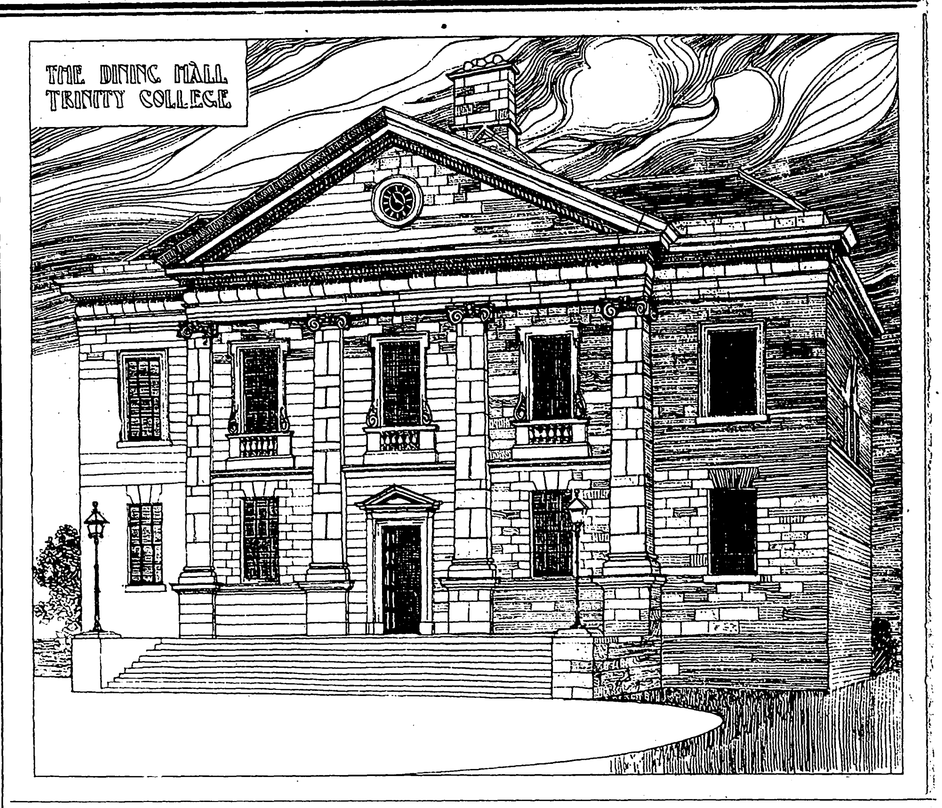
Erected 1862; the flow has, fortunately, been increased since that date, as for a long time it was but a humorous commentary upon the text.

We have now reached the most striking classical buildings in Dublin—the old Houses of Parliament now the Bank of Ireland (*see* lithograph for general view and view in portico). It is worthy of notice that few of the eighteenth-century buildings in this city, despite the symmetrical ideas prevailing at that time, are axial in their setting out. This monument, in particular, is approached by such sweeping lines of streets, that only by selecting a special point can the beholder get the statues set up before its porticoes on true axial lines. The House of Lords portico, which is nearest to Westmoreland-street, is particularly out in this respect, while nowadays it has a further and more serious disad vantage in an apparent aimlessness, owing to the actual entrance having been obliterated. The main front faces to College Green at right angles to this portico, the junction consists of a bold sweeping curve, repeated also on the other side, and these curves are perhaps the most original and striking feature of the building. The order is Ionic of an adequate scale, it stands on a high socle or plinth below the base proper, and carries an entablature, marked by a pulvinated frieze and dentilled cornice, with a low parapet over. The main front is unusual owing to the deep recessing of the central four-columned portico, and it pleases, despite the serious way in which the pretensions of the main feature are challenged by the advanced wings, which consist of arched entrance ways framed by the Ionic order. Besides being nearer to the eye and thus seemingly taller, these wings are also rather wide in proportion to the main portico. The circular sweeps which so powerfully support the wings are treated with great skill, the lower part of the walls, forming the background of the order, being rusticated up to a string, above which are simply detailed niches in plain masonry. The portico in Westmoreland-street is Corinthian, which, in comparison with the contiguous Ionic order, looks short and the Ionic tall, although extra height has been obtained in placing the former direct on the pavement by omitting the high socle of the Ionic already described. The cornice runs through with its dentils, but architrave and frieze are different, a good break being obtained by a skilful background of plain masonry, devised to set off the richer Corinthian order. Perhaps fluting would have given the requisite appearance of height to these columns. Nothing, however, in these remarks is intended to lessen the great impression that this building distinctly conveys. It has not the refinement of detail, power, or originality of St. George's Hall at Liverpool, but it is all the same one of the best productions of the old Classic school.

In this account we have deliberately treated of the building as it stands and as what it would generally be considered to be, namely, a complete design uniformly carried out. A study of its history reveals the reverse and unexpected fact, that the building is a happy growth and the work of four or five architects at succeeding periods. The original part is the recessed portico façade to College Green, built in 1728, under Captain E. L. Pearce, Surveyor-General in 1730, probably assisted by R. Cassel, a German of whom other work remains in Dublin. Another attribution is to Thomas Burgh, the previous Surveyor-General, who is credited with Trinity Library. At this period, houses abutted against the flanking wings, there were windows in the back walls of the porticoes, and a crushing dome over the House of Commons rose in the rear of the pediment. In 1785, the houses on the west side were removed, and Foster-place was created. A western façade was thus obtained with a bold quadrant open double colonnade connexion to the original front in College Green. This was the work of Robert Parkes. About 1790, the east side was similarly cleared, and James Gandon put up his Corinthian portico façade to the east, but with a quadrant connexion in the form of a blank wall only. In 1801-5, F. Johnston altered the building, as it now stands, for the new purpose of the Bank. He removed the Commons' Chamber and cupola, closing all the external windows and most of the doors. He also put a wall at the back of the outer range of the open quadrant portico on the west, and on the east he added similar columns to the corresponding quadrant wall which Gandon had left blank, thus cleverly establishing the present unity of the design.

It is a misfortune that the interior has been reconstructed for the use of the Bank, as the one chamber—that of the House of Lords—which is preserved, is of great interest. It has been singularly little touched; the splendid mahogany table, and even the simple, but good, mahogany chairs with inlay in the back rails, are the same. This fine apartment is best described as being on the lines of a Roman hall; it has a main semi-circular vault, treated in flat coffering, with lunette windows in the spandrels at either end. Below each of these is a recess, the far end one being a semi-circular exedra, where the Lord Chancellor sat on the woolsack, while the Commons entrance end, or space beyond the bar, is square in shape and covered with a segmental vault with octagonal coffering. It is worth noting that the semi-dome of the exedra is coffered in lozenges, as in the Temple of Venus and Rome at Rome, producing the fine spiral lines which have always been admired in that example. The fireplace on one of the long sides is original, even to its cast-iron work and its mantel of wood and marble combined, and is of a vigorous, rather German, character. The tapestry patterns are also interesting and original.

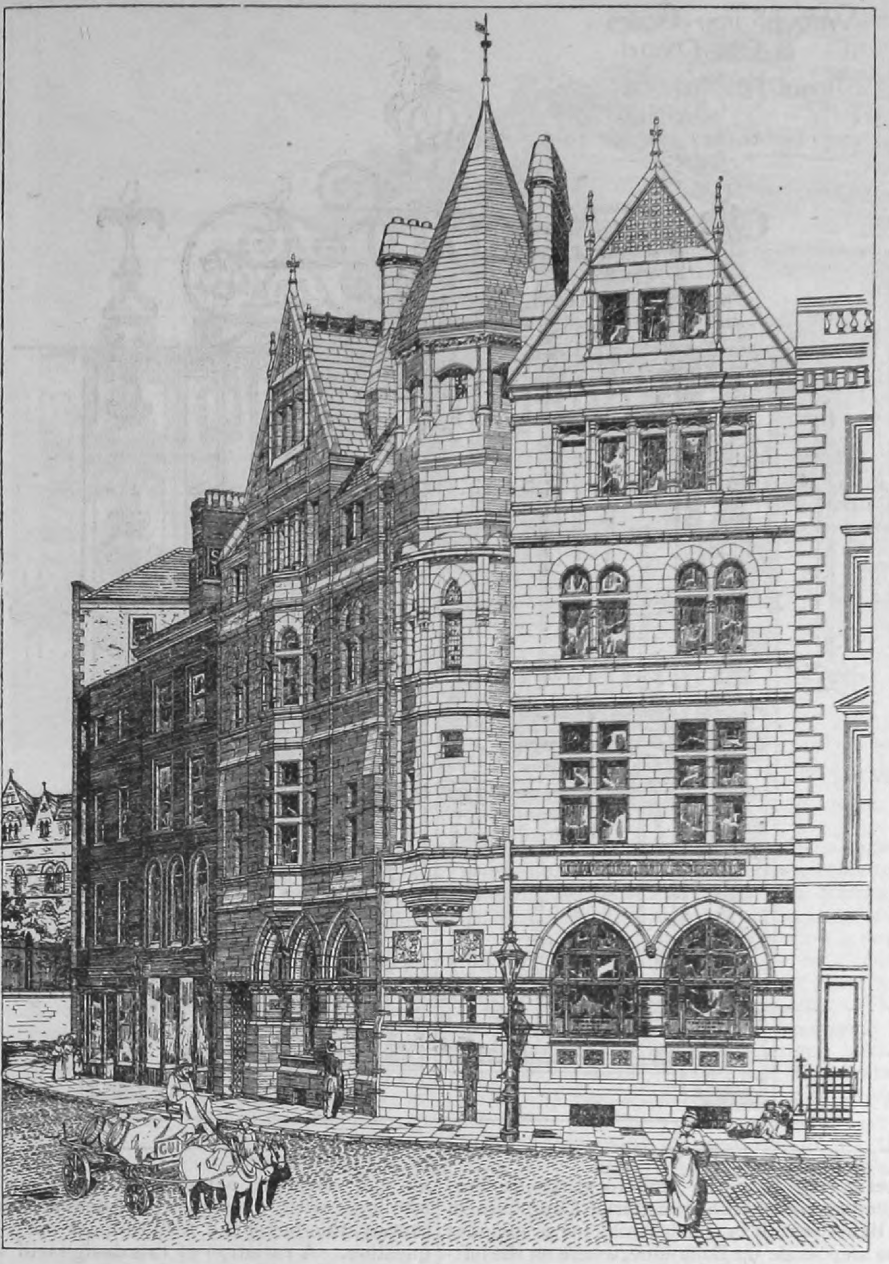
The House of Commons is now the main banking-room and has been reconstructed. At right angles to the Bank is the west front of Trinity College (*see* lithograph), by Sir W. Chambers, ending College Green and facing Dame-street, an important thoroughfare that leads into it. Here again the want of axis that seems characteristic of Dublin prevails, as the front of Trinity is not central to that street. This front is a good combination of granite and Portland stone. The whiter architectural features tell against the dull grey of the unpolished background; the tooled surface of the stone contrasts well with the roughness of the axed granite. A feature of this façade is the strongly marked narrow wings which have something of the force of towers without their aggressiveness. The centre is pedimented over four engaged three-quarter columns spaced with a double width for the centre bay, where the semi-arch of the entrance way springs from the caps of the pedestal, as occurs in some Spanish work. Over this archway is a prominent window lighting a large saloon over the vaulted carriageway below. On passing through the gateway a fine oblong court is visible, in the centre of which is a good modern campanile (*see* lithograph), built in 1852, designed by W. H. Lynn, afterwards partner in the firm of Lanyon & Lynn, of Belfast. It was intended to have had extending colonnades on each side and, in explanation of its design, it should be recalled that it occupies the position of the old monastery tower at the crossing; the laying out of the College having been dictated by the line of the old church of the Monastery of All Hallows, which was dissolved, the grant for the foundation of the College being made in 1591. The splendid library, occupying the upper right hand side of the court, was built in 1712-32, being ascribed to Thomas Burgh, Surveyor-General, as architect. The other sides were chiefly brick buildings, rough cast, of which only the block facing the library remains unaltered, and this is about to be removed to make room for a Graduates' Union by Mr. Thos. Drew. The end block has been recased in a foolish fashion with a red brick facing, destroying the general tone of silver and grey of the collegiate buildings. It is much to be hoped that no further modernisms of this kind will be introduced into Trinity College.



The College Green front, with the three sides of quadrangle behind that forms the lower half of this great court, was designed by Sir William Chambers in 1785; his sketch model of the façade is to be seen in the library. It appears that he never was in Ireland, and the general character of this work is rather bolder and more careless than those of his with which we are more familiar. Beyond the great court is an upper court of detached buildings, beyond which are some more recent blocks, the college grounds being very extensive. The Provost's house facing College Green is a study of General Wade's house in London, often ascribed to Lord Burlington.

The block by Sir W. Chambers, forming, as we have described, the lower half of the great square, has wings terminated by the chapel and the examination hall respectively, set with their pedimented ends facing each other. The interiors are alike in general lines while differing in details; each is oblong and ended by an apse with three windows, there being no other source of light except from an attic story of lunettes, comprised in the elliptical intersecting vaulting of the ceilings. This stage is worked round the apse, also producing intersected half-domes at that end. Below this low attic is a continuous frieze and cornice supported by flat panelled pilasters on a high podium. The entablature is not well fitted to the vault above; the decorative ornament is of a Wedgwood character. As there are no transverse arch bands in the vault of the hall, the shapes formed by the groins produce a curious effect looking down the soffite of the ceiling; in the chapel, however, such arch bands exist, while the order is also coupled instead of single. Both interiors have western galleries; the chapel, in addition, has a hemi-cycle of engaged columns in wood of a rather rich and bold character. The old pulpit with its characteristic stairs upstands in the centre passage. Just beyond the left-hand wing of the Chambers block, and rather set back, is the dining hall, standing free. It is said to have been built by the college mason and to have failed in some way, possibly in the roof inside, whereupon Sir W. Chambers appears to have been called in, this being his first introduction to Ireland. The façade is rather rough and coarse in detail, but it is interesting, because, like Clare College at Cambridge, it is Anglo-Palladian rather than classical. A point of interest is the bonding of the pilasters in small courses, whose pedestals have no bases, with apparent compensation, however, in extra heavy capping mouldings. Internally, a small hall leads to the dining-hall proper, a fine apartment superior in design and detail not only to the façade, but also to the small hall preceding it. It is a notable interior, possessed of greater harmony of style, and refinement of detail, than either the examination hall or the chapel can claim.

The library, however, occupying the upper right hand side of the great court, is the most famous and interesting building in the group. It has suffered a good deal from modern enlargements, to which are due the ugly mansard roof, and the destruction of the original vaulted ceiling of the ground floor cloisters, which have at a still more recent date been wholly appropriated as a book store, the arcades being glazed in. The entrance is at one end, where an ample staircase in oak, carried round a square hall, leads up to the library on the first floor; the ceiling of this hall is in plaster work of a rococo character, as also is the ornamentation of the large panels upon the wall above the first floor level, up to which point the work is in rustication. The hall is one of the not very numerous examples of an apparently French influence, and the date of completion—1732—may have some bearing upon the facts. The library is a noble room, lined with bookcases at



*Commercial Union Assurance Company (Sir Thos. N. Deane & Son).*

right angles to the windows, in which, as in general characteristics, it recalls Wren's Library at Cambridge. When the new roof was put on in 1860 an upper order of cases was introduced, surmounted by a barrel roof in wood, in place of the old flat plastered and panelled ceiling, shown in Malton's views. Unluckily, the original seats have been converted into dwarf bookcases; they have interesting ends with large C scrolls. The second court contains buildings of lesser interest, but in the left hand lower corner is an old portico by Cassel, a small square, four-column temple known as the Printing House. On the right hand side is a modern block, the Engineering Schools, the design of Benjamin Woodward, who, beginning as an engineer, took up architecture previous to his early death about 1861. The work was completed by Messrs. Deane, Son & Woodward, associated with the late John McCurdy, the College Surveyor. It is a Romanesque semi-Venetian palace, with a fine feature in its lofty moulded plinth extending up to the ground story window-sills. The interior contrasts with the somewhat clumsy character of the exterior. The feature is a remarkable staircase hall approached from a square vestibule at a lower level; this upper and oblong hall is of great height and domed in two bays, each with one eye as the sole source of light. At either end are arcades in two stories extending the area of the plan, and the central flight of stairs divides and rises in a bold arch on either side to the upper stage of these galleries. This hall is, of course, the centre well, or cortile as it would be in Italy, of the square block of buildings. The general conception is a powerful one, and it is carried out in a severe style of treatment depending in part for its effect upon large blank surfaces of plain ashlar. The colour treatment is not so successful and detracts from the result, more particularly in the pendentives and surfaces of the domes, where enamelled bricks of strong colours are used in the formation of patterns.

Returning to the open square in front of the Bank, known as College Green, and proceeding westwards towards Dame-street, at the angle of the street is the Commercial Union Assurance offices, a Gothic building with an angle turret and a gable on each face, designed by Sir Thos. Deane & Son, in yellow Mansfield stone. The turret grows out cleverly from a shaft at the ground story. The Ulster Bank, by Mr. Thos. Drew (*see* lithograph), on the left, attracts attention. It is a somewhat ambitious design, but is rather characteristic of the type which financial institutions in this city affect. The ground story is treated as a basement to an order on a large scale, usually, as here, carrying a pediment, and in this case three stories are comprised in its height; it being mounted on tall pedestals which reach up to the imposts of the first floor windows, treated with semi-circular arched heads. In the top stage the capitals of the order are cleverly detached by setting back the wall face, with the further advantage of increasing the depth of shadow in the right place just below the entablature. The entrance archway leads into a small but richly-treated porch or vestibule, closed to the street only by a wrought iron gate, and from this the fine banking-room is entered direct on the axis of a semi-circular exedra, which is repeated, beyond the coved and domed centre, by another at the other end. The treatment is rich but subdued; the mosaic pavement is of good design, in black and red with touches of yellow, in large circular wreaths on a white ground. The base of the wall is in red marble with the hard limestone of which the façade is built (but here polished) for skirting and capping. Above for about three-quarters of its total height the wall is in plain rusticated red stone ashlar, the remainder being intended for a deep frieze of colour decoration which would encircle the whole interior, and bring its parts into good relation. Above the red stone entablature, in the central portion, is a deep diapered plaster cove, hardly fine enough in its detail for the material, with arches and pendentives to a glass dome, which is the sole but adequate source of light. This description will convey an idea of what these banking halls, which are practically open to the public, are like; and as it is, on the whole, the best, it may serve as the type. Messrs. Atkinson & Co., the poplin weavers, have the shop adjacent to the Ulster Bank, also by Mr. Thos. Drew, and shown in the same illustration.

At the commencement of Dame-street is an old lead equestrian statue, by Grinling Gibbons. The statue is painted brown colour, like new bronze, and relieved with gilding. It has a worse and a better side; the former afforded great entertainment to Foley, who loved to expatiate on the points of the horse—*inter alia* the neck and head are on the down grade owing to the weight of the lead and the action of the sun.

Beyond the statue, on the left hand side, is the Hibernian bank by Mr. Drew, a heavy, round-arched building in grey granite with polished red shafts on first floor and purple slate roof. Next to the same, in red stone rather raw looking, is the Belfast Banking Company, Mr. W. H. Lynn, marked by a large circular turret with a steep, green slated roof (*see* lithograph). An added interest is given to this work by the fact, which would not probably be guessed, that the tower occupies a piece of property adjoining but only lately acquired, and is a clever invention to unite this strip with an older design. Mr. Lynn must be congratulated on the way in which he has thus extended his original building. The banking hall is an important room, but, as we have fully described that of the Ulster Bank, we need not dwell on this feature. Next to it is a quiet Ionic colonnaded shop front of three-quarter columns in grey granite, also shown in the illustration.

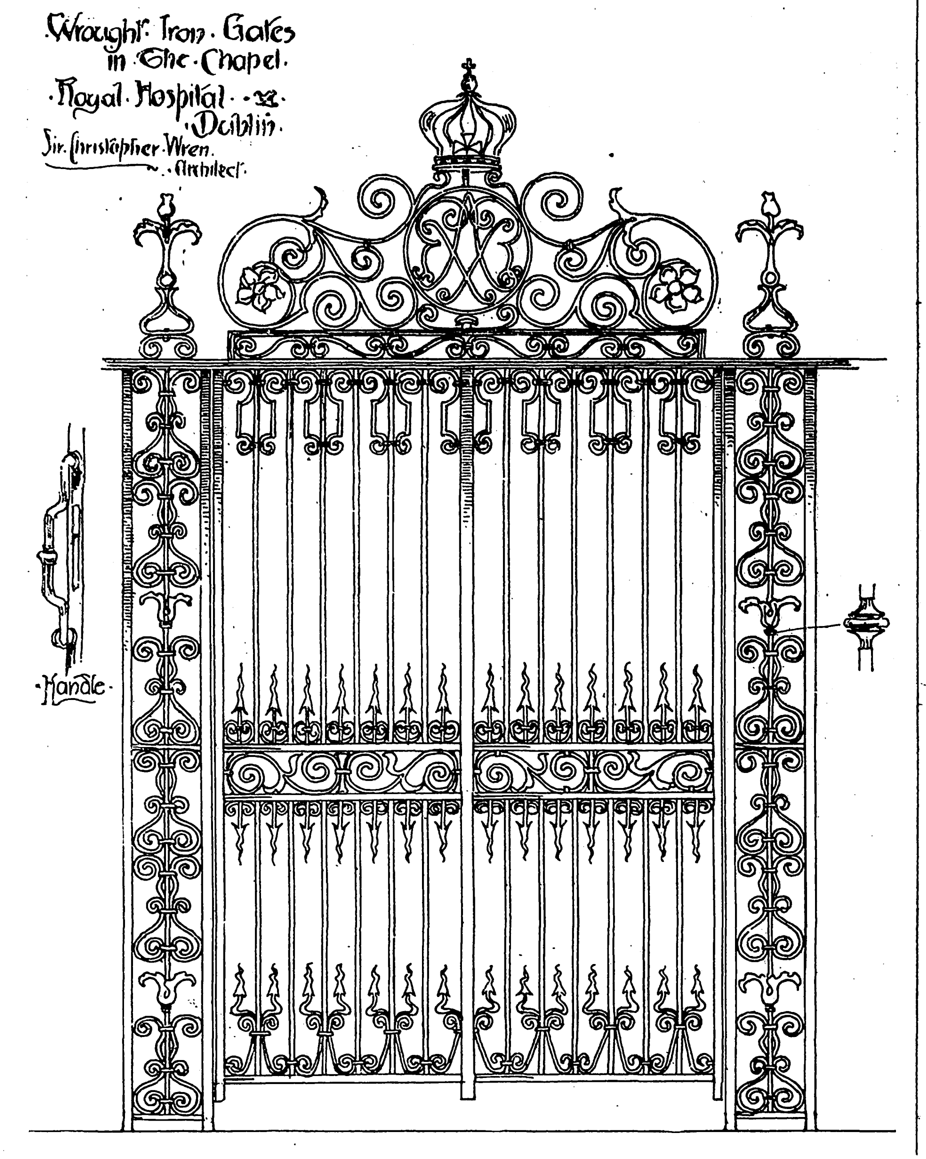
Opposite on the right hand side is an old pilastered front, now the National Assurance Company of Ireland, also of unpolished grey granite, but having unfortunately a new entrance with polished red granite panels. The Patriotic Insurance, on the right near Jury's Hotel, which latter has a new red stone pilastered ground story, is an old Greek stucco front of some interest, but as usual it has been altered on the ground floor. Higher up still is an Italian Florentine palace of granite, with an Ionic doorway leading to a wide vaulted vestibule; this is the Chamber of Commerce, by E. Parke (1796). At the end of the street, on the left, is the Munster and Leinster Bank, by Sir Thomas Deane, of a heavy, round, arched style in grey granite, with red granite shafts to the windows. The street then narrows and rises, being crowned on the left by the imposing Corinthian portico of the City Hall, by Thomas Cooley, 1775 (*see* lithograph), approached by a slight terrace staircase protected by balustrades, on a high basement adapted to the fall of the street. The portico faces down a main street at right angles, but has the usual lack of centrality. The order is two stories high, the lower stage in the wings being windowless, and treated as a lofty rusticated wall surface with excellent effect. It is noteworthy that the dome of the Rotunda inside appears only in distant views. The style of the detail approaches that of Adam, having the characteristic flat swags between the capitals, and the fluted frieze without architrave to the minor Ionic order, between the Corinthian pillars of the main portico. This minor order extends into the interior and encircles the fine rotunda, of 52 ft. diameter, which is directly entered from the main approach. The peculiarity of this circular hall is, that while at the four main points the order is engaged, between it is free, as the enclosing walls for the height of the minor order are square in plan with canted angles. The rudiments of an aisle thus exist. The doors to the various offices are taken off at these points, and thus interfere less with the effect of the circle of columns, and are also straight, instead of curved in shape. This, however, is an alteration, as having been erected as an exchange the whole ground-floor was once open.

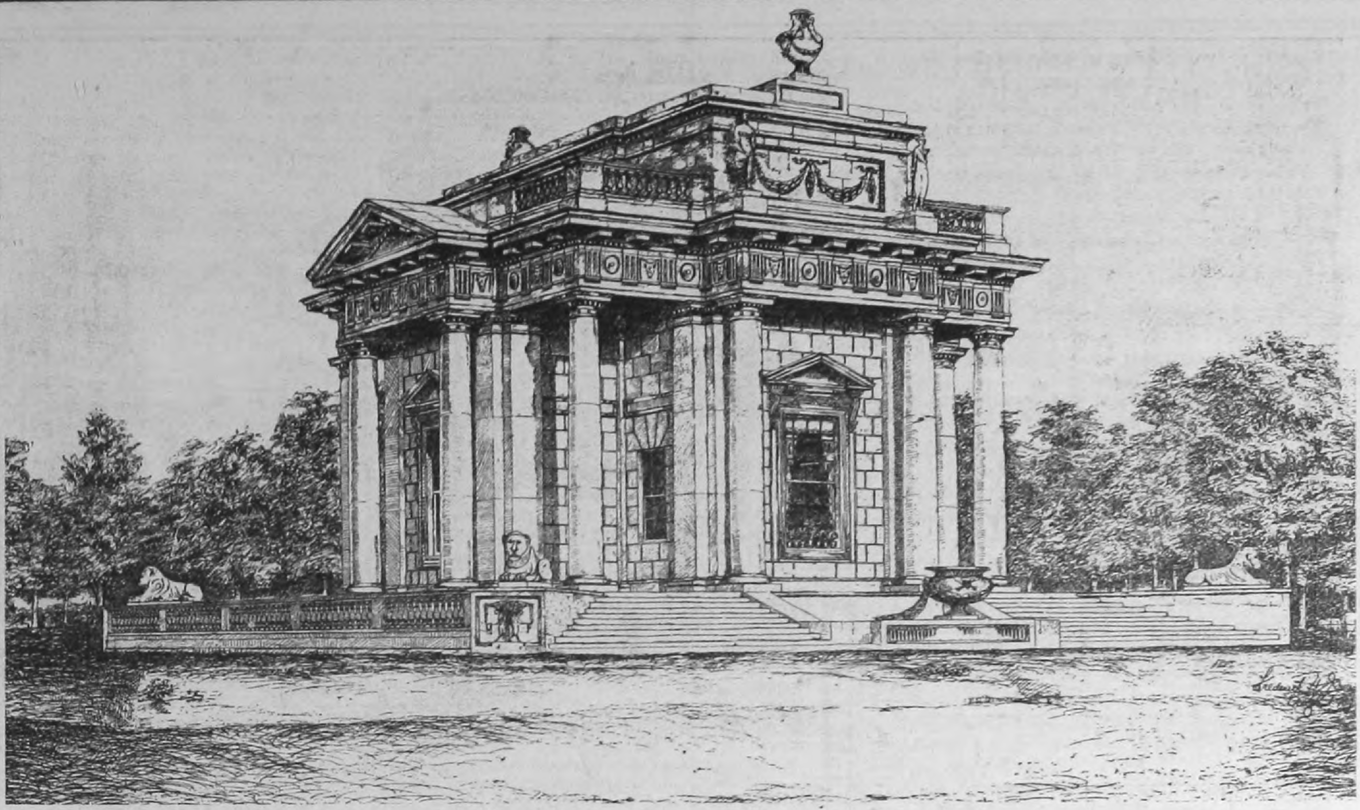
The Castle abuts upon the city hall; one approach to the former separates the municipal offices from the latter. These offices, once Lord Newcomen's house and bank, by Thomas Ivory, are a fine block in the same style, but are rather more delicate in design, something between Kent and Adam in character. The dual character of its original use has been well expressed in its façade.

Entering the Castle at this point we find that it consists of an upper and lower court. In the lower is the only remaining visible round tower of the original castle (*see* lithograph); attached to it is a modern chapel of 1807-14 (by F. Johnston) of extraordinary Gothic, but a clever production for that date. Inside most of the interior is of wood, mainly oak, and the carving is of a vigorous description. In the eastern window are four panels of very rich stained glass brought from the Continent, probably from Flanders. Also preserved in the chapel is the heavy silver Communion plate, given by William III. to Christ Church Cathedral, which is also Dutch in character, and is of considerable interest. The upper court of the Castle is in a very heavy style, the two lower stories, of red brick and granite architraved windows, are damaged by an attic story in plain red brick. The court is oblong in shape; on the left is a projecting portico for the state entrance, and on the right a centre block with a recessed portico on the first floor, with an order of inadequate scale. Over is a tower, octagonal on a square base, with a Corinthian order carrying a leaded roof of reversed curvature over (*see* block on page 2). The state apartments are of very little architectural interest. The best room is an oval vestibule with four segmental domed recesses, and lit by an oval top light. It was decorated by Wedgwood, and has his characteristic low relief ornament on its plain walls. St. Patrick's Hall, in white and gold, is a good room for a dance, and there is a long domed corridor, rather heavy and very plain. The other rooms are in that European palace style which, wherever met with, seems always to be either dull or tawdry.

Castle-street leads on, up the hill, to the east end of Christ Church Cathedral. It is a convenient modern cut but a failure as a city improvement, having large unbuilt spaces, owing to an inadequate purchase of land, resulting in all frontage and no depth in the plots on both sides. Christ Church Cathedral (*see* lithograph) is a subject in itself, which we are here excused from treating of by the special account already given in the "Cathedral Series." The Synod hall and offices form a picturesque secondary block, grouped round an old tower restored by the late G. E. Street, as part of the new block. The interior of the hall and offices lacks the interest of the New Law Courts, and will seem very bare to a modern student. Proceeding westwards from Christ Church down High-street, it is worth while for a moment to step aside up Back-lane, where on the left-hand side a quaint old archway, with broken steeply segmental pediment, gives access to the Old Tailors' Hall. This is a simple brick building, having on one side of its plain rusticated and pedimented door the four tall semi-headed windows of the hall itself, and on the other side the living portion, of two windows in width and height, the upper tier extending over the door. On the key block of the door is the date 1770. The windows are all wood frames nearly flush, and divided up by sash bars. Returning to High-street, and passing on to Thomas-street, the Augustinian Roman Catholic Church (G. C. Ashlin, architect) on the right forces itself upon your attention. The whole west front is gathered up as a tower, oblong in the upper part and finished with a steep stone roof, with dormer lights in tiers. The west window of the church is deeply recessed under a pointed arch, with the porch below, emphasising the tower idea; the pinnacles are bad, and the tenuity of supports gives a sense of weakness and of exaggerated altitude. On the right-hand side, beyond the church, Messrs. Power & Sons' distillery has a new doorway on a rounded angle in granite; the distorted forms of the Late Renaissance are well worked, despite the stubbornness of the material; Mr. W. D. Caröe is the architect. On the same side the St. James Branch Post Office is a new building, and a departure from the ordinary type. Above a high plinth in brick, a three-fold division by granite piers, forms wide openings, which are subdivided by wood framing; the piers carry granite architraves surmounted by a brick gable of modern fashion. The doorway, formed in an end division, extends into the wood framing, with a somewhat heavy stone canopy, this being the feature most open to question. A variation of this design will be seen in the Phisborough Office on the Circular-road. Mr. H. Pentland is the architect.

The street now divides at a fluted and banded obelisk, with sun-dials on each face. The upper branch is lined by several old houses of simple type, the chief feature being in the doorways, with their ingenious variations in the numbers and forms of the pannelling. A side turning runs down to Bow Bridge over a side steam, and a path ascending on the other side leads up to the Royal Military Hospital (1680-4), well placed on rising ground, the design of which is, with much plausibility, ascribed to Wren (*see* lithograph). The façade is long and low, and, approached on this side by a steep incline, is seen well placed on a plateau, with fine grass plots spread out in front. The body of the building is of brick, rough cast; the dressings stuccoed or painted are wide and flat, so that they give an idea of too close spacing of the windows. The centre has stone moulded architraves, and a central gateway treated with a window over as a special feature, while above is a wide spreading pediment. The steep roofs are, unhappily, in purple slates, doubtless modern. The extreme right hand presents the curiosity of the façade, as the chapel window is emphasised by the whole entablature being bent round it, forming a semi-headed pediment, which is carried back in lead into the main roof. This large semicircular-headed opening has been subdivided by doubtful tracery. Entering the centre gateway you pass through into a quadrangle 210 ft. square, whose lower story is an arcade in semicircular arches of





"*The Marino,*" *Clontarf (Sir W. Chambers).*

stone on plain piers, the upper story being rough-casted as before. On the right, the arcade is broken by the hall of five bays, the centre having an arched and pilastered doorway with a balcony over, approached from a segmental pedimented window on the first floor. The hall is entered from the quadrangle or from the base of the tower. Inside it is a splendid apartment, 100 ft. by 45 ft., with a curious coved plaster ceiling, exhibiting the tie-beams and uprights of the roof, which was unusual at this date. There is a large fireplace at the upper end with oak settles. At the other end the chapel is entered, as it is, in fact, a continuation of the hall block. It has a barrel plaster ceiling richly ornamented with plaster work, flowers and fruit, said to have been executed by two Italians. The other front with the tower gives on to a terrace with trees upon it; here a wrought iron gate leads by a stone balustraded double staircase to a garden below, laid out with formal grass-plots, ended by a garden house. Looking back at the hospital from here, the trees on the terrace give force to the white mass of the pedimented centre, above which rises the slender grey stone tower. If the building is not by Wren, even if he did not (as might be suggested) supply a general plan for local carrying out, we can at least say that it is not one of which he would have any cause to be ashamed.

Near at hand, off Bow-lane, is Steeven's Hospital, of 1720, but this has been so treated as to have lost most of the original interest of this rather rough and bald piece of work. Quite close is Swift's Hospital (1745) for the Insane, chiefly interesting from its association with the great Dean. Steeven's-lane leads to the terminus of the Great Southern and Western Railway, called King's Bridge Station, built in 1845 by the late Sancton Wood (*see* lithograph). The station takes its name from the bridge across the river; on the opposite or northern bank, and a little eastwards is the Blue Coat Hospital lying well up upon the slope. Built in 1773 by T. Ivory (*see* lithograph), this is a much more interesting building than Swift's or Steeven's. There is a good space in front of the façade, which consists of a centre and two advanced blocks, connected by quadrant screen walls treated with niches. The chapel is on the right, the left-hand block being the hall. Each of these is pedimented and has a tall turret of wood upon the roof. The centre has a rusticated basement supporting an Ionic order of coupled columns flanking an arched recess which frames a window. Over the main pediment is the start of an ambitious octagonal tower on a scale too large for the building, if we may judge from the old engravings that exist (from one of which our illustration is taken). This remains in a ruined state, the work of carrying out the original design having been abandoned. The illustration, taken from an engraving, shows the design complete.

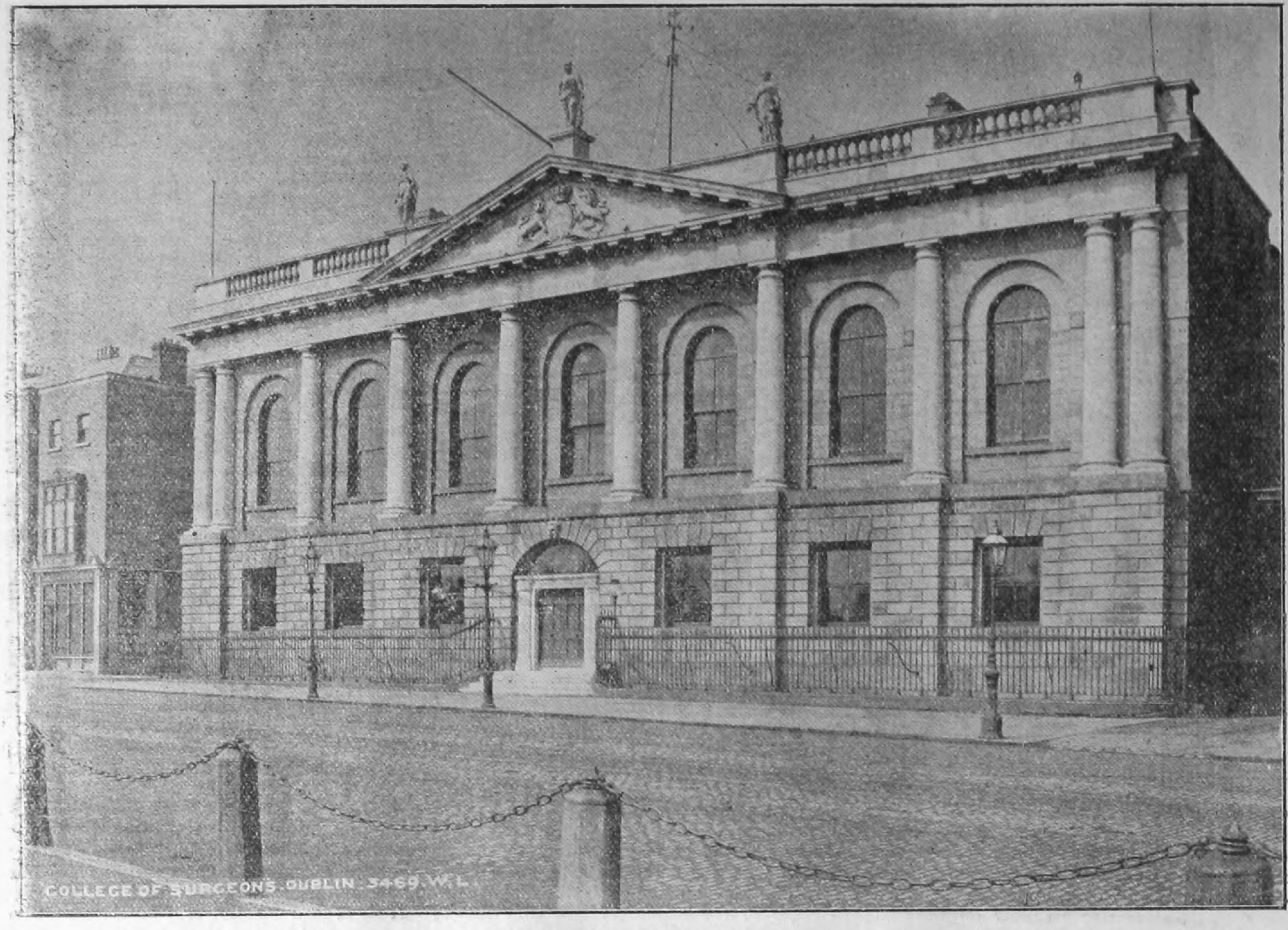
From this point the tramway down the quay will bring us to Richmond Bridge, crossing which, Wine Tavern-street affords a picturesque view of the other side of Christchurch Cathedral, especially where it passes under the bold flying bridge which connects the Synod Hall with the West End of the church. St. Nicolas-street, which leads away due south from this point, is lined with tumbled-down property in a condition suggestive of a recent fire or siege. The ground stories are mostly wooden fronts, and are some of them suggestive of how shops might be treated with oak or teak pillars, in place of unreliable stanchions. Looking down the street, St. Patrick's tower and spire look very picturesque as we come down upon the west end in sharp perspective. The left-hand side of the street is lined with quaint wooden shops that have encroached upon the highway, and are one and all provided with irregular pent house shelters over the counters. All these appear to be on the point of being cleared away as, on reaching the Cathedral, the rear of this line of houses is seen to border on a great area of property behind that has been cleared. Doubtless this will be a civic improvement, of value for health and morals, but it is one not so likely to be appreciated by the artist and lover of the picturesque.

The west end of the Cathedral is very curious to an English eye, but decidedly impressive; a semi-fortress air is produced by the quaint battlements to the flanking turrets of the west end, and to the tower parapets. It is the happiest part of a blundering and drastic restoration which has effaced the old work, inside as well as out. The Lady Chapel, carefully restored by Carpenter, recalls the nave of the Temple Church and is very graceful. The whole building has, however, been already treated of in the Cathedral series, and need not be here enlarged upon. We give, however, for comparison, lithograph illustrations showing the general appearance of the cathedral before and since the restoration.

A short turn up Lower Coombe-street to the west, and on the right hand side, is the ancient Weavers' Hall (1750), an old brick front of two stories, with sash windows divided up by heavy sash bars and spanned by flat gauged brick arches. Inside, a hall leads to a staircase in wood, heavily balustraded, of two flights and a half landing, by which the fine room on the first floor front is approached. The whole interior is given up to the storage of sanitary ware, but the deep cove of the ceiling can be seen, and the columned entrance doors and end features all in wood can be made out. The fireplaces here and on the floor below appear to have been preserved. The rescue of this building is of urgent importance, and no restoration other than repair and cleaning would appear to be necessary, in order to preserve this good specimen of an old Guild Hall. This district was the settlement of the Huguenot refugees and is known as Spitalfields. Sweeney's-alley, somewhat difficult to find, presents a fine example (1721) of the old gabled houses that illustrate the Dutch influence, of which so many traces have been gradually effaced in Dublin. Many of the gabled houses have been flat parapetted, as has happened to the Weavers' Hall itself, which doubtless had a pediment of some kind, as the change in the character of the brickwork in the upper part declares.

Returning and proceeding eastwards, at the corner of Peter-street and Bridge-street is a fine old brick house of the Wren type, in five bays, three being slightly advanced as a pedimented centre. The roof has, unfortunately, been reslated and provided with ugly dormers. Over the doorway is a coat of arms and tablet setting forth that Sir Thomas Molyneux built this house 1711; it is approached by a good flight of steps and is a well-panelled example.

Proceeding northwards and turning off on the right, William-street brings us to Powerscourt House (1744: Robert Mack, architect), perhaps the most imposing of the old private houses in the city. Its effect is gained to a large extent by the tall attic, marked out by console brackets on a large scale, which crowns the centre. The



*College of Surgeons (the late W. Murray).* *(From a photograph by W. Lawrence.)*

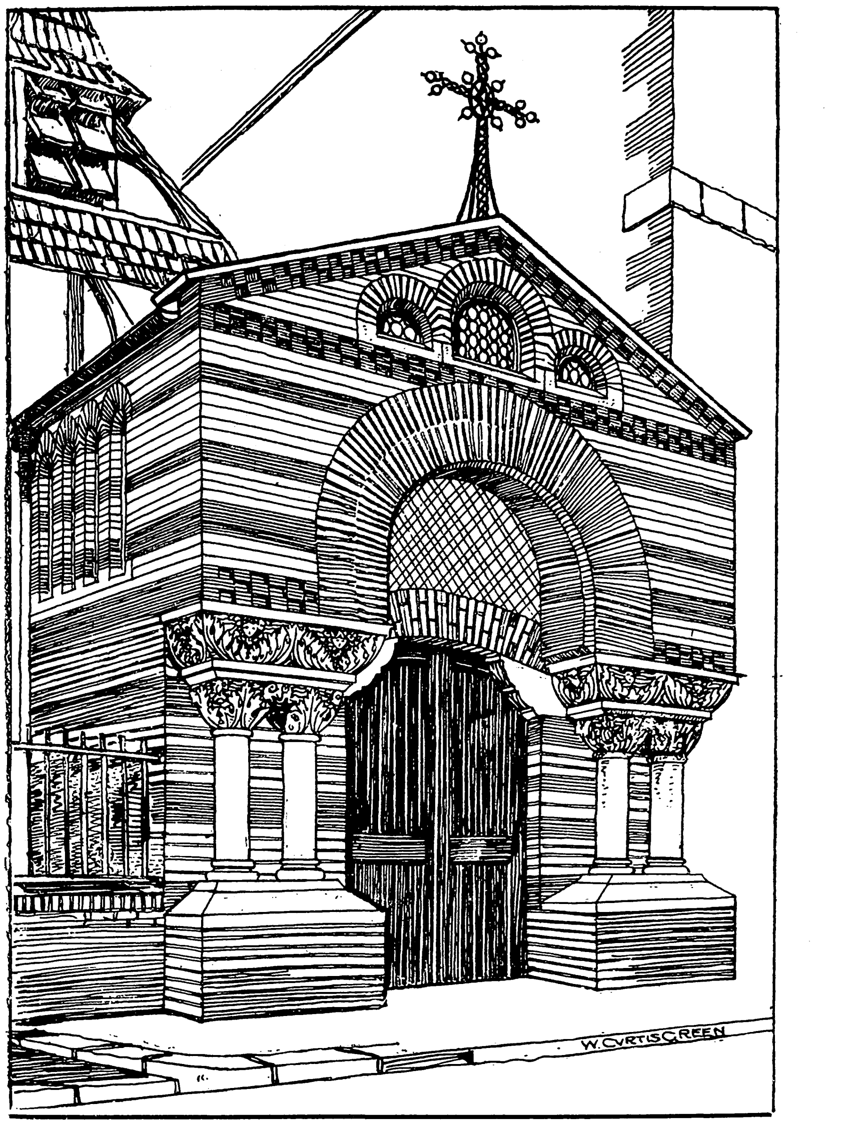
façade is of granite, with returns and back in brickwork. The centre doorway is somewhat small in scale, but a grand approach is gained by the sweeping lines of the balustrade enclosing a wide flight of steps up to the entrance. The area is enclosed by projecting arched carriage-ways connected to the main body with quadrant sweeps. This fine old house is now a wholesale drapers, but in 1811 it was used by the Government as a stamp office, at which time it was extensively added to in the rear, the back court being formed into a quadrangle by additional wings of no interest. The dining-room is a fine apartment, with a good plaster-work ceiling and with medallions of the same on the walls. The front hall is spacious and has a highly enriched archway opening on to the first flight of the staircase, which is of bog oak with heavy carved balusters. It surpasses in detail and richness the type of staircase hall which was followed in Dublin at the period.

Turning to the left we reach the South City Market, a large, well-arranged block (by Messrs. Lockwood & Mawson) divided internally into shops, with glass and iron roofs over the main avenues, and having besides a clearstory of brick arched openings over the shop fronts. The exterior elevations are in red brick and terra-cotta, and of a style of pointed arched Revival Gothic, with which we are rather familiar at home. St. Andrew's Church (W. H. Lynn, 1860) is in a past phase of the Gothic Revival, built of polygonal granite rubble with dressings. It has a good feature in the flanking open arched aisle, serving as a portico protecting the entrances.

Grafton-street, the Bond-street of Dublin, runs from College Green to St. Stephen's Green. Though it is the shopping centre, it cannot be described as an interesting street architecturally. The shortness of the leases is one reason assigned for the want of building enterprise that it exhibits. No. 68 presents an old wood shop front design, with a curious bow window in the centre; this was a type once common in the city. Nos. 64 and 65 have been rebuilt in red brick and terra-cotta, with four stories over the shops. The block presents two gables on the face and one on the return; the treatment is too much split up by vertical and horizontal features (J. F. Fuller, architect). St. Stephen's Green (1670) is a fine old square of exceptional size, the central garden (1,220 ft. by 770 ft.) being laid out in an ornamental manner after the style of St. James's Park, but with a rockwork cascade, bridges, and serpentine paths, introduced in modern fashion. This work was due to the munificence of Lord Ardilaun, whose seated statue in bronze on the western side is a graceful work by Thomas Farren. On this west side of the square is the Royal College of Surgeons, built by E. Parke in 1806, and rebuilt in 1825 by William Murray, senior, having a Doric order in Portland stone relieved against walls of grey granite. The ground story is a rusticated basement, while the first floor in seven bays presents a portico of three bays embraced by a pediment. The order is of three-quarter columns, which are coupled at the angles, but to the centre the order stands free in order to produce a sufficient break to mark off the pediment. The windows of the first floor are semicircular headed with enclosing arches over, so that, in reality, it is an arcade in Roman Doric style, but owing to difference of colour of the white columns and the grey wall, this is not apparent at first sight. The square is lined with old brick plain fronted houses, such as we have already commented upon, with their chief variety and interest centred in the doorways. The wrought-iron railings also remain to the wide areas, but the old lampholders and torch-extinguishers in wrought-iron have mostly disappeared. There is one, however, at No. 96. The lodge to the Green strikes quite a different note, being a cottage in red brick, with wood-carved bargeboards, red tile roof, and prominent chimney with projecting brick courses (Mr. J. F. Fuller, architect.)

On the south side a porch in red and black brick work, with blue brick patterns, the pointed arch carried on coupled white marble colonnettes, with Byzantine carved caps and the typical abacus above, calls attention to the Roman Catholic University Chapel (1858: by T. H. Pollen). Entering the porch and passing under the deep western gallery, formed by slender columns with carved capitals into a description of narthex, we find ourselves in a lofty oblong interior—100 by 36 by 40—with a flat, beamed ceiling and large, half-domed apse, in early basilica style. The windows are narrow and round arched, and close under the ceiling, attention being concentrated solely upon the decoration. This consists of a high dado of coloured marbles, inlaid with lunette insertions in mosaic and painting, above which is a deep band of painted subjects, each divided off by single figures in upright panels. The windows are glazed with clear glass, leaded in circles, Venetian-wise, and a general effect of richness is produced by the quietness of the colouring, so largely composed of marbles. Adjacent to the porch of this chapel is an old classical house, remarkable for a crouching lion over the Roman Doric doorway (possibly designed by R. Cassel); this was once a splendid residence. Beyond us is the town house of Lord Iveagh, an old house with a new stone façade designed on old lines. A ball-room in alabaster has also been added by Mr. William Young.

On the east side of the square the College of Science (a house built by Lord Chancellor Saurin) shows an old brick front; and next to it is a house (No. 52) built about 1790, and once occupied by Bishop Clougher (1822-34). The typical staircase hall is here reduced to an oblong, but still retains its



*Church Porch, St. Stephen's Green (Mr. T. H. Pollen).*

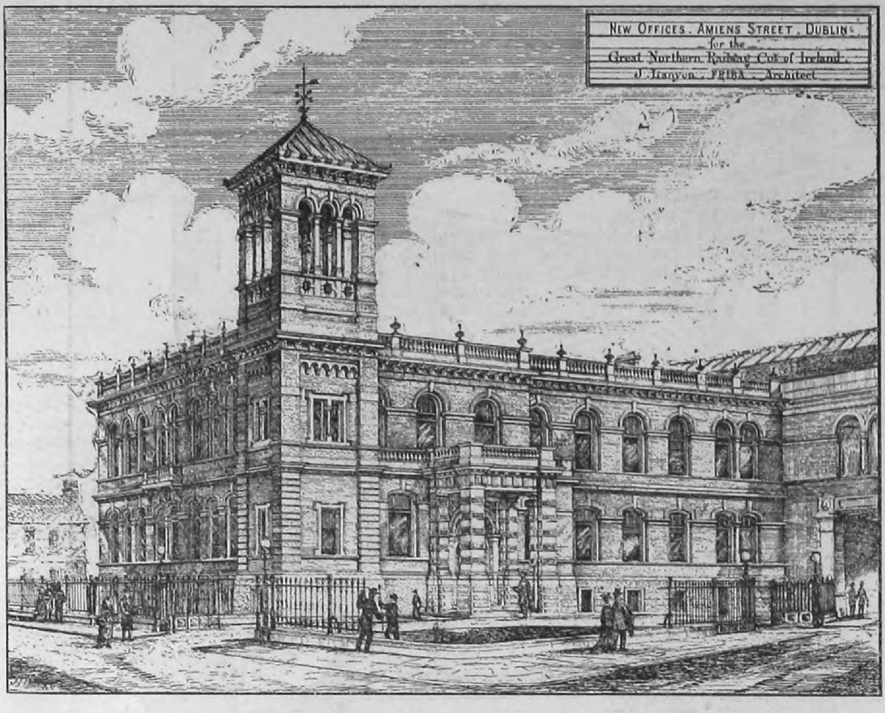
ample flights and open well between, while it also differs in being solely lit from the end by a very large arched window with Venetian sashes starting at the half landing. The plaster-work ornamentation has been modelled by the fingers, and not with tools, as in the narrow water-wave band at the first floor level. The rooms here are interesting from their association with Angelica Kauffmann and Cipriani, who decorated them. In the ball-room are door-panels executed by the former, with small decorative figures and arabesques, on an apple-green ground; while the music-room has large chiaroscuro compositions in the panelling by Cipriani, which, with the other ornaments, all relate to musical subjects.

Leaving the square at the north-east corner, for a brief digression southwards, in Earlsfort-terrace we pass the long façade of the Royal University, once a winter garden, but now a very inadequate design for such an institution. The Alexandra College opposite, built in 1888 by W. K. Parry, is of very red brick with a green slate roof and boasts a heavy projecting wood bay in the centre of the front. The return front, partly visible, in rubble and brick dressings, supplies a hint that does not appear to be followed at all in Dublin; although the red facing bricks as commonly used have a semi-glazed surface, and virulent colour, that makes a whole façade of such a material somewhat trying in such a grey and white city. At the end of this terrace are some patent concrete salmon-tinted blocks of building which will not, we hope, be imitated. We now reach Harcourt-street Station, the terminus of the Wicklow Railway (1858: G. Wilkinson). It is of good design for a station, and one which on a large scale would be imposing. A bold entrance is obtained by a large arch springing off the entablature of the colonnade that forms a portico along the front. Returning to St. Stephen's Green and turning off on the east side, Hume-street leads to Ely-place, in which is Ely House, a very fine specimen of an old city mansion. An ample vestibule leads to a square staircase hall. The stairs work round the walls in the customary manner, but are novel in their dedication to the "Labours of Hercules," who, carved in stone, stands as the newel at the commencement. The balustrade panels exhibit the "Labours" in the form of the characterising animals, which appear to be in wood, though they have the flat rounded treatment applicable to cast metal. On the many-panelled doors, which are of splendid mahogany, are pierced and chased mountings in silver. The rooms are decorated in low relief plaster work in a Wedgwood-Adam style. The mantelpieces of white and Siena marbles with carved panels are excellent examples, such as used to be common in Dublin; the grates are heavily mounted in silver.

Kildare-street, off the north side of St. Stephen's Green, presents, on the left-hand side, the well-known National Museum and Library buildings, by Sir Thomas Deane & Son, which were the outcome of a competition. Old Leinster House (*see* lithograph), now the home of the Royal Society of Dublin, forms a centre, the new buildings, right and left, being the Science and Art Museum and the Library respectively (*see* lithograph). Although alike in the façades that face each other, they are different in internal plan and design; also, on the Kildare-street front the Museum block is much longer, and rather different in treatment to that of the Library. The Museum block, on the right hand, has as its entrance-hall a rotunda, encircled by a gallery at the first-floor level, carried on rich Irish marbles of varied colours; the treatment throughout departs from the classic tradition, being carried out in an elaborated Early Renaissance style of detail, introducing rich carving and also colour, as in the pavements of mosaic and in the doorways of modern Della-Robbia ware. The cupola of this front hall has a central eye and skylight over, the surface of the dome being panelled in plaster with coffers of small size, below which is the peristyle which, leaning in, after the manner of that at St. Paul's, is treated with pilasters in narrow bays enclosing tall arched openings, which are alternately windows and recesses to the front, and all recesses at the back. From the rotunda the large court is entered, covered with a glass and iron roof which is not a very successful instance of the use of ironwork, the architectural treatment being traditional rather than of a character adapted to the material. The student will find the contents of the Museum of great interest, more especially the Irish antiquities, upon which, however, we cannot enlarge in this place.

A richly-treated staircase ascends to the upper floor and gallery of the court, giving access to the rooms surrounding, in many of which the roofs are of an ornamented queen-post type, the majority of the rooms having top light. Special attention must be called to the architectural drawings in water-colour of the Custom House and Four Courts, by Gandon, and also those of the Houses of Parliament, and to a bird's eye perspective by A. W. Pugin, of Maynooth College as proposed. The library block opposite is quite different in internal arrangement; the entrance-hall is low with a flat ceiling, but the effect is carried off by an inner ring of columns concentric with the outer sweep of the walls. The staircase is approached direct through a small square hall in stone, panelled and pilastered. From the top landing doors right and left lead into the great reading room, which has a half dome prolonged upon straight side walls to a gable end; the eye, which is the main source of light, following the same line. An inconvenience attending this solution of the problem is that the iron trusses, of which apparently the domical ceiling is constructed, are seen passing through this skylight. The inside treatment of the dome is like that of the Museum rotunda in the upper part, the windows being alternated with recesses.

Leinster House, in the centre, is a dignified if rather dull façade (1745), by R. Cassel. Inside is a fine hall, with a two-storied arcade in three bays opposite the entrance, carrying through the passage at the first floor level; the deep coving of the ceiling has the effect of a square dome, but the intersections for light are awkward. A certain German heaviness of detail prevails throughout this hall. From the central bay of the arcade opposite the entrance runs a good corridor to a more graceful ball-room in the rear. The back façade of Leinster House is flanked by two gallery blocks enclosing a spacious open garden. These were erected under the direction of the late Captain Fowke, R.E., assisted by C. Lanyon (1859), with simple façades in the style of the old house. The right-hand block is the National Gallery of Ireland, and one-half of its length forms a sculpture gallery, well lit by side windows, flanked by advanced columns supporting a beamed ceiling. The end of this saloon forms a sweep pierced by a central archway, on either side of which a flight of the stairs commences, turning inwards with long, winding steps. The staircase, which does not develop well in its architectural treatment, ends in the picture gallery, which is a large room with a cove to the glass lights, as at South Kensington. The opposite wing is connected to the New Science and Art Museum on the front in Kildare-street, and contains the


NEW OFFICES . AMIENS STREET . DUBLIN
for the
Great Northern Railway Co. of Ireland.
J. Lanyon . FRIBA . Architect

natural history collection. The ground floor room is uninteresting and ugly, with cast-iron columns, but on the first floor the whole wing is open up to the roof, and is treated as a store museum of a modern type, resembling somewhat the well-known example in Jermyn-street.

Merrion-square (1762), on this side of the National Buildings, is another fine old city square. Proceeding northwards in a straight line, Westland-row passes St. Andrew's Roman Catholic Church on the right, designed in 1793 by G. F. Johnston in regulation Greek Doric, except that on either side of the portico *in antis* is a blank arch. Inside we have the same type of a wide span transeptal church with segmental vaults and a dome at the crossing, all flatter than ever in this example. Almost next to St. Andrew's is Westland-row Station, which is a frankly modern and somewhat characteristic. The street front is end on to the railway which runs in by a girder bridge across the street, thus forming a wide centre in a front of five bays, the divisions being piers running up the whole height of the façade. Above the cornice is a balustrade, behind which a segment of the iron shed roof is seen. Carried out with good detail and materials this would be a nineteenth-century station façade of some interest. Proceeding northwards and turning to the left down Great Townsend-street, from Tara-street by a turning off on the right, we reach the Westmoreland Lock Hospital, built in 1792. It has a two-story classical façade in rather roughly-worked granite.

In Townsend-street is the four-story Protestant Church Mission building, in red brick, and in a semi-Gothic style. D'Olier street leads to the foot of the O'Connell Bridge and to the Nelson Pillar, from which this tour round the southern part of the city set out.

Commencing a tour through the northern half of the city, it will be convenient to set out on the eastern side of the Nelson Column, from which point, starting down East-street and turning up Marlborough-street on the left, the Roman Catholic Pro-Cathedral will be reached on the left-hand side, a Greek-Doric edifice with a six-column portico of correct pattern (1816: Morrison & Taylor), but with a saving clause of three lofty statues at each angle of the pediment as representative of Christian ideas. The interior, however, produces rather a striking effect from the simplicity of the lighting, with a further shock to the historical architectural mind, from the combination of a great semicircular barrel vault, intersected by a dome and finished with an apse, with an internal order of correct Greek Doric type which supports it. The architectural impression is that the Greek Doric order requires modification before being put to such use as this, and in particular that such a feature as a dome on large arches requires special supporting piers in order to be æsthetically satisfactory. Further on in this street is the unfinished façade of St. Thomas' Church (1758-62: J. Smith), after a design by Palladio. It faces down a fine wide street (Upper Gloucester-street) of old brick-fronted houses, quite plain, but varied with many forms of the Dublin type of the doorway of the period. By a turning on the right, the Amiens-street Station (by the late W. D. Butler—added to by J. Lanyon) can be reached, which has a granite façade of classical characteristics modified by freer Italian ideas.

Amiens-street leads southwards down to the back front of the Customs House (*see* lithograph), the masterpiece of James Gandon, and the building which with the Bank challenges the position of the grandest of the classical buildings in the city. The strength of the Customs House lies in its sky-line. Viewed from along the quays in sharp perspective, the long river front is singularly happy in its grouping; and in this respect the only competitor is the Four Courts higher up, whose simpler central feature tells by virtue of a greater mass and distinctness of outline. The back front of the Customs is long and low with a central attic too extended to be quite satisfactory. The wings have an order two stories high, recessed in the main wall, which is a late and doubtful feature in classic. The order is Roman Doric, and the bold mutule cornice that runs through the whole front is the strong feature of this elevation. centralised with its surroundings, and the viaduct lattice bridge of the railway on the right is also a disturbing element in its effect. The materials are granite for the walling, with Portland stone for the columns. The centre feature, a four-column portico with pediment over, forms in the ground story a beautiful loggia, cross-vaulted in stone in three bays, about 8 ft. wide, the details being in the spirit of the vestibule at Somerset House. From this a pretty columned hall is entered, leading to an excellent stone staircase, with columned loggias at the first floor level, and lit by an oval eye in the dome above.

The front to the quays is more varied and pleasing. The dome externally is covered with copper, now a fine green in colour. The peristyle is strongly broken by four advanced masses treated with coupled columns, but carrying nothing upon their entablatures above to break the outline, or carry back the eye to the upper drum of the dome.[*] Inside, under the dome, the plan is octagonal, and this vestibule is the least pleasing part of the design. It is small and well-like; as the landings of the first and second floors go through with centre eyes, the view upwards is restricted. At the first floor level the treatment is with recessed orders, all in stone work with delicate carved ornamentation. The stairs are at the ends, and are also in masonry, as well as the connecting corridor parallel to the front, wherein some interesting vaults and flat domes are to be seen employed in the roofing. The detail is of the school of Chambers, and it may be said that the sculpture, by Smith, in parts approximate to the excellence of that at Somerset House, as in such features as keystones, &c., while in places it is more vigorous and skilful, but the gigantic oval vases upon the return fronts, that give vent to four flues apiece, by means of very obvious flue pots, are decidedly a blemish.

After visiting the Customs House the student could not do better than proceed along the quay to the Four Courts (*see* lithograph), which presents instructive points of contrast and similitude. The name explains the plan; the four courts of Queen's Bench, Chancery, Exchequer, and Common Pleas were to be housed in the same building. The great domed rotunda is the fitting point of unity in plan and external effect. The original design was by T. Cooley (1776), carried on (1786-1800) after his death by J. Gandon. The façade facing the river consists of two plainly-treated three-story wings, enclosing a three-sided open court on either side of the centre, each closed in towards the Quay by an arcaded screen-wall, with a central carriage archway. These screens maintain touch with the centre block, which is divided into three by a six-columned, pedimented portico, slightly advanced. The feature, however, of the building is the great rotunda, rising out of and above this centre block. It is perfectly circular and unbroken. The order, of great height, standing on a high plain podium, is crowned only by its entablature, above which two gradins lead back to the low cupola devoid of any lantern. The dome, therefore, is seen here in its simplest and most classical form, and as this is one of the types which presented itself to Bramante for his design of St. Peter's, and is, perhaps, that which he intended to employ, it is worth while to examine its effect in this instance. The first impression that it makes is that the lowness of the cupola proper undoubtedly diminishes the powerful effect of a dome of this diameter; secondly, that it is very graceful; and, lastly, that the order proper gains greatly in importance and effect. Close at hand, however, as from one of the side courts, there is the defect that the cupola disappears altogether, the drum ends with the great curving lines of the entablature, and possesses the unfinished effect of a mere cylinder.

To proceed to the interior. The main portico has a segmental background leading to an oblong vestibule, with an oval top light, and having columned exedræ at either side. Passing directly into the rotunda of 64 ft. diameter, a grand effect is at once realised in this great stone hall, which is treated in a somewhat unusual fashion. There are eight recessed porticoes *in antis* in the circuit of its walls; four are entrances at the cardinal points, while the others are openings into the four courts, from which the building derives its name.

The piers between are large, solid segments pierced with niches below and plainly treated above (there are sundry cracks in the dome piers, more especially about these niches). The Corinthian columns are doubled in the depth of the wall, the openings to the courts are now closed with wood panelling. Above the unbroken entablatures

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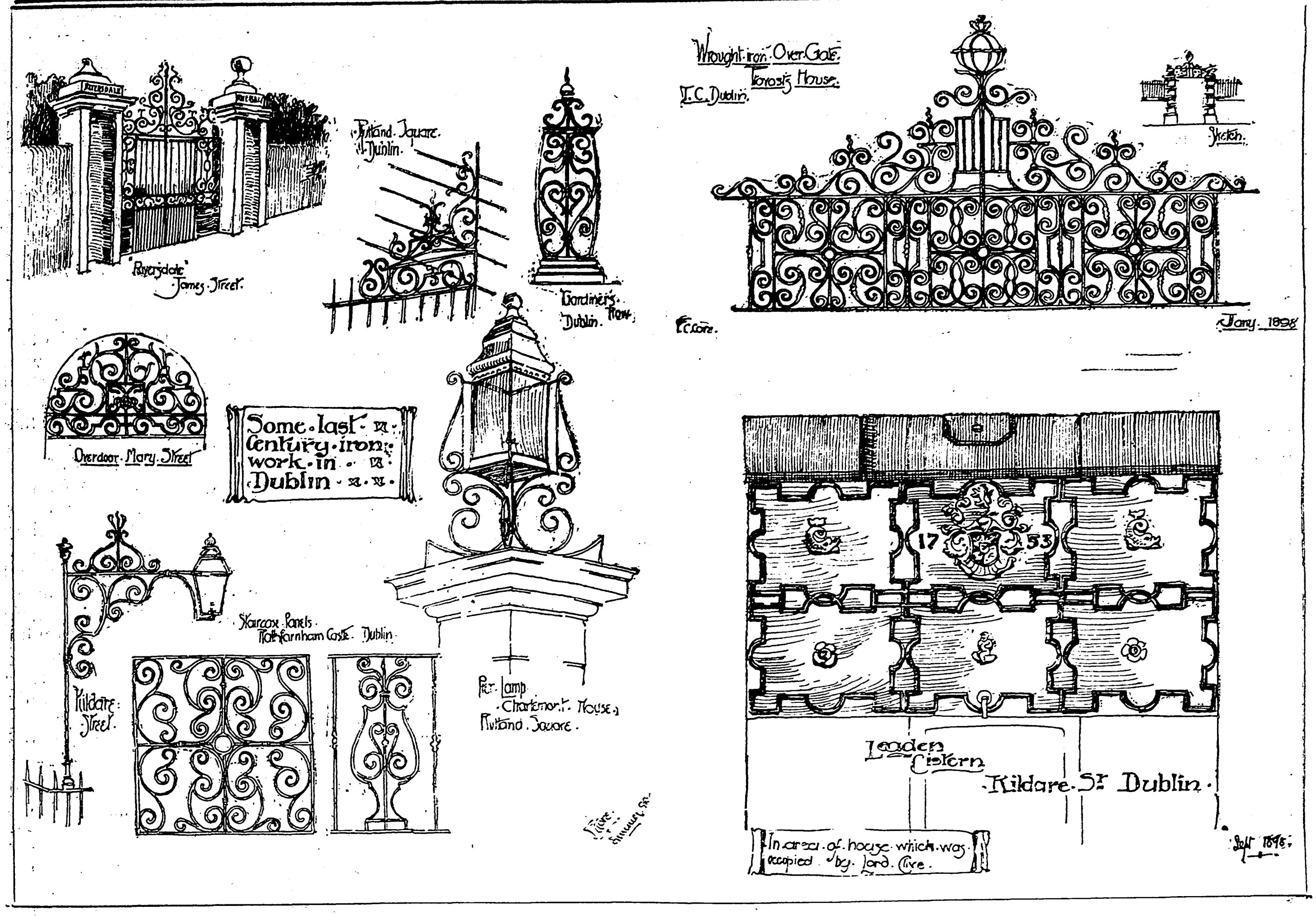
[*] The sculpture of the building, to the architect's design, was never completely carried out, to his great regret.


Some last century iron work in Dublin
'Riversdale' James Street
Rutland Square Dublin
Gardiner's Row Dublin
Wrought-iron Over-Gate Forest's House. T.C. Dublin.
Sketch
Jany. 1898
Overdoor. Mary Street
Kildare Street
Staircase Panels Rathfarnham Castle. Dublin
Pier lamp Charlemont House Rutland Square
17 53
Leaden Cistern Kildare St Dublin
In area of house which was occupied by Lord Clive
Sept 1898

rules a high attic, which conveys the idea of being really the springing portion of the cupola. Over this are eight windows, one over each portico below, all involving a square-shaped cut into the curve of the dome; moreover, these windows being on their outward face bounded by the gore lines of the exterior, produce a most singularly distorted effect. Above is a second string starting the lozenge coffering which reaches up to the central eye. It is a frankly hideous scheme emphasised by bad decoration; the ground of the coffers being blue, while the plaster arabesques between the dome windows are relieved on salmon pink; there are figures in low relief of Justice, Wisdom, &c., from whose heads spring stems growing out into scrolls which form a band round the dome. The pity is that the whole dome surface is not left unbroken, as at the Pantheon, and the lighting made dependent upon the eye alone as in that example.* It springs, in fact, at the top of the attic, and the subsequent divisions only disguise the nobility of its real curvature. The cupola visible externally is, of course, a roof at a much higher level.

The Courts resemble each other; they have segmental vaulted ceilings, with intersections for clearstory lighting, helped by large lunettes in the spandril of the vaults over the Judges' seats. These are placed in a wide, shallow apse with a half dome over; a wooden canopy and curtains protect Justice from any draughts, but produce a curious effect from the great likeness of the Bench to a Royal box at the theatre.

Turning up Church-street just beyond the Four Courts, on the left is St. Michans, a curious old church founded 1095. The tower is a rebuilding in 1686 on its original mediæval lines, though the west door at its base has pilasters with a broken scrolly pediment, a type not common in Dublin. Some of the old Dutch work is retained in the interior, which, however, suffered a "thorough repair" as recorded in the inscription of 1828. The interior is quite bare with a flat ceiling and wooden gallery, which last has, however, been tampered with. There are some old monuments and a curious crypt below.

By turning down St. Mary's-lane on the right the Fish and Vegetable Market is reached, a large area roofed by spans of glass and iron on columns, and enclosed by brick walls, which present two frontages in red and yellow brick arches, broken by entrances flanked by granite columns. The ends of the façade to St. Mary's-lane are canted to provide other entrances at these points. St. Mary's-lane ends in Capel-street, which runs northwards to Bolton-street, off which, by a lane to the left, a fragment of the old Linen Hall, 1720, now a drug warehouse, may be visited. In Henrietta-street, a turning on the same side a little higher up, are lofty four and five story plain brick houses built about 1790, with old ironwork in the area railings, while in one case there is a heavily rusticated, columned doorway, of a Palladian type, but not common in the city. Nos. 4 and 5 have staircase halls of some interest. Henrietta-street is closed at the upper end by a curved screen of arches, intended to reconcile its axis with that of the fine block of the King's Inn, which is askew to the street. This building is not so well known as its merits deserve; both fronts are of interest, but the main façade gains by the possession of a fine lawn in front which adds greatly to its effect. It is well detailed and carried out in granite to the design of James Gandon in 1776. Two fine caryatid doorways with decorative male and female figures in pairs, on either side of the centre, mark out the entrances. Over a low attic in the centre is an open cupola lantern of the Corinthian order crowned by a simple copper dome, which is the feature of the building from a distance.

From the King's Inn grounds is seen, standing out on rising ground, the terminus of the Midland Great Western Railway, called Broadstone Station (*see* lithograph). This is a remarkable design (1846: by John Mulvaney), in granite, but unfortunately not of a perfectly homogeneous character. The station shed is flanked by a long colonnade which, good in itself, is too small in scale, and light in character, for the immense mass of the front block containing the Company's offices, which the architect has elected to treat on the lines of an Egyptian pylon. Wisely, however, he has adopted Greek detail, and assuming, as seems reasonable, that the end of a great railway line, an iron road of vast extent, demands some vertical mass to express its completion, it must be admitted that this design is a more reasonable artistic expression of the fact than, say, the great granite portico of Euston. Here the central feature is internally a top-lit hall, carried out in a massive Greek Doric style. Eastwards, in Dominic-street, is St. Saviour's Roman Catholic Church, with an incomplete quadrangle of ecclesiastical buildings. The church was built by the late J. J. MacCarthy about 1859 on Pugin lines, the adjacent buildings by the late J. L. Robinson.

From Dorset-street, running northwards, an extraordinary Chapel of Ease, St. Mary's, can be seen on the left. It was built (1840) by G. Semple, for Archbishop Magee, as a fireproof church. It has a parabolic vault, with lofty intersections to the side lancet windows, heavily buttressed outside. Originally it was roofed also in stone, but is now slated. Continuing up Dorset-street, and turning on the right, in Upper Gardiner-street, is the Roman Catholic Church of St. François Xavier (1832: J. B. Keane), which also has a Greek Ionic portico. The street ends in Mountjoy-square, of a similar character in general aspect to the other squares of the city, though built within this century.

From the north-west corner of this square a straight street runs into Rutland-square, at the upper end of Sackville-street. Charlemont House (probably by Sir W. Chambers, about 1759) occupies the centre of the north side of the square. The house, being set back with quadrant screen walls, has a fine approach. It is an astylar design of three lofty stages crowned by a modillion cornice. The ground floor is rusticated, with an arched doorway flanked by small Ionic columns in the centre. At the first floor the windows have segmental and triangular pediments alternately, while above the openings are oblongs with plain entablatures. There are good spaces of plain walling between, and around the windows, to which much of the effect is certainly due. The staircase inside has an apsidal first landing, with a half dome over, the main body of the stairs having a barrel vault.

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* One would be inclined to look on this treatment as a modification by Gandon, to differentiate this rotunda from that at the City Hall, also by Cooley.

On the west side of this Rutland-square are some well-preserved sets of old Dublin area railings, with curious open standards of wrought-iron, at the corners of the steps up to the entrance; these are about 10-inch square and 4 ft. 6 in. high to the top of the knob finials. It appears, however, from a few remaining examples, of which there is one just close, that the centre upright originally ran up as the lamp-holder, and on examination many of them can be seen to have been cut down in height. The present finish of the standards is by scrolls set in diagonally, for the apparent support of a central ball or other finial, of which there are numberless varieties.

At the lower-side of Rutland-square, and therefore at the head of Sackville-street, is the Lying-in Hospital by R. Cassel (1751-7), to which the Rotunda is attached (*see* lithograph). It is a somewhat feeble design—the parts also do not seem to be wholly in scale; for instance, the order of the quadrant wings is too small, while the large scale of the bases of the main order at the first floor level destroys the character of the Venetian window of the centre. The Rotunda (by G. Ensor: 1757) has a curious frieze of drapery and bulls' skulls, in Wedgwood ware, hung on to the granite background, against which it is forcibly relieved by its light colour and stoneware texture. The slated cut-off cupola that appears behind the parapet detracts from the effect of this circular building, which has further suffered by later additions hiding a part of its circle and destroying the original communicating corridor all round. The interior circular room is very poor, having a flat, apparently sagging, ceiling, and very coarse detail over the windows.

The adjoining ball-room, by R. Johnston and F. Trench, is a curiosity. It is in three bays formed by hollow piers of advanced columns, carrying segmental flatly coffered arches enclosing very flat cross vaulting. A central dancing space about 23 ft. span is thus formed, with a raised daïs either side of about 8 ft. each. The entrance is in the centre of one long side, and there is a window in the back wall of each of the hollow piers opposite. It is possible that the idea of this room was suggested to the travelled amateur, who has the credit of the design, by the loggia of the Palazzo del Te at Mantua, by Guiliano Romano.

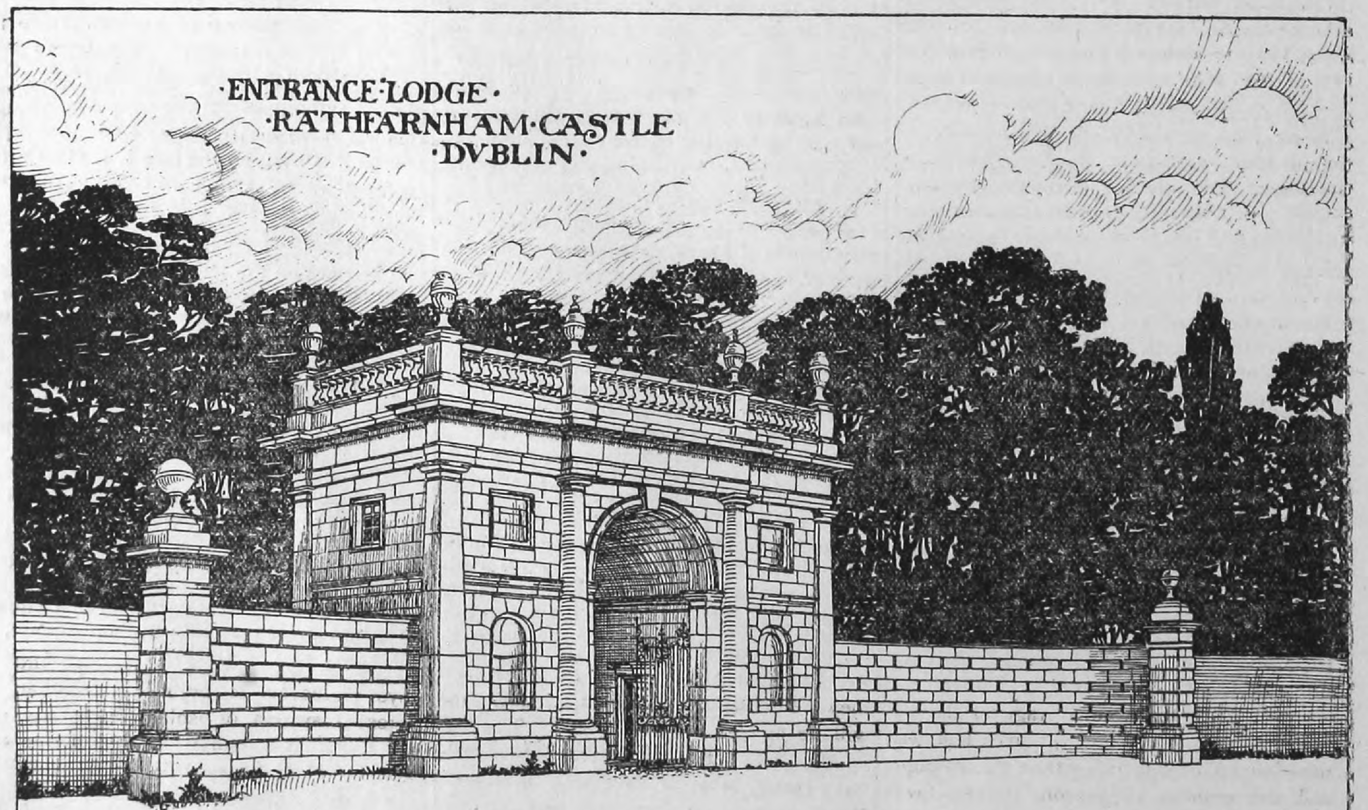
Here at the head of Sackville-street, from which we set on the first tour through the southern half of the city, ends our extended, if flying, visit through the northern half; and there only remains a tram ride out to Rathmines for those who are curious to see one suburb at least, and a modern, if small town hall.

Proceeding southwards by the Rathmines tram the Roman Catholic Church of Our Lady of Refuge is reached on the right (the late Byrne, City architect). The grandiose Corinthian portico façade has little relation to the structure behind it, which is a domical interior of a Greek cross plan. The arms are shallow, and canted at the angles for the pendentives, over which is a very slight drum disagreeably overhanging, except where it touches the crowns of the four enclosing arches. The Rathmines Town Hall, by Mr. Thos. Drew, has been visible by its tall campanile for some time past down the road we have been travelling. The building is in red stone, and is carefully designed and detailed. It presents a gable up the road and another to the street flanked by the tower at the corresponding end. The façade consists of a rusticated ground story treated lightly with the same Early Renaissance feeling that marks the whole.

Riding back on the tram to the centre of the town affords a space for a few hasty reflections on what has been seen. The first thought probably will be that, fine as the classical buildings of Dublin are, they do not add much to the general estimate of the applicability of the style to modern architecture. In this aspect it is mortifying that the best building, the Bank, is precisely that one which has an apparent lack of three of the essentials of modern work—viz., windows, chimneys, and roofs. As regards sky line, however, another English demand, the Customs House and the Four Courts are decidedly above the average of classical compositions, while there is an expression of idea about the latter which is quite a modern note. It is interesting also to notice that in this Irish classical work there is a certain spontaneity of design which we should like to assert is racy of the soil. An absence of the dead formalism of such classic as that of the British Museum in London, or the National Gallery in Edinburgh, would excuse many breaches of convention. Something again may be ascribed to the general use of granite for important works, whose hardness must always have a restraining influence, while the introduction of Portland stone for the features, when managed with judgment, produces a fine colour effect in silver and grey.

Turning to the Dublin houses of the period, a general impression is that, excepting a few special examples, they are too little cared for in the matter of exterior; but that internally they are admirable, and even magnificent, exponents of the social habits of that day. In churches, unfortunately, the result is practically nil; excluding the two old cathedrals, it is difficult to think of a good example. Coming even to modern times, about 1860 there was a certain flutter, but St. Andrew's and St. Saviour's, Dominic-street, to take an example on each side, are far below what has been done in England; and since that date church work seems to have positively gone back. In a city where extremes meet, *à priori*, one might expect something of special value; but, in fact, controversy seems to be a sterilising agency. In schools, also, there is an absence of anything so expressive, and adapted to its purpose as a London School Board building. In street architecture it is the financial institutions of College Green and Dame-street which are the most marked features of modern times.

In the general aspect of the city, up to the present, Dublin may be said to be practically free from the worst side of modern building enterprise, and it is to be hoped that, in any future development, the general character of the monuments of the old capital may have



*A Gateway by J. Gandon.*

a restraining influence on modern designs. To the present day architectural ideals, of which so much is heard in other centres, the architects here seem by their works indifferent. The impression of a visit is that their aim is towards a careful and richly-detailed exposition of well-recognised styles. The idea of attempting to develop from each building a design according to its special characteristics does not appear to be received as yet in Dublin.

We have to thank Mr. Drew for the loan of some valuable engravings, some of which have been reproduced in our lithograph illustrations; Mr. F. C. Core for the sketches of iron work and for the drawing of Gandon's Lodge at Rathfarnham Castle; and Mr. F. H. Jermyn for the drawing of Chambers's design of the "Marino" at Clontarf. Others of the lithograph illustrations of Dublin are mostly from photographs by Mr. W. Lawrence. Beyond the loan of drawings, we have specially to thank Mr. Thos. Drew and Mr. W. M. Mitchell for the assistance and information which they placed at our disposal in regard to buildings in Dublin.*

## NOTES.

**Theatre Safety and Pantomimes.** THE Christmas Season has been remarkable for the number of fires in places of public entertainment, and though fortunately no loss of life has to be recorded, several important buildings have been destroyed. Of these we may first mention the new Palace Theatre at Plymouth, which had only been opened a few months, and was practically gutted, as far as the interior was concerned, on the morning of the 23rd ult. At Marburg (Austria), the Municipal Theatre was entirely destroyed a few days before, and the Union-street Music Hall at Inverness was burnt out earlier in the same month. Several American theatres have also been destroyed. Of minor fires again, there was a slight outbreak at the Royal Music Hall, which prevented the evening performance last week; another at a Manchester theatre, just at the close of the Harlequinade, whilst others are reported from West Bromwich, Leeds, and Brighton. There have also been some panics from unimportant causes at Vienna and Rotterdam. Taking into consideration the number of minor fires at theatres in the Pantomime season, of which the public never hear anything, much less the public authorities, we think that a word of warning might be timely, and we would address this, not only to the various managements concerned, but also to the architects who are nominally in charge of many of the buildings, and who, with a little attention, will often find how some dangerous practice may have crept in which would be obviated by a few words of advice to the stage hands or mechanics.

**Boiler Explosions.** THE sixteenth report on the working of the Boiler Explosions Acts, 1882 and 1890, has just been presented to the Secretary of the Board of Trade. It deals with explosions which occurred during the year ending June 30, 1898. The total number of explosions during the year was eighty-four, or fourteen more than the average of the last twenty years; the number of lives lost was thirty-seven, or eight more than the average; and the number of persons injured was forty-six, or fifteen less than the average. Architects and contractors will find little cause for complaint in the report. Not a single kitchen-boiler explosion is recorded, and only two explosions of heating-apparatus, and neither of these caused either personal injury or loss of life. The explosion at the Marylebone Presbyterian Church was referred to in our article about a month ago, and was due to the rupture of one of the pipes, the apparatus being of the high-pressure type; the other explosion was at Middleton in Lancashire, and was due to the over-heating of the boiler through shortness of water, consequent on the neglect of the attendant. There can be no doubt that the paucity of explosions in boilers for domestic water-supply and heating apparatus is due to the absence of frost throughout last winter; and this fact should keep us from being lulled into a false sense of security during the winter which is now upon us.

**The Paris Exhibition.** THE route for the circular railway at the Paris Exhibition has now been decided on. It will be a single-line railway, running in a complete circle, the train starting from the left-hand side of the Esplanade des Invalides, and following Rue Fabert to the first station, towards the centre of the Esplanade. It will then cross Rue de Grenelle on a viaduct, and take up the right side of the Avenue de la Mothe Piquet to the Champ de Mars. Thence it will turn to the right and follow the Avenue la Bourdonnais, where there will be a descent to a station at the Galerie des Machines. At the end of the Champ de Mars the railway will again rise, by a curved gradient, to the level of the Quai d'Orsay, where there will be a station at the Exhibition des Armées, and will continue the line of the Quai d'Orsay, crossing the Avenues Rapp and Bosquet in an open cutting. The line will then arrive at the station for the portion of the Exhibition reserved to foreign countries. After crossing the Boulevard Latour Maubourg on a viaduct, the line will take a turn to the right to avoid the "L'Ouest" railway, and return thence by a new curve to the Esplanade des Invalides, after a course of 3,300 mètres. The traction will be by electric power. In connexion with the Exhibition we may add here that the Spanish Government are about to erect a fine pavilion on the Quai d'Orsay, in the style of the Spanish Renaissance. M. José y Velada, of Madrid, is the architect.

**Cartwright Memorial Hall Competition.** THE Cartwright Memorial Hall, proposed by the Bradford Corporation, is a rather curious kind of scheme, as it is to include on the principal floor a room for the purpose of an art-gallery, along with a suite of entertaining rooms—Mayor's Parlour, Reception Hall, and Banqueting Hall, "which are also to answer for art-galleries." If this means that they are to be lighted in the best way for showing pictures and works of art, *i.e.*, from the top, they will be spoiled as entertaining rooms and the façade of the building will be spoiled also; if, on the other hand, they are to have a range of windows, they will be spoiled as art-galleries. The Corporation had better at all events state rather more clearly what is their idea in regard to these rooms; but they will probably have "questions" on the subject from competitors. The terms of the competition are not altogether satisfactory. The architect who receives the first premium will be employed to carry out the building, but his premium will be merged in the commission, the premium being in fact here again called by that new and barbarous term "merger," which seems to have been invented to give a colour to this system; and nothing is said of travelling expenses. Moreover, the building is to be carried out for 40,000*l.* inclusive of architect's fees, and if a bonâ-fide tender is not obtained to carry it out for 38,000*l.* the Corporation may withdraw the premium and decline to carry out the works. They might at least allow the architect the usual 10 per cent. margin. Mr. Waterhouse is the assessor, but we should hardly think he is responsible for these points in the conditions.

**The Cardiff Town Hall Scheme.** WE are glad to find that an attempt which was made to postpone the building of the Cardiff Town Hall has failed, the resolution "that the architects be instructed to proceed with the plans and specifications and submit the drawings to an early meeting of the Committee for final approval" having been carried, at a special meeting of the Town Hall Committee on Tuesday last, by nine votes to six. We feel sure that this result will not only be welcome to the architects and to their professional brethren, who have regarded their fine design with considerable interest, but that it is in the best interests of the town itself. If the scheme were postponed now, even for a nominally definite period, it is only too probable that the definite period would stretch itself out indefinitely, and perhaps that the buildings (on that site at all events) would never be carried out at all; and it must be evident to any one who reads the report of the meeting that the longer the scheme is postponed the more it will cost to carry out. It is to be hoped there will now be no more vacillation in the matter.

**Companies *v.* Local Authorities.** FORMERLY we used to hear a great deal of complaint against the rate-aided competition of Local Authorities with private electric lighting companies. It is now the turn of the Local Authorities to complain. The partial success which the General Power Distributing Company's Bill has already obtained in the House of Lords has led to the introduction of many other measures of equal magnitude, and with equally serious consequences to many municipalities. The General Power Distributing Company's scheme is to supply electricity for lighting, traction, and, other purposes to a district having an area of two thousand square miles and including the towns of Sheffield, Lincoln, and Nottingham. The central generating station is to be at Worksop, in the midst of a colliery district where coal slack suitable for generating purposes can be obtained at 2s. per ton. The promoters expect that, owing to the wholesale demand, they will be able to supply electricity at 1d. or 1½d. per unit. Their proposal seems feasible, and the system seems to be far better than the present system of isolated networks each with its own small generating station. The Parliamentary Bill is supported by numerous consumers in the districts affected, but is actively opposed by nearly all the Local Authorities. The Mayor of Sheffield is particularly active in his opposition to the Bill, as he says that, if it passes it will be a serious blow to Sheffield, as the Corporation has only recently purchased the undertaking of the Sheffield Electric Light and Power Company. The Municipal Corporations' Association is calling on all its members to do their utmost to defeat this Bill, or at least to get it amended so as to prevent the Company from competing with the Local Authorities who are at present supplying electric light in their own districts.

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* This series of illustrated articles was begun in our issue of September 26, 1896, and is concluded this week. A list of those towns dealt with will be found on page xvi. of last week (December 31, 1898).

**Bacteriolysis.**

THIS convenient word, coined, we believe, by Mr. Adeneny, is now beginning to supersede the cumbrous phrase, "bacterial purification of sewage;" and as the operation it is intended to designate is likely to be more and more largely carried out, the word had best be adopted without delay. Among the various methods of bacteriolysis the "septic" is perhaps the best known, and a partial trial of this system on a large scale is about to be made at Morecambe, in Lancashire. We say "partial" because the scheme proposed by Mr. H. Bertram Nichols, A.M.Inst.C.E., and described by him in a small pamphlet* which lies before us, does not include the filtration of the effluent from the "septic" tank. In other words, a partial purification only is intended, and the tank-effluent will be conveyed into the bay below low-water. Whether this will be entirely satisfactory remains to be seen, but the pamphlet is worth perusal, as it describes a scheme designed to meet a somewhat peculiar case. It is also tersely written and well illustrated.

**A Public Park for Ealing.**

IT is satisfactory to find that the Ealing District Council have accepted Sir Spenser Walpole's offer to sell to them the Walpole property for 40,000*l.* as a public park. In so doing the Ealing District Council have shown public spirit and foresight. At present Ealing is not an overcrowded locality, and there are probably not a few inhabitants of the place who think that these thirty-one acres of open space are not required. But the true policy for the various public bodies in the vicinity of London is to obtain as much land as possible for open spaces before it is covered with buildings. It is greatly to be regretted that public efforts have not been much more largely made to keep as playgrounds and "lungs" various pieces of ground which are now covered with buildings, and which comparatively a few years ago might have been obtained at no very great cost. Any one who will take the trouble to observe, for example, the way in which building has increased along the Metropolitan Extension line will have an object lesson on the necessity for the systematic preservation of some amount of open space in the different localities around London, before the builder covers every field with his handiwork.

**Hertford College, Oxford.**

WE gather that the designs prepared by Mr. T. G. Jackson, R.A., for a further extension of Hertford College, provide for the preservation of the fifteenth-century doorway, with its sculptured panels of the Annunciation, of the Chapel of Our Lady. The chapel is depicted in the background of Mr. H. W. Brewer's panoramic view of "Mediæval Oxford," published by us on January 3, 1891. It appears that it was either hexagonal or octagonal on plan, somewhat like the Lady Chapel on the Mount, at Thetford, and was still standing, just by the ditch at Smith's Gate, when Aggas made his drawing of Oxford. The chapel of late years has been known as St. Catherine's, a mistake that is due seemingly to the modern name of the street in which Hertford College is situated. That street was formerly called Cat-street—being the "Vicus Cattarum" of some old maps and surveys. The new hall, with kitchen, buttery, bursary, and a set of undergraduates' rooms, at Hertford College, were built in 1887-8, after Mr. Jackson's plans and designs; the fronts facing the schools and New College-lane, designed by Garbett (1820), were built for the then Magdalen Hall, at the cost of Magdalen College. James Parker mentions (1848) the sets of rooms in the angle between the Principal's old lodgings (built *temp.* James I. by Dr. Theodore Price, the Principal) and the chapel as forming a portion of the buildings erected by Dr. Newton, who in 1740 re-founded Hart, or Hertford, Hall as a college; the chapel was built by him and consecrated on St. Catherine's day, 1716.—Gutch (1786) cites the then existing buttery with rooms above, and kitchen, built by Phillip Rondell, who was Principal *temp.* Elizabeth, and gate house, by Thornton, 1668. After a fire in their buildings, by Magdalen College, the authorities of Magdalen Hall migrated to St. Catherine-street, where the two foundations were afterwards reconstituted under the former name of Hertford College, mainly by the munificence of Mr. T. C. Baring.

**Southampton Bar.**

IF, as is reported, the Mayor of Southampton wishes to remove the old Bargate, he is no real friend to the town. Southampton is not in itself a very interesting place, and after the destruction of an old monument like the Bargate it will become still less so. If a clearance is really wanted, the alternative proposition that has been made is better, viz.: to pull down some of the modern houses adjoining the Bar, and make a sweep of the road on each side, leaving the ancient structure in the centre. But is either scheme really necessary?

**Duffield Castle.**

IT is stated that the Hon. Edward and Frederick Strutt are about to present to the public the site of Duffield Castle (known as Castle Orchard), and to vest the ground in the National Trust. The castle, standing on an eminence that rises 70 ft. above the Derwent, at the north end of the old road to Belper and Matlock, formerly belonged to the house of Ferrers, Earls of Derby, having been erected by Henry de Ferrers, *temp.* William I., who granted him 114 lordships in the county, besides estates elsewhere. In 19 Henry II., William de Ferrers, second Earl, lost his possessions for rebellion; they were restored to his son William by King John, but were again confiscated after the capture at Chesterfield and the conviction for high treason against Henry III. of Earl Robert, who had joined Simon de Montfort, when they were given, according to Dugdale and Camden, to Edmund (Crouch Back), Earl of Lancaster, whose elder brother, Edward, ravaged with fire and sword the Earl Robert's lands, and destroyed Duffield Castle, 1266. To Edmund succeeded in turn his sons Thomas (beheaded 1322) and Henry, Earls of Lancaster, from the latter of whom the property passed to his granddaughter, Blanche, who brought it in marriage to John of Gaunt, whose son (Henry IV.) was created Earl of Derby. In the course of some excavations made in 1886 by the Derbyshire Archæological Society were laid bare the foundations of the Norman keep, 98 ft. by 95 ft., its walls being 15 ft. thick; in the larger of the two basement rooms was found the well, which, though not lined with stone, was in excellent preservation and contained 18 ft. of water, together with a great deal of reputedly Roman pottery. The moat, for the most part filled in, encloses 5 acres.

**Mr. Gould's Palace of Sports.**

IT is rather hard on the American people that some of their millionaires will persist in displaying so much selfish ostentation. For the Palace of Sports, which it appears that Mr. George Gould is to begin to build for himself in February, is purely a piece of show. It is to be, we learn from the *New York Herald*, a huge structure, the main walls of white brick, the pillars and visible parts of solid marble and granite, and it is to be the finest place of its kind in the world. The arena will afford room for riding, polo, and other outdoor sports to be enjoyed under cover. In addition, in one corner of the building will be a swimming-bath of marble, in another a gymnasium, in a third bachelor apartments,—we presume something in the nature of dressing-rooms—and the remaining corner will hold a theatre. This mammoth pleasure palace is to be built near Lakewood, in New Jersey. Such an edifice as this is simply one form of advertisement—it says that Mr. Gould is worth so many millions of dollars. The same result might be obtained in a much shorter time by a paragraph in a newspaper to the effect that Mr. Gould's balance at his bank amounts to such-and-such a sum. The spending of money on this building contrasts in a singular manner with Lord Iveagh's wise and generous kind of gift to the city of Dublin which we referred to last week.

**How They Do Things in France.**

WE recommend those who are interested in public art in this country to look at the account, given under the head of "Illustrations," of the decorative work carried out at the new Paris Opéra Comique. The exterior sculpture is by the greatest French sculptors of the day; for the decorative paintings in the auditorium, the staircases, and the foyers, a galaxy of the most gifted French painters have been employed; and all this paid for by the Government, for the public good and for the encouragement of national art. When shall we see such a thing in England? It is as if we had a London theatre decorated with sculpture by Mr. Gilbert and Mr. Onslow Ford, and the halls and staircases painted by Mr. Watts, Mr. Tadema, and Sir E. Poynter. Instead of that, we have theatres with sculpture done by stone-carvers and paintings by decorating "firms."

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THE "LORD HADDON" COFFEE HOUSE, ILKESTON.—This building has just been opened in Bath-street, close to both the Midland and Great Northern Railway stations. Mr. S. Richards, jun., was the architect.

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* "Morecambe Bay Sewerage Scheme." By H. Bertram Nichols, A.M.Inst.C.E. London: Hodgetts, Limited.

## MAP OF THE COUNTY OF LONDON, SHOWING THE BOUNDARIES OF THE SURVEYORS' DISTRICTS UNDER THE BUILDING ACT.

THE map which we give as a supplement this week has, by the courtesy of the Building Act Committee, been specially prepared from the Official Map of the London County Council. We feel sure that many of our readers who have been engaged on work near one of the boundaries may often have been uncertain as to the actual district, and we hope our map may help to remove such doubts in future, and in other ways be found useful to our subscribers. Great care has been taken in the production to ensure accuracy—not, we venture to hope, without success.

It is twelve years since we issued a similar map, which in its day served a good purpose, but the London of to-day differs widely from that of 1887, and no excuse is needed for the present publication. We may take this opportunity of thanking several District Surveyors and others for their valuable suggestions. Some of these we have gladly adopted, and are sorry that, through want of space and from other causes, we have not been able to make use of all.*

# Illustrations.

## A HALF-CENTURY'S CHANGE IN LONDON.

WE have put this as the most appropriate general title to the two views on the Thames from a point near Waterloo Bridge, though of course it only represents a comparatively small portion of London.

The illustration at the top is from a water-colour drawing made by a lady in 1848, and was shown to us by its present possessor as an interesting memorandum of the aspect of that portion of the Thames and of the opposite bank at that date. Underneath is a drawing specially made by Mr. H. W. Brewer from the same point of view, showing its appearance at the present day. In the modern view the mass of the Houses of Parliament rises on the right to balance that of St. Paul's on the left; the Charing Cross Railway Bridge, with its ugly iron pins, takes the place of the graceful lines of the old "Hungerford Suspension Bridge" (now at Clifton); there are more steamers and fewer sails on the river. By a pardonable bit of "cookery" of the perspective, the Egyptian obelisk has been got in on the right of the picture.

The general air of crowding and life in the modern view, as compared with the quiet look of the old one, may be partly due to difference in style of execution; but to a considerable extent we imagine the difference really represents the increasing crowd and turmoil which has developed during half-a-century of the growth of modern London.

## NEW VAUXHALL BRIDGE.

BEFORE describing the proposed new bridge to be erected across the River Thames at Vauxhall, we think it advisable to give a short description of the existing structure which is now being demolished.

The old bridge was commenced in the year 1811, and opened to traffic in 1816, and is composed of two abutments, eight piers, and nine arches. The abutments are supported on a grid of piles, the tops of which are about 5 ft. to 7 ft. below the surface of the foreshore, and in the case of the piers no piles were used, but only a grid composed of 16-in. thick timbers, laid on the top of the ballast or clay, upon the top of which the masonry and brickwork were built. No information exists as to whether the piers were built within coffer-dams or not; but, from the high state of the water in the river at the period when the bridge was built, caused by old London Bridge, it is believed that coffer-dams must have been used.

The piers and abutments are composed of blue Bristol pennet stone facings, backed up and filled in with brickwork and all set in lias lime mortar; the piers, above the springing level of the ribs, are hollow, with occasional cross walls, and the tops arched over to carry the roadway. All the brickwork, so far as it has been broken into, is good work, and it is assumed that the same will be the case throughout. The engineer, when designing the bridge, kept the springing line of the ribs at the same gradient as the roadway, and by this means one set of patterns only was required for the ribs; the effect of this being that the piers are all at different heights, instead of the same, as is the case in all later bridges constructed across the River Thames. The ribs, bracing, floorplates, cornice, parapet, &c., are all made of the best cold-blast cast iron. The ribs are made in three segments, and to them are cast the spandril pillars, &c., so that great rigidity was obtained in a light structure. The ribs were braced together by means of lattice bracing at regular spaces, and leaded in and thoroughly well bolted together; the plates carrying the roadway were laid on the top of the upper member of the spandrel pillars, and held in position by means of long through bolts and muff couplings. The spans of the arches are 78 ft. throughout, and the maximum headway at the centre span is 26 ft. above Trinity high water. Each span consists of ten ribs which bear at their springings on cast-iron skewbacks built into the brick and stonework, no holding-down bolts being used. From the construction of the ribs it has been found during demolition, that very little horizontal thrust could have been exerted, as when the centre portion of the rib was removed the rusting up of the springing ends in the skewbacks was sufficient to keep the free portion in position, which weighed about five tons. The original cost of building the existing bridge was 259,681*l.*, and it was purchased by the late Metropolitan Board of Works in 1879 for a sum of 75,000*l.*, and thrown open to the public free of all tolls.

In this number we give a reduced impression from the half-elevation of the new Vauxhall Bridge, also a cross section to a larger scale showing the piers, &c., and a half-longitudinal section on the centre line of the bridge, to the same scale as the elevation. The rock-faced voussoirs, introduced to give boldness of effect, will project from 6 in. to 8 in. beyond the spandrel face. The lower columns of the piers project beyond the face for about ⅝ of their diameter so as to throw a good shadow on to the flat portion of the pier. The upper columns are intended for ornament and also to carry the lamps which will be used for navigation purposes and for lighting the bridge, and the tops will be surmounted with bronzes. The architecture of the bridge generally is a free Tuscan, but certain deviations had to be made, so that it was almost impossible to adhere throughout to the order in its entirety. The abutments are carried above the level of the footway, and it is intended that statuary of some description shall be placed thereon, but not necessarily that shown on the elevation.

The width of the new bridge between the parapets will be 80 ft., composed of a carriage-way 50 ft. wide between the kerbs, and with two 15 ft. footways; all other dimensions as to spans, &c., can be ascertained from the half longitudinal sectional elevation.

The bridge throughout will be constructed of Portland cement concrete of varying strengths, according to the work that it has to do. All exposed surfaces of the abutments, piers, and bridge, except the under side of the arches, will be faced with the whitest granite obtainable.

The arches throughout will be in two pieces pivoted at the centre and the springing; by adopting this means of construction a considerable amount of material is saved in the haunches and springing, as the curves of pressure are compelled to pass through the pivots. The neutral axes and equilibrium curves of the arches are in the same line, so that the compression is equal over the arch at any point of its cross sectional area. The maximum compression does not exceed 17 tons per square foot on the concrete, due to dead load only; the live load, which bears a very small ratio to the dead load, has not been taken into account in calculating the stresses on the arch, but is taken into account for the loads on the foundations.

The tests made with the 4 to 1 Portland cement granite concrete for two months' old material to be used in the arches crushed at an average of 238 tons per square foot, so that allowing 17 tons per square foot as the compression in the arch, this will give a factor of safety of 14 to 1, which must be considered as very high. As concrete takes about two and a-half to three years to attain its maximum strength, it is assumed that the ultimate crushing strength ought to be as high as 400 tons to the square foot.

The bridge is from the design of Sir A. R. Binnie, Chief Engineer to the London County Council, and will be carried out under the immediate superintendence of Mr. E. P. Wells, of the Engineer's Department of the Council, acting as resident engineer.

We have confined ourselves to giving information as to the structure of the new bridge; of the design our readers can judge for themselves from the illustration.

We have to thank Sir A. Binnie for his courtesy in lending the drawings, and Mr. E. P. Wells, the resident engineer, for furnishing us with the above particulars in regard to the old and new bridges.

## KEW BRIDGE.

WE give an illustration, from a drawing by Mr. W. Monk, of this picturesque bridge over the Thames at Kew, which will soon be unavoidably demolished.

A few words as to the history of the bridge may be of interest. By an Act, 31 Geo. II., powers were given to R. Tunstall, owner of the ferry, to erect a bridge in its place. His bridge consisted of eleven arches, the seven central arches being of wood, the rest of brick and stone. In 1782 an Act (22 Geo. III., c. 41) was passed, on the petition of Tunstall's son, for rebuilding the bridge, which was accordingly done after the designs of Payne—architect also of the bridges at Walton, Chertsey, and Richmond—and the present structure was opened in September, 1789. Tunstall sold his undertaking for 22,000*l.*, and it was eventually bought in 1872 by a joint Committee of the Corporation and the late Metropolitan Board of Works, in terms of the "Kew and other Bridges Acts" of 1869 (and 1874), for 57,300*l.*, the initial claim for compensation in respect of tolls being about 16,700*l.* in excess of that sum, and the bridge was made free from toll. Payne's bridge is 400 ft. long, and 24 ft. wide between the parapets; of its seven arches, which vary in width, the middle and widest arch has a span of 66 ft. and a height of 22 ft.; each of the two adjoining arches has a span of 55 ft., a line of small arches carries the southern approach over the low shelving ground of the Surrey shore.

The King's Collection, in the British Museum, contains some interesting views of the bridge, together with its then rural surroundings, as they appeared in the earlier days of its history. On February 5 last we gave a view, after a drawing by Mr. Roland W. Paul, of the old Shoeing Forge, at the southern end of the bridge, which, it seems, will be demolished for the making of the new bridge.

We understand that Sir J. Wolfe Barry's designs show a bridge 45 ft. wide, and that this width will probably be altered on the plans to 55 ft. at the instance of the Building Joint Committee of the Middlesex and Surrey County Councils; the new bridge will be deemed a county bridge, to be maintained and repaired accordingly.

However much we regret the destruction of a bridge which has so much charm from its simplicity and beauty of line, and the picturesque proportions of its arches, it must be admitted that the practical reasons for its removal are unanswerable. It is too narrow for a traffic which is increasing and is likely to increase still further; the gradients, according to the old fashion of bridge-building, are inconveniently steep for heavy traffic; and the arches, especially the side ones, are so narrow as to form a serious impediment to navigation, especially considering the rapid tide-stream at Kew, which races between the piers in such a manner as often to make it a difficult matter to force a boat through against the tide.

It is gratifying to know that the new bridge is to be of granite, and not a piece of steel engineering, though we fear it is hardly likely that it will present the picturesque appearance of the old one, the beauty of which, it must be admitted, arises partly from the circumstances which constitute its practical defects, viz.: the high curve and the narrowing of the arches towards the shore ends.

## LLANTHONY PRIORY.

THE view and plan of the remains of Llanthony Priory form the twenty-eighth of our

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The Publisher's terms for mounting will be found on the margin at the foot of the map.

series of "The Abbeys of Great Britain." The historical description will be found among the separate articles commencing on this page.

## THE NEW OPÉRA COMIQUE, PARIS.

THE new building of the Opéra Comique at Paris, just completed from the designs of M. Bernier (who obtained the commission as the result of a competition in 1893), replaces the theatre which was destroyed in the fire of May 25, 1887. The principal façade, towards the Place Boildieu, is decorated with six caryatide figures by M. Gustave Michel, M. Allar, and M. Peynot, and with statues in the niches which are the work of M. Puech and M. Guilbert.

The public entrances are in the Place Boildieu and in Rue Favart and in Rue Marivault. The large central vestibule decorated with statues by M. Michel, M. Falguière, and M. Mercié (symbolising "La Pensée," "Le Drame Lyrique," and "L'Opéra Comique"), leads to two state staircases with balustrades in wrought iron and chased copper, designed by M. Germain. There are also four side staircases, as well as a lift to the boxes. The artists have their own foyer; the store-rooms for costumes, and "Étude de la danse," are over the public foyer. A small theatre for rehearsals is placed over the auditorium The stage, lighted by electricity, has service stages at the sides, connected by four tiers of bridges. In the mechanism woodwork has been almost everywhere replaced by iron. There is an extract chimney over the stage intended, in case of fire, to draw off the flames and smoke from the auditorium.

The grand staircase on the right is decorated by a ceiling painting, "La Comédie," and two panels representing "La Tragédie" and "La Danse," which are the work of M. Francois Flameng. On the opposite staircase, on the left, the decoration is by M. Olivier Merson, who has represented in his two panels "La Poésie" and "La Musique," and in the ceiling "Le Drame." The decoration of the ante-room to the foyer is by M. Guifard and M. Joseph Blanc. In the foyer itself M. Gervex has represented the ancient "Foire Saint-Laurent," and M. Albert Maignan has painted subjects from various French comic operas—"Les Noces de Jeannette," "Zampa," "Le Châlet," "La Dame Blanche," &c. The oval salons at the two extremities of the foyer have been decorated by M. Toudouze and M. Raphaël Collin.

In the auditorium the prevailing tone is a light grey—nearly white, heightened with gold, which, under the electric light, produces a somewhat too vivid effect. Among the decorations are caryatide figures by M. Coutan. The ceiling painting by M. Benjamin-Constant, which we have before referred to, is much too sombre in tone for the rest of the decoration. The figures which decorate the proscenium are by M. Marqueste, and the curtain has been painted by MM. Rubé and Masson.

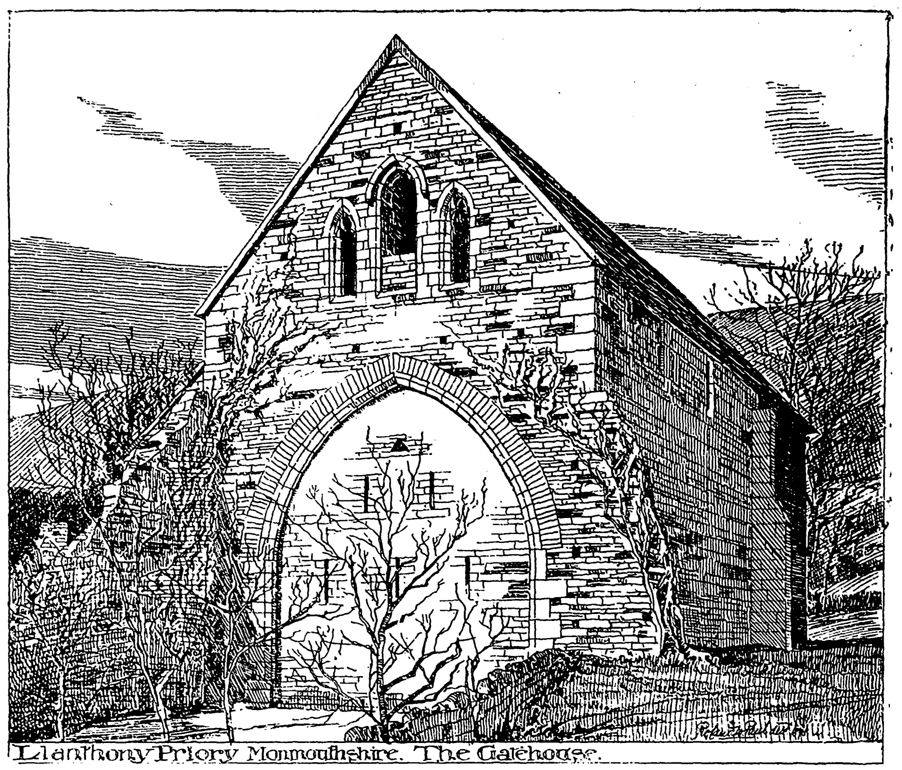
The acoustic conditions of the theatre are in general favourable, but the Parisians have been rather taken by surprise and dissatisfied by the sinking of the band in a pit, as at the Bayreuth Theatre, and complain that there is a want of blending of the instrumental accompaniment with the voices, which is what we should expect. In fact, this system of sinking the band below the floor is only really applicable to the special effect which Wagner wanted, and to apply it to operas on the ordinary model is a mistake.

## DUBLIN ARCHITECTURE.

THE seven sheets of lithographs of Dublin architecture are given as illustrations to the article on the subject in this number, forming the twentieth and last of our illustrated articles on "The Architecture of our large Provincial Towns."

The illustration of the Bank of Ireland is from a drawing by Mr. Curtis Green; the four illustrations of "The Houses of Parliament," "St. Patrick's Cathedral before Restoration," "Leinster House," and "The Blue Coat Hospital," are from engravings kindly lent by Mr. Thos. Drew, R.H.A.; the remainder are from photographs, mostly by Mr. W. Lawrence, of Dublin.

All these illustrations are specially referred to in the article—some of them at considerable length—with the exception of the Drill Hall by Mr. W. M. Mitchell, which we have added as an example of characteristic treatment of a building of this class. In regard to the others, the reader may be referred to the leading article in this week's issue.



Llanthony Priory Monmouthshire. The Gatehouse.

## COMPETITIONS.

THE NEW JOINT HOSPITAL, ARDROSSAN.—Plans for the building of the proposed Ardrossan and Saltcoats Joint Hospital having been received, and a leet formed consisting of three competitors, a meeting of the joint Local Authorities was held on the 22nd ult., at which the three competitive plans were considered. The competitors were:—Messrs. Fryer & Penman, Largs; Guest Luckett, Glasgow; and Thomson & Sandilands, Glasgow. The firm first named was successful. The hospital is likely to cost 4,000*l.* or 5,000*l.*

BOARD SCHOOLS FOR WREXHAM.—On the 30th ult. a special meeting of the Wrexham School Board was held to consider the award of the assessor on the plans sent in for the proposed new Board schools for Wrexham. The competition was confined to architects practising in the town, and nine sets of plans were sent in. The assessor appointed by the Board was Mr. W. E. Willink, F.R.I.B.A., Liverpool, and he awarded the first premium to Mr. W. Moss, Regent-street; the second to Mr. John Harris, Westminster-buildings; and the third to Mr. J. H. Swainson, Holt-street. The Board asked for plans for accommodation for 1,000 children—400 boys, 300 girls, and 300 infants, and the entire cost, exclusive of building site, was not to exceed 8,000*l.*—Mr. Willink said they could not get what they wanted for the money, and he estimated that the first plan would cost 9,610*l.* to carry out, and the others 10,995*l.* and 10,607*l.*—The Chairman proposed that the assessor's award be accepted, and the 30*l.* premium paid to Mr. Moss.—The Vice-chairman seconded, and the motion was agreed to.

INTERMEDIATE SCHOOLS, WREXHAM.—At a meeting of the Wrexham County School Governors (Grove Park), a few days ago, it was agreed to accept the designs of Mr. Phillips, of Cardiff, for the proposed Intermediate Schools, and award him the first premium of 50*l.*, which was to be merged in the commission if Mr. Phillips has the carrying out of the plans. It was agreed to request Mr. Phillips to prepare working drawings, details, and specifications and submit the same to the Governors with a view to obtaining estimates for the work; but the Governors were not to be liable to him for any payment whatsoever in relation thereto unless it was found that the plans can be carried out by the Governors, and the amount stipulated for—viz., not mere than 8,000*l.*, plus 10 per cent. Mr. W. E. Willink, of Liverpool, acted as assessor.

## LLANTHONY PRIORY.*

THE County of Monmouth boasts of two important monastic ruins, Tintern and Llanthony *prima*, so called to distinguish it from Llanthony *secunda* near Gloucester. Tintern has already been described in these columns.† Llanthony is in the north-west portion of the county, on a narrow strip which runs northward between the counties of Hereford and Brecknock. Here in the valley of the Honddu (the "black water") a tributary of the Munnow surrounded by the romantic scenery of the Hatteril Hills or Black Mountains, St. David is said to have had a cell. The site afterwards became that of a hermitage of one William, a retainer of Hugh de Lacy in the time of Rufus. To him and to Ernisius, Chaplain to Queen Maude, the first church, begun in 1103 and finished in 1108, is ascribed. It was dedicated to St. John Baptist, and consecrated by Urban, Bishop of the diocese, and Ramelene, Bishop of Hereford. The church seems to have undergone rebuilding or enlargement by Hugh de Lacy; forty monks were introduced from Colchester, Merton, and Trinity, and Ernisius became the first prior of this house of Canons Regular of St. Augustine. During the reign of Henry I. the priory appears to have been greatly subject to attack, and for this and other reasons a number of the monks were removed to Gloucester in 1136, where a new monastery, known as Llanthony *secunda*, was founded by Earl Milo, Constable of England, largely, no doubt, owing to the influence of Robert de Betun, who had formerly been a Prior of Llanthony, and was at the time Bishop of Hereford. Communication was, however, kept up between the two houses, and during the reign of Henry II. periodical visits appear to have been made by the monks at Gloucester to their brethren on the banks of the Honddu. To what extent Llanthony *prima* was reduced at the time of the removal there seems no evidence to prove, but the bells are said to have been taken away in Roger de Norwich's time to Gloucester, and no doubt were destroyed in the fire chronicled by Walter de Froucester as having happened in 1301.

From this period until 1534, when Llanthony *prima* was dissolved, there is nothing bearing on its architectural history. At the Dissolution the abbey passed into the hands of Richard Arnold. At a later period Captain Arnold sold it to Auditor Harley, and through the Oxford family it came by purchase to Colonel Wood, of Brecon, and afterwards to Walter Savage Landor, whose descendant now owns the estate.‡

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* The series of the "Abbeys of Great Britain" is continued this month with illustrations of Llanthony Abbey. For the list of Abbeys which have already appeared, and for particulars of future arrangements, see p. i.

† *Builder*, July 2, 1898.

‡ "Arch. Camb.," Ser. I., Vol. 1.

If we cannot agree with the late Professor Freeman's opinion that "Tintern is nothing to Llanthony,"[*] there is doubtless much in Llanthony that renders it a particularly interesting study. Nothing could exceed the beauty of its mountain situation; and if the scale of the church is less than that of Tintern, the detail is, for its date, of equal interest, and helps to supplement the documentary evedence.

The present remains include the church, having a nave of eight bays, with aisles, and the bases of two western towers; the "crossing" with the base of a central "lantern"; aisleless transepts; and a presbytery, aisleless, but flanked by side chapels for two-thirds of its length. Of the monastic buildings the cloister court is fairly complete; the slype and chapter house on the east; the fragments of the frater on the south; and a large block of buildings on the west side, now used partly as an inn, partly as farmhouses, which includes many points of interest.

The church, although it bears evidence of advance in style from east to west, is practically Transitional Norman to Early English throughout. To this period likewise belongs the cellarage on the west and south sides of the cloister. The slype and chapter house are, on the other hand, fully developed Early English, and a trefoil-headed doorway has been inserted at the western end of the passage, south of the south-west tower. To the fourteenth century belong a vaulting shaft and other details in the chapel south of the presbytery; and the east window, according to old engravings, was also of this date, inserted in the earlier jambs.

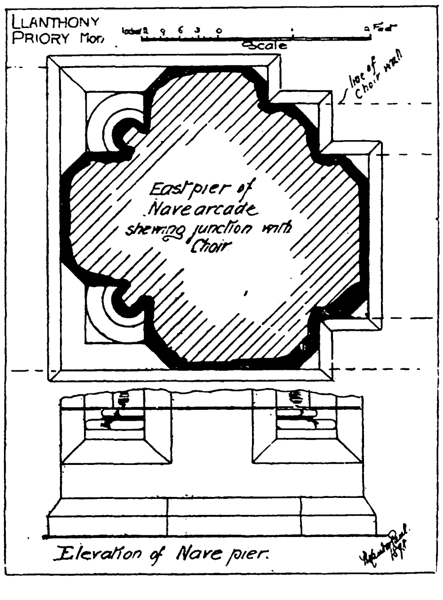
While it seems unaccountable that the building of so large a church should not have been recorded, it is obvious that no part of it can possibly be placed earlier than the middle of the twelfth century, and the nave and west front must, from their design, be given a still later date. Notwithstanding, therefore, that the monastery was reduced in 1136, during the remainder of the century building on a large scale must have been carried out, and the theory that Llanthony *prima* was "abandoned" for Llanthony *secunda* is negatived by the architectural evidence.

It is evident that the presbytery and transepts are the earliest parts of the church. The former was of three bays lighted by a single round-headed lancet in each bay (those in the two western bays being shorter on account of the roofs of the flanking chapels), and by a large window, perhaps a triplet, at the east end. This east window was flanked by two buttresses finishing, doubtless, in turrets. In the westernmost bay the walls are pierced on each side by a round-headed doorway forming both the upper entrances and the choir, and a communication with the side chapels. The presbytery was vaulted, and the vaulting shafts remain for a considerable height. Two steps still remain crossing the presbytery. The choir stalls occupied the space below the "lantern," and the ritual choir extended westward one bay into the nave. In the ground near the bases of the western piers of the lantern are still traces of foundations on which the stalls were placed, and there are indications of a step having crossed the church at this point. The lantern must, when perfect, have been very imposing. In old engravings it is shown rising two stories above the nave gable. The lower of these stories (now partly remaining) had round-headed arches. The upper story had windows with pointed heads, and the whole was finished with a corbel table and parapet. According to a letter from the then proprietor, Walter Savage Landor, "Llanthony Abbey was much injured while I was in Spain, in 1808, by taking down a part of the great tower contrary to my orders."[†] Two sides, the west and north, are now standing nearly to the ridge level of the nave and transept roofs, and there is a small part of the north side also remaining. The great arches supporting the tower are pointed and of two orders, chamfered. The inner order is in all cases carried on a corbel, and in the case of the eastern and western arches the outer order is likewise corbelled back to allow the stall work to be placed against the piers. Another curious feature is the treatment of the eastern arch of the nave arcade against the tower piers, and the corbelling back of the outer order.

The north transept is much ruined, but the south transept is nearly perfect. In the south wall are two round-headed lancets with a circle over them, and on the west side are remains of a single lancet. On the east side, near the south-east angle, is a round-headed recess, and the remaining part of this side is occupied by an opening into the south chapel spanned by a semi-circular arch. From the disproportion between the span of the arch and the scale of the corbels that carry it Mr. Freeman conjectured that the chapel had been originally planned with a central column, and that there had been two arches originally to the transept.[*] Of the north transept the north-east angle, with its buttress and a window jamb, remains, and a portion of its west wall with the base of a buttress. This has a sloping plinth as at the east and west ends. Both transepts were vaulted in two bays.

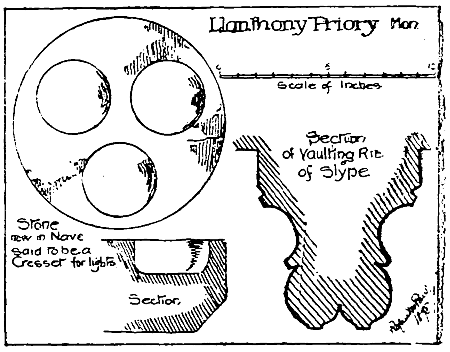
The large chapels on each side of the presbytery are much ruined. Only a fragment at the south-east angle remains of that on the north, with the vaulting shaft and springing of the vaulting itself. Of the south chapel, nearly half of its south wall remains. It has vaulting corbels at two levels in its south-west angle, and further east a vaulting corbel of Decorated date at the higher level. Near this is the jamb of a later window. This chapel evidently underwent alteration in the fourteenth century, the vaulting being raised, and some of the Transitional vaulting corbels re-used.

The nave was of eight bays, but the easternmost bay was, as already shown, a part of the ritual choir, and is, by alteration in the planning of the piers, one foot greater in breadth (see plan of nave piers). The next bay west was probably taken up by the pulpitum, thus leaving six bays for the ritual nave. The arcade had pointed arches, at first sight looking much later in date than they are, the arch and jamb mouldings being the same, without the introduction of caps. They are, in fact, piers, 4 ft. square, moulded at the angles, and resting on chamfered plinths (see plan and elevation of piers). The triforium and clearstory were united under one enclosing arch; the former had two pointed arches enclosed in a circular headed one, while the clearstory consisted, if we are to trust old engravings, of a round headed lancet in each bay. The bays are divided by vaulting shafts, with Transitional caps, the shafts corbelled back below the string course that divides arcade and triforium. Freeman considers that, though undoubtedly prepared for vaulting, it was never completed, and that the nave was finished with a wooden roof of cradle form. Some marks against the west face of the lantern would seem to support this theory. The north arcade is perfect. The four centre arches of the south arcade fell on Ash Wednesday, 1837. Of the aisle walls only a fragment remains at each end. On the north side the return is visible on the west face of the transept, and a part of the lancet window remains in the westernmost bay adjoining the north-west tower. The remains on the south side are similar in extent, but the passage and conventual buildings over covered the aisle wall on this side. The west front of the church, as will be seen by the view, was a very fine composition, simple and dignified, with its transitional date clearly written on its design. Over the doorway was a triplet which fell in 1803, Sir R. Colt-Hoare being a witness of the disaster. It is shown roughly in old engravings, but nothing now remains except the outer jambs next the towers. The towers were, when perfect, at least one story higher than at present, and one of them was probably a bell tower. The bay of the north aisle adjoining the north-west tower retains part of its vaulting, and is the only instance throughout the church. At the north-west angle of the central "lantern" will be noticed a series of weatherings, and a portion of a string course on the west face of the transept. The relative positions of these features suggests either an alteration in the height of the side aisles, or an abandoning of the original idea when the aisle came to be constructed. There are altogether three weatherings, and a trace of a fourth below. The corresponding angle at the south-west is similarly treated.



On the north side of the choir, near the north-east pier of the "lantern," are the only fragments of monuments now left. They are here illustrated. The most perfect is a coffin-shaped slab, with a cross and other ornaments in low relief, of thirteenth century date. Of the same date is a fragment of another slab with the feet and leg of an effigy and foliage below, also in low relief. Both these are said to have been found in the Chapter House.[*] The third slab is of later date—late fourteenth century or early fifteenth—with a cross and a part of a marginal inscription in bold lettering. On either side of the shaft of the cross is a book and chalice.

Among the various fragments in the nave, is a circular stone, about a foot in diameter, with three cup-shaped hollows, said to have been used for lights. We give a measured sketch of this.


Llanthony Priory Mon.
Scale of Inches
Section of Vaulting Rib of Slype
Stone now in Nave said to be a Cresset for lights
Section

The monastic buildings now claim attention. Immediately south of the transept is a slype or passage vaulted in three bays, the vaulting being carried on corbels. The entrance from the cloister is by a well-moulded arch with banded shafts, carved caps, and delicately-moulded bases. It is at this point that we find the first indication of a departure from Transitional detail. Everthing except the vaulting corbels (here, as elsewhere, probably re-used) is fully developed Early English work. South of this slype is the chapter-house, also of Early English date, three bays in length, with a semi-hexagonal apse, of slightly irregular form. The northern half of it is now a stable, the east end is a pig-stye. A portion of the bench that was continued round the interior remains at the south-east angle, but the whole of this beautiful building is in a sad state of neglect. Sufficient however remains for the general lines of its design to be recovered, and at its east end are still the foundations of one of the buttresses of the apse, which definitely settles its dimensions. The vaulting was carried on banded shafts in groups of three, and in each bay was a recessed lancet. The sills and jambs of at least one of these windows remain on the south side, and the window of slightly greater width on the south side of the apse also partly remains. The north side is now covered by the lean-to roof of the stable, but it has been completed on the ground plan. The jamb of one of the arches between the chapter-house and cloister remains on the south side. There were probably three, the centre one being the doorway. South of the chapter-house are the remains of another doorway, similar in design to that of the slype but having a greater span.

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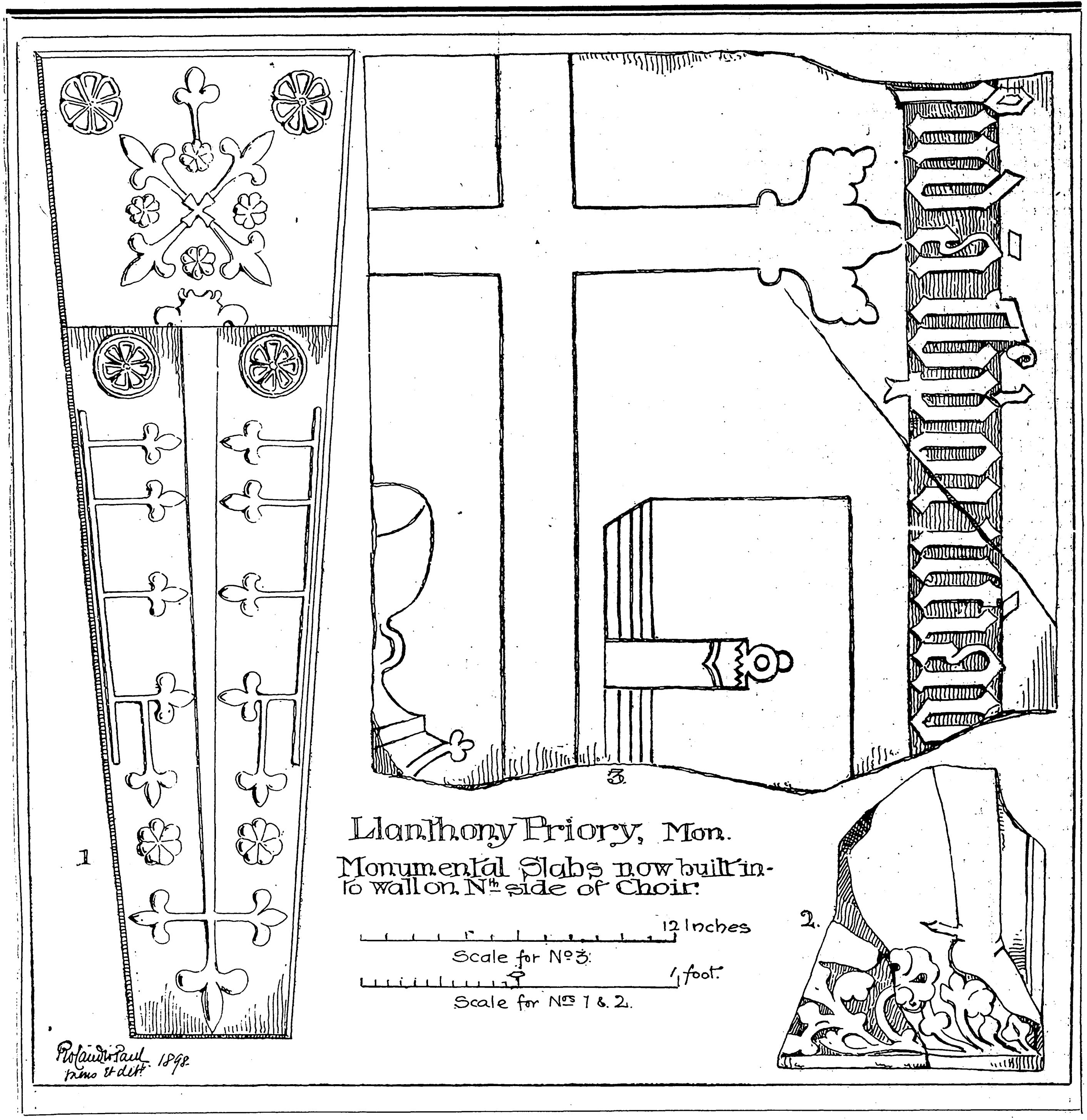
[*] "Arch. Camb.," Ser. III., Vol. 1.
[†] "Arch. Camb.," Ser. I, Vol. 1.

[*] "Arch. Camb.," Ser. III., Vol. 1.

"Arch. Camb.," Ser. I., Vol. 1.



Llanthony Priory, Mon. Monumental Slabs now built into wall on Nth side of Choir.

Following the south wall of the chapter-house at a distance of about 15 ft., are the traces of a wall, probably part of the base of a staircase. At this point the wall of the chapter-house is set back, and above are corbels for supporting a pentice. The angle buttress of the chapter-house eastward has also been corbelled back. At the present time a wall of uncertain date, part of a building of two stories, with a fireplace on the upper level, and a window on the lower level, abuts on the chapter house near the centre of the south side of the apse. There are remains of a small cross wall running westward, and the space between it and the chapter-house is filled with accumulated masonry and earth. South of this building is said to have been a "splendid sewer." This, though not at present visible, no doubt still exists, and probably had an outlet towards the river Honddu, south-west of the monastery.

On the west side of the cloister is a group of buildings chiefly of post-Reformation date, now partly an inn and partly a farmhouse. A recent careful examination, however, has proved that part stands on the old cellarium, and the continuation of it occupied what is now an open courtyard. It was divided into two alleys by a series of square piers, with chamfered angles, and it has been traced, as will be seen by the ground plan, for a length of six bays south. On the east side of the seventh bay is a fireplace with the hearth still *in situ*, and assuming that the fireplace was central, this bay would have been slightly larger than the others, and the piers would have come on the line of the present wall. Everything south of this has been destroyed by the modern approach. The first three bays at the north end are perfect with their simple cross-barrel vaulting. At a higher level and adjoining the south-west tower is a passage, also with a cross-barrel vault. At the west end is a richly moulded trefoil-headed doorway, at the east end a plainer one with a segmental head; both Early English additions to the Transitional work. Two houses—formerly a residence, now a farm—project westward of the old line of the cellarium. They are of comparatively modern date, but may probably stand on the site of monastic buildings. There are some traces of old walls on the north face, and a plinth on the south.

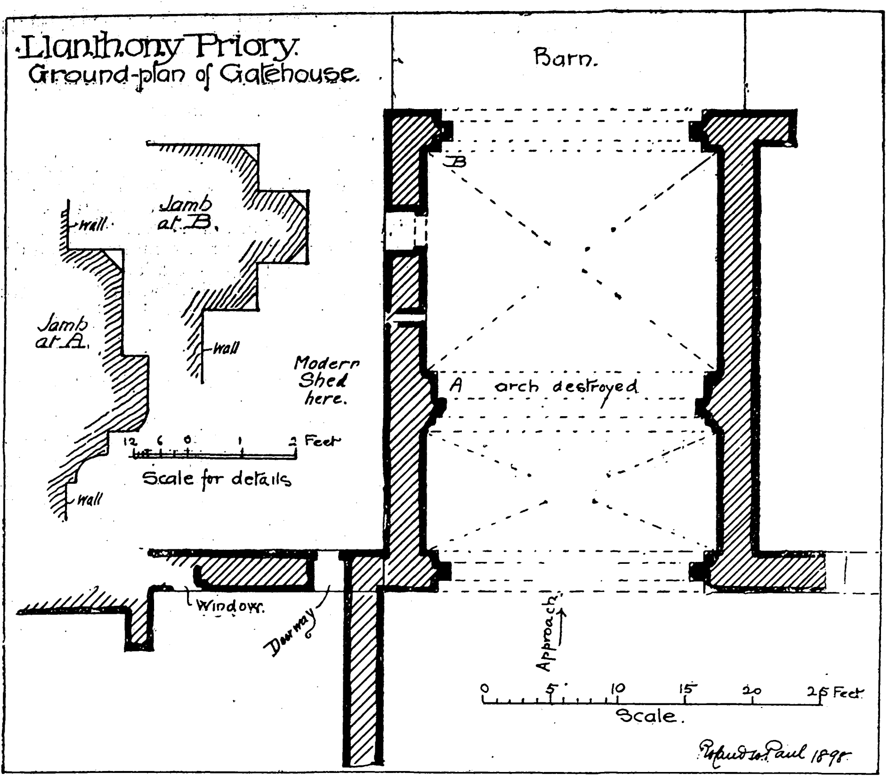
On the south side of the cloister a wall, 3 ft. 9 in. in width, is all that remains of the frater. There were doorways at both ends of this wall, and on its south side are the remains of the cellarage. There are traces of a cross wall near its western end, and indications of a fireplace at the back of the cellarium wall, near the fireplace already noted. The frater was not quite parallel with the church, its main axis inclines slightly south-east.

At a little distance south is the parish church of St. David, recently restored, and generally considered to mark the site, if it does not actually retain the walls, of the infirmary hall and chapel. It is placed at a greater angle with the monastic church than the frater, and near its south-west angle are other buildings which bear evidences of having at one time formed part of the monastic buildings.

About 150 yards west of the cellarium is the great gateway of the Priory. We give a plan of this, as well as the view of its southern front, which stands at the head of this article. It is probably of early fourteenth century date, and is a further evidence of the flourishing state of the priory at that period. It is of two bays, the southern one having formed a porch or shelter. It was divided from the northern half by a large and small arch, and on the left or west side was the entrance to the porter's lodge. The north elevation seems to have resembled the south. There are three arches, the two outer ones pierced and cusped, in the south gable, and at both angles are traces of walls of buildings now gone. A little distance further west is a part of the boundary wall. The fish ponds appear to have been south of the priory.

The arms of Llanthony *secunda*, perhaps also used by Llanthony *prima*, have hitherto been incorrectly given. They were: Party per pale *az.* and *gu.* on a chev. betw. three sprays of oak. *arg.* a rose betw. two pinks proper.

Llanthony is at all times a fascinating spot; perhaps at no time does the broad mass of its western front and central tower stand out better against the dark background of mountains than in the late afternoon light. It is this effect that we have attempted to give in the general view from the north-west.



Owing to its secluded situation it must be classed with the less-frequented of our monastic ruins, and owes much of its charm to its solitary surroundings; but the buildings require careful attention, and the chapter-house should be cleared of the accumulated dirt and outbuildings that now destroy its beauty.

Two papers in *Archæologia Cambrensis*, referred to in the foregoing account of the ruins, give perhaps the two best accounts of the building and its history hitherto published. The first is by Rev. Geo. Roberts, vol. 1, Series I.; the second, an account of the architectural details of the church, by the late Prof. E. A. Freeman, in Series III., vol. 1, pp. 82-109.

We believe that hitherto no authentic plan of the monastery has been published. The one now given will, therefore, have additional value.

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## BUILDING ACTIVITY AT BERLIN, 1898.

ANY one who has not visited Berlin for a couple of years, will be struck by the change in the appearance of its thoroughfares. Everywhere, in the heart of the city, as well as in the smallest suburb, the activity in the building trade has been phenomenal; and innumerable houses of as recent date as the "seventies" have had to make room for new structures erected almost regardless of expense in the best of materials. Whole blocks have been rebuilt, and even certain districts of the fashionable Thiergarten area are being pulled down to make room for the elaborate residences which are taking the place of the old-fashioned villa with its neo-Greek stucco front, so long one of the characteristic features of the German capital. In main thoroughfares the change is no doubt most marked, for there the aspect of some hundreds of yards of frontage at a time will often be found altered.

As far as the architect is concerned there is also a marked improvement in the design of the Berlin façade. The academic fronts with their commonplace classical detail are disappearing, and the more modern schools of design are making themselves felt. Herr Griesebach, whose work we have frequently illustrated, originally set the example, and has many followers; whilst the pupils of Professor Wallot may be said to form another school of their own. Even the more academic architects of an older generation, such as Professor Messel, and Messrs. Cremer and Wolfenstein, show that they have recognised that something different was required of them than they had at first anticipated when they started variations on Italian and German Renaissance. As is the case wherever there is a new movement, the extremist reformer, such as Herr Sehring, is, of course, also not missing. But it is not only in the design of the exterior that progress is being made at Berlin; there is certainly also a marked improvement in every department of building that calls for comment and encouragement. Even in plan and in sanitation there is a great advance as compared with what was done some few years ago.

As regards public works in hand during the past year, the new offices and Council Chamber of the Prussian Diet have just been opened, whilst the great Cathedral is nearing its completion, having just been roofed in, and the Royal stables, opposite the Castle, are just having the scaffold removed. Then again, in nearly every part of Berlin we find churches that have either just been finished or are nearing completion; whilst a large number of minor Government offices have arrived at that stage in which their opening can be counted on in so many months. Curiously, as far as public buildings are concerned in the capital, the only department in which there seems to be some stagnation is that of the Municipal Buildings Board, and of all the proposed improvements in the architectural rendering of the municipal offices, about which so much has been written since Mr. Ludwig Hoffman was appointed City Architect, we have not yet been able to see a single suitable example that might serve as a basis for opinion. As a word of warning we would however note that if, as we understand, the Italian Renaissance is to be introduced for the future covered market, board school, and other municipal structures, this style will be just as out of place in modern Berlin as the coarse brickwork façades of his predecessor were in the building epoch of the "eighties."

Among the semi-public buildings, such as hotels, banks, assembly rooms, and the like, a considerable amount of interesting work is to be found; and the bank buildings in particular are becoming an important feature in the main thoroughfares. As to the hotels, however, perhaps the interior arrangement calls for more remark than the façade; thus, in equipment, the new Bristol Hotel is far in advance of what is to be found elsewhere on the Continent. The luxurious character of the fittings is a conspicuous feature in the modern semi-public buildings at Berlin.

Next, if we turn to the shops, such an establishment as that of Messrs. Wertheimer, designed by Professor Messel, is, perhaps, one of the most instructive buildings in Berlin, for it embodies most markedly our modern requirements of air, light, and roominess in such institutions, and though it would be impossible to give a structure so much window opening in London, owing to the requirements of our Building Act, those who frame our future Building Regulations will have to bear in mind that it is the skeleton structure that will have to be considered in the future, as far as shop property is concerned. It would, however, lead too far in these notes, to go into detail regarding the shops as found in Berlin, and we would only add that great trouble seems to be everywhere taken to obtain artistic effects in the interior, so that the commonplace shop with its long rows of counters is becoming a thing of the past.

Speaking of the villa district referred to above, there seems to be a predilection for laying out large plots for groups of from six to twelve villas, with a private thoroughfare as their approach. It is also interesting to observe that a good deal of money seems to have been spent on wrought-iron work, for the railing and gate have become a most important feature in property of this description. A villa residence costing less than 20,000*l.* in this district is the exception.

Turning to various other recent building operations at Berlin, we may notice that the various sheds and houses in the large Zoological Gardens have been most picturesquely reconstructed, and that many of the public places are being laid out and improved and further decorated with sculpture of some considerable merit. On the Victory Avenue a particularly fine series of statuary, for instance, has been promised by the Emperor, and some of the monuments are already in position, the idea being to represent the Rulers of Prussia and the leading men of their times.

Turning to the more utilitarian public works, it is interesting to note that very great improvement is being shown in the architectural treatment of the bridges over the River Spree and the various canals, but there is more taste shown in the erection of new embankments, railings, and the like. Even the new overhead railway, which is in course of erection, has its artistic merits, and certainly everything is being done to prevent its becoming the eyesore which it is in New York.

As regards the maintenance of the thoroughfares and public parks, we can only speak in praise, for Berlin is certainly becoming the best-paved city on the Continent, as it has long been the cleanest. What with its excellent electric trams, its neat Victoria and Coupé cabs (in which taxometers have been introduced), and the brilliant lighting either by electricity or by incandescent gas lamps, locomotion in the German capital is becoming quite a pleasure; and if the police only understood traffic regulations as we do in the Metropolis, a Berlin thoroughfare might serve as a model to the world.

Taken altogether, Berlin has, during 1898, again upheld its position as being the one city in which the most advanced ideas, as far as building and public works are concerned, are practically put to the test regardless of expense; and where the municipality and the freeholder rival one another in their efforts to improve the appearance of its streets. The result will be that, in another ten years Berlin will be a model city in spite of its position, and of the financial embarrassment soon after the Franco-German War. It is already a wonderful monument of industry, system, and prosperity, combined with "Baulust," *i.e.*, the love for bricks and mortar.

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## LUXFER PRISMS.

THE installation erected by the British Luxfer Prism Syndicate, Limited, at 16, Hill-street, Finsbury, is well worth a visit, if only to see what can be done in the way of rendering dark interiors much lighter, by a very simple and economical process. The Syndicate cannot, of course, create light, but it has succeeded in bringing forward a most ingenious method for bending light rays by refraction, so that these latter shall be projected to any dark corner or part of a room remote from a window. We happened to go to the place on a very dull day, which was hardly fair to the prisms, but showed at any rate what they could do under adverse circumstances, and the result was highly satisfactory; in fact, it was just on such a day as the prisms would have been most useful in actual practice. There is a long room about 90 ft. in depth lighted only at one end by the Luxfer prisms. The latter being mounted in a frame fixed as a folding window could be brought into play as desired. Opposite the window was a building, the top of which was of such a height that, with the width of the street about half the ordinary horizontal diffused light was cut off. In other words, a line drawn from the parapet of the building diagonally across the street to the ground line in front of the window, made an angle in the latter position of about 55 deg. with the vertical wall in which the window was placed. Without the aid of the Luxfer prism window the long room was lighted only near the opening to the street, and that for only a few yards. In such a position the light rays fell on to the floor near the window orifice. When the prism window was shut, however, these light rays, instead of falling on the floor, and thus being badly reflected and mostly absorbed, were caught and refracted horizontally to the far end of the room, lighting it sufficiently to enable one to read where before it would have been quite impossible to do so.

In another room the sparse light from a well, between glazed brick walls, was caught, and refracted at the most convenient angle, so that an interior which must have been almost dark (on the day we visited) was rendered sufficiently light for general purposes without artificial light of any kind. Yet a third room had a refracting window (shall we call it?) which was equally serviceable; and at another end of the room a number of experiments were conducted to show the varying effects of different varieties of the prism. By arranging the prisms diagonally, light was thrown from either one side of the room or the other as desired. But perhaps the most striking experiment here was the lighting of a stained glass window. In the ordinary light this window was exceedingly dull, and did not bring out the colours of the glass in at all a satisfactory manner. By inserting a band of the prisms, however, that portion of the window was illuminated in such a manner as to greatly improve its appearance, the light being caught from the outside and projected through the window, did not in any way interfere with or cast shadows upon the stained glass itself.

In the basement of the building much larger Luxfer prisms are arranged in the street pavement, so as to send refracted light into the interior, and the effect is intensified by the adoption at the same time of smaller prisms, in window form, which catch the rays refracted through the pavement prisms and direct them to such positions as may be required.

In regard to the prisms themselves, they are of quite an ordinary form and are manufactured in great variety, so far as size and angle are concerned. For window purposes and similar objects, each "prism" consists of a small plate of "crystal glass," one side of which is smooth, as in ordinary plate glass, whilst the other side is fashioned into a number of prisms running parallel with each other—that is in the commoner forms. The angle which the two projecting sides of each of these prisms makes with the base of that prism (*i.e.*, parallel with the outside smooth surface) varies with the angle at which the window is to receive the light rays, and divers angles are arranged for varying forms of window canopies, &c. The principle is the same throughout, however. It will thus be seen that each small plate (not more than a few inches square) is, although called a "prism," composed of a number of prisms. Each prism does no more than refract a great portion of the light rays falling upon the surface presented to them.

In addition to their power of refracting, these windows are noteworthy on account of their strength and peculiar construction. They are made of a number of small squares of thick crystal glass as already described; but the squares are not fitted together by means of thick lead or iron glazing, which cut off so much light. With a view to minimising the number of rays which must be cut off, the little squares are joined together by copper. This will be made clear on referring to figs. 1 and 2. A copper strip about $\frac{1}{32}$ in. in thickness (see fig. 2 where the strip is greatly magnified) is placed between the edges of two of the glass plates to be united, or a compound arrangement for uniting four plates may be understood from fig. 1. The plates being gripped together, the whole is placed in an electrolytic bath, by means of which copper is deposited in a thin strip along the edge of each of the thin copper strips already adverted to, and thus firmly holds the small plates together (see fig. 1.) In fig. 2, for the sake of clearness, we have shown the thin copper strip as being away from the sides of the glass; in reality the strip is pressed close to them. The strips are so thin that even in the finished state they cut but little of the light off from the windows or canopies as a whole. The windows made in the manner described are quite as strong as plate-glass, and probably stronger than plate-glass of similar thickness. There is no room for them to bulge. It may be observed that the smooth surface of the prism plates are placed outwards in fixing an installation, so that there is not much trouble in cleaning, &c. In regard to basement lighting, the multi-prisms let into the pavement are provided with small secondary prisms which receive the light rays coming sideways down and up the street, and render them available by compound refraction, which may probably not amount to much extra light in the aggregate. Apart from the small lateral prisms alluded to, the big lenses employed save a great amount of light, and we are quite satisfied with the net result.

*Fig. 1.*

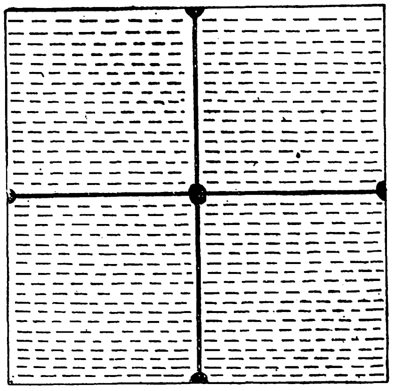
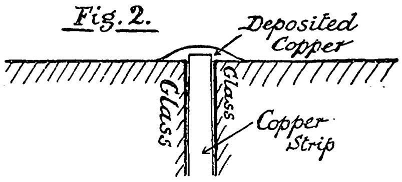


*Fig. 2.*



Finally, we think that the Luxfer prism method of lighting partially dark rooms in daylight is a good one; by using small and parallel prisms the light is more diffused than by the employment of a series of large prisms. The principal difficulty is to catch the available light rays at the proper angle to get maximum and collective refraction, and from what we have seen we believe the Luxfer Prism Syndicate has successfully coped with this.

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# Correspondence.

*To the Editor of* THE BUILDER.

## THE DECORATIONS AT ST. PAUL'S.

SIR,—I am heartily glad to see that some one has "broken the ice" with an adverse criticism on the new decoration at St. Paul's which appears in a letter in the *Builder*. I cannot think that there are merely a few architects (whose opinion on decoration taken into regard with the building as a whole should be most worthy of respect) who disapprove of what is going on inside that noble fane. The character, I contend, of the decoration is wholly out of keeping with Renaissance architecture, and one might imagine the ghost of Wren erasing the famous motto on his tomb could he behold the false face which is being put on his masterpiece. Sir W. B. Richmond has started from an entire misconception in his treatment of the building. Everything is done to kill surface—a thing of all others to be preserved; all breadth is gone, and a style of decoration has been executed in a Byzantine character rather than Renaissance. I cannot but think a day will come when it will be perceived that a deplorable mistake has been made.

ANOTHER ARCHITECT.

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## BOOKS RECEIVED.

THE RENAISSANCE IN ITALIAN ART. By Selwyn Brinton. Part II. (Simpkin, Marshall, & Co.).

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THE "CLEOPATRA" SWIMMING BATH.—We learn that the swimming bath which was moored for some years past against Victoria Embankment, near the Charing Cross railway-bridge, has been bought, failing other purchasers, by a ship-breaker for 300*l*. The bath, having cost, it is said, nearly 23,000*l*., was removed in 1894 to the pier at Southend, and refitted as the "Palace Bath," but did not, it seems, prove to be a successful venture.

# The Student's Column.

## ARCHITECTURAL HYGIENE.

### INTRODUCTORY.

IN the present series of articles an attempt will be made to tabulate and co-ordinate the knowledge which exists in this most important of sciences.

The hygiene of architecture, it need scarcely be said, is one of the most important subjects which the architectural student has to study, for on its proper application in the practical execution of buildings erected under his supervision depends not only the health and well-being of his clients, but often their very existence. It is not too much to say that a building placed on a well-selected site, properly drained and executed with regard to its planning, and fitted up in accordance with the latest sanitary knowledge, reduces to a minimum the need for medical intrusion. In no other service is the intimate connexion of cause and effect so painfully apparent; a badly constructed system of drainage is a certain cause of typhus, typhoid, and other diseases. It affects the health of the inmates in every particular.

The subject will be presented in as simple a way as possible, and an endeavour will be made to include all that is necessary for the architect to know.

At present the literature on the subject is in a most chaotic state. There are ponderous tomes on particular branches, which are quite beyond the province of the practitioner, and there is no one treatise which combines the essential knowledge for practical use.

The subject will be dealt with under the following divisions:—

I. Sanitary Legislation.
II. The Site and Foundations.
III. The Plan in regard to Health and Convenience.
IV. Sanitary Construction.
V. House Drainage.
VI. Drain Ventilation, including Syphonage and Traps.
VII. Sanitary Fittings.
VIII. Disposal of Sewage.
IX. Water Supply and Pollution.
X. Ventilation.
XI. Heating.
XII. Lighting.
XIII. Sanitary Inspection.

I. *Sanitary Legislation.*—Many Acts of Parliament contain clauses which refer to sanitation, and an endless array of authorities exist whose by-laws are to be followed. An attempt is made, therefore, to bring the more important provisions before the student in a simple manner, so that the principal regulations referring to sanitation can be seen at a glance.

II. *The Site and Foundations.*—The sites of buildings and proper provision for draining are then taken—a most important subject, and one which is often neglected.

III. *The Plan in Regard to Health and Convenience.*—Then follows the planning of the house in regard to health and convenience.

IV. *Sanitary Construction.*—The various materials in use in buildings, their special points and value, and their effective use in roofs, floors, and walls are dealt with in this section. Special reference will be made to the exclusion of damp from walls, and the various methods in use in ordinary practice.

V. *House Drainage.*—House drainage includes the laying of underground drains, the use of gulleys, the comparative value of earthenware and iron pipes, and special points to be observed in the laying of drains so as to prevent blocking up. The inspection of drains by manholes will be also described and illustrated.

VI. *Drain Ventilation, &c.*—The important subject of drain ventilation and the prevention of syphonage in traps will be dealt with, including their various forms.

VII. *Sanitary Fittings.*—Next an article on sanitary fittings and traps which illustrates the different forms of closets and their traps, lavatories and their wastes, grease traps, baths, and water waste preventers, &c., and the general use in buildings of all these fittings.

VIII. *Disposal of Sewage.*—Having thus planned the system of drainage we have to consider the important question of the disposal of sewage, including refuse collection, and to compare conservancy systems and water-carried systems, and the treatment of sewage. We shall supply some typical drainage plans of executed works, so that the student will have before him practical object lessons in the subject.

IX. *Water Supply and Pollution.*—Then the important question of water supply and its pollution is undertaken, the effect of rainfall on a district, the advantages of a constant and intermittent supply, the question of storage, filtering, and water fittings in general use.

X. *Ventilation.*—This includes the composition of air, the movement of air currents, the quantity of air required per person, and the impurities to be found in air. The best position for inlets and outlets in ventilation systems, and the division of the subject into natural and artificial systems. Examples of ventilation schemes as applied to domestic and public buildings are also given with plans.

XI. *Heating.*—Under the section of Heating the comparative advantages of hot water in the high and low pressure systems, and of steam are discussed, and the general arrangement and form of heating apparatus. The subjects of ventilation, heating, and lighting are, of course, very much connected, and should be considered together.

XII. *Lighting* is treated in conjunction with ventilation, but in this section the various kinds of illuminants are dealt with from a hygienic point of view.

XIII. *Sanitary Inspection.*—This section will be devoted to sanitary surveys and reports, a subject well within the ordinary practitioner's domain, and one by means of which the young architect may often tide over the early struggles of a professional career with profit to himself and friends. A model specification for the sanitary work of an ordinary small house is outlined, in which are incorporated the facts which have been laid down in the previous articles.

The importance of the above-mentioned subjects is fully recognised by the examinations which are held on it by the Royal Institute of British Architects, the Surveyors' Institution, the Institution of Municipal and County Engineers, the Sanitary Institute, and the Carpenters' Company, &c. It also forms part of the examination for the Diploma of Public Health held by the various Universities throughout the British Empire, so that these articles should appeal to a wide circle of readers.

Sanitary science is the bridge or link connecting the architectural and medical professions, and on it are to be found both architects and medical men. We need not discuss here to whom the work of making new buildings healthy and habitable in a hygienic sense really belongs, for it must be apparent that the architect should be solely responsible for it. He cannot delegate to anybody so important a branch of his work, neither should he desire to. Architectural practice is interesting because of its variety, and while the architect may to-day be superintending the laying of drain-pipes and the formation of manholes, to-morrow he may be designing an altar frontal or a bishop's mitre.

While the architect should reserve to himself, as the *chief workman*, the planning and superintendence of everything connected with his buildings, he should, on the other hand, be ready to accept for inquiry the views of medical men on those subjects with which they are more familiar, and to make inquiries in an enlightened manner into all new ideas and inventions in regard to sanitation.

In sanitary science there is no lagging behind, no stopping on the forward march. In no other science that we know have such strides been made during the Victorian era. From Sir Edwin Chadwick onwards the progress has been uninterrupted, and in these articles an attempt is made to bring into one coherent treatise the whole subject as affecting architects whose privilege it is not only to superintend and re-plan the existing drainage of old buildings, but to see that in the structures which they erect the principles of hygiene may be carried out with as much success as the knowledge on the subject permits.

New Workhouse Chapel, Salisbury.—The recently-erected chapel at the Workhouse was opened and dedicated by the Bishop of Salisbury recently. The building was commenced in March last by Messrs. Kite & Son, of Fisherton, and was erected to the plans of Mr. George Gordon, architect. It is Gothic in character and is composed of brick, with courses of grey brick round the windows and elsewhere. In the nave there are six lancet windows, and in the chancel two and an east window. It has a woodblock floor, and the seats are of pitch pine, and are capable of seating 150. The building is warmed on Grundy's hot air system.

## *GENERAL BUILDING NEWS.*

Reopening of Shernbourne Church.—The Church of SS. Peter and Paul, Shernbourne, was reopened recently after restoration. During the restoration of the old walls, and in the process of excavations being made, the foundations of the original aisle and chancel were discovered, and these indications have inspired the lines on which the work has been conducted, the church now consisting of nave, chancel, south aisle, and porch. Although the walls have been partially rebuilt, such judicious use has been made of the old material (flint and rubble) as to redeem them from the appearance of raw newness almost inseparable from such work, while the retention of the ancient stonework in doorways, windows, and arcading considerably enhances the appearance of age. Externally the roofs to nave and chancel are covered with Broseley tiles, a stone cross surmounting the east gable and a bell turret the western. The roofs to south aisle and porch are covered with lead. Internally the chancel has a wagon-headed roof in oak, treated with moulded ribs and carved bosses, those to nave and south aisle being of a plainer character. The piers to the south arcade (of the Decorated period), after being walled in for centuries, again divide the nave from the south aisle, the eastern end of which is intended for the future organ chamber, an ancient doorway giving access to the chancel. The floors of nave and aisle are of wood blocks, the sacrarium and chancel being laid with tiles and stone steps. The pulpit (on stone base) and the choir stalls are in oak; and the font has been refixed on a stone slab. The only remaining brass, together with the Purbeck marble slab to which it is attached, has been restored and refixed in an upright position in the north wall of chancel. All the memorial mural tablets have been retained. The windows throughout are glazed with cathedral glass. The heating apparatus is by Messrs. Mackenzie & Moncur. The lamps have been supplied by Messrs. Ames, Lyde, Elsum, & Co. Among the contractors entrusted with the execution of the work have been Mr. Geo. Riches, of Dersingham, who restored the fabric of the building; Mr. John Boddy, of Harpley, being responsible for the roofs, floors, and internal fittings; and Mr. A. W. Hall, of Norwich, who restored and reinstated the ancient stonework, together with the new masonry throughout. Sir Arthur Blomfield has acted as consulting architect, and the work has been carried out from the designs and under the superintendence of Mr. Herbert Green, of Norwich.—*Eastern Daily Press.*

New Church for Boosbeck.—It has become necessary to build a church to meet the requirements of the Boosbeck district of the Parish of Skelton-in-Cleveland. Plans have been prepared by Mr. Hicks, Diocesan Architect, of Newcastle, for a stone church, to seat 400, at an estimated cost of 3,000*l.*, exclusive of the site.

Church, Falkirk.—St. James's United Presbyterian Church is about to be erected in Falkirk, at the corner of Thornhill-road and the new street at Firs. The building, of which Mr. G. Deas Page, Falkirk, is architect, will cost 4,000*l.* In the Gothic style, it is being constructed of red stone from Locharbriggs Quarry, Dumfries.

Church Improvements on the Borders.—The old Parish Church of Eckford, situated on the banks of the Teviot, near Kalemouth, which has been closed since May last, in order to allow of internal alteration and improvement, has been reopened. The scheme of restoration embraced the reseating of the church, the removal of the east gallery, and the forming of a chancel at that end, the insertion of a new window in the east gable, the introduction of a modern system of heating, a new pulpit and communion table. The architects were Messrs. Sidney Mitchell & Wilson, Edinburgh.

Work at the Tower, Earl Soham Church.—The Church bells in the parish of Earl Soham have been rehung A new frame, with modern improvements, has been set up, a new ringing chamber erected, and the tower strengthened. The spiral stairway has also been repaired, the old gallery removed, and a screen put up that has been made out of the materials of the tower arch. By the removal of the gallery, the tower arch and the Perpendicular west window have been opened out. The architect, Mr. T. G. Jackson, R.A., has reproduced in the screen many of the features of the old gallery worthy of preservation. The work of rehanging the bells has been carried out by Messrs. George Day & Son, Eye; and the design of the screen has been reproduced by Mr. C. Beecroft, Earl Soham.

Aisle, &c., Castle Church, Stafford.—On the 23rd ult. the Bishop of Lichfield dedicated a memorial aisle and windows, which have been added to the Castle Church in memory of the late vicars. The new aisle has been added to the north side of the church, and will accommodate about eighty worshippers. The memorial stained-glass windows in the wall of the new aisle have been presented by Mr. W. G. Bagnall. The apostles, Matthew, Mark, Luke, and John, are represented in them. The architect is Mr. J. Oldrid Scott, London, and the work has been carried out by Mr. Bridgeman, of Lichfield.

East Side Congregational Mission Hall, Whitby.—The new East Side Mission Hall, situate in Grape-lane, Whitby, was opened recently. The ground floor consists of one large room, which will be utilised for Sunday school and assembling purposes; whilst the classes of larger children are provided with six separate class-rooms of varying sizes. In the basement there is a heating chamber, lavatories, &c. The building is faced with red brick and stone dressings. Mr. J. C. Petch, of Scarborough, was the architect for the building, and the various departments of work have been carried out by the following: Brick, stone, slating, plastering, and ironwork, Mr. A. Palframan; joinering, Mr. B. Smith; and plumbing, Mr. E. Smithson.

Wesleyan Methodist Church, Bole Hill, Sheffield.—At the recent quarterly meeting of the Carver-street Wesleyan Methodist circuit, the chairman reported that at a recent meeting of the Bole Hill Chapel trustees plans drawn by Mr. W. J. Hale, architect, were submitted and approved for the erection, on the site already acquired at Bole Hill, of a new chapel with vestry and school accommodation, at an outlay of about 4,000*l.* The scheme comprises a chapel to seat some 300 persons, with entrance porches, and a chancel in which will be placed seats for the choir and the communion table and rail; a school-room for 320 children, which has separate entrances for boys and girls; and vestries of varying sizes, together with kitchen and other accommodation.

School, Raveningham, East Anglia.—At Raveningham a voluntary school with a teachers house has been erected. The new school occupies a central position, and is a red-brick building with a red-tiled roof. Mr. A. Pells, of Beccles, is the architect, and Messrs. J. Hipperson & Sons, of Barford, the builders.

Cottage Hospital at Rhondda.—It has been decided to erect a cottage hospital at Llwynypia, Rhondda, in the mining district of Glamorganshire; it is intended chiefly for accident cases from the collieries. Messrs. Griffiths & Jones, of Tonypandy and Llandaff, have been instructed to prepare the plans, &c.

Building in Aberdeen in 1898.—During the past year building has been very active in Aberdeen, while the prospects for next year are exceptionally bright. Large numbers of big blocks of tenement houses (with shops) have been and are being erected at Torry on the south side of the River Dee. A great many dwelling-houses have also been built in other suburbs, and building is brisk along the lines of railway from Aberdeen. In the more central parts of the city numerous new buildings have taken the place of old structures. Among the most important public buildings completed in 1898 are—Empire Palace Theatre; Corporation Lodging-house; South Wing, Marischal College; enlargement of Corporation Baths (large swimming-pond and new wing); and extension of Sick Children's Hospital. A strike of plasterers dislocated business for a time, and the strike and lock-out at the granite quarries (involving the suspension of all the operative masons for a time) interfered seriously with the supply of grey granite, and it may be noted that red granite is now considerably used for house building in Aberdeen.

The Building Trade at Barnsley.—From the annual return made by Mr. J. H. Taylor, C.E., Borough Surveyor, it appears that the year 1898 has been very quiet compared with its predecessors. Seventy-seven plans were deposited, embracing 158 houses, ten shops, three public buildings, seven workshops, &c., and three for alterations, &c., making a total of 201, which is the lowest since 1887, when the total was 137. The total number of buildings erected and certified has been 158, against 263 in 1897.

Belfast Building Trade.—Although there has not been much falling off, still the improvement in the building trade in 1897 was not as fully maintained last year. Bricks have been by no means as scarce as in previous years, as the supply has been quite equal to, if not more than equal to, the demand. This applies principally to stock bricks, and not to perforated bricks, as large quantities of the former are used in the building of artisans' dwellings, and this particular branch of the trade has fallen off very considerably during the past few months, owing doubtless to the very large number of houses which were built on the extended municipal area about the time this was taken over by the Corporation. The supply of this class of house has been greater than the demand. Taking everything into consideration, we consider that the building trade has been very satisfactory during the year, with the one exception referred to, and it is to be hoped that early this year that branch of the trade also will revive.—*Northern Whig.*

Building in Bolton.—Like its predecessor, the year just closed has been marked by considerable activity in connexion with building operations in Bolton and the adjoining districts. Including the completion of undertakings commenced prior to the advent of 1898 and the work still in hand by Bolton architects and contractors, the number of structural extensions and renovations has been considerable, and also show much variety, the spreading being not only in the direction of industrial and commercial development, but in that of religious and educational progress; while new warehouses, shop, and dwelling-house construction has continued to be carried out on an extensive scale. There has, however, been comparatively little new mill-building in the borough.

BUILDING AND STONE TRADES, BRADFORD.—The local building trade has been exceedingly brisk throughout the year. Some of the more prominent buildings erected, or in course of erection, are the shop premises in Manningham-lane, the Empire Theatre of Varieties, the Telephone Company's offices in Nelson-street, the alterations and additions to the Parish Church, shop properties in Westgate, and a large warehouse in Canal-road. In the neighbourhood of Shipley building on a very extensive scale has been carried on for the textile trade. The speculative house-builder has been never busier in Bradford than during this year. The stone trade has been good, both as to the local and as to the Metropolitan and provincial markets, and prices have advanced since 1897. The timber trade has been very active, and the increase in cottage property has been considerable.

BUILDING IN BRISTOL IN 1898.—There has been a fair amount of activity in Bristol in the erection of new buildings during the past year. It is a matter for satisfaction, says the *Western Daily Press*, that Bristol is extending its manufactories, so that if it is not breaking new ground, it is increasing its power of output in existing industries. House building has gone ahead in many districts, particularly in Bedminster, St. George, Westbury, and Bishopston. The tendency is to produce a much more convenient and better fitted class of house than formerly, and hence it is not surprising that many of the older residences, minus bathrooms and other modern necessities, have suffered in competition with the newer villas. The improvement of Wine-street has made considerable progress, and several new shops have been erected, the fronts being set back so as to widen that thoroughfare. Closely connected with these changes is the demolition of a considerable part of that interesting, if not very inviting, old street, the Pithay. Every year leaves Bristol with fewer of the quaint overhanging houses which helped to carry the imagination back to the days of our forefathers. Several large blocks have been erected in Baldwin-street, and the frontages to that important artery of traffic are now nearly complete. But for the heavy rate imposed in October it is quite possible that a site for new municipal buildings would have been decided upon, but the matter has been referred back to the committee for further consideration, and meantime further expenditure upon the Council House site has been sanctioned.

BUILDING IN COVENTRY.—Builders in Coventry have been busy in the last twelve months. Although the number of plans approved was not so large as in 1897 there were considerably more buildings completed, the numbers being: 1898, 655; 1897, 508. More houses were finished last year than in any previous twelve months—the increase being no less than 102—compared with 1897, which hitherto had furnished the largest total. Builders have plenty of work in hand, and the demand for houses still continues.

DUNDEE BUILDING TRADE IN 1898.—The prosperity of a city finds fair indication in the state of its building trade, and at the present time, judging by the briskness in this department of industry, Dundee would appear to be in a prosperous condition. The year has been marked by an almost phenomenal activity in the building trade, and this in spite of the fears expressed a year or two ago that the boom had largely spent itself, and that a reaction must come. At the beginning of the year there was an enormous amount of work on hand, and as the spring wore on additional contracts were entered into, and the result has been that all branches of the building trade have been kept fully employed. Indeed, difficulty was experienced at times in getting qualified men, and in many cases new properties were not ready at the stipulated day. The feature of the year's building operations in Dundee has been the extraordinary increase in the number of tenement dwelling-houses erected—a state of matters which can only be described as a revival of the boom of several years ago in this class of property. In 1895 there were complaints that numerous three and four roomed houses were standing empty, and that occupiers of such dwellings were finding their way to suburban districts; now it seems as if too many tenements could not be erected, while the demand for such is certainly most pronounced. These tenements have for the most part been put up in the eastern and northern districts, although the other parts of the city have not been neglected in this respect.—*Dundee Advertiser.*

EDINBURGH BUILDING TRADE.—In the building trades masons, joiners, plasterers, slaters, plumbers, &c., have all been fully employed during the past year. From first to last the weather has been of an open character, and outdoor work was very little interrupted. A large amount of what may be called speculative building has gone on during the year, especially at Dalry, Morningside, and Murrayfield. At Dalry, in consequence of the growth of manufacturing establishments in the west end of the city, there has been a great demand for workingmen's houses, and many tenements to meet this want have been erected. These houses for the most part consist of two rooms and kitchen and three rooms and kitchen, and rent from 12*l.* to 20*l.* In Murrayfield and Morningside villas mostly have been built, not a few of them, on the Cluny property, being of a substantial character. Important buildings for insurance companies have been in progress in St. Andrew-square and George-street; the building of the North British Railway Hotel has afforded employment to a considerable number of men, and outside of Edinburgh there has been in progress a large extension of the Rosslynlee Asylum. In the first part of the contract of the Caledonian Railway Leith line, which is in the hands of Messrs. W. Beattie & Sons, Fountainbridge, there has been a large amount of masonry, in the form of viaducts, &c., constructed, and in connexion with this, and with the construction of the North British Leith line, for which Messrs. James Young & Sons have the contract, a large number both of skilled artisans and unskilled labourers have been required. The demolition of property to make way especially for the North British new Station at the foot of Leith Walk has necessitated the railway building, as it is provided for under the displacement clause of their Act, a number of houses for working people who have been disturbed by their operations. These tenements have been erected in Lorne-street and Halmyre-street, half of them by Messrs. Beattie and half by Messrs. Young—accommodation being thus provided for nearly 300 families. There has been also abundance of work for unskilled labour in connexion with the demolition of the houses of the North Bridge, the excavating of the foundations for the new *Scotsman* offices, and, all over the town on the streets with the cabling of the tramways. Plumbers and gasfitters have had a busy year in putting electric wires and fittings into houses. They would have done more had this department of work not received a check by the inability of the Electric Light Committee to guarantee a supply of electricity to newly-wired houses. That, however, will be shortly remedied.

THE BUILDING TRADE, GLASGOW.—The various trades connected with the building industry in Glasgow have all been well employed throughout the year. The relations between employers and their employés have been friendly. The valuation of the linings granted by Glasgow Dean of Guild Court during the year is the highest of any year since 1876. The past seven years have each in succession shown a marked increase from its predecessor in the value of linings granted by that Court. But indications are not wanting at present of the probability that the zenith has been reached for the present of the erection of dwelling-house property at least. For the past three years the value of linings granted for dwelling-house property has exceeded in amount the value of the linings granted for buildings for all other purposes together, whereas for the previous three years the value of the linings granted for buildings for other purposes was more than double in amount of value that granted for dwelling-houses. The preparations being made for the erection of buildings for various purposes in the central parts of the city will for a time counteract any slackening of the building operations in the suburbs. The extensive railway works in progress and in contemplation must also cause an amount of displacement of the occupiers of both dwelling-house property and business premises.

BUILDING IN INVERNESS.—The year 1898 has been a progressive one in the town of Inverness. Although the actual number of new buildings erected in the town was not so large as compared with the previous year, still all classes of workmen were kept constantly employed throughout the year. The villa boom, which was characteristic of the year 1897, has now reached its highest, and the feature of 1898 has been the enterprise of private parties in erecting large blocks of workmen's dwellings.

THE BUILDING TRADE IN LEEDS.—Though the previous twelve months were marked by very great activity in the building trade, the year now closed has been even brisker, while the present year is likely to rival it. But rosy as the outlook may be, the masters would have that mere outsider, the general public, to understand that this activity may lead people to erroneous conclusions if they are not at the same time told that both labour and material are, or very likely to be, considerably dearer than they have been. First as to labour—the bricklayers have given notice that they shall require a penny per hour more than the ninepence they are now receiving. Then as to material, the advance in prices has been greater than for twenty-one years—and it has been an advance all round; cement, for instance, has risen during the year to the extent of ten shillings per ton. The masters admit, of course, that changes of this kind are not peculiar to the building trade, but they also urge that this year they occupy a position practically, but not altogether pleasantly, unique, so marked has been the upward tendency of prices. The widening of Vicar-lane and the consequent re-construction of Kirkgate Market will be the biggest job in the near future, entailing, as it will, the rebuilding of a very large quantity of private property. The erection of large schools is shortly to be commenced on the south side of the river, and one is to be built close to Woodhouse-lane; while there is also to be erected a Masonic Temple on a fairly large scale. The extension of the Griffin Hotel is one of the largest schemes in the way of alteration of premises. What may be described as clearance work is actively proceeding in many parts of the city, though as yet little rebuilding has been done. On all hands there is every reason to anticipate a long period of activity.—*Leeds Mercury.*

BUILDING IN MONTROSE.—Not for twenty years has the building trade in Montrose been so busy as during the past year. Several improvements have been effected in certain localities by altering old buildings, but the boom has shown more than anything else that a felt want in the absence of a certain class of dwellings in the community has been recognised, and will soon be met.

BUILDING IN NEWCASTLE-ON-TYNE.—During the year that has just closed, building operations have been carried on with increasing rapidity wherever possible. There are three ways in which this activity has been principally apparent. The first is the pulling down and rebuilding of old premises that have served their turn and must give way to new. The second, and most important, is the building of houses for the growing population to live in. And the third is the erection of the great public buildings—churches, and schools, and the like—which are needed more and more as the population extends outwards. Grainger-street, Grey-street, Clayton-street, and Market-street are unalterable as to their main structures; but at many of the shops, by the insertion of new windows and the alterations in the interior, the aspect of things has changed materially. In Blackett-street, old brick buildings have been demolished, and their places taken by lofty stone structures, and the same thing has gone on in Percy-street and Northumberland-street. In Collingwood-street, the larger part of one side has been razed to the ground, and the builders are busy in the erection of new premises. At Gallowgate, where the roadway was widened by the removal of the Corporation Baths, a handsome building is being erected; and at the top of Westgate Hill, where the old inn used to be, there is, or is about to be, the initiation of new work. In Neville-street, right opposite to the Central Station, a site is now being covered by hotel buildings. To those living in the outskirts of the city, the activity has been most apparent in the laying out of new streets. In every possible direction that has gone on with astonishing rapidity. To the westward, all the ground, nearly, has been built upon, right up to the city's limits. Southward, of course, further extension is barred by the river. Newcastle has gained considerably during the past year in the way of public buildings, and there, again, the prospect for the coming year is good.—*Newcastle Chronicle.*

BUILDING TRADE IN NORTHAMPTON.—The building trade in Northampton last year was not conspicuous for its briskness or prosperity. In fact, the closing months have been months of slackness, and one cannot help coming to the conclusion that, so far as cottage property is concerned, Northampton is now well supplied for a year or two, or until the increase in population demands more house room; or until some new industry looms upon us and transforms the industrial aspect of the town. However, progress has been made, and there have been some good buildings erected or opened during the year.—*Northampton Reporter.*

BUILDING IN NOTTINGHAM.—For the twelve months ending with November, plans for 955 new dwelling-houses, to be built within the city limits, were passed by the Council, most of these being for the erection of working class dwellings. Altogether more than 1,000 plans came before the Building Committee, 324 being rejected. Building operations in that portion of the Meadows which abuts on the Great Central line are working a partial transformation in that locality. Large blocks of cottages, some of which are for the employés of the company, are rapidly approaching completion, and a block of school buildings, which will be known as the Mundella Schools, is already within measurable distance of completion. At Lenton there have not been quite so many houses built as was the case last year, but at Sneinton the work of putting up new property has proceeded briskly. Between Sneinton Dale and Colwick-road a number of new streets have been laid out. In various parts of the town a good class of residential property has been erected, mainly for the middle and working classes; and there have been a great many alterations in the south part of the city, particularly in that quarter where the new line passes towards Trent Bridge. At Bulwell a new boulevard has been constructed. The most prominent building erected during the past year was the new post-office in Queen-street. During the year the foundations of the new workhouse, which is to take the place of the one cleared away by the Great Central Railway Company, and which is to cost 200,000*l.*, have been put in, and are now complete. The superstructure is to be proceeded with immediately. The governors of the General Hospital having decided to build a new wing to the hospital, the excavations are now being made. Additional facilities for providing the public with popular entertainments have been afforded by the construction of the Empire Theatre of Varieties.

BUILDING IN SHEFFIELD.—The building of house property has been going on apace in Sheffield during the past year or two, and the year 1898 establishes a record, says the *Sheffield Independent*, both as regards the number of new houses certified for occupation and the number for which plans have been submitted to the Corporation and approved. The building department of the City Surveyor's office has been continuously and unusually busy.

throughout the year—one of the busiest, in fact, of the several busy bureaus under Mr. Wike's supervision. Between November 9, 1897, and November 9, 1898, 2,020 houses were certified as fit for occupation within the city boundaries. The total for the previous year was 1,426, so that the advance is considerable; and the comparison is more remarkable still when the average for the ten preceding years is taken into account. That average works out to 848, and it thus appears that the rate of house-building in Sheffield has been just about doubled during the past two years. Another way of estimating the activity of local builders is to take the number of plans for new property submitted to the Corporation for approval. This figure differs considerably from the one already given, affording rather a criterion of what next year's developments in brick and mortar will be. During the past municipal year, it seems, no less than 1,073 plans were deposited in the City Surveyor's office, of which 985 were approved, the others being disapproved or withdrawn. The number of new houses sanctioned in these plans is 3,518, and as only a part of them have been actually erected, this unmistakably points to continued rapidity in the growth of the city. Like the number of houses sanctioned, it is a considerable advance on the total for the preceding twelve months. At the last meeting of the sub-committee which has the plans to deal with, proposals were submitted for 390 new houses in different parts of the city. It is not only in the erection of house property that the building speculator has been at work. During 1897-8, 306 buildings of different kinds, other than houses, have been completed and written off by the municipal authority as satisfactory. In the same category, 484 buildings have been sanctioned during the year. Eight certificates as to means of egress from public buildings have been issued from the City Surveyor's department during the same period. There have been deposited with the department during the year 62 street plans for new streets and sewers, of which 52 have been approved, representing a total length of streets and sewers of 16,913 lineal yards, or nearly ten miles. In almost all the suburbs of Sheffield, new property is springing up fast, but perhaps Abbeydale, Darnell, Firvale, and Hunter's Bar take the lead. Round about Ecclesall-road especially vacant sites are fast disappearing, and the district is losing its rural aspect. The past year has not been marked by the erection of many big buildings, but architecturally speaking the city continues to improve.

Proposed Pavilion at Knightstone, Weston-super-Mare.—An inquiry was held on the 27th ult., at the Town Hall, before Mr. H. B. Boulnois, M. Inst. C.E. (an inspector of the Local Government Board), respecting applications by the Weston-super-Mare Urban District Council, for sanction to the borrowing of (1) 14,300*l.* for a pavilion at Knightstone (Mr. J. S. Stewart, of London, being the architect for the pavilion); (2) 1,482*l.* for the extension of baths at Knightstone (Messrs. Price & Wilde, architects); and (3) 431*l.* for purposes of public offices.

Proposed Workhouse, Hunslet, Leeds.—It is proposed to erect a new workhouse at Rothwell Haigh, Hunslet. The plans prepared by Mr. J. H. Morton, architect, South Shields, have been adopted.

Friends' Hall and Institute, Highgate, Birmingham.—At a cost of about 40,000*l.* a Friends' Hall and Institute has been erected on a site opposite the Moseley-road Board School. On either side of the porch entrance is a glass-covered verandah. On the left side of the front entrance hall (there are other entrances in Oughton-place, to which thoroughfare the building extends) is a room which it is proposed to set out as a coffee-house, and the corresponding room on the other side is to be arranged as a reading-room. Proceeding along the mosaic-paved corridor the main hall is reached, and leading from this are the secretary's office, the caretaker's apartments, and a number of rooms for the accommodation of the various classes. Over the reading and coffee rooms, extending the whole length of the building, is the small lecture hall, and at the back of the building is the large hall, which will seat 2,000 people. It is so arranged with revolving shutters that around the sides of the hall, under and over the galleries, which are supported by ornamental pillars, a series of class-rooms—thirty-seven in all—may in a few minutes be fixed up. A gymnasium has been provided in the basement. The building has been erected by Mr. John Bowen, from the plans of Messrs. Ewen and Alfred Harper, architects.

Building in Leeds.—Another big batch of plans came before the Building Plans Sub-Committee of the Leeds Corporation Improvements Committee on the 9th ult. A considerable proportion of them relate to alterations and improvements to existing property in the central parts of the city. The old bank premises of Messrs. Wm. Williams Brown & Co., for instance, are to be overhauled and converted into showrooms and offices adapted to the character of the business usually done in Commercial-street, and the rear portion reconstructed as warehouses. Another scheme concerns improvements to St. George's Church—the addition of an apse, the building of new vestries, and so forth; and there are also projects for the extension of works. The total number of plans considered was 120, comprising 316 dwelling-houses in different districts of the city.—*Yorkshire Post.*

Club, Reading.—New club buildings were opened recently for the Wellington Club. Part of the old site has been utilised, with extensions to the north, and the main frontage is now in the Station-road, instead of to Friar-street, as before, the corner of the same elevation being occupied by the new premises of the Metropolitan Bank, Limited. In the basement of the new club premises are large kitchen, &c., servants' hall, and the usual domestic offices, and cellarage. On the ground floor are large main entrance-hall and cyclists' entrance (with cycle house), each having a lobby for coats and hats; two billiard rooms, a reading-room with bay window, smoking-room, smoking lounge, card-room, lavatories, &c., and a half-covered court for American bowls. The staircase leading to the first floor is of teak and walnut; the floor is devoted to a dining-room with bay window, with an annexe for private tables, connected by a lift and separate service staircase, and other rooms, including the Secretary's office. The service-lift and staircase also connect with the private dining-room on the second floor. On this floor are also various rooms to be let as bedrooms to members, a bath-room, and lavatory accommodation. Various rooms for the private use of the steward, and a sitting-room and bedrooms for the staff, occupy the third floor. On two of the landings the light is reflected through memorial windows. The club and bank buildings are alike built of the best selected red brick and buff terra-cotta, the entrances being massive and of polished granite of various tints. The joint architects were Mr. F. W. Albury and Mr. George W. Webb, both of Reading; and the contractors, Messrs. G. S. Lewis & Bro., Reading.

Victoria Hospital, Richmond, Yorkshire.—The work of building the new Victoria Hospital for Richmond and district is approaching completion. The architects are Messrs. Clark & Moscrop, Darlington. The new hospital building is built of local stone, and has red Staffordshire tiled roofing, the front facing south. It is a one-storied structure.

Bank Buildings, Rotherham.—The York City and County Banking Company have erected on a site in Moorgate-street, Rotherham, a branch bank. Grey Aberdeen granite has been used up to the first floor level, from which point there is brickwork, with stone dressings. The bank itself measures 30 ft. by 24 ft. 6 in., and is 15 ft. high. There is a suite of offices—six in number—immediately above. On the top floor are caretaker's apartments. Messrs. Demain & Brierley, of York, have been the architects, and Messrs. Wm. Ives & Co., of Shipley, the contractors.

Proposed Poorhouse Infirmary, Southampton.—It is proposed to erect a poorhouse infirmary on the Shirley Warren site, for the Southampton Board of Guardians. The architect is Mr. A. F. Gutteridge (Messrs. Mitchell, Son, & Gutteridge).

Electric Light Station, Leith.—In the electric light station, Junction-street, Leith, Provost Bennet recently turned on the Leith Walk section of the electric light in Leith. Mr. Bryson is the Electrical Engineer. The buildings are erected on the town's property in Junction-street, and have been built with a view to future extension. The boiler-house is about 50 ft. in width, by about 70 ft. from back to front. The remainder of the ground for additional boiler space has not been roofed in, and it is proposed to use the same for coal storage. The engine-room contains at present five steam dynamos, equivalent to 700 h.-p., and there is accommodation for three other dynamos, by which the horse-power can be increased to 2,000. The total cost of the installation was estimated at fully 28,000*l.*—distributing mains, 8,000*l.*; electric lighting station buildings, 8,000*l.*; engines, dynamos, and accessories, 8,844*l.*; boilers and accessories, 3,313*l.*; and 8-ton travelling crane, 240*l.*; and the actual cost is less than 30,000*l.* The contract for the engines, dynamos, and accessories was carried out by the Indiarubber, Guttapercha, and Telegraph Works Company, Limited, Silvertown; for boilers and accessories by Mr. George Sinclair, Leith; and for 8-ton travelling crane, by Messrs. Carrick & Ritchie. The architect for the building was Mr. George Simpson.

New Hotel for Aberdeen.—In a short time a commencement will be made with the erection of a new hotel in Guild-street, Aberdeen, at a point almost directly opposite what will be the main entrance to the extended Joint Station. The new building will have a frontage of 60 ft. to Guild-street. The plans are now being prepared by Mr. R. G. Wilson, architect. The new hotel will be five stories high from the ground level.

Town Hall, Conway.—The Town Hall which has been built at Conway has just been opened. The building replaces the old market, the materials of which have been largely utilised. On the basement there are council and committee rooms, with offices for the borough officials. The upper floor is devoted to a concert and assembly hall, with retiring and waiting rooms, and which has a separate approach from the street. The original plans were designed by Mr. T. B. Farrington, C.E., the Borough Surveyor, but since his illness the works have been superintended by Mr. Richard Davies, architect, Bangor. Messrs. E. Thorpe & Son, Llandudno, were the contractors, the approximate cost being 4,000*l.*

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## *STAINED GLASS AND DECORATION.*

Window, Holy Trinity Church, Batley Carr.—The east window and the side chancel window of this church are to be filled with stained glass, the gift of Mr. and Mrs. Fox, of Staincliffe. The work is to be executed by Messrs. Powell Brothers, of Leeds, whose designs have been selected in competition with those of other firms.

Window, Old Meeting Church, Birmingham.—A new south window has been erected in the Birmingham Old Meeting Church, Bristol-street, to the memory of William Sextus Harding and Anne his wife. The window is the work of Messrs. Heaton, Butler, & Bayne.

Decoration of St. Paul's, Goswell-road, E.C.—This church, built by the late Ewan Christian, was on the 20th ult. reopened after cleaning and decorating. Over the altar has been painted a large picture of the Lord's Supper. The west end over the font is enriched by paintings of Our Lord, and adoring angels on either side. Between the spandrils on the north and south side are paintings of the Four Evangelists, and dividing the chancel from the nave are life-size figures of Saints Peter and Barnabas under canopies. The walls of the whole interior have been diapered, and the roof of the chancel has been diapered with gold. The whole work was carried out by Messrs. Percy Bacon & Bros., under the supervision of Mr. Romaine Walker.

Memorial Window in Moffat Parish Church—A large memorial window in memory of the late Mr. Walter Johnstone, of Bodesbeck, has been placed in Moffat Parish Church. The window is composed of three lights, and represents our Lord walking with two of his disciples on the way to Emmaus. The window was designed and executed by Messrs. Ballantine & Gardiner, Edinburgh.

Window, German Church, Bradford.—A stained glass window has just been placed in this church. It has been presented by Mr. Tye, of Bradford, and is illustrative of the text, "Honour thy Father and thy Mother." The window has been designed and executed by Messrs. Powell Brothers, of Leeds.

Memorial Brass to Sir F. Lockwood at St. Margaret's, Westminster.—A memorial to the late Sir Frank Lockwood has been placed in this church, in the form of a brass with a border elaborately engraved and bearing an inscription. The work was executed by Messrs. Percy Bacon Bros.

Memorial Window for St. Paul's Episcopal Church, Edinburgh.—St. Paul's Church, York-place, Edinburgh, has just been embellished by the insertion of another stained-glass window at the north-west end. The subject illustrates the text from Revelations, "Blessed are they that do his commandments that they may have the right to the tree of life and enter through the gates into the city." The artists were Messrs. A. Ballantine & Gardiner, Edinburgh.

Window, Arksey Church, Doncaster.—On the 29th ult. a stained-glass window, placed at the east end of the church at Arksey, Doncaster, by Lady Cooke, of Wheatley, in memory of the late Sir William R. C. Cooke, was dedicated. The window is in three lights, and the subjects are, in the centre, the Crucifixion, on one side St. Mary, and on the other side St. John. The work has been executed by Messrs. Heaton, Butler, & Bayne, London.

New Window, Sunbury-on-Thames.—On Christmas Eve, a stained glass window was dedicated at the Parish Church, Sunbury-on-Thames, as a memorial to the late Rev. Henry Vigne, who had been vicar of the parish for upwards of fifty years. The window, which is on the north side of the nave, was carried out by Messrs. Joseph Chater & Sons, of London, from the designs of Mr. G. Ostrehan.

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## *FOREIGN.*

France.—The excavations undertaken in the Ile de la Cité by the "Vieux Paris" Committee, in search of the remains of the Roman wall, have resulted in the discovery of the substructures of the ancient Archbishop's palace, as well as an important fragment of the ramparts of the city. This, like the other portions discovered in 1829 and 1847 in various positions in the neighbourhood of Nôtre Dame, is about 2½ mètres thick, and composed of large blocks which seem to have been taken from buildings that had been pulled down. Tiles of Roman make have also been found.——The inhabitants of the Parc Monçeau quarter at Paris have signed a memorial desiring that the monument to Puvis de Chavannes should be erected in the centre of the Place Pereire, contrary to the wish of the painter's friends, who wish it to be placed in the Jardin de l'Infante at the Louvre, near the monument to Meissonier.——The Carnavalet Museum has acquired a carved corner-post from an old house at the junction of Rue Saint Denis and Rue des Prêcheurs, carved as a Tree of Jesse. These corner-posts are rare and curious examples of decorative woodwork of the fifteenth century. There are examples of the same class at Chartres, Reims, Sens, Orléans, Beauvais, and Rouen.——The drawings by Puvis de Chavannes presented to the Municipality of Paris number 163, and are to be exhibited at the Galliera Museum.——Advantage has been taken of a number of repairs going on at the Tribunal de Commerce to destroy or conceal all the monograms recalling that the building had been erected under the Second Empire; an absurd piece of vandalism which the "Vieux Paris" committee ought to have endeavoured at least to prevent.——A new reservoir is being formed at Saint Cloud to receive the waters of the Avre, at a cost of more than a million and a half francs.——The equestrian statue of Napoléon, by M. Fremiet, is to be erected at the entrance to the arsenals at Grenoble. The statue was formerly in the Place d'Armes at Grenoble, but was overturned in 1871.——The decease is announced, in Paris, of M. Sellerier, architect, at the age of forty-seven years.

PUBLIC WORKS AT HAMBURG.—With the completion of the new town hall, and the various new public offices, the architectural activity, as far as public buildings are concerned, is somewhat on the decrease; but, on the other hand, Hamburg is looking towards a period of great activity in the civil engineering department. The long-discussed railway works, with the large central station, will now probably at last be taken in hand. The principles for remodelling the railway system around Hamburg have practically been determined, the officials of the Imperial Government on the one side, and those of the Hamburg State on the other, having come to a compromise which should be satisfactory to all parties. The present lamentable state of the railway stations has long been a disgrace to the city, and the sooner they are re-modelled, the better. In the Harbour, again, various material extensions are to be expected, as the rapid increase of traffic and commerce has to be catered for. Several important quays are to be taken in hand, together with four large blocks of warehouses, an extensive series of sheds, and a new Customs house. As far as the architectural rendering of the buildings is concerned, the Hanoverian brickwork, which has been utilised throughout the Harbour works, is to be maintained, but in respect to the construction various important innovations are to be expected.

THEATRE BUILDING IN GERMANY.—Germany is at present showing considerable activity in theatre building, and no less than four important cities (*i.e.*, Cologne, Frankfort, Kiel, and Nuremberg) are about to build new Municipal playhouses. At Frankfort, the old Municipal comedy house is to be replaced by a modern building, and thus this town will soon have both a new home for opera and for drama. About 75,000*l.* is to be spent on the new building, of which Herr Seeling will be the architect. Some 15,000*l.* has been voluntarily subscribed; the rest of the cost will be met by the civic authorities. At Cologne, the new theatre is to serve both for opera and drama, and its design is at present the subject of a limited competition. At Nuremberg, the theatre is to be built in conjunction with some Municipal assembly rooms, whilst at Kiel a building of only secondary importance is desired. A number of the older playhouses in Germany are also being remodelled, and, in many instances, new stages are being put in. Thus, for instance, a new stage has just been completed at Carlsruhe to meet the requirements of Mr. Mottl's Wagner Cycles, and another is to be put in at Manheim. By a curious anomaly, the Royal Opera House, Berlin, however, still remains one of the worst planned and equipped theatres in the Empire, and seeing that the Emperor takes such an active interest in the operatic performances, it is somewhat surprising that a new building has not yet been commenced during the ten years of his reign.

## *MISCELLANEOUS.*

PROFESSIONAL AND BUSINESS ANNOUNCEMENTS.—Mr. Percy W. Meredith, architect, has removed from 20, Deerbrooke-road, Herne-hill, to 21, Finsbury-pavement, E.C.——Messrs. Newton & Cheatle, architects, have removed to new offices at 39, Newhall-street, Birmingham.——Messrs. Moses Eadon & Sons (President Steel Works, Sheffield) have removed their London office from Bishopsgate House to 5 and 6, Bishopsgate-street Without, E.C.——Messrs. Donnison, Berlyn, Sillem, & Co., general electrical engineers, have removed their North of England branch offices to 66, South John-street, Liverpool.——Mr. Perry F. Nursey, consulting engineer, has removed his offices from 161, Fleet-street to 17, Victoria-street, Westminster.——Mr. H. E. Milner, landscape gardener, 7, Victoria-street, Westminster, has taken into partnership his son, Mr. E. B. Milner.

LABOUR MARKET IN THE COLONIES.—The January Circular of the Emigrants' Information Office states that in New South Wales matters relating to trade, labour, and industry are improving, but the effects of long drought, and of serious disputes between capital and labour, have made employment in many cases precarious. The building trade remains depressed, and there is a large number of empty houses in Sydney and the suburbs. In the metal trades at Sydney there is no demand for any kind of mechanic. In Victoria, a skilled mechanic, who lands with sufficient money to provide for himself and family during the first few weeks, would have a reasonable prospect of finding remunerative employment, especially in country districts. A few more plumbers and glaziers—if duly qualified—would find employment on the drainage works which are now being carried out at Melbourne. But for ordinary labourers employment continues to be scarce. In South Australia a Government Labour Bureau has just been established for the purpose of facilitating the obtaining of employment. The Bureau is situated in Victoria-square, Adelaide, and branches may be established elsewhere; a register is to be kept of all persons applying for employment, but no one can be registered unless he has resided for one year in the colony; a register of employers applying for labour is also to be kept. No labour is to be employed in the public service except through the Bureau. The Report of the Queensland Government Labour Bureau for 1897, which has just been issued, does not point to any very satisfactory results, but on the whole the tendency of the labour market was towards improvement. In Western Australia a considerable number of public works are being carried out in all parts of the colony, but as many of these are nearly completed the Government will during the next few months gradually discharge some 200 of the employees in the Public Works Department. In Tasmania good miners and mechanics can always get work, but there is no demand for inexperienced men. Extensive smelters are being put up at Zeehan, and brickfields have recently been opened. In other parts of the colony there is no general demand for more mechanics. In New Zealand, in the district of Auckland, the building and sawmill trades have been very busy. In other parts of the colony also, except at Wellington, men in the building trades have been fully employed; the engineering trades have also been busy, except at Auckland and Oamaru. Ordinary labourers find plenty of work in country districts at this season of the year; but they must avoid large towns like Auckland, Wellington, Christchurch, Timaru, and Dunedin, where many hands have been unable to find employment. In Cape Colony and Natal there is very little demand for mechanics or labourers at the present time. In the South African Republic (Transvaal) there is great scarcity of work in the building and other trades, and a great number of mechanics have left to look for employment elsewhere. At Beira, in Portuguese East Africa, a considerable amount of distress prevails, and persons are warned against going there in search of work.

GLASGOW ARCHÆOLOGICAL SOCIETY AND KELVINGROVE HOUSE.—A circular has been sent out by this Society bringing under public notice a resolution passed at a meeting of the Council of the Society, and expressing a hope that the removal of this relic of old Glasgow will be opposed. The text of the resolution is:—"That the society deprecates the removal of Kelvingrove House, which deserves preservation, not only as an example of the architecture of Robert Adam, but as for over a century one of the best known and most picturesque landmarks of Glasgow, and an excellent example within the city bounds of a country mansion of the old Glasgow gentry."

THE BUILDING BY-LAWS, FOLESHILL, COVENTRY.—At a meeting of the Foleshill Rural District Council, recently, a letter was read from Mr. F. Warner, for the Coventry and District Master Builders', Plumbers', and Painters' Association, stating that the Association had carefully considered the by-laws in force in Foleshill, and were of opinion that several needed slight amendment. He asked if the Council would consent to receive a deputation from the Association.—Mr. T. F. Tickner, in pursuance of notice, moved that the Council appoint a committee to consider the by-laws with a view to ascertaining which, if any, ought to be amended or relaxed. He said in several respects the Foleshill by-laws were more stringent than in Urban Districts, and he did not think this should be the case. One which pressed very heavily was that requiring cement concrete to be spread over the site whether needed or not. The Coventry city by-laws provided that it should only be spread where the dampness rendered it necessary. Then, he did not think there was another place in the United Kingdom besides Foleshill where hollow walls were prohibited. Again, the Foleshill by-laws did not admit of half-timbered buildings being erected. He was of opinion that there was no style more picturesque for rural buildings than the half-timbered.—Captain Bellasis agreed with Mr. Tickner except with regard to the concrete, which he thought was absolutely necessary. The Chairman remarked that the Surveyor had stated that the Council had never objected to half-timbered houses. Colonel Woollcombe-Adams asked if there was a by-law to prevent buildings being erected with hollow walls, composed of two 4ft. 6in. courses with a space between, and the Surveyor replied in the affirmative, and said it was quite right too, for there was not the strength in such walls as in solid. Mr. T. Gossage seconded Mr. Tickner's resolution, which was carried by six votes to four.—*Coventry Herald.*

THE REGISTRATION OF PLUMBERS.—The Registration Committee were entertained by the Master, Wardens, and Court of the Plumbers' Company to dinner on Thursday last week. Amongst those present were:—Dr. Allan, Medical Officer of Health to the Strand Board of Works; Dr. Priestley, Medical Officer of Health to the Lambeth Vestry; Mr. T. de Courcy Meade, City Surveyor, Manchester; Dr. Mansel-Howe, and representatives of the London Society of Associated Master Plumbers, and the various London Lodges of the United Operative Plumbers Association of Great Britain and Ireland. Mr. de Courcy Meade, in proposing the toast of "The Registration Committee," said there was no doubt that the work of the Committee in connexion with the National Registration of Plumbers was being more and more felt throughout the Kingdom, and he particularly referred to this being the case in Lancashire, where, in his capacity as City Surveyor of Manchester, it came repeatedly and forcibly under his notice.—Mr. F. Randall, speaking on behalf of the Operative Plumbers, referred to their desire to secure the highest standard of plumbers' work, and their appreciation of the support rendered generally to the Registration movement, particularly by prominent medical and architectural authorities. He expressed the hope that a scheme of apprenticeship for plumbers in London would be established as quickly as possible, and that the classes for plumbers should be open only to bonâ-fide apprentices.—Dr. Allan, in stating that a great deal of plumbers' work necessarily came under his notice, expressed his opinion that a great improvement was noticeable within the last few years, and he had no hesitation in saying that such improvement was mainly due to the Registration movement.

"BEEHIVE BRAND" GLASS.—This is a second quality of glass produced by the Red Star Glass Works Co., and which is announced as a cheaper substitute, where desired, for the Red Star glass.

APPOINTMENTS.—At the ordinary meeting of the Lambeth Board of Guardians at the offices, Brook-street, Kennington, recently, the Works Committee unanimously recommended, and it was agreed, that Mr. S. R J. Smith, of York-buildings, Adelphi, be appointed architect to the Board.——The Halifax Waterworks Committee have resolved to recommend the Town Council to appoint Messrs. G. H. Hill & Sons, of Manchester, engineers, for the construction of the proposed new reservoirs at Walshaw Dean. The Committee also recommend that during the construction of the works an additional salary at the rate of 200*l.* a year be paid to Mr. J. A. Parkin, the Halifax Waterworks engineer.

A DISCLAIMER.—We are requested to state that Major Hector Tulloch, C.B. (retired Royal Engineers and lately Chief Engineering Inspector of the Local Government Board) is not the person who was a director of the West Australian Trading Syndicate, two of the directors of which are under prosecution by the Public Prosecutor.

BIRMINGHAM ARCHITECTS AND THE EXTENSION OF THE COUNCIL HOUSE.—The members of the Birmingham Architectural Association have forwarded to the Lord Mayor the following resolution: "Having read the Press report of the recommendations of the General Purposes Committee to the City Council, respecting the proposed new art-gallery and public offices, the Council of the Birmingham Architectural Association have had under consideration the suggestions therein contained respecting the appointment of an architect or architects to carry out the works. They regret that the proposals seem to imply that the resolution of the City Council, and passed at the suggestion of this Association, directing that works to cost upwards of 10,000*l.* shall be submitted to architectural competition, is to be departed from; and they beg respectfully to request that the subject shall receive the most careful consideration before being acted upon. Should, however, it be determined to dispense with competition, they venture to hope that, as the proposed new buildings will occupy so prominent a position, and be used for public as well as artistic purposes, the greatest care will be exercised in the selection of an architect, who, from his experience and works, may be trusted to produce a building which will not only be thoroughly suitable and convenient in its plan, and arrangement, but will also be of decided architectural merit and an artistic ornament to the city."

NEWPORT MASTER BUILDERS' ASSOCIATION.—The annual banquet in connexion with the Newport (Mon.) Master Builders' Association was held at the King's Head Hotel, on Friday, the 16th ult. Councillor J. Linton, the President, was in the chair. Mr. A. S. Morgan gave "Architects and Engineers," and Mr. Edgar Fawckner, (Messrs. Habershon & Fawckner), responding for the architects, said the feeling between builders and architects was one of mutual respect and esteem. Mr. Bain (Messrs. Swash & Bain) and Mr. R. H. Haynes, engineer under the Corporation of Newport, also responded. Mr. S. T. Harse introduced the principal toast, "The Building Trade." Mr. W. M. Blackburn, responding, remarked upon the different manner in which architects treated them as compared with bygone times. Mr. Jones, also responding, said he believed their work was of an enduring character, and a good deal of it would remain after they had passed away. Mr. George Morgan gave "The Timber and Stone Trades." Messrs. Dawson, Brewer & Jelly (Bath Stone Firms) acknowledged the sentiment, each alluding to the amicable relations existing between the allied trades. Mr. Chas. Locke submitted

"Builders' Merchants," Messrs. Jno. Williams and Jno. Davis (Davis Bros.) replying, The President gave the health of the Secretary (Mr. J. D. Whitaker), whom he regretted was about to retire from the position. Mr. Whitaker returned thanks. He had always worked amicably with the builders and architects. He feared there were labour troubles ahead, but he advised the masters not to be tyrannised by the men. He believed in a fair day's work and a builder getting a fair price for his work.

Great Yarmouth Master Builders' Association.—The first annual dinner of the Great Yarmouth Master Builders' Association was held recently at the Bath Hotel, Yarmouth. The Mayor (Dr. Ryley) occupied the chair. The loyal and patriotic toasts having been honoured Mr. G. Wright gave the toast of "The Mayor and Corporation," and coupled with it the name of Mr. F. Burton, who responded. The Mayor proposed "Success to the Builders' Association." In reply, Mr. Beech, as President of the Association, said societies of the kind were being formed all over the country, and Yarmouth ought not to be behind in that respect. In the summer of 1894 the bricklayers came out on strike, and walked about for four or five weeks. There was no builders' society then, and single-handed they could not really arrive at an understanding. But eventually they met, and a settlement was agreed to. This year the men gave further notice, but the society arrived at an agreement with them and a strike was averted. They used to have different forms of agreement from different architects, but now, he was pleased to say, all architects provided the same form of agreement: they knew its contents, and it was not necessary to waste any time in perusing it. He was sure there existed now a better feeling between men, architects, builders, and everybody concerned.—Mr. Townsley proposed "The Architects," and, in response, Mr. Bottle said he considered an architect's first duty was to his clients. He had, also, to act with absolute fairness towards the builders, and if he did not he was unworthy of his position. On principle they were morally bound to accept the lowest tender; his firm insisted on that, and he did not see how any honourable man could do otherwise. The good old idea of a professional man was that he had to think of the interests of others before he thought of his own. Architects alone were no use, for their designs, however beautiful they might be, unless they were accompanied by industry, skill, intelligence, and capital to carry them into execution, would be only waste paper after all. He trusted the Association would be the means of promoting, if it were possible, an even better feeling between architects, builders, workmen, and clients, and so help to raise the tone all round, with the result of better work being done, and all parties being satisfied. Mr. Bray gave the toast of "The Visitors," and Mr. Saul replied. The only other toast was "The Chairman," proposed by Mr. I. S. Cooper and Mr. R. Nudd.

Diary and Blotting Pad, &c.—We have received from the Patent Victoria Stone Co., Limited, their diary and blotting pad for 1899.——Messrs. Ashwell & Nesbit, Limited, warming, ventilating, hydraulic and electrical engineers, have issued a tear-off date-indicating almanac.——"The Gardening Year Book and Garden Oracle for 1899" (W. H. & L. Collingridge, 148 and 149, Aldersgate-street, E.C.) is the forty-first year of publication of a useful and well-arranged little work for those interested in gardening matters.

Sales of Property in 1898.—The total value of the property sold by auction at the Mart and in the country and suburbs (including Masons' Hall Tavern), also sales by private contract, registered at the Estate Exchange during 1898, amounted to 13,363,358*l.*, as compared with 12,205,824*l.* in 1897.

The Engineering Trade.—According to Messrs. Matheson & Grant's Engineering Trades' Report, the New Year opens with workshops busy and good prospects in all branches of the engineering trades, the revival which, in the autumn of 1895, followed and redeemed the depression of the preceding three years, having since merged into a steady and increasing activity. The proportion of exports, however, is less in comparison with to imports than it was a year ago. This apparent anomaly of brisk trade and restricted shipments is due to the fact that much of the present prosperity arises from a home demand. But even in regard to exports the steel and engineering trades show better than most of the other trades in the country. Prices in iron and steel did not, up till the middle of 1898, move upwards in accord with the growing activity of manufacturing engineers, who had, therefore, the great advantage of cheap material and fuel, while their own prices were advancing. Since July, however, the growing demands on the iron and steel makers have reached the limits of their powers of prompt delivery, and there has been a rise in values, which is likely to continue. Hematite ore costs more than a year ago, and this, with dearer coke, neutralises some of the gain to the steel maker. The above conditions have afforded a good opportunity to the iron and steel makers of the United States, who have not only shipped pig iron and steel to Europe, but seem likely to compete seriously in the colonial and foreign markets of this country. The out-put capacity of the American steel works has grown enormously; steel rails are cheaper there than in England; the trade in steel beams for structural purposes is growing rapidly; and the proposed increase in the U.S. Navy is leading to an increase in the machinery for rolling plates. As regards structural steelwork, bridge builders are fully occupied, and there is so much work in view that when the steel makers are able, by a relaxed demand from the ship builders, to give prompter delivery and at lower prices, roof building and bridges are likely to afford ample employment. Structural steelwork ranges from 2*l.* to 3*l.* per ton dearer than it was two or three years ago. Iron founders, mechanical engineers, and machine tool makers are almost all busy, either directly for the users or as subsidiary to the great leading industries above referred to. Electric lighting and power transmission, hydraulic machinery, arsenal equipment, gas engines, road locomotives, motor cars, and machine tools are directions in which there is the greatest activity. The falling-off in the cycle-making factories has set free many workmen for the lighter branches of engineering.

New Building Line for Oxford-street, Manchester.—The suggestions for improving Oxford-street and its neighbourhood, made by Mr. Edward Salomons in his address to the Manchester Society of Architects recently, were discussed by the Improvement Committee of the Manchester Corporation at their meeting last week. Mr. Salomons' idea was that the Corporation should purchase the twelve acres of land bounded by the South Junction and Altrincham Railway, Great Marlborough-street, Saville-street, and Pritchard-street, at a probable cost of 194,000*l.*, and erect upon it a new reference library and art gallery, instead of spending a sum of at least half a million sterling on the infirmary site. He also suggested the widening of Oxford-street to 120 ft. as far as Whitworth Park. The first part of the scheme met with little support, several members criticising it severely from different points of view, one being that the site lies in a hollow. The question of widening the road, however, was more favourably received, and the Committee eventually declared a building line extending from Nelson-street to York-place. As soon as a suitable opportunity presents itself the resolution will be carried into effect.—*Manchester City News.*

## *LEGAL.*

### WORKMEN'S COMPENSATION.

At Liverpool County Court, on the 30th ult., Richard Rogers, labourer, sought compensation under the Workmen's Compensation Act for the death of his son. It appeared that the son was a bricklayer's labourer, and whilst at work fell from a scaffold and was killed. He was unmarried, and lived in lodgings apart from his father. The respondent, Mr. P. Tyson, builder and contractor, urged that the father had no claim, as he was in no sense dependent on his son at the time of the latter's death.

Judge Collier said that on the facts stated he could not see how it could be contended that the father was, within the meaning of the Act, a member of the workman's family, dependent on him. Had the men lived together perhaps something might have been said on the point.

The Judge, however, reserved his decision.

### CASES UNDER THE LONDON BUILDING ACT.

At the Lambeth Police-court on the 29th ult., H. A. Townsend, of Lambeth, was summoned at the instance of the London County Council for having, contrary to the provisions of the London Building Act, 1894, and the amending Act of 1898, retained a structure to which Part 7 of the Act of 1894 applies without having obtained a licence as required by that part of the Act. Mr. T. Seager Berry, from the Solicitors' Department of the Council, appeared in support of the summons, and the defendant was represented by Mr. Temple Martin, instructed by Mr. Jonas. The proceedings were taken under section 84 of the Building Act of 1894, which makes it an offence for any person to set up a wooden structure without first obtaining a licence from the County Council, and under the amending Act of the present year, which prohibits the retention of such structures. The shed which gave rise to the proceedings is erected at the bottom of the defendant's garden. Mr. Berry contended that although the structure (which is used as a workshop), was contained within three walls it was not attached to them, and was consequently a structure within section 84 of the principal Act.—For the defence, Mr. Temple Martin disputed that this was a wooden structure within the meaning of the Act, and argued that the proceedings had not been taken within six months of the time of the "discovery" of the building by the District Surveyor in February last. The learned counsel went on to contend that this was not a wooden structure coming under Part 7 of the Act, but was a building under Part 6. The attention of the District Surveyor was called to the building, and it was erected according to his ideas. Upon its completion it was seen by the District Surveyor, and in the month of February he sent in his return to the Council. Under section 161 that return was deemed to be a certificate that the works were in accordance with the Act.—Mr. Berry put in the return of the District Surveyor, but pointed out that that official, although appointed by the Council, was in no sense a servant of the Council.—After considerable argument on the question of the time limit, Mr. Hopkins remarked that he doubted whether there were any merits in the Council's case, seeing that the structure had been passed by the District Surveyor.—Mr. Berry replied that the Council could not control the District Surveyor, but said he was prepared to take any reasonable course his worship might suggest.—Mr. Hopkins: I think a reasonable line would be to withdraw the summons.—Mr. Berry: Very well, sir, I will withdraw it.—Mr. Temple Martin asked for costs. The defendant had been put to considerable expense because the County Council and the District Surveyor were not quite in unison.—Mr. Berry resisted the application for costs, and eventually the summons was withdrawn, no order being made as to costs.

At the Guildhall, London, recently, Messrs. Whitbread & Co., the owners of the "Black Bull," Holborn, were summoned, at the instance of Mr. McLachlan, the District Surveyor, for contravening the London Building Act. Mr. Horace Avory appeared for the London County Council, and Mr. Dixon represented the defendants. One of the points raised was the insufficiency of only one entrance, seeing that, in addition to the business premises, there was a dwelling house. The Alderman said he must uphold the claims of the District Surveyor, and make an order in accordance, with costs.—Messrs. Whitbread & Co. appealed against the decision of Mr. McLachlan (District Surveyor), regarding proposed work at the "Old Bell" public-house, 123, Holborn. The work, Mr. McLachlan declared, was in contravention of section 74 of the London Building Act. Mr. Dixon appeared for the appellants, and Mr. Horace Avory for the respondent. The Alderman dismissed the appeal, with costs, and directed the appellants to fully carry out the conditions.—*City Press.*

## MEETINGS.

### Friday, January 6.

*The Architectural Association.*—Mr. H. H. Statham on "House Planning from the Æsthetic Point of View." 7.30 p.m.

### Saturday, January 7.

*British Institute of Certified Carpenters.*—Special meeting at 6 p.m. Paper by Mr. C. W. Denny on "Staircases and Handrailing."

*Sanitary Inspectors' Association.*—The President's (Sir John Hutton), New Year's Address. 6 p.m.

### Monday, January 9.

*Surveyors' Institution.*—Adjourned discussion on Mr. Wm. Weaver's paper on "The London Building Act and the Official Supervision of Buildings." 8 p.m.

*Leeds and Yorkshire Architectural Society.*—Mr. A. E. Henderson on "Byzantine Architecture in Constantinople" (illustrated). 6.30 p.m.

*Liverpool Architectural Society.*—A discussion will take place upon the following subjects: (1) The Architects' Registration Bill; (2) The Liverpool Electric Tramway System. 6 p.m.

*Bristol Society of Architects.*—Mr. F. Bligh Bond on "Rhythm in Design," with limelight illustrations.

### Tuesday, January 10.

*Institution of Civil Engineers.*—Mr. John Handsley Dales on "High-Speed Engines." 8 p.m.

*Northampton Institute, Clerkenwell.*—Lectures on Mediæval Architecture by Mr. Francis Bond, M.A.:—I. "Architecture and National Character." 7.45 p.m.

*Sheffield Society of Architects and Surveyors.*—Mr. F. T. Baggallay on "Common Errors in Design." 8 p.m.

*Perth Architectural Association.*—Mr. E. Forbes on "The Abbeys in the Stewartry of Galloway." With limelight illustrations. 8 p.m.

### Wednesday, January 11.

*Edinburgh Architectural Association*—Mr. A. C. Dickie on "Explorations in Palestine and Jerusalem." 8 p.m.

*Liverpool Engineering Society.*—Mr. R. D. Cripps on "Employers' Liability." 8 p.m.

*Northern Architectural Association.*—Mr. G. B. Bulmer on "Architectural Studies in Yorkshire." 7.30 p.m.

### Thursday, January 12.

*Dundee Institute of Architecture, Science, and Art.*—Mr. A. C. Dickie on "Explorations in Jerusalem." 8 p.m.

### Friday January 13.

*Institution of Civil Engineers (Students' Meeting).*—Dr. Archibald Barr, Professor of Civil Engineering and Mechanics in the University of Glasgow, will deliver an address on "The Application of the Science of Mechanics to Engineering Practice." 8 p.m.

### Saturday, January 14.

*Perth Architectural Association.*—Visit to Southern District School, South William-street.

## RECENT PATENTS:

### ABSTRACTS OF ACCEPTED SPECIFICATIONS.

### *Open to Opposition until February 14.*

[1897] 28,289.—Sash Fasteners: *Charlotte Russom.*—The latch is opened and closed in the usual manner, but the knob is loose in a socket on the end of the latch lever; inside the socket is a spring which acts upon a spindle upon

# COMPETITIONS, CONTRACTS, AND PUBLIC APPOINTMENTS.

## COMPETITIONS.

| Nature of Work. | By whom Advertised. | Premiums. | Designs to be delivered. |
|---|---|---|---|
| *Memorial Hall and Art Gallery ...... | Bradford Corp. ...... | 150*l.* : 100*l.* 50*l.* ........ | April 14 |

## CONTRACTS.

| Nature of Work or Materials. | By whom Required. | Forms of Tender, &c. Supplied by | Tenders to be delivered. |
|---|---|---|---|
| *Paving Works .................... | Beckenham U.D.C. .. | J. A. Angell, Council Offices, Beckenham .... | Jan. 9 |
| *Making-up Road .................. | do. | do. | do. |
| *Waterproof Coats and Leggings .... | Cty. Boro. of West Ham | L. Angell, Town Hall, Stratford ........ | Jan. 10 |
| Villa, Exeter-road, Exmouth ........ | T. Rowsell........... | E Ellis, Archt. Market-st. Exmouth............... | do. |
| Shop, Exmouth..................... | do. | do. | do. |
| Granite, Flints, Slag, and Steam Coal | Acton D.C. .......... | D. J. Ebbetts, 242, High-st. Acton, W. .......... | do. |
| Additions to Business Premises, Londonderry..................... | Austin & Co........... | Forman & Aston, Archt. Royal-avenue, Belfast .. | do. |
| Sewerage Works .................... | Bedlington U.D.C.... | C. D. Forster, 24, Grainger-st. West, Newcastle .... | do. |
| Reconstruction of Pier ............. | Southend Corp. ...... | A. Fidler, C.E. Corporation Offices............. | do. |
| Hotel, Dewsbury-road, Leeds ........ | Armley Brewery Co. Ltd. ............... | Secretary, Co.'s Offices, Armley, Leeds .......... | Jan. 11 |
| Fire Engine Station.................. | Kidderminster T.C. .. | A. Comber. Boro. Surv. | do. |
| Sewers, Great Corby ............... | Carlisle R.D.C. ...... | J. Little, Engr. Viaduct-chambers, Carlisle ...... | do. |
| Four Houses, Bankfoot, Bradford.... | ........ | Brayshaw & Dixon, Archt. Bowling Old Lane, Bradford ................ | Jan. 12 |
| Schools.......................... | Little Ilford Sch. Bd. | S. Jackson, Archt. 65, Fenchurch-st. E.C.......... | do. |
| Schools.......................... | Hathershaw Sch. Bd. | Winder & Taylor, Archt. Oldham ............... | do. |
| Reservoir, Fowey .................. | St. Austell R.D.C.... | T. H. Andrew, Engr. 1, Trevarrick - villas, St. Austell................ | do. |
| Sheds, High-street ................ | Normanton U.D.C. .. | C. R. L Fernandez, Council Offices .............. | do. |
| Underground Conveniences .......... | Glasgow Corp......... | J. Lindsay, 64, Cochrane-st. Glasgow........ .... | do. |
| *School .......................... | East Barnet Sch. Bd.. | W. Pywell, 40, Gt. James-st. W.C. .. .. . | do. |
| Tramway Sheds..................... | Hull Corp............ | A. E. White, City Engr. Town Hall ............ | Jan. 13 |
| Training College, Limerick .......... | Trustees ............ | W. H. Byrne, Archt. 20. Suffolk-st. Dublin ...... | Jan 14 |
| Reservoir ........................ | St. Andrew's (N B.) Commrs. ........... | Belfrage & Carfrae, C E 1 Erskine-place, Edinburgh | do. |
| Widening Station-road, Barnstaple .. | ........ | J. Baker, The Grange Bratton Fleming, Barnstaple .................. | do. |
| Rebuilding Yorkshire Hotel, Burnley | J. Grimshaw, Ltd..... | R. Neill, Archt. 9, Grimshaw-st. Burnley ........ | Jan 16 |
| Club Premises, Rishton.............. | Conservative Club.... | Sandbach & Parker, Archt. 15 Richmond - terrace, Blackburn ............. | do. |
| Street Works ..................... | Salford Corp. ........ | Borough Engr. Town Hall | do. |
| Sewerage Works, Little Hulton ...... | Bolton U.D.C......... | C.C. Hooley, C.E. 34 Brazennose-st. Manchester.. ... | do. |
| *Sewerage ........................ | Hendon U D.C. ...... | S. S. Grimley, Offices, The Burroughs, Hendon, N.W. | do. |
| Police Station, Huyton, nr. Liverpool | Lancs. Standing Joint Committee .......... | H. Littler, Archt. County Offices, Preston .. | Jan. 17 |
| Chapel .......................... | Handsworth Burial Bd. | E. Winder, Junr. Corn Exchange - chambers, Sheffield . ............ | do. |

## CONTRACTS—*Continued.*

| Nature of Work or Materials. | By whom Required. | Forms of Tender, &c. Supplied by | Tenders to be delivered. |
|---|---|---|---|
| Railway Hotel, Southminster, Essex | Gray & Son ......... | P. M. Beaumont, C.E. Maldon................... | Jan. 17 |
| Additions to Poor Law Offices........ | Leeds Union.......... | T. B. Wilson, Archt. 12, East Parade, Leeds...... | do. |
| *Street Works ..................... | Southgate U.D.C. .... | C. G. Lawson, Offices, Palmer's Green, N. ....... | do. |
| *Carts, Vans, and Horse Brooms ...... | Chiswick U.D.C....... | A. Ramsden, Vestry Hall, Chiswick............... | Jan. 18 |
| Police Station, Dunoon, N.B. ........ | ....... | W. Fraser, Archt. Burgh-buildings, Dunoon ...... | Jan. 21 |
| *Road Making, and Supply of Granite Kerb and Asphalte Paving......... | Woodford U.D.C. .... | Surveyor's Offices, Woodford Green .............. | Jan. 23 |
| Reservoir Wall, &c. Hewletts ........ | Cheltenham Corp. .... | Borough Surveyor, Municipal Offices ............. | do. |
| *Widening Road, &c ................ | Beckenham U.D.C. .. | J.A. Angell, Council Offices, Beckenham ............ | do. |
| *Pulling Down Buildings and Making Alterations, &c. .................. | Islington Vestry...... | J. P. Barber, Vestry Hall, Upper-st. N. ........... | Jan. 25 |
| *Cottage Home Buildings ............ | Isle of Thanet Union.. | Leonard Grant, High-st. Sittingbourne .......... | do. |
| *Chimney Shaft at Workhouse........ | Tonbridge Union...... | The Clerk, 23, Church-rd. Tunbridge Wells ........ | Jan. 26 |
| *Infirmary, Tramp Wards, Lodge, &c. at Workhouse .................. | Bakewell Union ...... | E. M. Longsdon, Town Hall, Bakewell.......... | Jan. 28 |
| Reservoir ........................ | Midhurst R.D.C....... | Taylor, Sons & Co. C.E 27, Great George-street, S.W. | Jan. 30 |
| Sewers .......................... | Ampthill U.D C....... | T. Hennell, Engr 6, Delahay-st. Westminster, S.W. | do. |
| Police Station, Church-st............ | Berwick-on-Tweed T.C. | R. B. Dick, Archt. 55, Northumberland-st. Newcastle | Jan. 31 |
| *Brickmaking ..................... | East Sussex C.C....... | F. J. Wood, County Hall, Lewes ........... ...... | do. |
| Bridge Works, Horninglow-st. ...... | Burton-on-Trent Corp. | G. T. Lynam, Borough Engr. ................. | Feb. 1 |
| Five Houses, Arkwright-st. Burnley | ....... | A. Robinson, Archt. 321, Padiham-rd. Burnley .. | No date |
| Sub-Post Office and Houses, Bramley, Leeds ......................... | F. Boocock............ | J. M. Fawcett & Son, Archt. 26, Albion-st. Leeds...... | do. |
| Club Premises, Fishpool ............ | Stanley Conservative Club, Ltd. .......... | C. H. Openshaw, Archt. Fleet-st. Bury .......... | do. |
| Lodge and Four Cottages, Shenstone, nr. Lichfield..................... | R. P. Cooper.......... | W. Perry, Archt. Lichfield | do. |
| Brewery, Dickenson-rd. Rusholme .. | Messrs. Byde ........ | Harrap & Duffield, Archt. 34 Queen-st. E C......... | do. |
| Rebuilding Mason's Arms, Crynant Neath ........................ | W. J. Rogers, Ltd..... | Swash & Bain, Archt. Midland Bank-chambers, Newport ................ | do. |
| *Villa, Felixstowe ................. | ...... .. | G. W. Thompson, Granville House, Arundel-st. W.C. | do. |

## PUBLIC APPOINTMENTS.

| Nature of Appointment. | By whom Advertised. | Salary. | Application to be in. |
|---|---|---|---|
| *Assistant Marsh Bailiff ............ | Cty. Boro. of West Ham | ........ | Jan. 10 |
| *Quantity Surveyor (Temporarily) .... | Reigate Corp. ....... | 3*l.* 3s. per week .......... | Jan. 16 |
| *Clerk of Works .................. .. | Hereford County, &c. Asylum .... ...... | 3*l.* 3s. per week ........ | Jan. 17 |
| *Drainage Inspector ................ | Fulham Vestry ...... | 2 . 2s. per week .......... | Jan. 18 |
| *Art Teachers .................... | Sch. Bd. for London.. | ........ | do. |
| *Engineer and Surveyor .... ... .... | Sunderland Corp. .. | 700*l.* increasing to 800*l.* per an. | Jan. 21 |
| *Main Road Inspectors (Three)........ | Essex C C............ | 156*l.* per ann. each........ | Jan. 25 |
| *Two Assistant Surveyors .......... | Middlesex C.C. ...... | 250*l.* per ann. each..... .. | do. |
| *Draughtsman ...... .............. | do. | 175*l.* per ann. ............ | do. |
| *General Indoor Assistant .......... | do. | 130*l.* per ann. ............ | do. |
| *Clerk of Works .................. | Cnty. of Southampton | 3*l.* 10s. per week .......... | No date |

*Those marked with an asterisk* (*) *are advertised in this Number. Competitions, p.* iv. *Contracts, pp.* iv. vi. viii. x. & xxxiv. *Public Appointments, p.* xxxi.

the collar; when the window is fastened the end of the spindle drops into an opening in the bed-plate; on opening the latch the knob is raised and pushed back, thus the knob and spindle are turned, and the spring's action is suspended so as to keep the spindle end free from the bed-plate while the fastener is open.

28,656.—PAVING AND PAVING BLOCKS: *W. H. Northcutt.*—The several "claims" under this invention amount to fifteen in number; they relate to paving blocks constructed with a metallic shell and interior filling, with either raised or roughened or smooth faces or tops, with internal locking flanges and tongues, ledges, or grooves. The blocks are also curved in shape, for tunnels, sewers, &c.: in the process of laying them, key-blocks are employed.

29,144.—HANGING OF WINDOW SASHES: *R. H. Stanbridge.*—To each pulley stile is fixed a pulley (or drum, or wheel), the sash stile is grooved or mortised to receive one end of a leather strap or band, whose free end passes over the pulley and then down the boxing to the weight.

29,218.—GAS TAPS: *H. J. Yates.*—To regulate the supply of gas to two or more burners, when fed from a single inlet, the inventor devises a single inlet and double outlet tap, whose conically socketted body part has a single inlet directed from one side, to range with one of the outlets directed from the other side, whilst above the outlet is a second one leading to a separate burner, or pipe. The plug has a series of lateral gas-way passages to correspond with the outlets, and by-pass channels between either of the series of holes in the plug and its corresponding outlet.

30,241.—JOINTS OF EARTHENWARE AND OTHER PIPES: *R. Ewing.*—The claim is for the adoption of an eccentrically shouldered socket end, deep enough to maintain a true alignment within the interior of the pipes when spigot and socket are put together, but narrowing towards the socket's upper side so that the spigot has full play in the socket; a recess is formed in the socket's inner butt-end, and is rounded into the crown of the shoulder for purposes of filling. If the joint is to be made by running cement into it an external flange is fashioned near the spigot's extreme end, which flange passes into the socket to abut against the face of the shoulder, and another external flange is placed upon the spigot some distance behind, the rectangular end of the socket resting in a recess or rebated part of the flange.

30,602.—ACETYLENE LAMPS: *J. Ritchie.*—The lamp comprises a base, gas-holder, cistern, and burner with globe, put together in a portable form; the generators, pipes, and taps are placed within the base, and are arranged so as to generate and cool the gas, there being a recess for waste water, keeping the carbide dry when no gas is being consumed—the carbide holder has a perforated bottom and a drain into which the waste water collects from the holder.

[1898.] 392.—CONSTRUCTION OF BATHS: *F. S. Smith & J. Houldsworth.*—A recess for the user's head, shoulders, and arms is formed by bulging out the bath at its head and sides, soap trays and drainers are provided, together with lips or ledges for the user's hands when he raises himself from the bath, and lips near the plug for his heels; the head end rises up perpendicularly above the head-rest so that the outside size of the bath is not thereby increased.

1,117.—TILES, &C.: *W. Price.*—For making undercut recesses at the tile's back the die which is to form the back has auxiliary dies arranged in pairs projecting above the main die's face, and having a lateral or expanding movement in opposite directions, the movement being utilised to form the dovetails or undercuts on two opposite edges of each of the recesses in the tile's back; in the reverse movement of the tile-press the two parts of each pair of auxiliary dies contract towards one another, so as to free them from the undercuts in the tiles, and enable the latter to be removed from the die without damage to the projecting edges of the undercuts or other parts of the tile.

1,477.—ACETYLENE GENERATING LAMPS: *J. G. A. Kitchen.*—The water falls by gravity upon the carbide, its supply being regulated by means of a cylinder closed at one end, with an orifice in the other end, and a piston, that slides in the cylinder, moved by a screw; an absorbent material, preferably a wick, fills the space between the piston and the cylinder.

1,641.—STREET GAS LAMPS AND OTHER SIMILAR LAMPS: *A. Firth.*—That the gas may be automatically raised or lowered at predetermined times a time-piece or clock-work mechanism is arranged to operate a valve or tap in the service pipe, the tap being formed so as not to turn the light quite out; the mechanism drives a disc or wheel, through which project adjustable studs or pins, which start a separate train of wheels (similar to the striking train of a striking clock), and so cause the gas to be turned up or down.

2,427.—VARIABLE ELECTRICAL RESISTANCES OR RHEOSTATS: *R. Waygood & Co., and P. I. Unwin.*—The invention relates to resistances that are especially suitable for the starting switches for the motors of lifts, cranes, and hoists. The novelty lies in substituting a badly conducting powder—such as flake graphite—with a conducting blade or plunger, which is inserted into it, for a water resistance, wherein a metallic plate rod is gradually immersed in water, but of which the water is liable to become heated to boiling point, and so to be lost by evaporation.

2,993.—FLUSHING CISTERNS: *W. Torloff.*—The object of the contrivance is to construct a flushing cistern that shall normally remain empty. The ball-cock admits water when the ball is depressed, a tumbler or weight mounted on the cistern's upper part is connected to the ball-cock in such a manner that when the tumbler is thrown over the ball-cock's centre, it supports the ball and keeps the cock closed. A valve at the cistern's base is connected to the tumbler-shaft so as to be lifted when the tumbler is tilted, but when the tumbler tends to keep the inlet valve open it presses on the flushing valve and keeps it closed. When a flush is needed, a cord is pulled, which throws the tumbler over its centre, thus the flushing valve is closed, and the ball falls, the water then enters the cistern until it raises the ball, and as it does so the tumbler is again tilted into its normal position, which action raises the valve at the bottom of the cistern and effects the flush.

3,246.—GRINDSTONES: *J. Barrow.*—The apparatus comprises a grindstone fixed on a horizontal shaft between discs, and running in a trough formed with a hollow partition and with pockets or wells, having outlets for water and sludge, a perforated pipe with regulating cocks, for applying water under pressure to the stone's underside, adjustable water-deflectors, and a top-guard or cover; the tool-holding and adjusting mechanism has a guide-bed plate formed upon the trough, fitted with a bottom saddle adjustable by means of screw spindles; a slide that moves across the guide-plate, and carries a slotted vertical cylindrical flanged boss or tool-holder, with clamping screw, and a covering plate fixed upon, and moving with, the slide.

3,263.—CHIMNEY-POTS: *J. Taylor & L. Ashworth.*—Down-draught is prevented by the combination of an upper part formed with a series of louvre openings, and a lower part formed with four funnel-shaped air passages leading from near the bottom of the exterior upwards and inwards into the interior of the chimney-pot.

3,523.—CONVEYANCE OF SANITARY PIPES, &C., FROM PLACE TO PLACE: *R. Wragg.*—For conveying the pipe to the drying-shed is employed a "dandy," fitted with the usual wheels and handle, but to portions of the rigid framing that extends beyond the wheel-bearings is pivotted a movable framework consisting of two side plates and a base, from the back whereof passes a rod ending against a stop near the handle of the rigid framing. In operation, the handle is raised until the end of the rod stops against the stop in the framing; the framework's base, being horizontal and near the ground, is pushed under the plate upon which the pipe stands; on the lowering of the handle the base is lifted up, the movable framing swinging in its top bearings ensures the carriage of the pipe in a truly vertical position, while a joint in the rod adjusts the difference between the relative positions of the handle and rod when the fixed framing of the "dandy" is depressed to raise the pipe and its plate.

3,859.—FASTENING CURVED AND STRAIGHT CORRUGATED SHEETS FOR ROOFING AND OTHER PURPOSES: *J. B. Pearson.*—To dispense with the punching of holes in the sheets, and the use of rivets and bolts are adopted especially prepared length-strips, in combination with an angle-iron strap, placed over the strips and the sheets, and bolted to a clip or clips embracing the roof purlin, or held in position by a hook-bolt that embraces the purlin

5,427.—IMPROVEMENTS IN LAVATORIES: *W. Cassels.*—The inventor improves his Patent 3,244 of 1896 by making the lavatory with three open compartments—one at the back to receive the water supply from ordinary taps, one in the middle for washing purposes which is filled through an opening from the back compartment, and a trough shaped compartment around the middle one to receive and discharge its overflow.

9,829.—CONSTRUCTION OF BRIDGES, &C.—*J. Shields.*—To obtain a wider span the girder or other support is constructed with a triangular, preferably an equilateral, section transversely across its width; the span girder bridge is composed of three inter-connected girders, arranged to form a bridge triangular in transverse section, with its apex uppermost, or lowermost, according to circumstances.

19,403.—DRAUGHTSMEN'S TRIANGLES: *F. Ziegler.*—The triangle is constructed so that the difference between each two of its angles lying on one and the same side of the triangle is equal to a given acute angle, it has guiding signs marked upon its three sides, and on both surfaces thereof; it is devised for the ready production and transfer of given acute angles—of which one forms either the sum or the difference of the two others—that it may be required to repeat in various positions, and for the finding and transferring of the angle which supplements each one of the said three angles in order to form a right angle.

22,997.—CEMENT FOR ATTACHING SURFACEING MATERIAL, TILES, GLASS PLATES, &C., TO BUILDING SURFACES, AND SO FORTH: *F. Schroeter.*—The cement is prepared by mixing joiners' glue with water to a thin fluid consistency, and reducing it to a pasty mass by the addition of powdered whitening; to the compound is added finely ground gypsum.

23,159.—ARTIFICIAL STONE: *A. H., H., and G. van der Vijgh.*—By way of an improvement upon the compound specified in No. 25,880, of 1896, the inventors substitute pumice stone, and slag sand from molten iron, for coke. So the composition is constituted thus:—Pumice stone (20 parts), slag sand (10), lime (18), tan (12), plaster of Paris (20), and water (20).

### NEW APPLICATIONS.

*December 19—24.*

26,730, E. Green, Mechanical Purification of Sewage. 26,736, C. E. Challis, Composition for Removing Soot and Scale from Flues, &c. 26,738, T. Taylor, Conduit Inspection Fittings for Electrical Wiring. 26,741, H. F. Horsnaill, Door-Check. 26,755, Lowe & Shawyer, Roofing Construction. 26,765, E. Britton, Securing Window Sashes, Doors, &c, 26,768, A. E. Cattermole, Portière Rods 26,770, H. H. Bohndel, Incandescent Mantels. 26,776, A. W & L. W. Case, Rotary Pumps. 26,779, Myers & Driggs, Windows. 26,783, J. C. Etchells, Automatical Water-supply. 26,785. J. Brockie, Automatical Lathes. 26,793, C. S. Snell, Gas Compressing and Regulating Apparatus Suitable for Incandescent Gas Lighting. 26,795, W. A. Kindt, Hand Saws. 26,797, J. C. Trueman, Closing Junction Inlets and Outlets in Stoneware Pipes when not in use, applicable also for Joining Pipes. 26,804, W. J. E. Binnie, Construction of Subterranean Tunnels and Machinery therefor. 26,807, F. L. Monkhouse, Electrical Switches. 26,811, McQuade & Smethurst, Substitute for Wood-paper, Papier-Mâché, &c. 26,819, F. W. Barratt, Acetylene Lamps. 26,823, J. C. Dalman, Theatre and other Folding Chairs and Seats. 26,825, J. O. Conway, "Sash Cords and Analogous Devices." 26,830, A. Benton, Man-holes for Sewers, Drains, &c., Method of Ventilating the same, and Lids or Covers therefor. 26,831, A. H. Gosling. Jointed Rules used by Joiners and other Artificers. 26,852, A. Stevenson & others, Safety Sliding Girder Clip for use in Building Operations, &c. 26,855, Wright & Lidstone, Dust and Draught Protector for Doors, &c. 26,859, J. Higson, Brick-making. 26,862, Gardner & Kelly; 27,085, H. A. du Clou, and 27,105 and 27,252, K. Gossweiler, Generation of Acetylene Gas. 26,878, E. H. Callaway, Moulding Presses. 26,892, Rippingille's Albion Lamp Company & Cole, and 27,200, F. S. Rippingille, Oil Cooking-stoves. 26,902, Paryczko & Litynski, Heating the Contents of Baths, &c. (see also 27,187). 26,906, Stäckig & Carlson, Platform Weighing Machines. 26,919, J. E. Whiting, Shutters or Sluices for Water-ways. 26,923, Youngs, Hooks for Cranes and other Lifting Machinery and Appliances. 26,931. J. Wilson, Filter Presses and Filtering Apparatus. 26,941, Harris & Corbitt, Method whereby a great illuminating power is obtained from Acetylene Gas by means of lowering its temperature. 26,952, E. Frith, Pneumatical Oil-lamp Extinguisher. 26,955, M. Wilkinson, Window Fastener. 26,967, Jackson & Swinburn, Thimble Links for Connecting Ropes with Chains or Shackles. 26,972, McMorran & Co., Portable Fire-extinguishing Apparatus. 26,991, E. Seé, Roofs. 26,997, R. Matthews. Packing White Lead, &c. 27,000, E. O. Sachs, Stage Floors. 27,008, C. F. A. E. H. von Forell. Cement. 27,025, F. C. Lynde, Baths, Lavatories, and Sinks. 27,026, J. Brady, Drainage of Cities, Towns, and other areas. 27,031, F. W. Hill, Chimney Pot and Ventilator. 27,035, Porter & Hirst, Cooking Ranges, &c. 27,046, Morrison and Baird, Stoves and Cooking-ranges. 27.056, Dhoondi Raj Thengdi, Steam Turbines, &c. 27.061, P. T. Sievert, Sheet Glass. 27,064, W. Turnbull, Sliding-sash Windows. 27,073, G. T. Augspurg, Gas Regulators. 27,074, W. E. Irish, Electrodes for Arc Lamps. 27,093, A. R. Sennett, Removal of House or other Refuse. 27,097, H. R. Ottesen, Arc Lamps. 27,107, A. A. Atkin, Cutter Blocks. 27,118, J. J. Ingham, Waterproof Material for Bridges, Viaducts, Flat Roofs, Footways, &c. 27,123, Beechey & Wright, Coin Freed or Actuated Gas and other Meters. 27,136, A. A. Millns, Non-Poisonous White Lead (Sulphate). 27,142, W. A. Burns, Electrically Driven Ventilating Fans. 27,146-7, E. Hervais, Drawing Pens. 27,149, S. J. Payne, Composition for Binding and Cementing Gravel, Stones, &c. 27,151, T. Bayley, Gas Compression. 27,155, J. Young, Sewer Drain Interceptors. 27,156, G. C. Leslie, Smoke Consuming and Heat Economising Apparatus. 27,162, Green & Foster, Heating Green Houses and Supplying them with Heated Air, Moisture, Fumigating Gases, &c. 27,164, G. Hanf, Water Gauge. 27,168, H. G. Dempster, Distance Measuring Instruments, &c. 27,173, J. Rowe, Bricks. 27,181, Reed & Knight, Stoppers for Stoneware Pipes, Gullies, Traps, and Junctions. 27,187, A. Blachette, Heating Water for Baths, &c. 27,198, A. Martini, Gas Ignition. 27,210, H. R. Owen, Producing and Diffusing Cool Air Currents. 27,218, J. A. Schmidt, Pocket Knife for Artisans and Mechanics. 27,219, A. J. Parkins, Acetylene Lamp. 27,220, J. Ferguson, Household Refuse Bins, &c. 27,228, Geipel & Lange, Regulators for Hot Water Heating Apparatus. 27,249, J. G. Hearfield, Hinges. 27,254, C. Wood, Electrical Arc Lamps. 27,257, W. G. Treadwell, Door, Window, and Other Fastenings 27,266, C. D. Phillips, Circular Saw Guard. 27,268, Mordey & Bevis, Alternate Current Arc Lamps and Lanterns. 27,269, Kunkelmann and Others, Measuring Electricity. 27,270, Vallance & Kay, Miners' Safety Lamps

## SOME RECENT SALES OF PROPERTY:

### ESTATE EXCHANGE REPORT.

December 20.—By JOLIFFE & FLINT (at Bournemouth).

| | |
|---|---|
| Branksome, Dorset.—Layton-rd. West, 12 cottages, u.t. 87 yrs., g.r. 24*l.* | £1,310 |
| Shillito-rd., 5 villas, u.t. 87 yrs., g.r. 20*l.* | 1,575 |

December 21.—By FOSTER & CRANFIELD.

| | |
|---|---|
| Camberwell.—12, Knatchbull-rd., u.t. 76 yrs., g.r. 9*l.* 5s., e.r. 60*l.* | 620 |

*Contractions used in these lists.*—F.g.r. for freehold ground-rent; l.g.r. for leasehold ground-rent; i.g.r. for improved ground-rent; g.r. for ground-rent; r. for rent; f. for freehold; c. for copyhold; l. for leasehold; e.r. for estimated rental; u.t. for unexpired term; p.a. for per annum; yrs. for years; st. for street; rd. for road; sq. for square; pl. for place; ter. for terrace; cres. for crescent; yd. for yard, &c.

## PRICES CURRENT OF MATERIALS.

### TIMBER.

| | | |
|---|---|---|
| Greenheart, B.G. ton | 8/0/0 | 0/0/0 |
| Teak, E.I. ... load | 10/10/0 | 15/10/0 |
| Sequoia, U.S. ft.cu. | 1/9/0 | 2/0/0 |
| Ash, Canada, load | 3/17/6 | 5/5/0 |
| Birch, do. | 3/0/0 | 5/0/0 |
| Elm, do. | 4/12/6 | 5/15/0 |
| Fir, Dantsic, &c. | 2/0/0 | 4/0/0 |
| Oak, do. | 3/5/0 | 3/15/0 |
| Canada | 4/0/0 | 6/0/0 |
| Pine, Canada red | 0/0/0 | 0/0/0 |
| Do. yellow | 4/7/6 | 6/5/0 |
| Lath, Dantsic, fath | 4/10/0 | 5/10/0 |
| St. Petersburg | 4/0/0 | 6/10/0 |
| Wainscot, Riga, &c., log | 3/15/0 | 5/15/0 |
| Odessa, crown | 3/15/0 | 5/15/0 |
| Deals, Finland 2nd & 1st std. 100 | 9/15/0 | 10/5/0 |
| Do. 4th & 3rd | 9/15/0 | 10/5/0 |
| Do. Riga | 8/5/0 | 9/5/0 |
| St. Petersburg, 1st yellow | 11/15/0 | 14/5/0 |
| Do. 2nd yellow | 10/15/0 | 12/5/0 |
| Do. white | 9/15/0 | 11/15/0 |
| Swedish | 9/15/0 | 16/15/0 |
| White Sea | 10/15/0 | 18/0/0 |
| Canada, Pine 1st | 18/15/0 | 25/5/0 |
| Do. do. 2nd | 13/15/0 | 17/0/0 |
| Do. do. 3rd, &c. | 6/0/0 | 10/0/0 |
| Do. Spruce, 1st | 8/10/0 | 10/10/0 |
| Do. do. 3rd and 2nd | 7/5/0 | 8/10/0 |
| New Brunswick | 7/5/0 | 8/0/0 |
| Battens all kinds | 5/0/0 | 16/0/0 |
| Flooring boards, sq., 1 in., prep. 1st | 9/6 | 16/3 |
| Do. 2nd | 8/0 | 13/3 |
| Other qualities— | 6/3 | 7/0 |
| Cedar, Cuba, ft. | /4 | /4½ |
| Honduras, &c. | /3¾ | /4½ |
| Mahogany, Cuba | /5¾ | /7 |
| St. Domingo, cargo av. | /5 | 1/3 |
| Mexican, do. do. | /3¾ | /4 |
| Tobasco, do. do. | /4 | /6½ |
| Honduras, do. | /4 | /6 |
| Box, Turkey, ton | 4/0/0 | 15/0/0 |
| Rose, Rio | 7/0/0 | 14/0/0 |
| Bahia | 6/0/0 | 12/0/0 |
| Satin, St. Doming. | /5 | 1/0 |

### TIMBER *(continued).*

| | | |
|---|---|---|
| Satin, Porto Rico | 0/0/9 | 0/2/0 |
| Walnut, Italian | 0/0/3 | 0/0/7 |

### METALS.

| | | |
|---|---|---|
| Iron—Pig, in Scotland ... ton | 2/9/6 | 0/0/0 |
| Bar, Welsh, in London | 6/0/0 | 6/5/0 |
| Do. do. at works in Wales | 5/15/0 | 5/17/6 |
| Do. Staffordshire, in London | 6/5/0 | 7/10/0 |
| COPPER—British cake and ingot | 61/15/0 | 62/5/0 |
| Best selected | 62/5/0 | 62/15/0 |
| Sheets, strong | 66/0/0 | 67/0/0 |
| Chili bars | 58/3/9 | 0/0/0 |
| YELLOW MTL. lb. | 5d. | 5⅝d. |
| LEAD—Pig Spanish ... ton | 13/5/0 | 0/0/0 |
| English com. Brands | 13/10/0 | 0/0/0 |
| Sheet, English 6 lbs. per sq. ft. and upwards | 14/10/0 | 0/0/0 |
| Pipe | 15/0/0 | 0/0/0 |
| ZINC—English sheet ... ton | 28/0/0 | 0/0/0 |
| Vieille Montagne | 29/0/0 | 0/0/0 |
| Spelter | 24/0/0 | 24/5/0 |
| TIN—Straits | 89/0/0 | 0/0/0 |
| Australian | 89/12/6 | 90/2/6 |
| English Ingots | 91/15/0 | 92/15/0 |
| Banca | 0/0/0 | 0/0/0 |
| Billiton | 0/0/0 | 0/0/0 |

### OILS.

| | | |
|---|---|---|
| Linseed ... ton | 16/12/6 | 0/0/0 |
| Cocoanut, Cochin | 27/15/0 | 0/0/0 |
| Do. Ceylon | 24/10/0 | 0/0/0 |
| Palm, Lagos | 21/15/0 | 0/0/0 |
| Rapeseed, English pale | 22/5/0 | 0/0/0 |
| Do. Brown | 20/15/0 | 0/0/0 |
| Cottonseed ref. | 15/0/0 | 16/0/0 |
| Oleine | 17/0/0 | 18/0/0 |
| Lubricating U.S. | 0/5/3 | 0/7/6 |
| Do. Black | 0/5/0 | 0/6/6 |
| TAR—Stockholm barrel | 1/5/0 | 0/0/0 |
| Archangel | 0/18/0 | 0/0/0 |
| Turpentine | 32/10/0 | 0/0/0 |

## TENDERS.

[Communications for insertion under this heading should be addressed to "The Editor," and must reach us *not later than 10 a.m. on Thursdays.* N.B.—We cannot publish Tenders unless authenticated by the name and address of the sender; and we cannot publish announcements of Tenders accepted unless the amount of the Tender is given, nor any list in which the lowest Tender is under £100, unless in some exceptional cases and for special reasons.]

ALNWICK.—For the erection of cottages, &c., Twizell Estate, Warenford, for Mr. R. W. Maling. Mr. G. Reavell, jun., architect, Alnwick:—

| | | | |
|---|---|---|---|
| Edward Fordy | £676 0 | Elliot Bros., Preston, Chathill (accepted) | £590 0 |
| R. & G. Brown | 647 15 | | |

BICESTER.—For additions to schools, Crockwell, for the National School Managers. Mr. A. M. Mowbray, architect, Oxford:—

| | | | |
|---|---|---|---|
| Grimsby & Son | £203 10 | T. Grimsby, Bicester* | 150 0 |
| J. W. Smith | 200 0 | | |

* Accepted,

BRIXHAM.—For the erection of a villa residence at Heath Common, for Mr. C. Hellyer. Messrs. Norman G. Bridgman & Walter H. Bridgman, architects, of Torquay and Paignton. Quantities by Mr. Vincent Cattermole Brown, of Paignton:—

| | | | |
|---|---|---|---|
| W. A. Goss | £2,000 0 | Hazlewood Bros. | £1,498 10 |
| Rd. Yeo | 1,850 0 | Hayman & Wills, Brixham* | 1,390 0 |
| J. C. & W. Watson | 1,787 0 | | |
| T. Silley | 1,741 0 | | |

* Accepted.

BRIXHAM.—For the erection of four cottages for Mr. John Martin. Messrs. Norman G. Bridgman & Walter H. Bridgman, architects, of Torquay and Paignton:—

| | | | |
|---|---|---|---|
| W. Wyatt | £750 0 | Rd. Yeo | £600 0 |
| G. Wotton, Brixham* | 605 10 | G. Cooksley | 688 0 |

* Accepted.

BUCKFASTLEIGH.—For the erection of business premises at Buckfastleigh, for the Buckfastleigh Co-operative Society, Limited. Messrs. Norman G. Bridgman & Walter H. Bridgman, architects, of Torquay and Paignton. Quantities by Mr. Vincent Cattermole Brown, of Paignton:—

| | | | |
|---|---|---|---|
| H. J. Almond | £2,085 0 0 | Hosking Bros. | £1,621 12 6 |
| W. A. Goss | 1,850 0 0 | J. C. & W. Watson | 1,616 0 0 |
| T. Wee | 1,717 0 0 | Jackson & Son | 1,562 10 0 |
| G. Arsco | 1,650 0 0 | J. Selwood | 1,540 0 0 |
| S. Furneaux & Son, Buckfastleigh* | 1,634 7 0 | J. Milman | 1,525 18 0 |

* Accepted.

BURGHILL (Hereford).—For additions and alterations to the County and City Lunatic Asylum, Burghill, near Hereford. Messrs. Giles, Gough, & Trollope, architects, 28, Craven-street, Charing Cross W.C:—

| | | | |
|---|---|---|---|
| easure | £35,986 | Willcock | £24,203 |
| James | 35,891 | Williams | 23,490 |
| Stephe.. & Bastow | 30,147 | Lewis | 22,967 |
| mith | 25,587 | Bowers, Hereford* | 22,525 |
| Rowbotham | 25,360 | | |

* Accepted.

BLACKMORE.—For the erection of cottages at Fengieth Hall. Mr. Richard Mawhood, architect, Chelmsford:—

| | | | |
|---|---|---|---|
| Knights | £690 | H. Barlow, Ongar* | £680 |

* Accepted.

CHIGWELL.—For erecting a police-station at Chigwell, for the Receiver for the Metropolitan Police District. Mr. J. Dixon Butler, Architect. Quantities by Mr. W. H. Thurgood:—

| | | | |
|---|---|---|---|
| Higgs & Hill | £4,744 | C. Ansell | £4,208 |
| Grover & Sons | 4,560 | Lawrance & Sons | 4,198 |
| Chessum & Sons | 4,299 | Lathey Bros. | 4,089 |
| F. J. Coxhead | 4,297 | Willmott & Sons | 4,026 |
| Almond & Son | 4,255 | H. Wells & Sons | 3,979 |

CHURCH (Lancs).—For sewering, &c., Riding Barn-street and several other streets, for the Urban District Council. Mr. W. E. Wood, Surveyor, District Council Offices, Church:—

*Riding Barn-street.*
W. H. Bury, Oswaldtwistle.*
*Back Hyndburn-road.*
W. H. Bury, Oswaldtwistle.*
*Elmfield-street.*
J. Grimshaw, Church.*
*Back Elmfield-street.*
J. Grimshaw, Church.
*Warwick-street.*
J. Grimshaw, Church.
[All at schedule of prices.]
* Accepted.

CHURCH (Lancs).—For flagging, paving, &c., Water-street, for the Urban District Council. Mr. W. E. Wood, Surveyor, District Council Offices, Church:—

| | | | |
|---|---|---|---|
| Levi Sharples | £213 0 6 | W. H. Bury, Oswaldtwistle* | £183 16 5 |
| James Grimshaw | 205 8 8 | | |
| John Moore | 199 3 8 | | |

* Accepted.

COVENTRY.—For the erection of electric light sub-stations, for Coventry Corporation. Mr. T. Swindlehurst, engineer:—

| | | | |
|---|---|---|---|
| Cave | £868 7 3 | Wootton | £833 0 0 |
| C. G. Hill | 849 0 0 | C. H. Barber* | 818 14 0 |
| Golby | 839 0 0 | | |

* Accepted.

DARTMOUTH.—For the erection of stone boundary walls, &c., North Parade, for the Urban District Council. Mr. T. O. Veale, surveyor, Castle View House, Dartmouth. Quantities by Mr. E. H. Back, of Darmouth:—

| | | | |
|---|---|---|---|
| H. Anderson | £434 9 1 | Robert Watts | £402 10 0 |
| Richard C. Pillar | 405 0 0 | R. T. Pillar (accepted) | 363 0 0 |

[All of Dartmouth].

DRIFFIELD (Yorks).—Accepted for the erection of St. John's Church (exclusive of seats and heating), for the Building Committee. Messrs. Hicks & Charlewood, architects, 42, Grainger-street, Newcastle-on-Tyne. Quantities by Mr. J. P. Allen, Newcastle-on-Tyne:—

| | |
|---|---|
| Leason & Son, Driffield | £3,329 7 9 |

KINGSWEAR.—For alterations and additions to "Bryndart" for Mrs. Walker. Messrs. Norman G. Bridgman & Walter H. Bridgman, architects, of Torquay and Paignton:—

| | | | |
|---|---|---|---|
| W. A. Goss | £410 | J. C. & W. Watson, Torquay (accepted) | £400 |

LEYTONSTONE.—Accepted for erecting a new infirmary, Whipps Cross-road, Leytonstone, for the Guardians of the West Ham Union. Mr. F. J. Sturdy, architect. Quantities by Mr. J. Moore Smith, Union-court, Old Broad-street:—

| | |
|---|---|
| W. Shurmur | £158,994 |

LLANDAFF (Wales).—For the erection of an assembly hall, &c., for the County School Governors. Mr. G. E. Halliday, architect, 14, High-street, Cardiff. Quantities by Mr. J. W. Rodger, Cardiff:—

| | | | |
|---|---|---|---|
| Symonds & Co. | £6,205 10 0 | H. Smith | £5,224 12 3 |
| T. S. Chubb & Co. | 5,875 1 0 | Jones Bros. | 5,130 0 0 |
| E. R. Evans Bros. | 5,653 16 3 | Owens & Evans | 5,108 18 8 |
| Shepton & Son | 5,651 14 4 | E. Turner & Sons | 4,846 0 0 |
| W. Thomas & Co. | 5,567 0 0 | C. C. Dunn, Cardiff* | 4,573 4 0 |
| Newman & James | 5,485 0 0 | | |

* Accepted.

LONDON.—For alterations, additions, and fittings at the "Earl Derby" public-house, London-road, Plaistow, E., for Messrs. Holt & Co. Mr. Fred. A. Ashton, architect, 177, Romford-road, Stratford, E.:—

| | Alterations, &c. | Fittings. | Total. |
|---|---|---|---|
| W. Shurmur | £2,023 | £896 | £2,910 |
| W. J. Maddison | 2,084 | 821 | 2,905 |
| A. E. Symes | 2,050 | 850 | 2,900 |
| J. & H. Cocks | 1,954 | 844 | 2,798 |

LONDON.—For erecting artisans' dwellings, Shadwell Mr. W. G. Drew, architect:—

| | | | |
|---|---|---|---|
| Holloway Bros. | £5,745 | H. L. Holloway | £4,600 |
| Clarke & Bracey | 5,285 | W. Shurmur | 4,595 |
| B. E. Nightingale | 4,693 | S. J. Scott | 4,597 |

LONDON.—For rebuilding the "Old Axe" public-house. Mr T. W. Aldwinckle, architect:—

| | | | |
|---|---|---|---|
| Shillitoe & Sons | £10,400 | Todd & Co. | £8,747 |
| H. Wall & Co. | 9,453 | Edwards & Medway | 8,581 |
| Johnson & Co., Ltd. | 9,285 | Hopkins | 8,5[illegible]9 |
| W. Shurmur | 8,073 | Sheffield Bros. | 8,4[illegible]7 |

LONDON.—For the enlargement of Homerton-row School. Mr. T. J. Bailey, Architect:—

| | | | |
|---|---|---|---|
| J. Grover & Son | £9,070 | C. Cox | £8,582 |
| Perry & Co. | 9,064 | J. & C. Bowyer | 8,551 |
| W. M. Dabbs | 8,989 | W. Shurmur | 8,235 |
| E. Lawrence & Sons | 8,814 | | |

LONDON.—For the erection of a three-floor factory and offices, Old Ford, for the Britannia Folding Box Company, Limited, under the superintendence of Messrs. W. Eve & Sons, 10, Union-court, E.C.:—

| | | | |
|---|---|---|---|
| Parker | £13,500 | J. H. Johnson | £12,180 |
| Kirk & Randall | 13,142 | Perry & Co. | 12,145 |
| Perry Bros. | 12,777 | Patman & Fotheringham | 12,049 |
| Harris & Wardrop | 12,574 | J. Godfrey & Son, Lower Clapton* | 11,990 |
| Holliday & Greenwood | 12,221 | | |

* Accepted subject to modification.

LONDON.—For the erection of a shop on the site of No. 251-3, Old-street E.C., for Messrs. Kruzin Bros., under the superintendence of Messrs. W. Eve & Sons, 10, Union-court, E.C.:—

| | | | |
|---|---|---|---|
| Perry Bros. | £857 | J. H. Johnson | 747 |
| Salt | 820 | J. Chessum & Son | 729 |
| Kilby & Gayford | 792 | E. Houghton & Son, Stroud Green* | 624 |
| J. Carmichael | 756 | | |
| Harris & Wardrop | 756 | | |

* Accepted.

LONDON.—For the erection of fireproof staircase at Messrs. Kearley & Tonge's, Limited, warehouse, Mitre-square, under the superintendence of Messrs. W. Eve & Sons, 10, Union-court, Old Broad-street, E.C.:—

| | | | |
|---|---|---|---|
| Gregory & Co | £1,235 | H. Brown | £991 |
| A. Monk | 1,067 | Harris & Wardrop | 986 |
| Lawrence | 1,049 | Patman & Fotheringham, Islington* | 926 |
| J. Chessum & Sons | 1,020 | | |

* Revised and accepted.

LONDON.—For alterations to "John Bull" public-house, Tyers-street, Lambeth. Mr. Geo. Hubbard, architect:—

| | | | |
|---|---|---|---|
| Burman & Son | £697 | Edwards & Medway | £523 |
| J. W. Heeps | 599 | Hill | 483 |
| W. Nash | 547 | | |

---

LONDON.—For the erection of two chapels at the workhouse at St. Pancras, for the Guardians of St. Pancras. Messrs. A. & C. Harston, architects, 15, Leadenhall-street:—

| | | | |
|---|---|---|---|
| Leslie & Co., Ltd. | £6,137 | T. Bendon | £5,063 |
| Miskin & Sons | 5,678 | W. Johnson & Co., Ltd. | 4,988 |
| E. Lawrance & Sons | 5,446 | Spencer, Santo & Co., Ltd., Westminster* | 4,816 |
| H. Wall & Co. | 5,135 | | |

[Architects' estimate, £4,500.]

* Accepted.

---

LONDON.—Accepted for the erection of six villa residences on the site of No. 2, Lyndhurst-road, Peckham, for Mr. W. Laud. Mr. A. E. Mullins, architect, 97, Barry-road, East Dulwich, S.E.:—

| | |
|---|---|
| Balaam Bros. | £2,718 |

[The supply of stoves, ranges, baths, and other hardware is not included in the contract].

---

LOUGHBOROUGH (Leicestershire).—For the erection of club premises, Baxter Gate. Mr. W. T. Hampton, architect, Swan-street, Loughborough:—

| | | | |
|---|---|---|---|
| Jas. Gorvett | £3,169 | Kirk & Fletcher | £2,860 |
| E. Orton | 3,073 | W. Corah | 2,850 |
| W. F. Harding | 2,975 | Watson & Lovett | 2,825 |
| W. Tailby | 2,960 | Main, Kendal, & Main | 2,795 |
| Moss & Son | 2,940 | Thos. Barker & Son, Loughborough* | 2,775 |
| C. Dobson | 2,870 | | |

* Accepted.

[Architect's approximate estimate, £2,606 16s.]

---

MAIDENHEAD.—For (1) making up Grenfell-road, (2) Penyston-road sewer, for the Town Council. Mr. P. Johns, C.E., Guildhall, Maidenhead:—

*Making up Grenfell-road.*

| | | | |
|---|---|---|---|
| Bentham | £832 2 3 | Free & Son | £699 17 6 |
| F. Talbot | 714 12 3 | W. Lee & Sons | 579 0 0 |

*Penyston-road sewer.*

| | | | |
|---|---|---|---|
| Lee & Son | £341 10 6 | Free & Son | 260 0 0 |
| Bentham | 330 3 9 | Talbot | 243 0 6 |
| C. W. Cox & Son | 286 0 0 | | |

---

MANCHESTER.—For new offices at the works of Messrs. Waites, Sons & Atkinson, Ltd. Mr. W. Cecil Hardisty, architect, Manchester. Quantities by Mr. Charles Jackson:—

| | | | |
|---|---|---|---|
| P. Hodkinson | £1,225 | Young, Tinker & Young | £1,175 |
| Megarity & Co. | 1,220 | F. & E. Haynes* | 1,130 |
| J. Riley | 1,219 | | |

* Accepted.

[The lowest tender subsequently reduced to £1,069 10s. in consequence of sundry deductions.]

---

MORECAMBE.—For alterations to West View-terrace. Mr A. L. Lang, architect, 12a, Pedder-street, Morecambe:—

| | | | |
|---|---|---|---|
| John Edmondson | £204 0 9 | J. W. Dodgson | £195 0 0 |
| Wm. Pool, Morecambe (accepted) | 195 10 10 | Parkinson & Tiddle | 183 0 0 |

---

NUNEATON.—For the erection of "Royal Oak," Nuneaton. Mr. J. F. Tickner, architect:—

| | | | |
|---|---|---|---|
| A. A. Wincott | £1,300 0 | Stanyan | £1,171 0 |
| Norton | 1,239 0 | C. H. Barber* | 1,171 0 |
| Wincott | 1,175 10 | | |

* Accepted.

---

PUTNEY.—For the erection of a new public library in Disraeli-road, Putney. Mr. Francis J. Smith, architect:—

| | | | |
|---|---|---|---|
| Stimpson & Co. | £8,960 | Shepherd | £8,748 |
| Adamson | 8,896 | Roffey* | 8,290 |
| Nightingale | 8,775 | | |

* Accepted.

---

PUTNEY.—For the construction of three new roads and sewers, Putney Park Estate, S.W., for the trustees of the late H. M. Rowe. Messrs. Geo. Elkington & Son, architects and surveyors, 95, Cannon-street, E.C.:—

| | | | |
|---|---|---|---|
| J. Mears | £3,952 | Hy. Woodham* | £3,394 |
| G. Wimpey & Co. | 3,517 | | |

* Accepted.

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SPRINGFIELD.—For erecting a villa, Mount Hill-avenue. Mr. Richard Mawhood, architect, Chelmsford:—

| | | | |
|---|---|---|---|
| Smith & Son | £878 | Samms | £790 |
| Fincham | 825 | Gowers | 735 |
| Choat & Son | 799 | Johnson, Chelmsford* | 687 |

* Accepted.

---

WAKEFIELD.—For laying pipes, &c., for the Emley Urban District Council. Mr. S. Shaw, C.E., Union-street, Dewsbury:—

| | |
|---|---|
| J. & J. Aliffe, Ossett | £534 12 4 |
| *For Cast-Iron Pipes.* | |
| Cochrane, Groves, & Co., Ltd., Middlesborough | 898 13 4 |
| *For Valves.* | |
| J. Blakeborough & Sons, Brighouse | 63 3 0 |

---

WARMINSTER.—For the erection of a billiard-room, Greenhill, for Mr. C. M. Thornton. Mr. A. F. Long, architect, Warminster:—

| | | | |
|---|---|---|---|
| Weston | £384 10 0 | F. Curtis | £343 10 0 |
| J. Pearce | 364 10 0 | H. Franklin, Warminster* | 321 16 6 |
| J. Gaisford | 358 5 0 | | |
| P. J. Ponton | 357 16 9 | | |

* Accepted.

---

WATFORD.—For the erection of two houses for Mr. R. Oxenham, under the superintendence of Messrs. W. Eve & Sons, 10, Union-court, E.C.:—

| | | | |
|---|---|---|---|
| Wood Bros. | £5,986 | G. & J. Waterman | £5,267 |
| Chas. Brightman | 5,420 | George Higgs, Watford* | 4,930 |

* Accepted.

---

WIMBLEDON.—For a proposed house for Mrs. A. Campbell on the Beloeden Estate, Wimbledon. Mr. J. H. Eastwood, architect, 42, Cheniston-gardens, W.:—

| | | | |
|---|---|---|---|
| Simmonds Bros. | £3,950 | J. Burges | £3,050 |
| Price & Price | 3,517 | Lathey Bros. | 2,916 |
| Whitehead Bros. | 3,160 | Bulled & Co. | 2,856 |

---

WRITTLE (Essex).—For the erection of four cottages at Skiggs Farm. Mr. Richard Mawhood, architect, Chelmsford:—

| | | | |
|---|---|---|---|
| W. Fincham | £750 | Smith & Son | £718 |
| Gowers | 723 | R. Wood, Writtle (accepted) | 623 |

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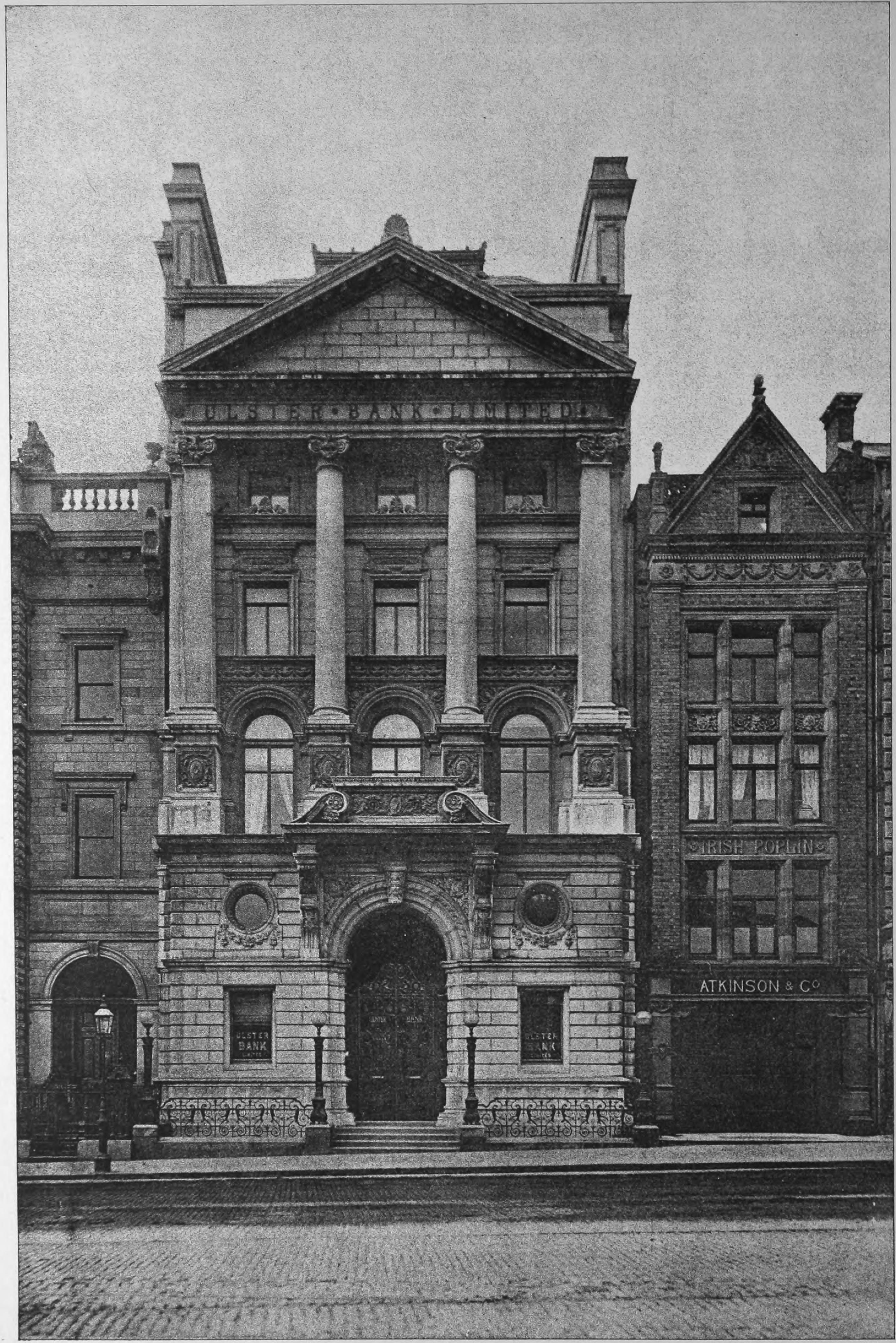
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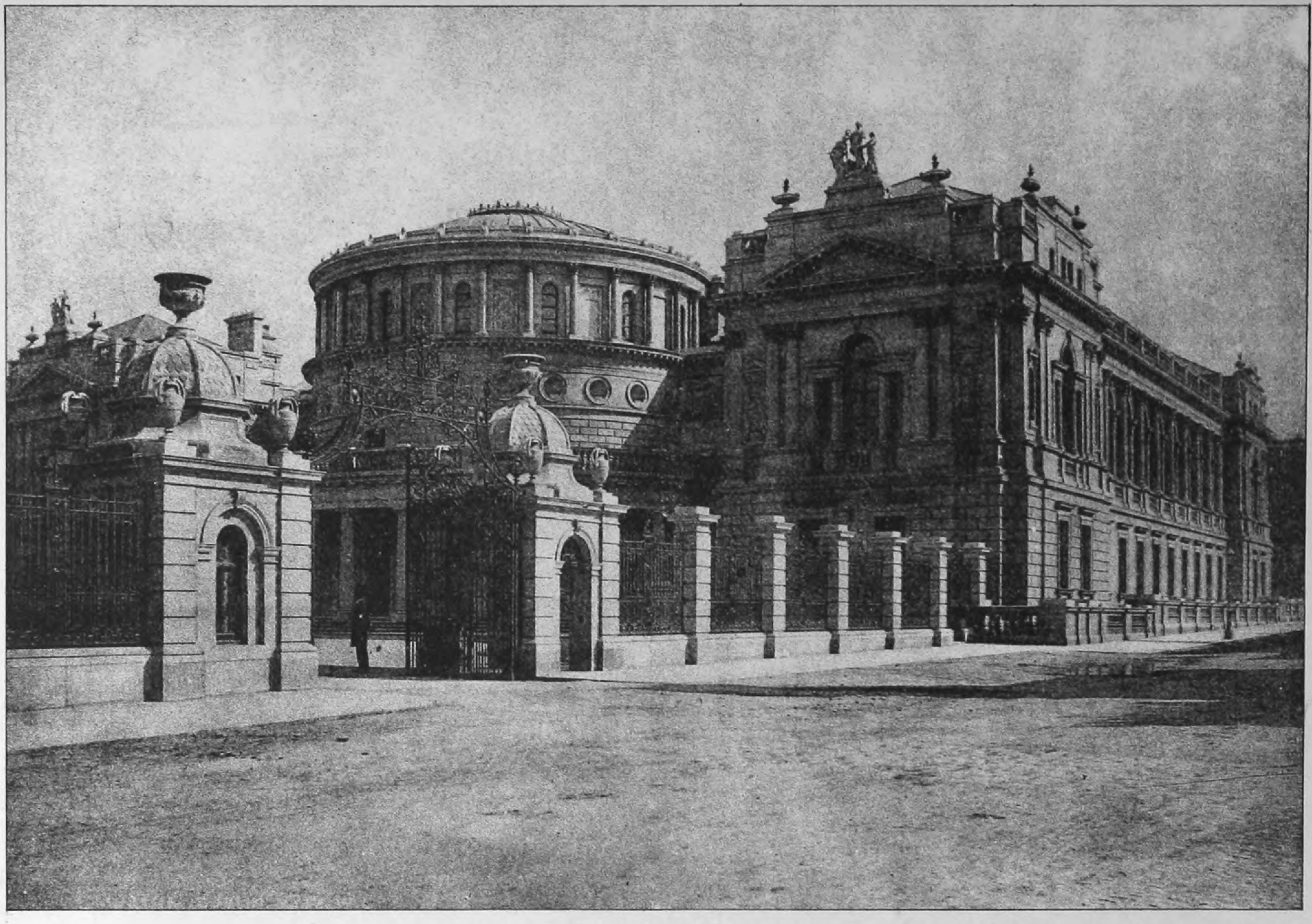

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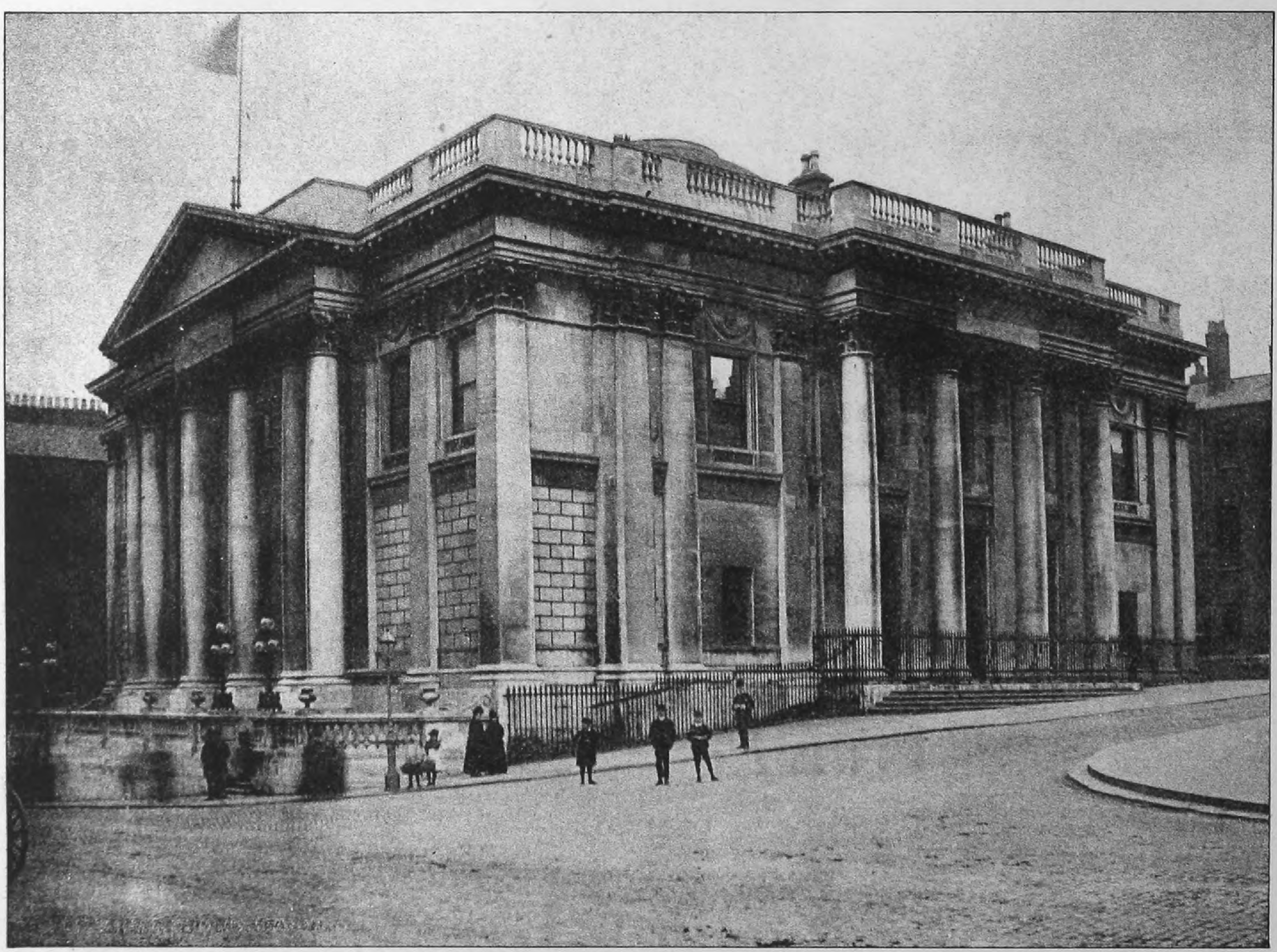

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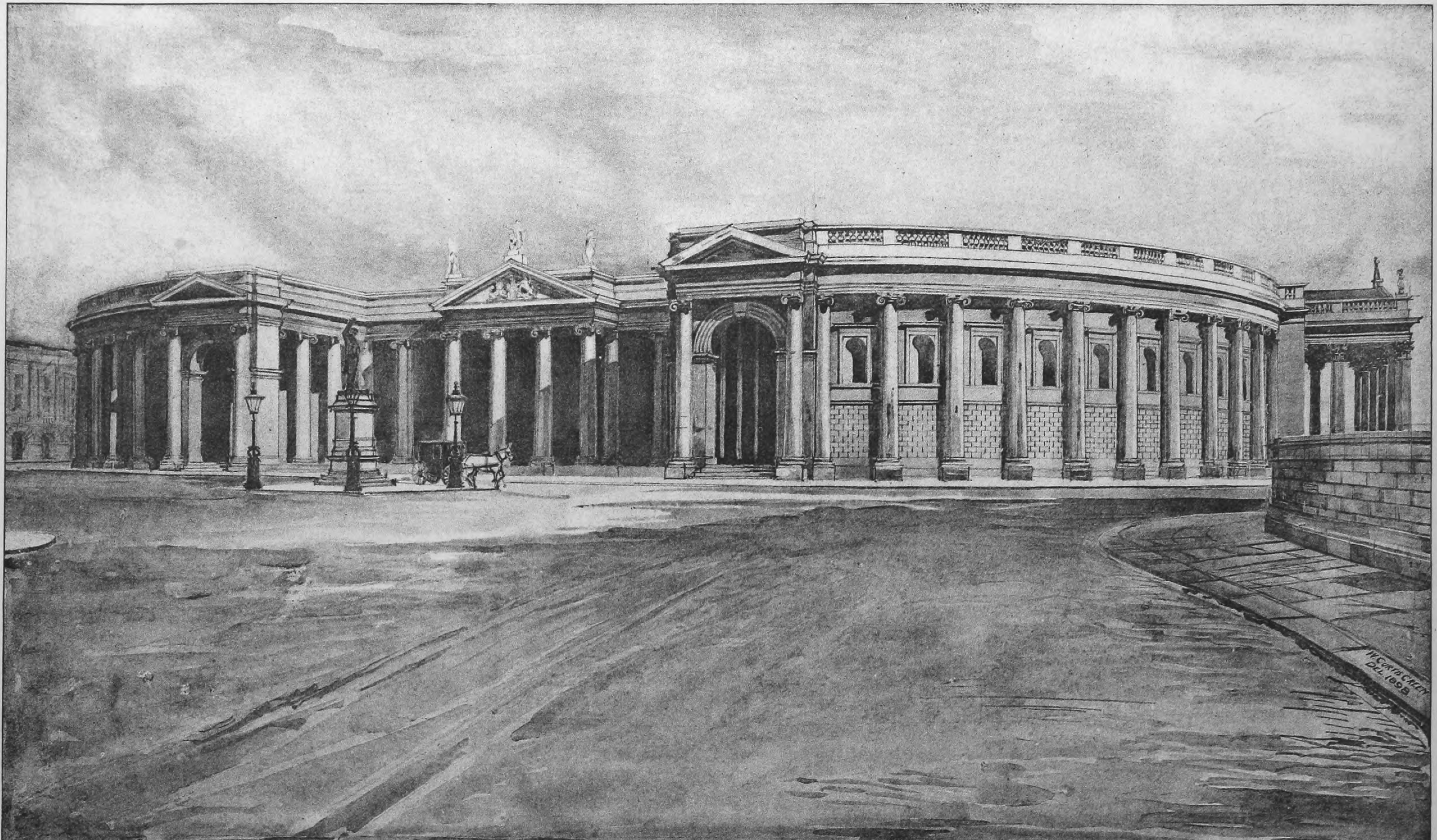
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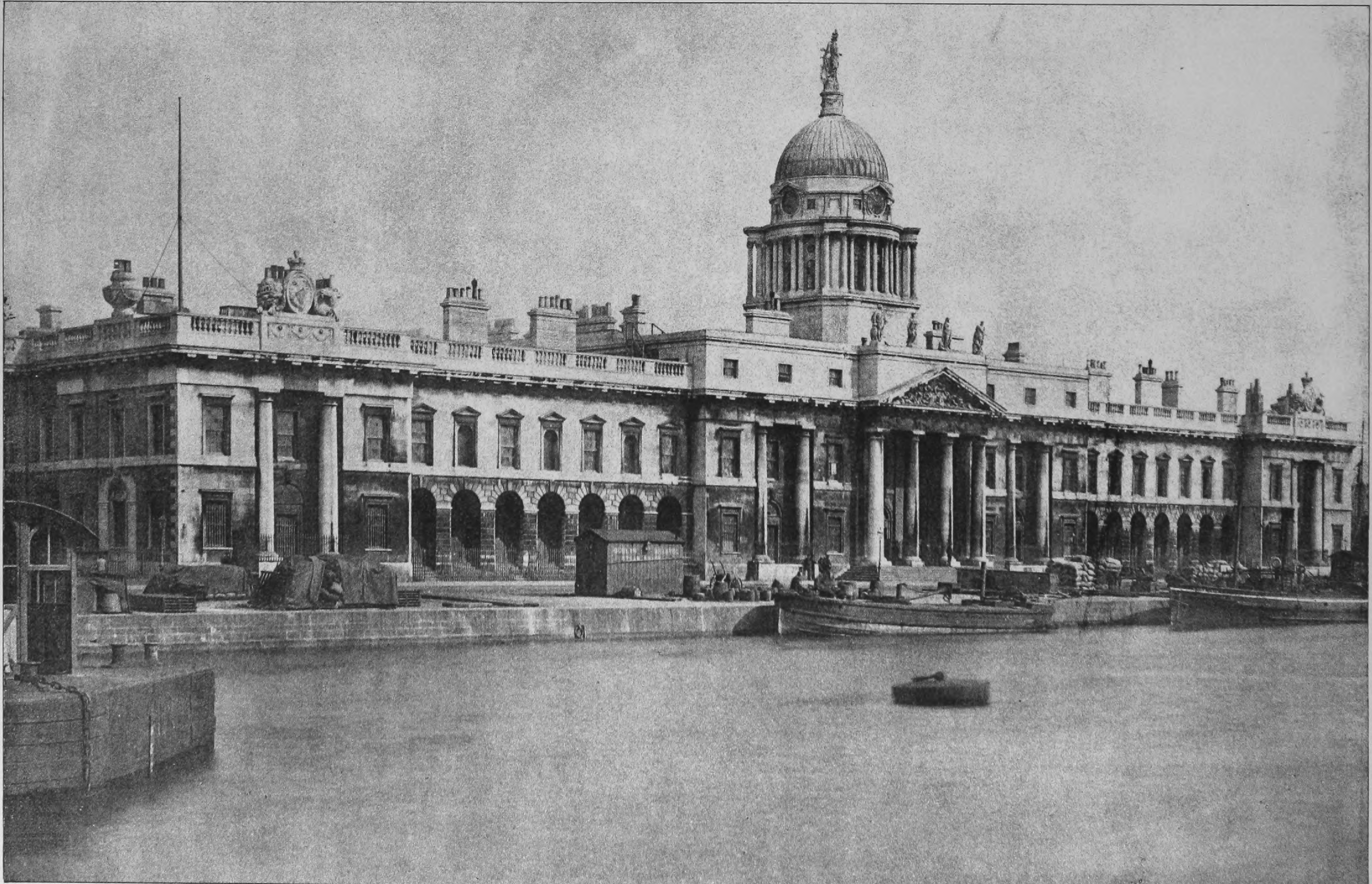

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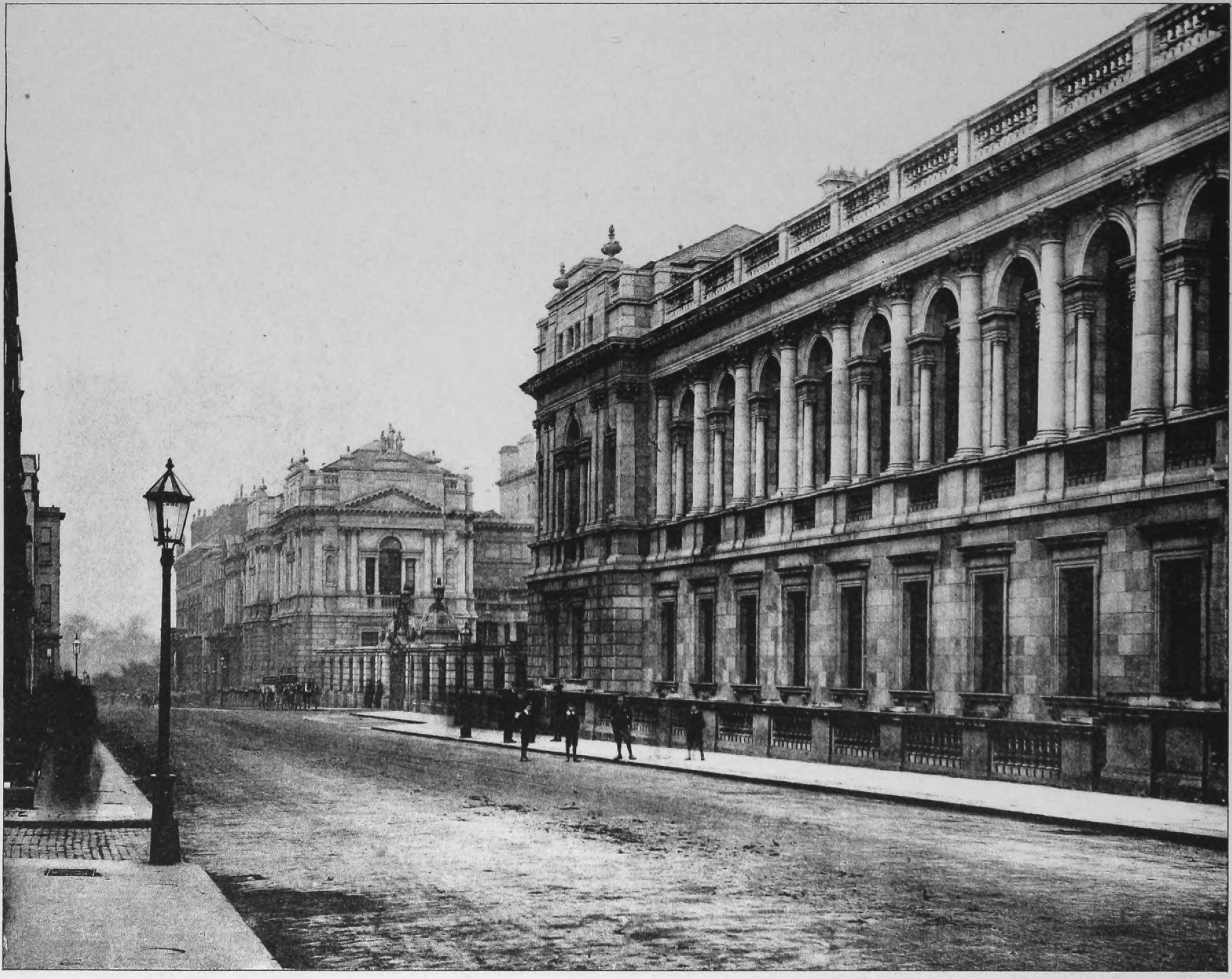

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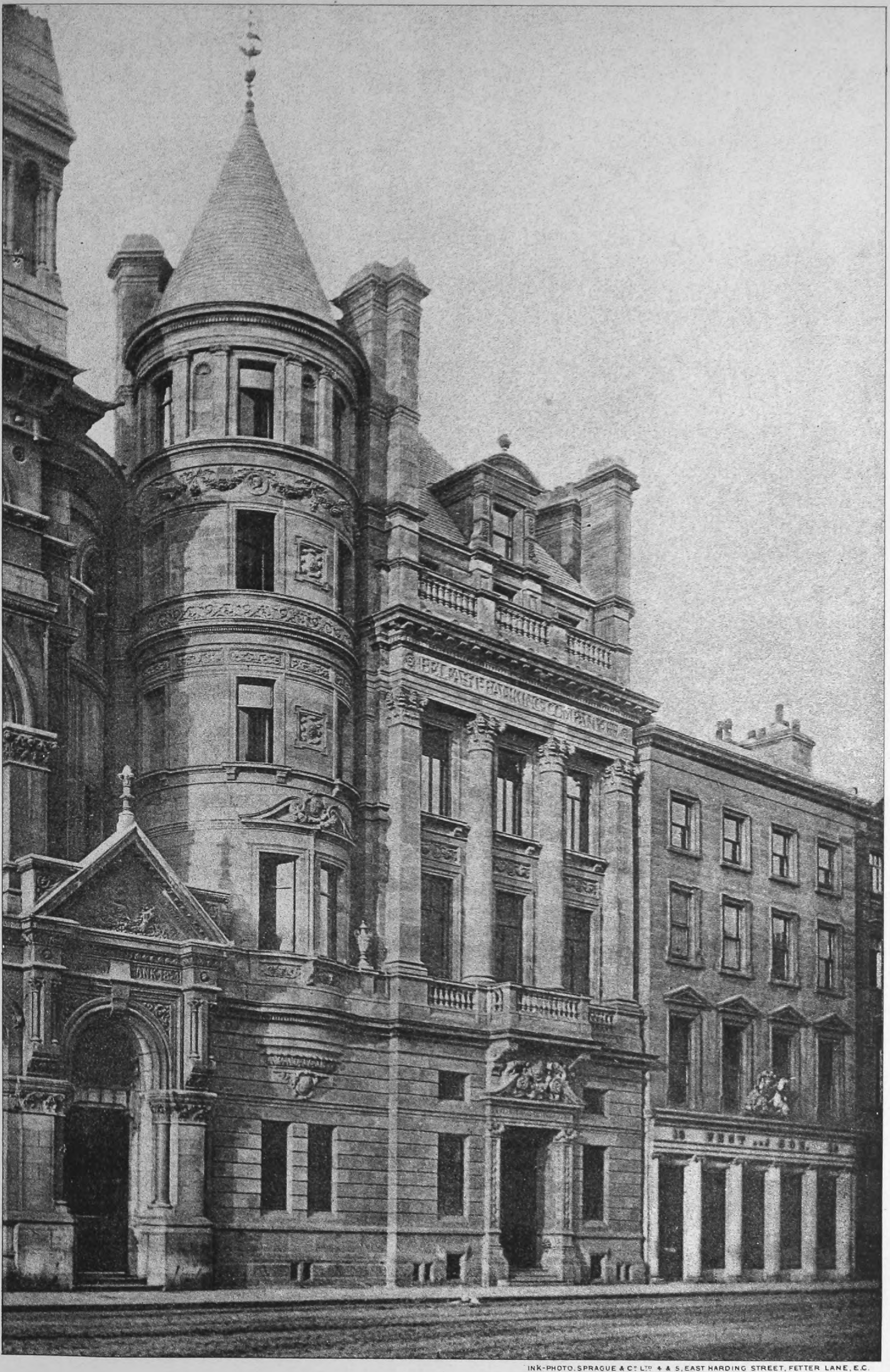
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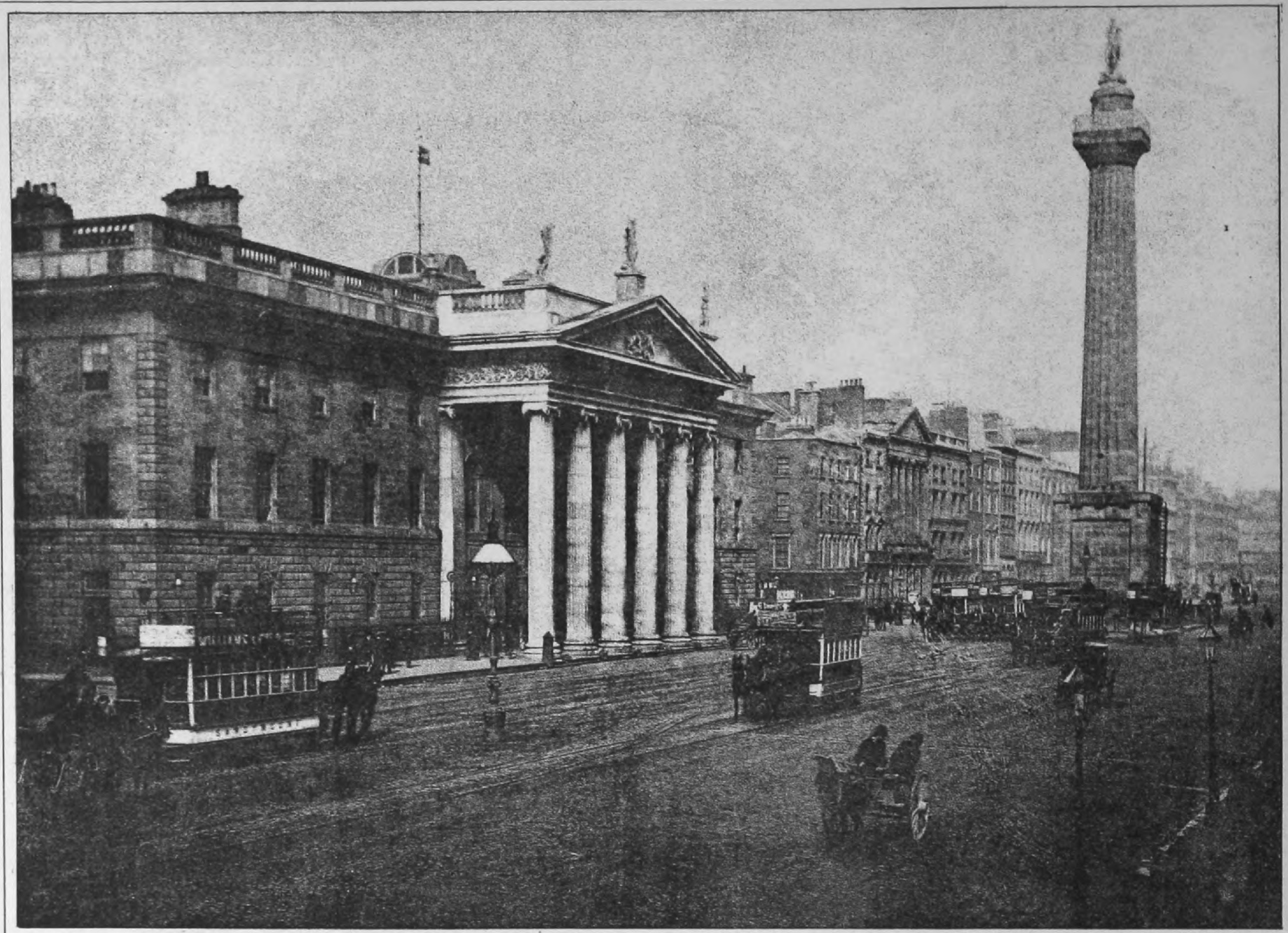

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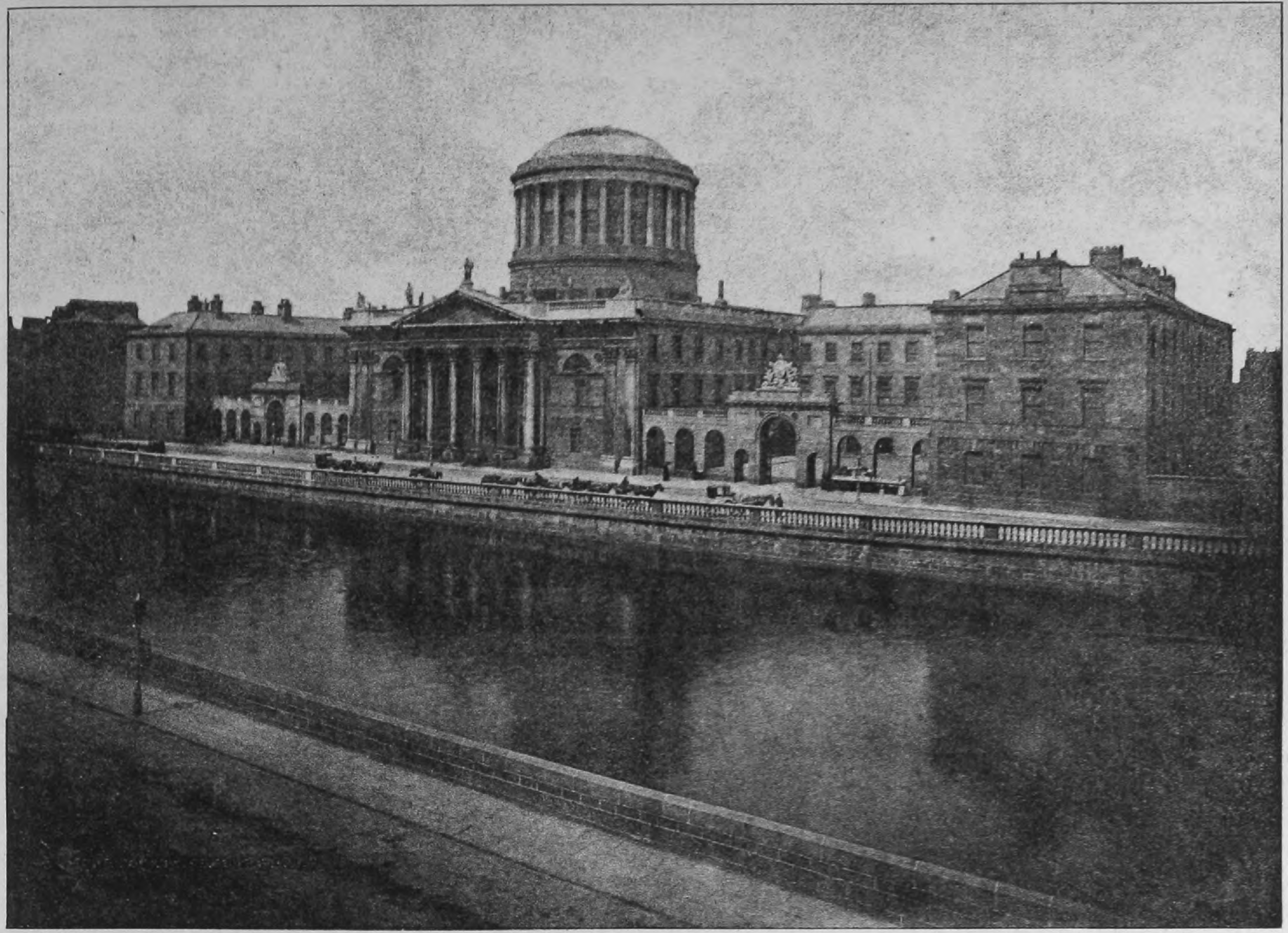

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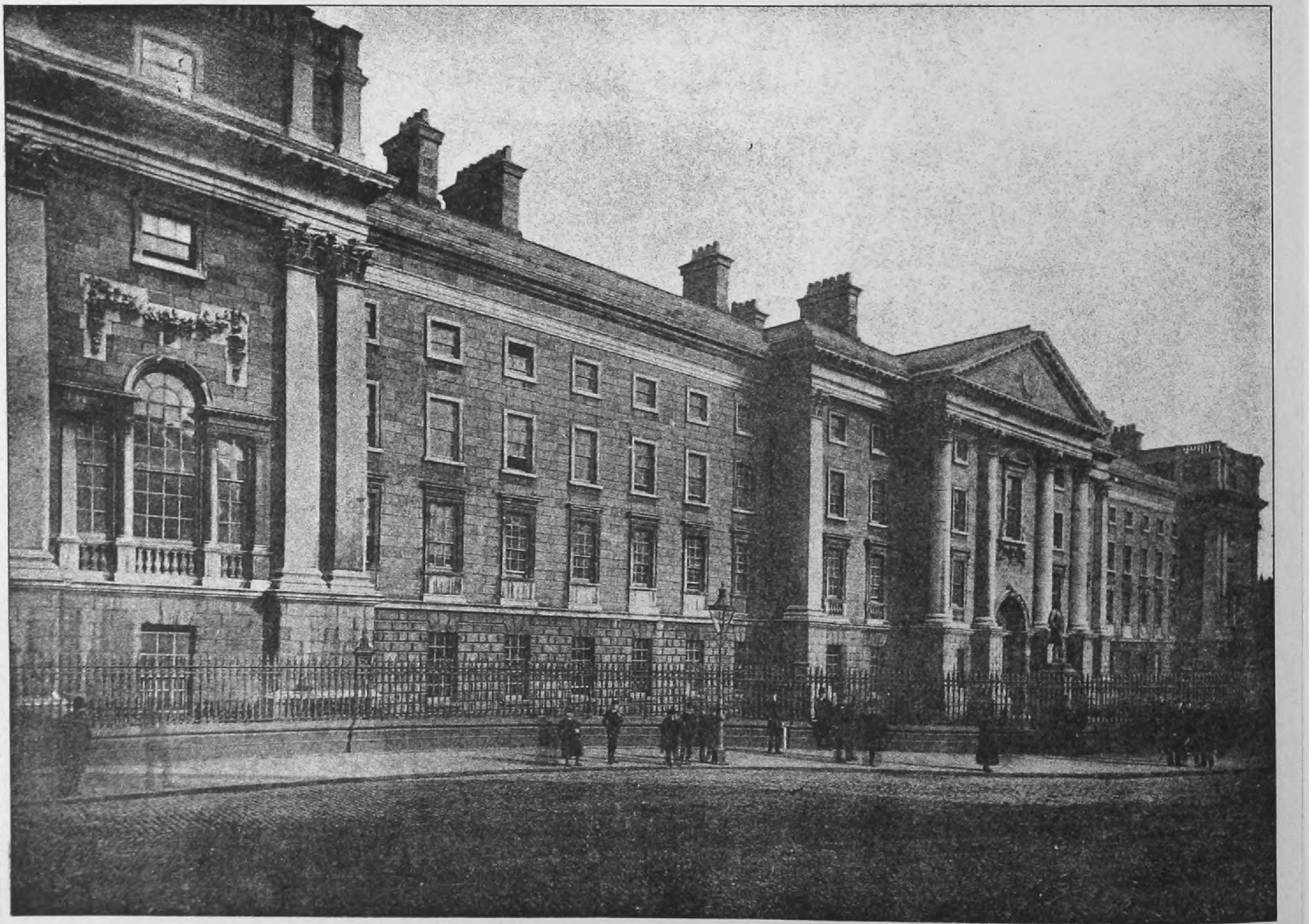

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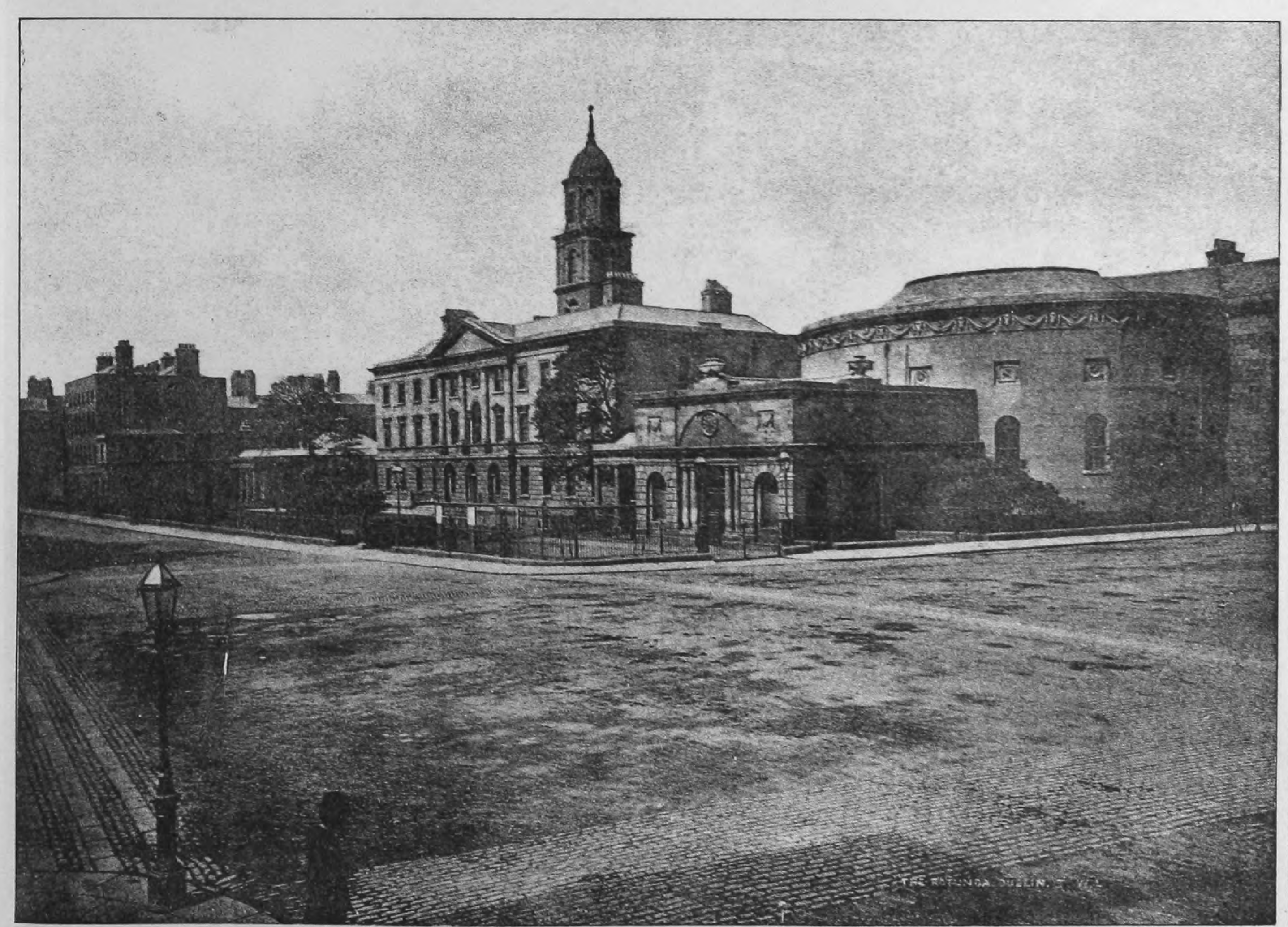

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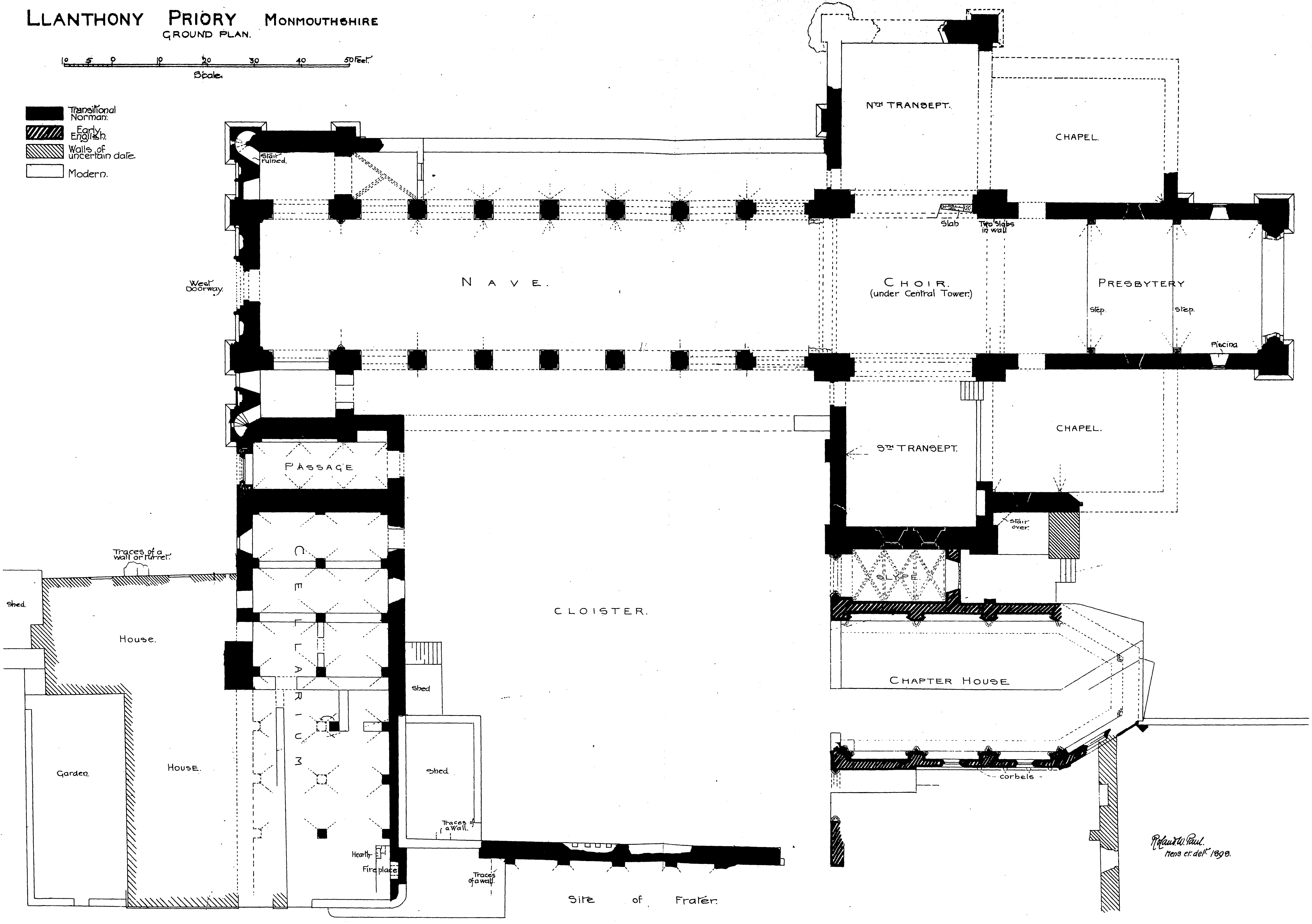
10 5 0 10 20 30 40 50 Feet.
Scale.
Transitional Norman.
Early English.
Walls of uncertain date
Modern.
Stair ruined.
West Doorway.
Nave.
Nth Transept.
Chapel.
Slab
Two slabs in wall
Choir. (under Central Tower.)
Presbytery
Step.
Step.
Piscina
Sth Transept.
Chapel.
Stair over.
Slype.
Passage
Cellarium
Cloister.
Chapter House
corbels
Traces of a wall or turret.
Shed.
House.
Garden.
House.
Shed
Shed
Traces of a Wall.
Hearth
Fire place
Traces of a wall.
Site of Frater.

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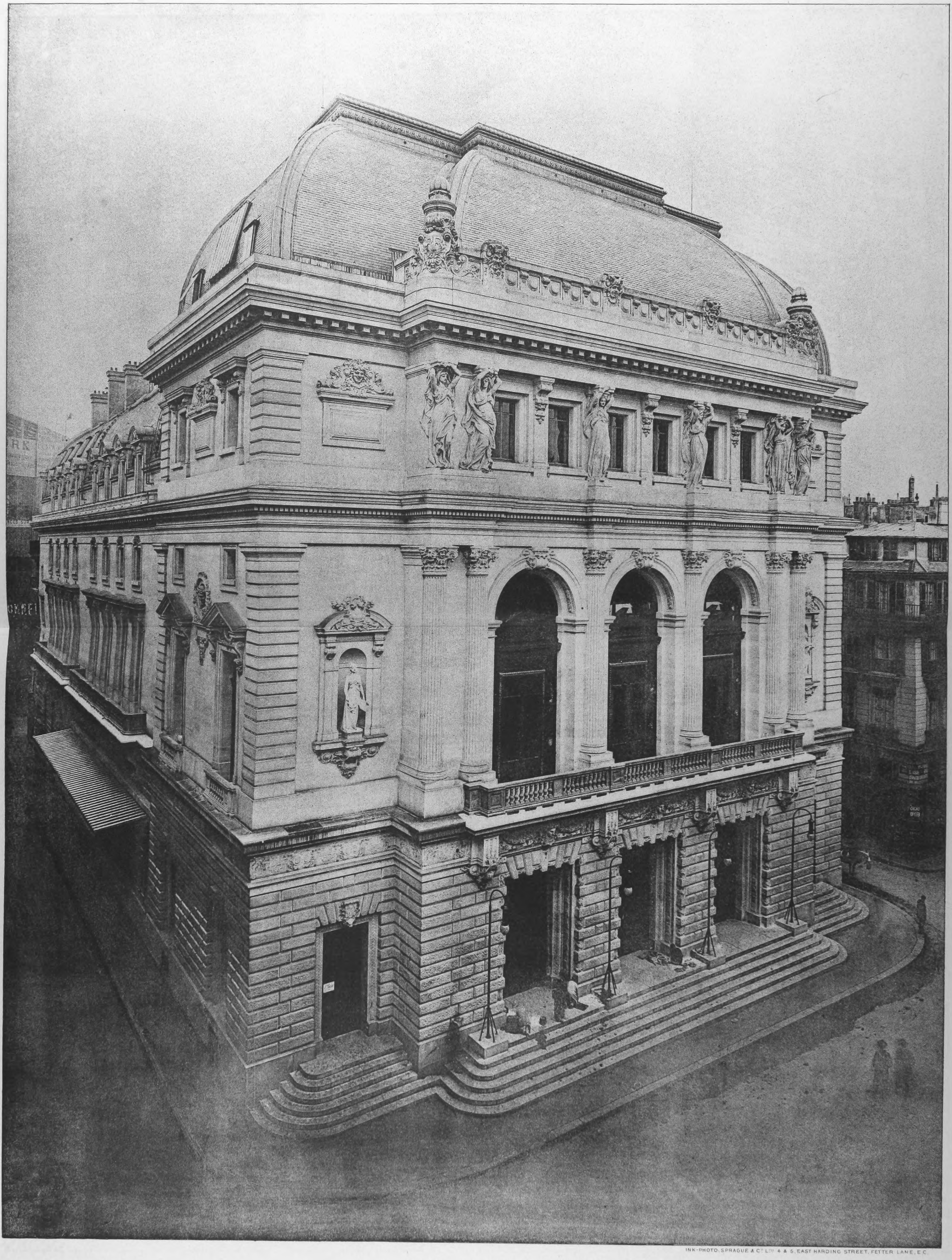

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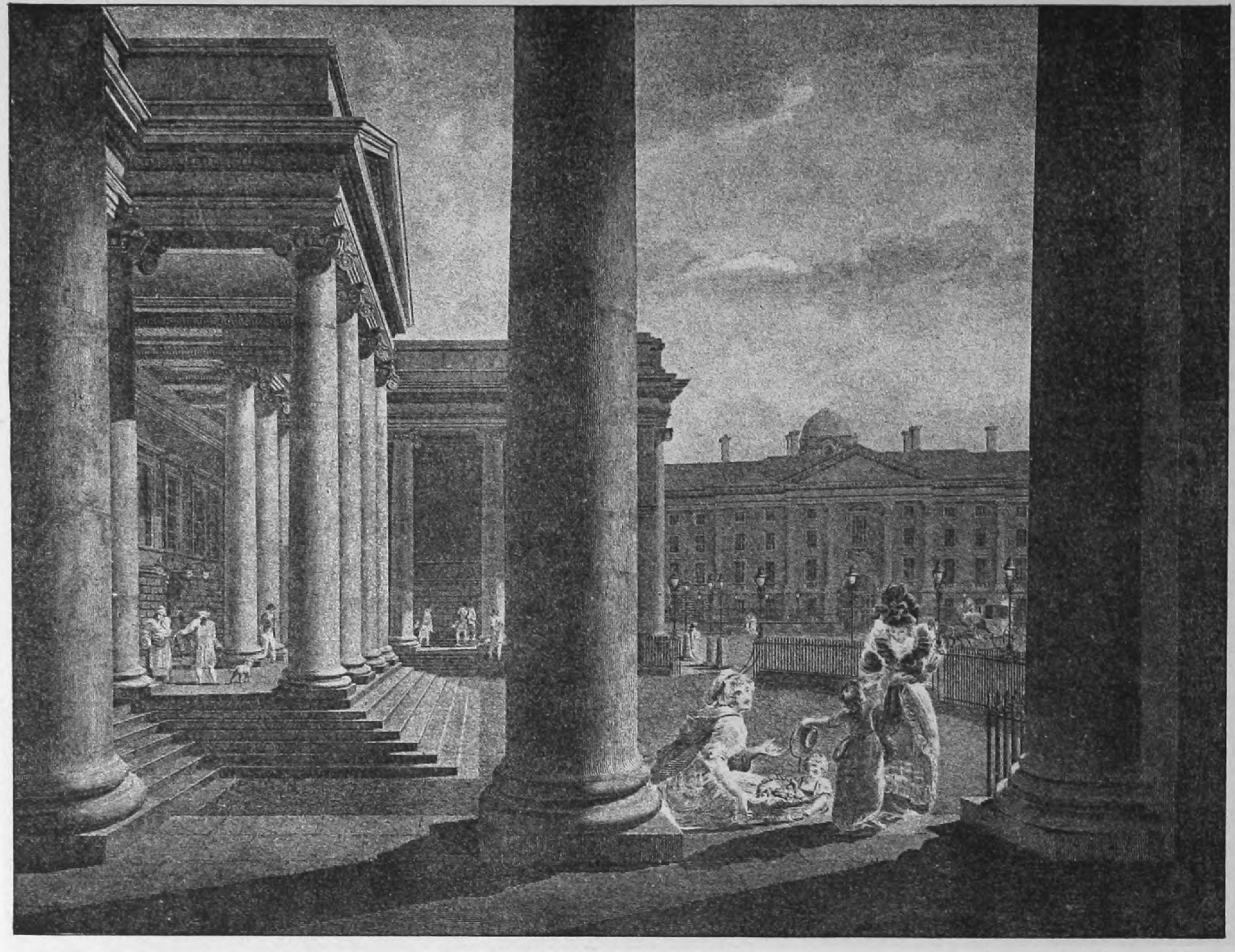

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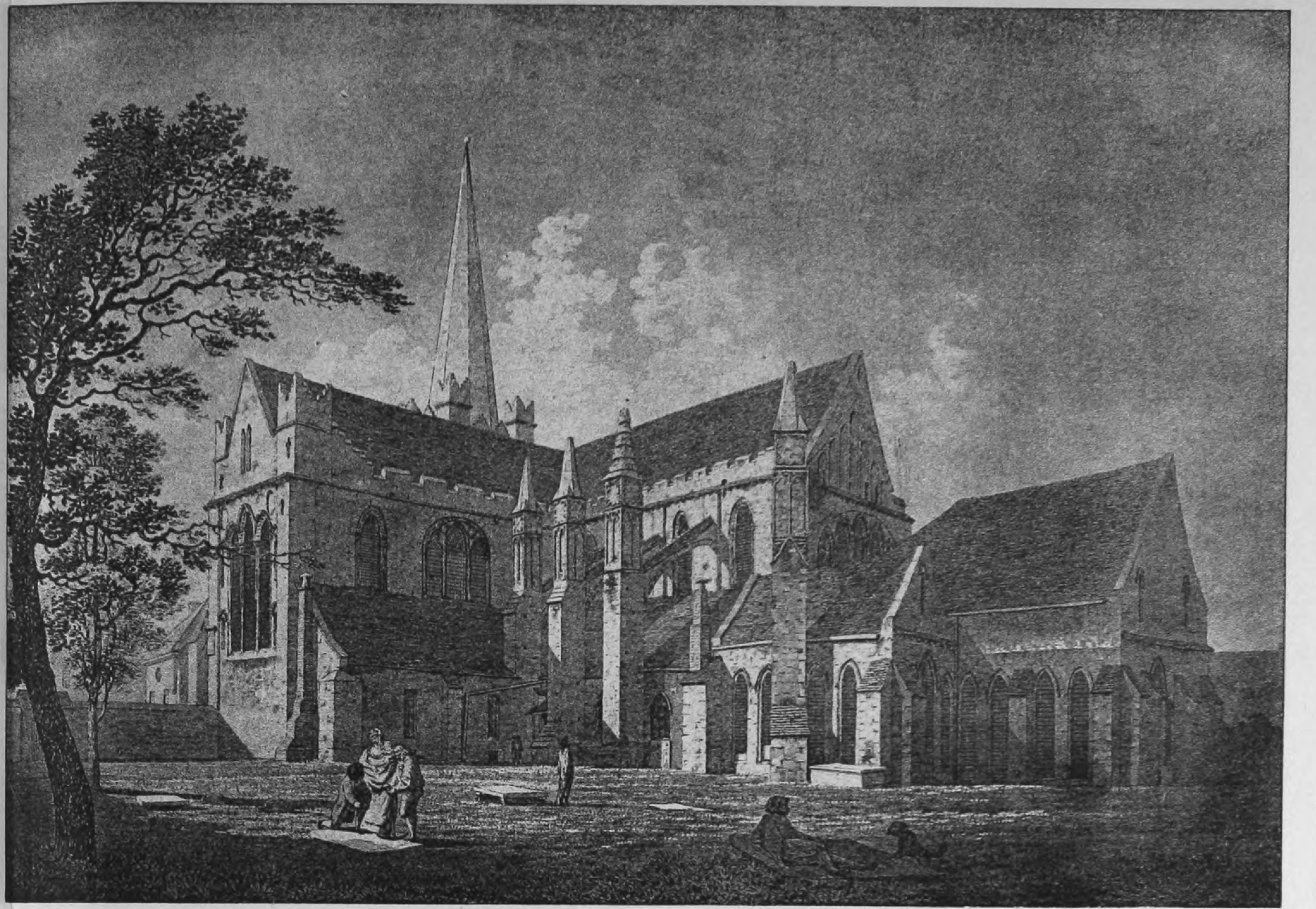

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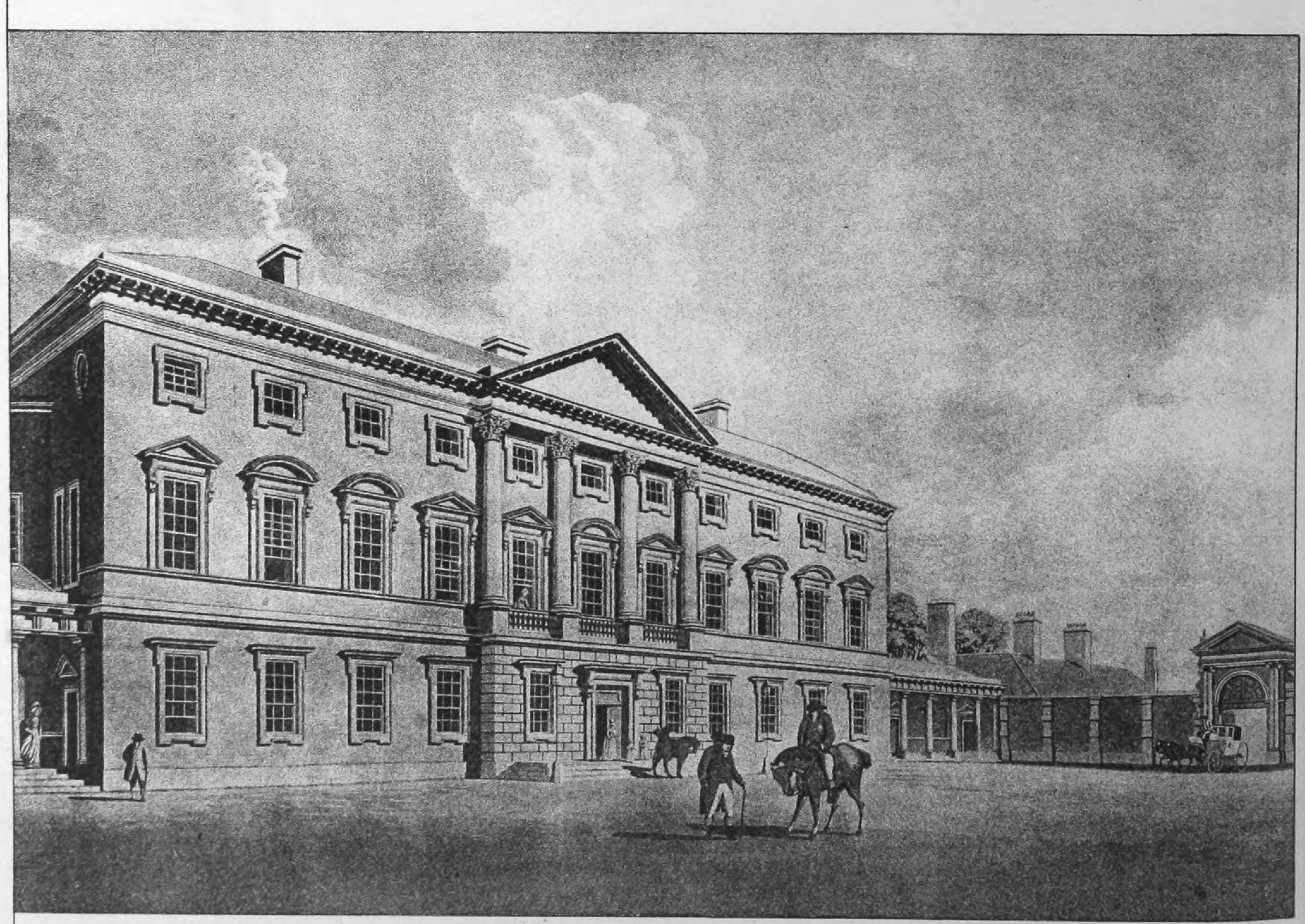

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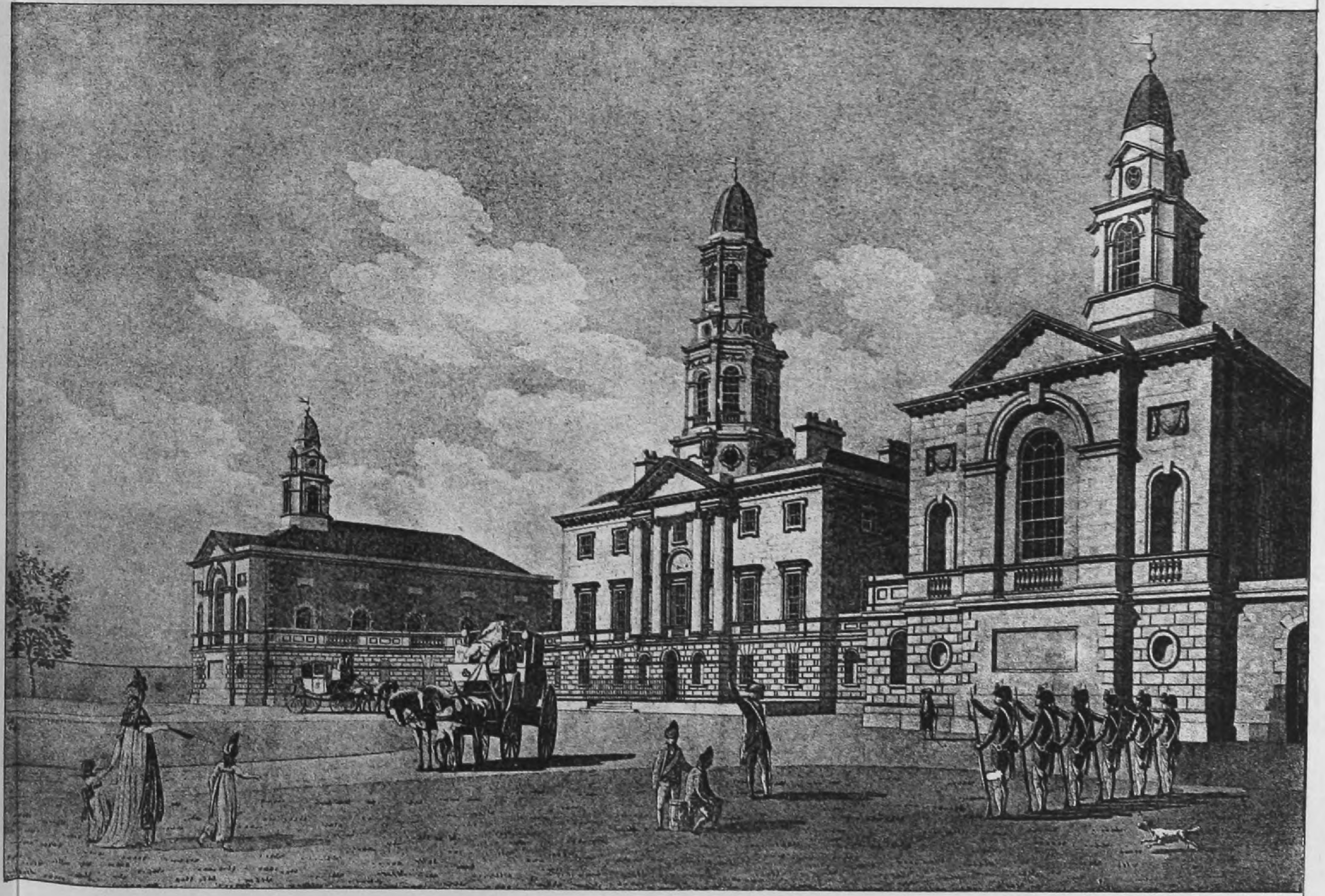

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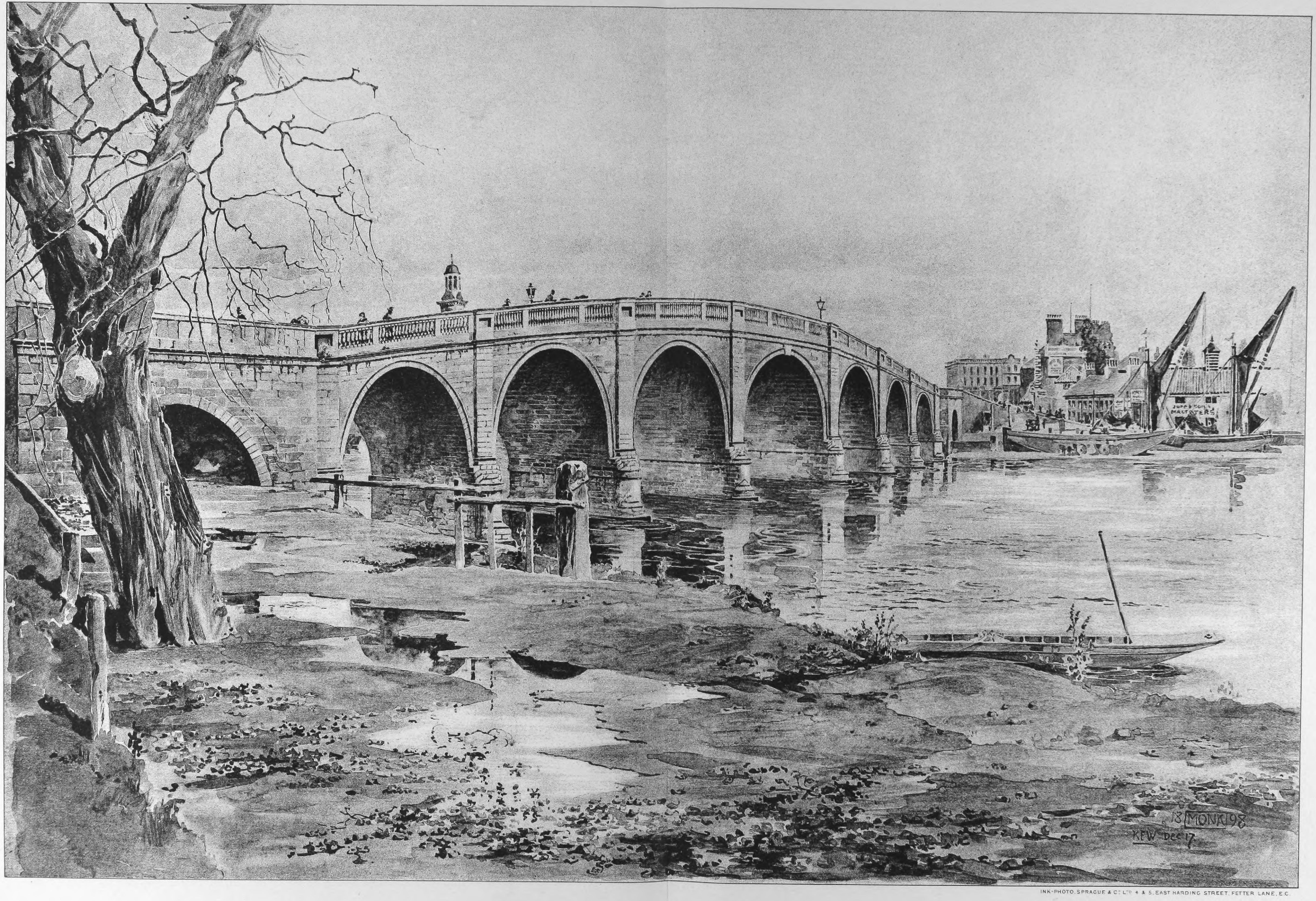
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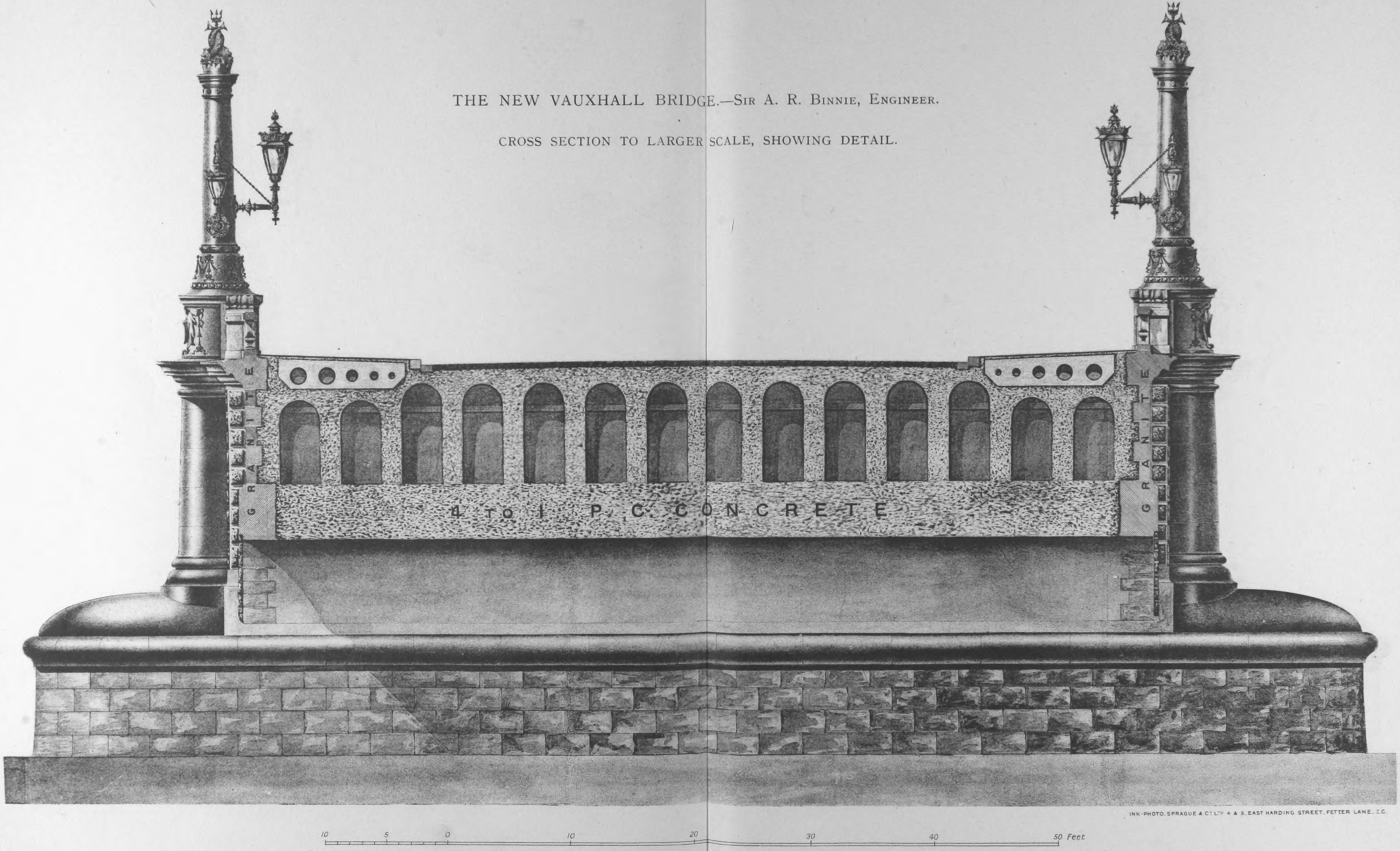
GRANITE
GRANITE
4 TO 1 P.C. CONCRETE
GRANITE
GRANITE
10
5
0
10
20
30
40
50 Feet

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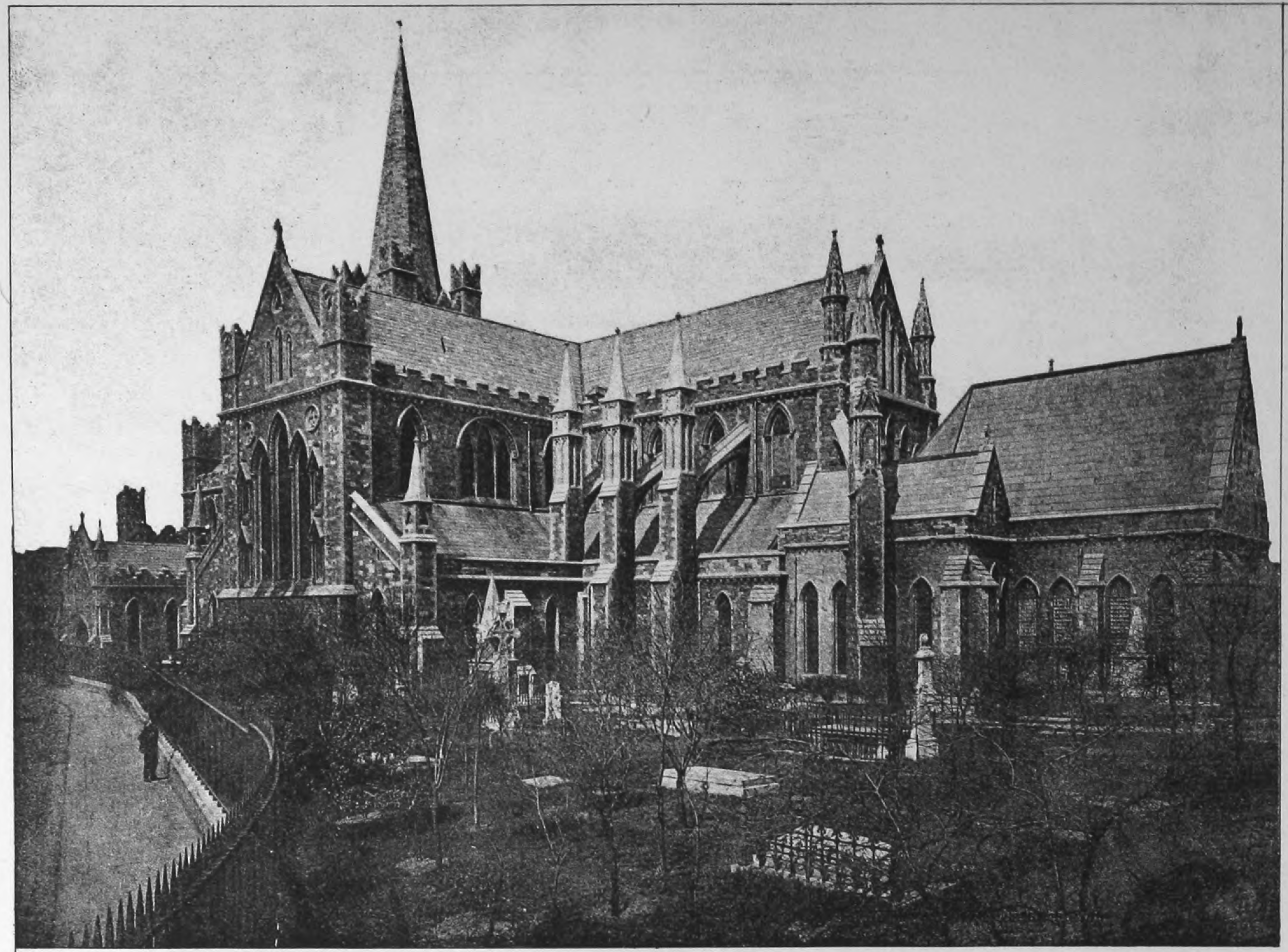
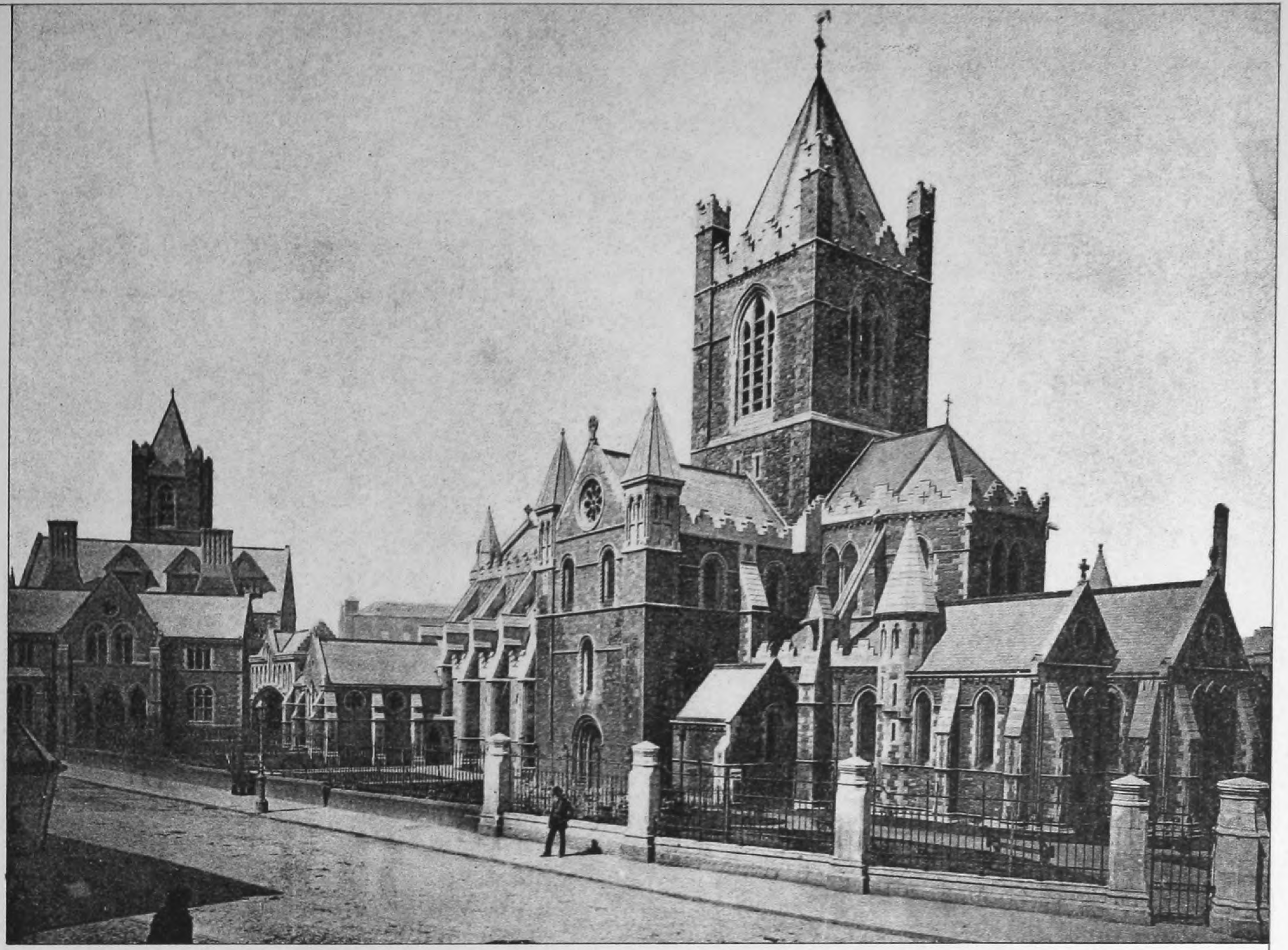
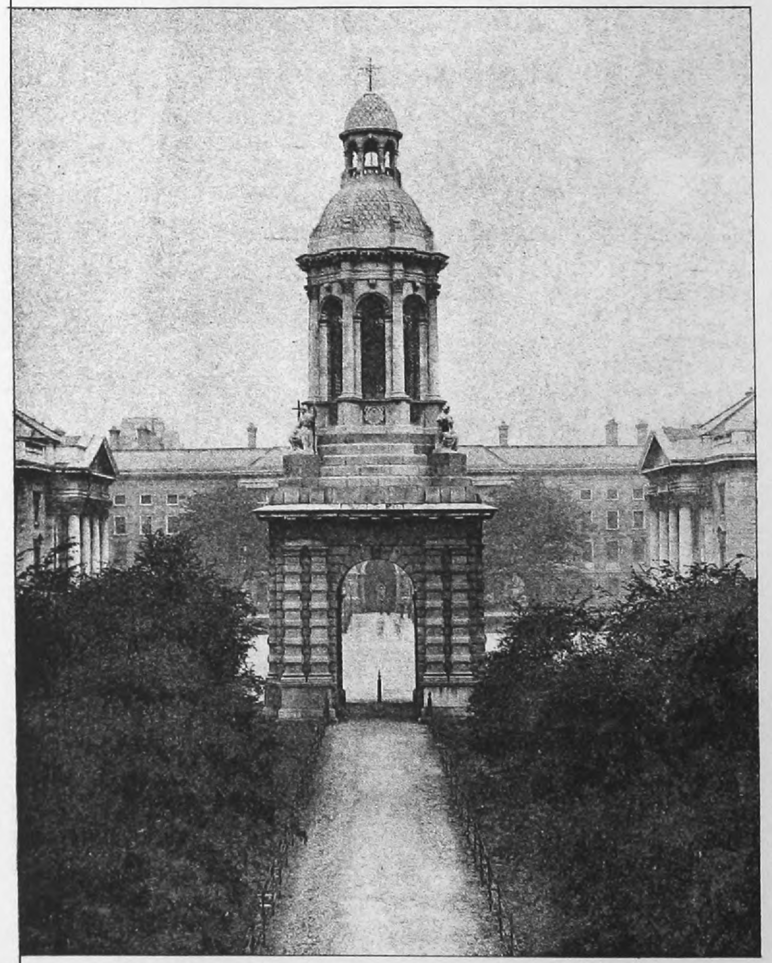


ST. PATRICK'S CATHEDRAL (AS RESTORED).

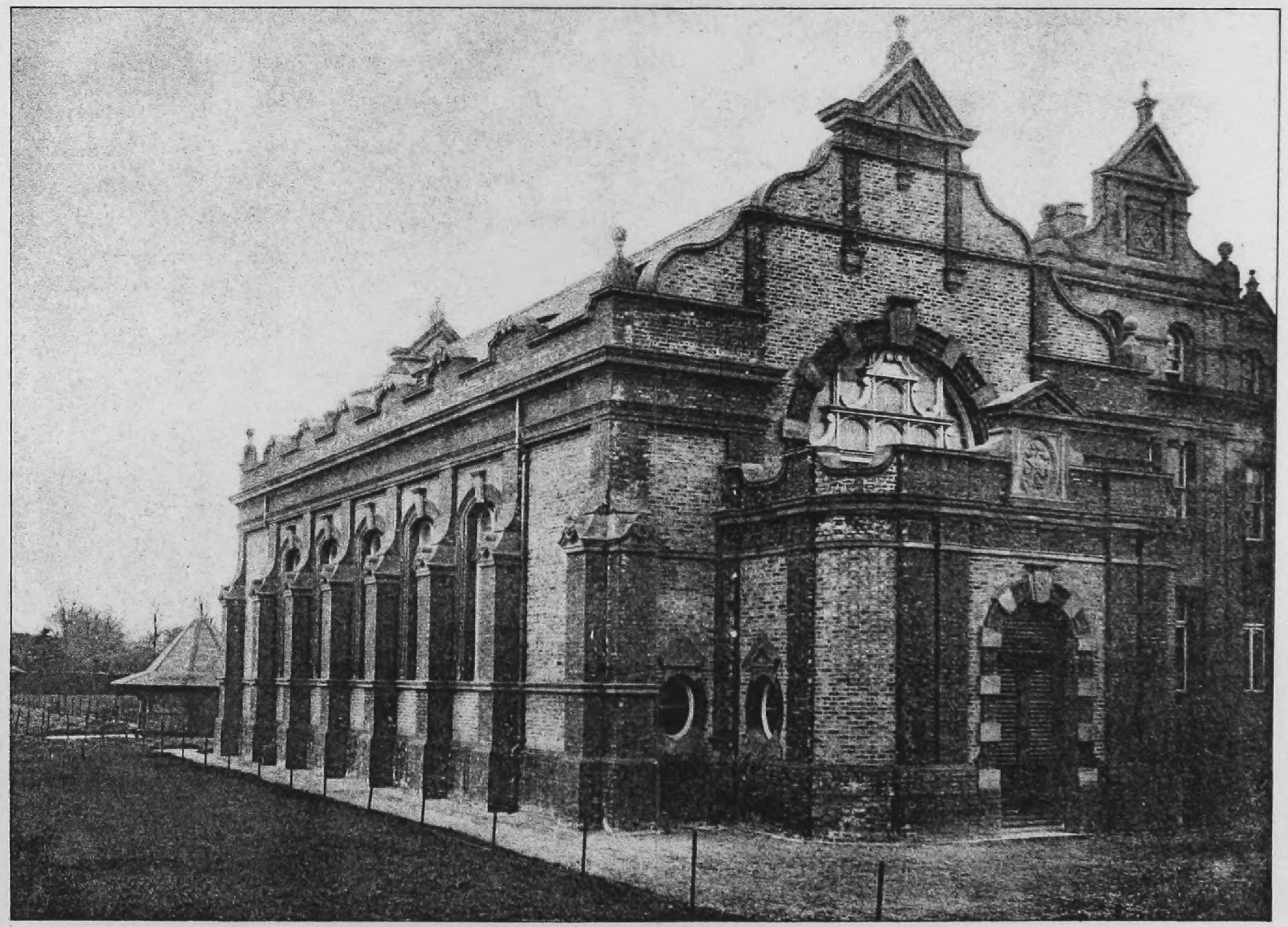


SYNOD HOUSE (G. E. STREET, R.A.)

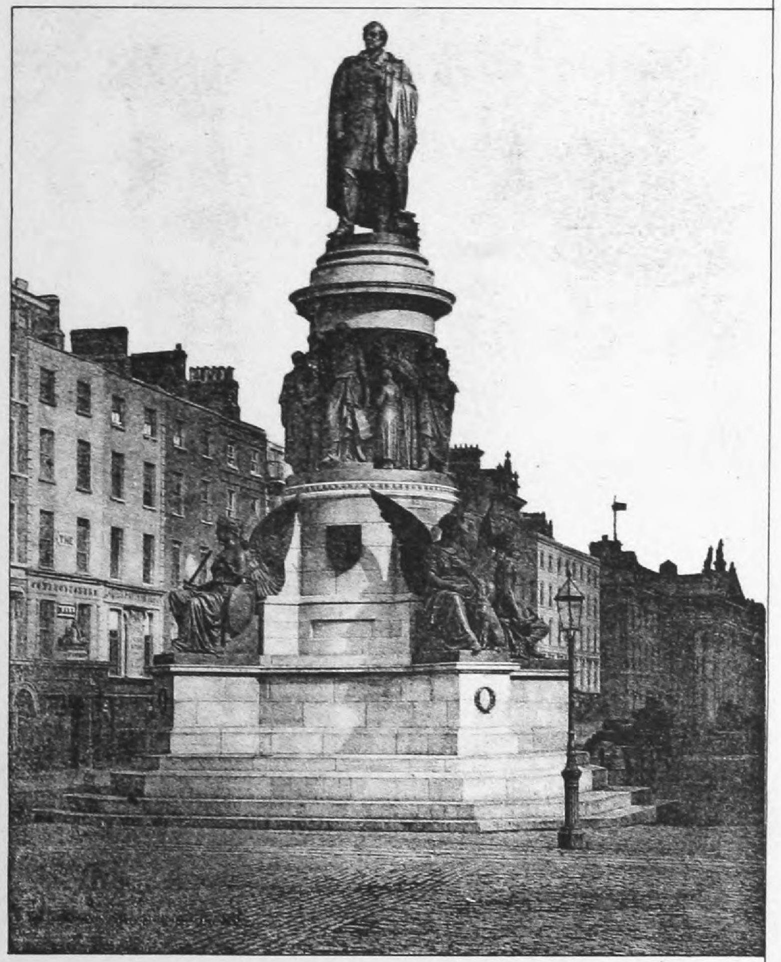
CHRIST CHURCH CATHEDRAL (AS RESTORED).



CAMPANILE, TRINITY COLLEGE (SIR CHAS. LANYON).



DRILL HALL (MR. W. M. MITCHELL, R.H.A.)



THE O'CONNELL MONUMENT.

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# DUBLIN ARCHITECTURE.

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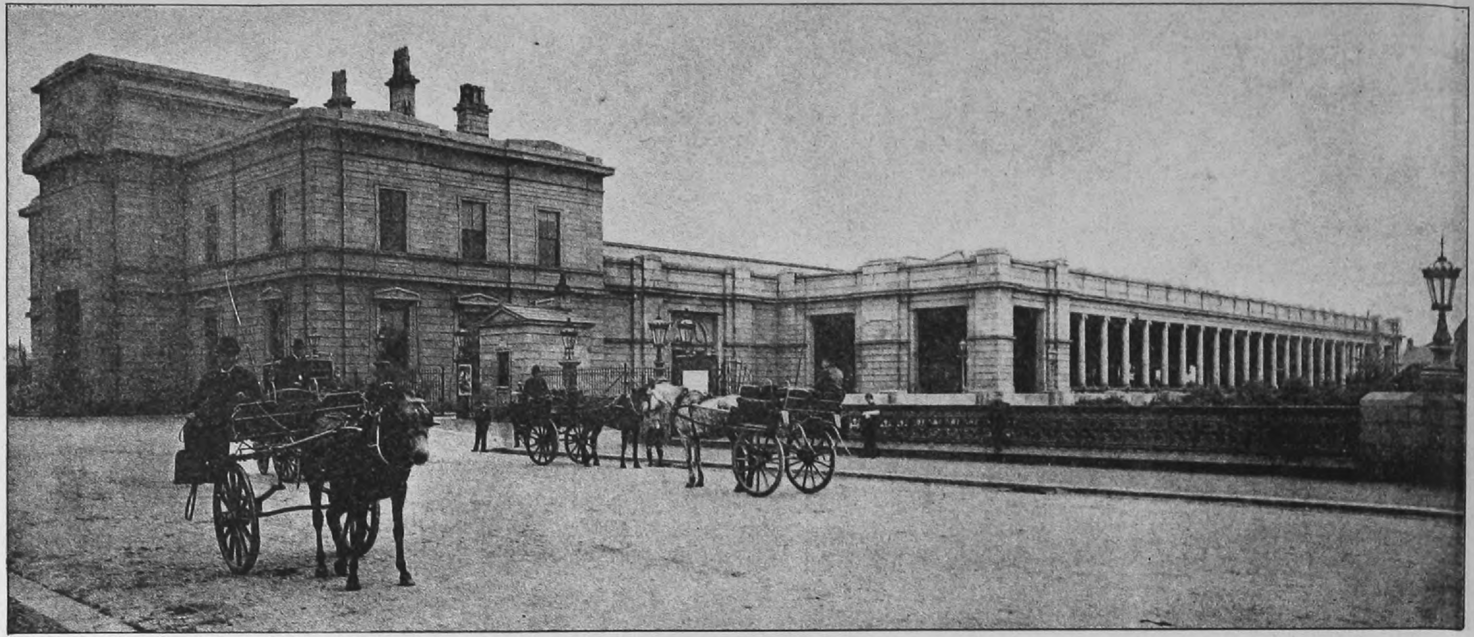
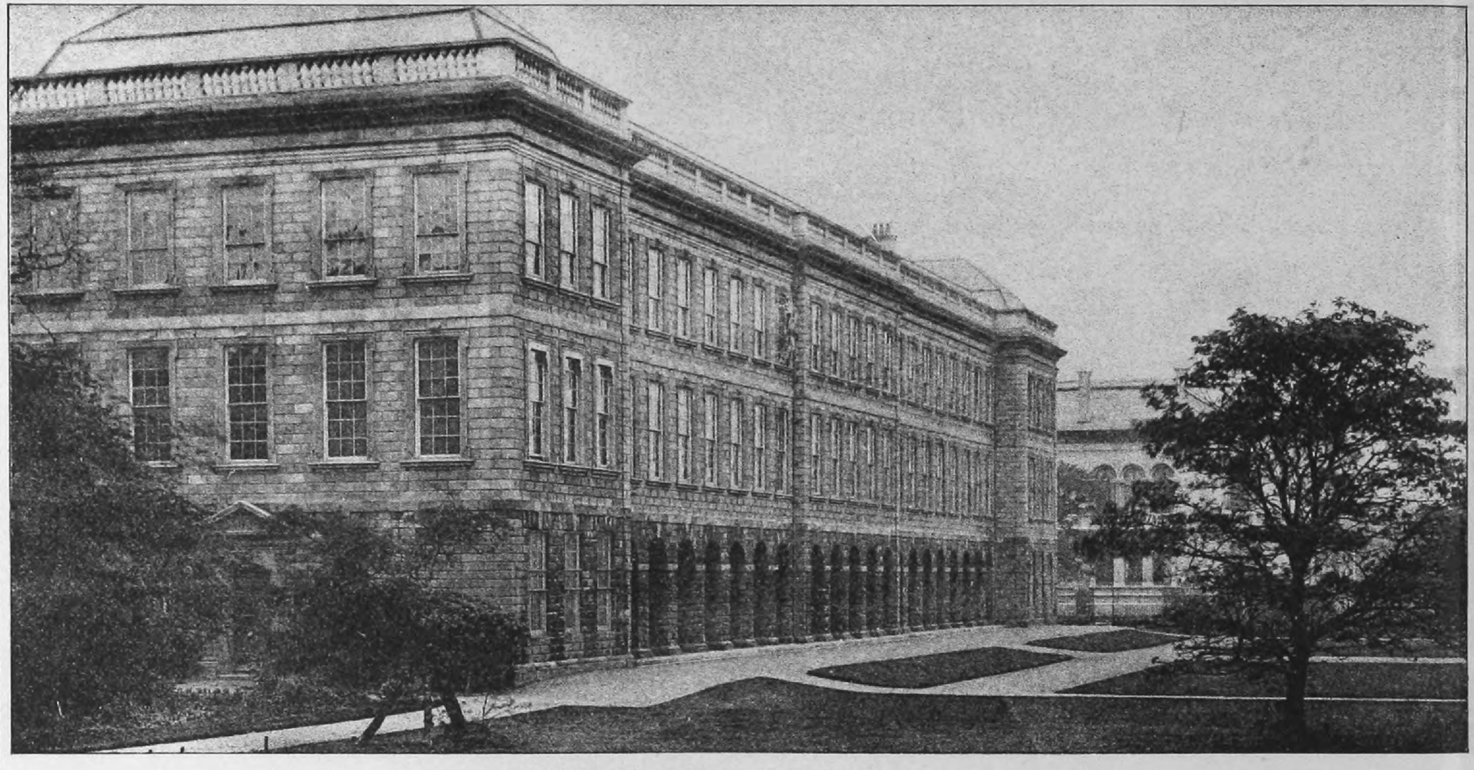
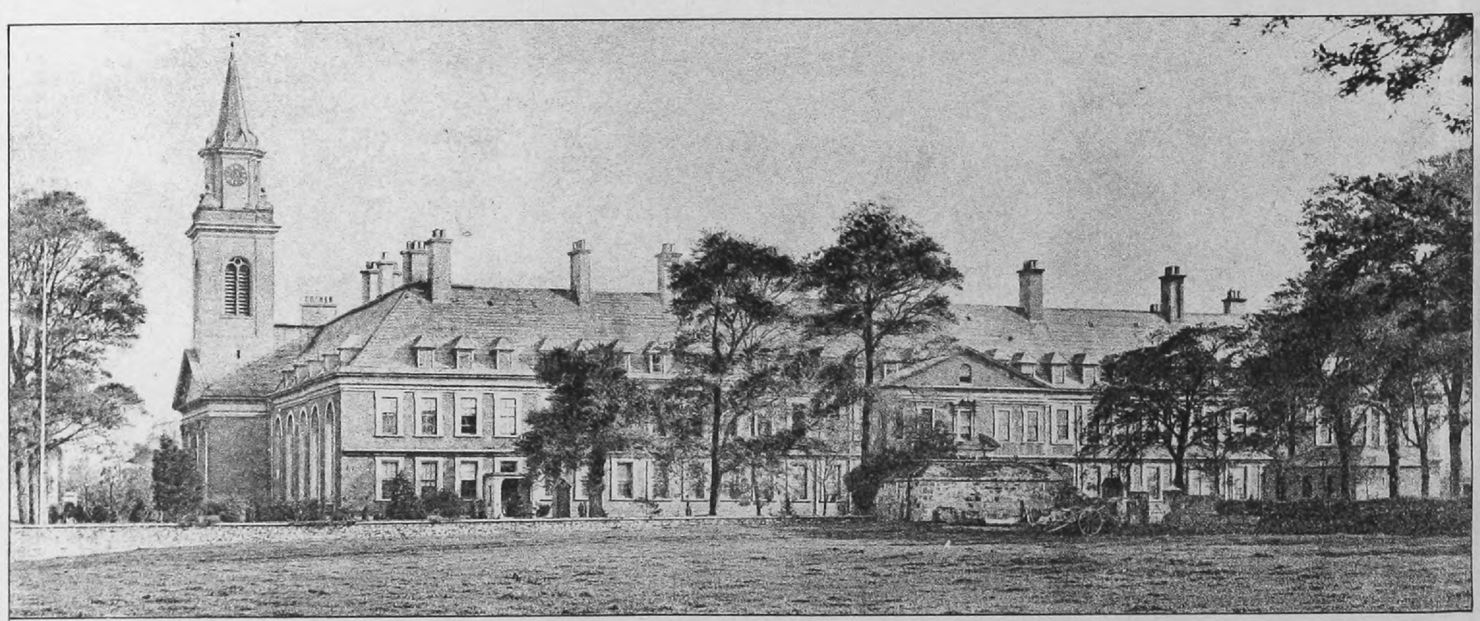


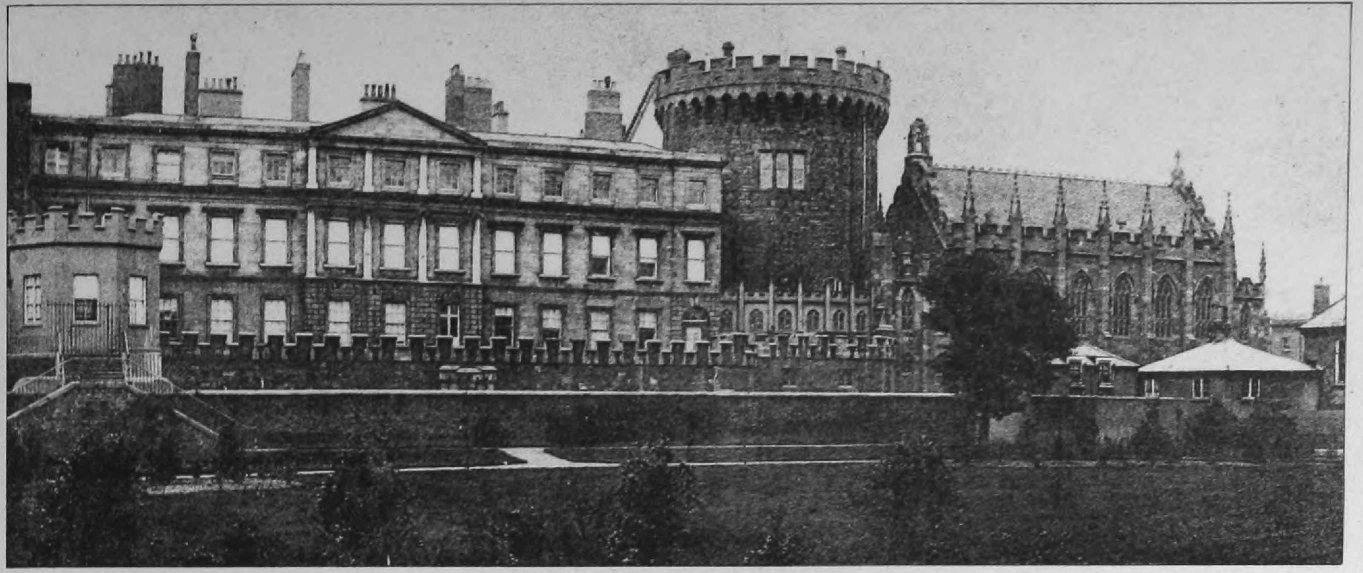
M.G.W. RAILWAY TERMINUS.



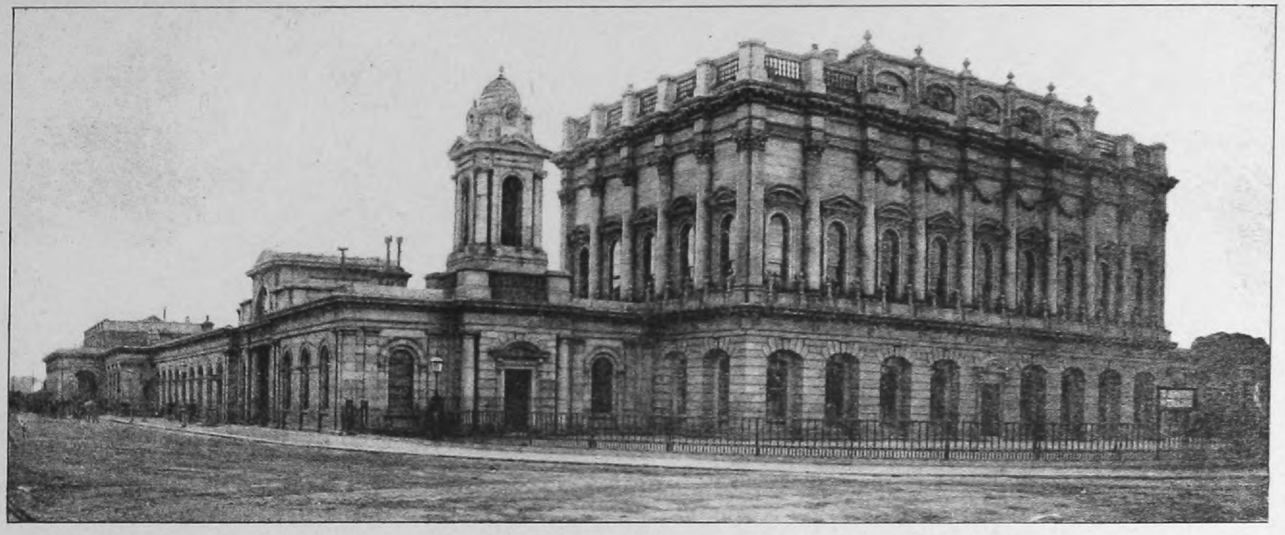
THE LIBRARY, TRINITY COLLEGE (THOS. BURGH).



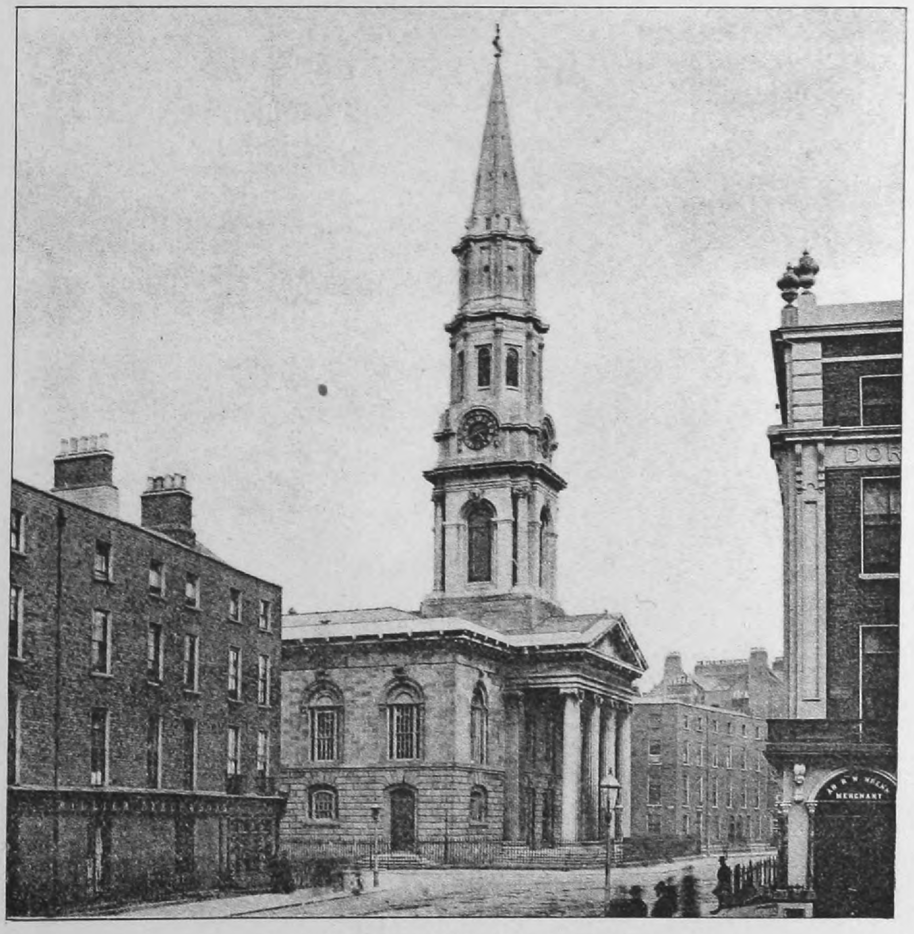
THE ROYAL HOSPITAL (SIR CHRISTOPHER WREN).



DUBLIN CASTLE. THE CHAPEL ROYAL (F. JOHNSTON).



KING'S BRIDGE STATION (SANCTON WOOD).



ST. GEORGE'S CHURCH (F. JOHNSTON).

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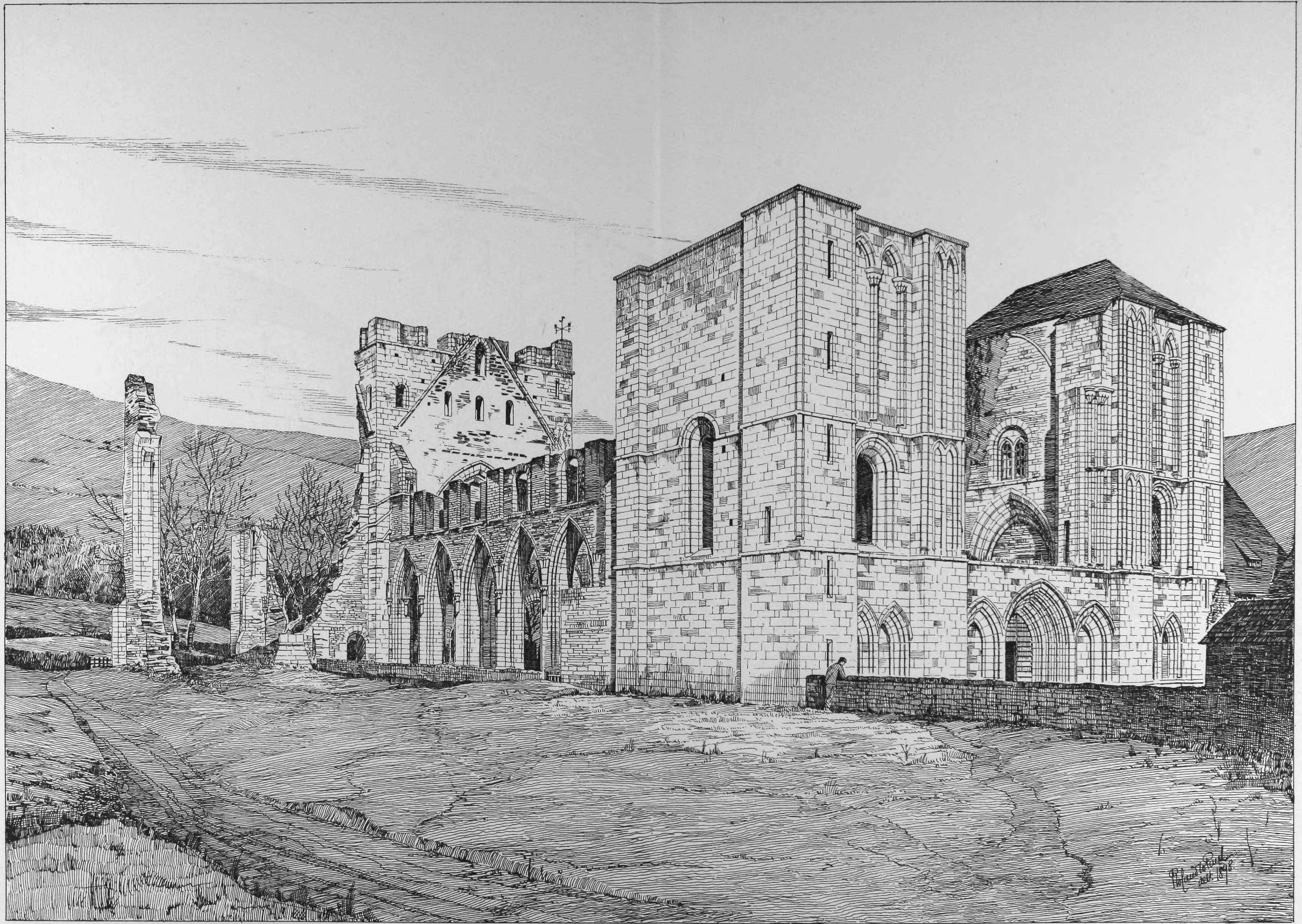
Roland W Paul
Sept. 1898

PHOTO-LITHO. SPRAGUE & C^o. L^{TD} 4 & 5, EAST HARDING STREET, FETTER LANE, E.C.

THE ABBEYS OF GREAT BRITAIN. No. 28. LLANTHONY.

DRAWN BY MR. ROLAND W. PAUL.

HALF ELEVATION.

GRADIENT 1 IN 42
RADIUS 9557 FEET
6 TO 1 P.C. CONCRETE
WOOD PAVI G
PIVOT
WO D PAVING
37·00
CONCRETE ARCH
CONCRETE WALL
SPANDRIL WALL
+32·50
4 TO 1 GRANITE CONCRETE
SPANDRIL WALLS 1. 10½ THICK
5. 6¾ CENT S
CONCRETE ARCH
4 TO 1 GRANITE CONCRETE
+31·11
6 TO 1 P.C. CONCRETE
EXPANSION JOINT
+32·50
SHORE SPAN
SPRINGING LEVEL
+13·50
T. H. W. +12·50
130. 6¾
INTERMEDIATE SPAN
144. 6¾
CENTRE SPAN
149. 9
4 TO 1 GRANITE CONCRET
6 TO 1 P.C. CONCRETE
PIVOT
GRANITE FACING
GRANITE
GRANITE FACING
ORDNANCE AT
−2·25
RADI 90 FEET
LOW WATER LEVEL
8 TO 1 P.C. CONCRETE
STEEL RAILS
E R T H A M E S
−14·25
6 TO 1 P.C. CONCRETE
−22·50
8 TO 1 P.C. CONCRETE
−32·50
56.0
Half Longitudinal Section on Centre line of Bridge
SCALE OF FEET
INCHES 12 0 5 10 20 30 40 50 60 70 80 90 100 FEET
6 TO 1 P.C. CONCRETE
−2·50
8 TO 1 P.C. CONCRETE
−32·50
38.0

HALF LONGITUDINAL SECTION.

THE NEW VAUXHALL BRIDGE.—Sir A. R. Binnie, Engineer.

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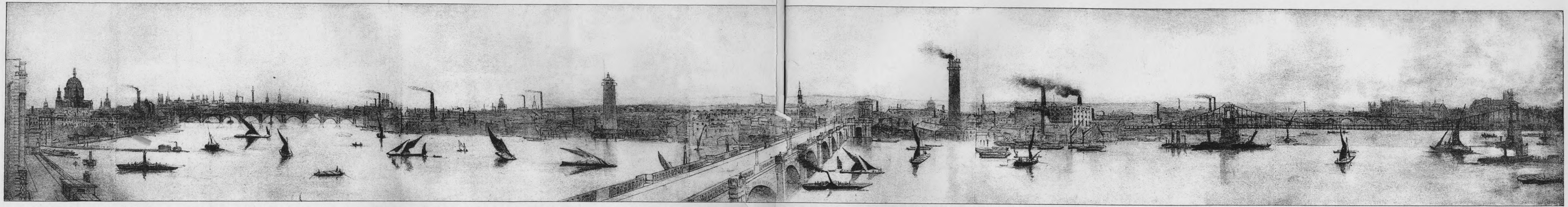
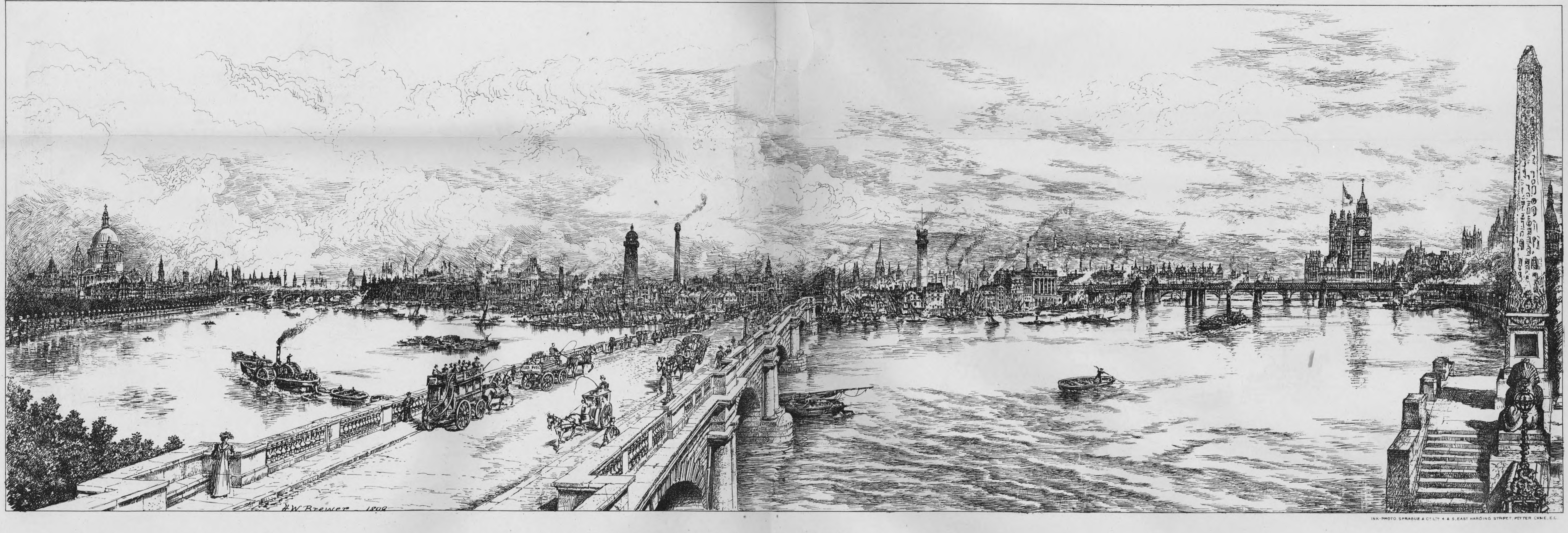


VIEW FROM A POINT NEAR WATERLOO BRIDGE IN 1848: FROM A SKETCH MADE ON THE SPOT BY "M.D." JULY, 1848.



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VIEW FROM THE SAME POINT IN 1898: BY MR. H. W. BREWER.

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JAN 18 1899

A HALF-CENTURY'S CHANGE IN LONDON.

# The Builder.

VOL. LXXVI. No. 2919. JANUARY 14, 1899.

## ILLUSTRATIONS.

Design for a Library Chimney-Nook.—By Mr. A. Finn Brophy ........ *Double-Page Ink-Photo.*
Workmen's Hall, Club, Savings Bank, and Offices, Birmingham.—Messrs. Essex, Nicol, & Goodman, Architects........ *Single-Page Ink-Photo.*
Additions to Town Hall Buildings, Clerkenwell.—Mr. C. Evans-Vaughan, F.R.I.B.A., Architect........ *Single-Page Ink-Photo.*
Royal Academy Travelling Studentship: Design for a Town Church.—By Mr. W. Hawke, A.R.I.B.A. ........ *Double-page and Single-Page Photo-Litho.*
Church for St. Luke's Parish, Darlington.—Messrs. Clark & Moscrop, Architects........ *Single-Page Photo-Litho.*

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## *Water Supply from the Chalk.*

### (SECOND ARTICLE.)*

THE distribution of water in the chalk is to a large extent influenced by the solid and superficial deposits lying upon that formation, and which frequently prevent rain from soaking into it over many square miles. The water level in the chalk under such deposits, where they are impervious, is maintained only by what can get there from the more favoured areas where the chalk crops out at the surface. Over a great portion of the London basin these overlying deposits are from 100 ft. to 350 ft. in thickness, whereof the uppermost portion (omitting the Drift and Bagshot sands) is a stiff, impervious formation, known as the London clay; beneath this comes a variable series of gravel, sand, and clay in thin beds, especially well developed in the southern and south-western parts of the basin, whilst these beds are paralleled in the western and northern part of the basin by a mottled clay, the two series being known as the Woolwich and Reading beds respectively. Sometimes they are developed together in the south-central part of the basin. With these we include the so-called Oldhaven and Blackheath series of the Geological Survey, made up of gravels and sands in North-west Kent, and pure sands in the eastern part of that county. Below all, comes a series of sands reposing directly on the chalk, the line of junction being well marked by a thin bed (1 ft. to 4 ft.) of large green-coated flints. These sands are called Thanet sands over a great portion of the basin, but are treated as part of the Reading series in the western and part of the northern sections.

In descending order, therefore, we get the following sequence:—

1. Drift: gravels, sands, brick earth, and clays.
2. Bagshot beds: chiefly sands, but many clay beds, and occasionally a bed of lignite.
3. London clay: sandy at top in certain localities, bulk of the formation made of clay, but basement bed of gravels and sands.

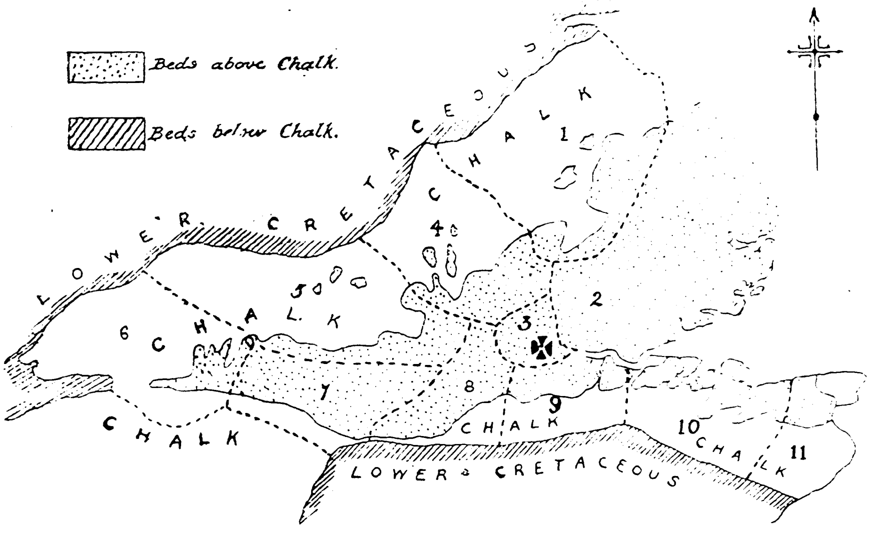

*Fig. 1.—Sketch Map of a Large Part of the London Basin, including North Kent, showing the Proposed Division of the Chalk Areas into Eleven Sections.*

4. Woolwich beds: gravel and sand, clay beds and partings, loam at base.
5. Reading beds: chiefly mottled clay, and (following the Geological Survey) sand at base. This latter frequently reposes on the chalk direct in those localities where the Thanet sands are absent, and the formation often dovetails into the Woolwich where the two formations are represented.
6. Thanet sands: green sand, loamy at base.
7. "Bull-head" bed: large green-coated flints.
8. Chalk.

The distribution of these beds over the area under discussion may be gathered on glancing at our sketch map (fig. 1). In this they are blocked together (excluding the Drift and chalk), and are distinguished by little black dots. Owing to local irregularities, the London clay may rest directly on the chalk, and the pebble beds of the Woolwich series have here and there cut their way through the underlying formations, and even into part of the chalk. At the same time, disregarding these little freaks, the succession is wonderfully constant, and certainly holds good over the greater part of the London basin.

The dotted area on the map may be regarded as impervious except at the fringe where the partially porous beds beneath the London clay commonly crop out at the surface. These latter are grouped together and are distinguished by a separate sign in other sketch maps of this article.

Many wells pierce these beds to the chalk, where a copious supply of excellent water is nearly always found. The chief difficulties in the way of boring operations are the large tabular concretions found on several horizons in the London clay, known as "septaria." The clay is readily pierced and, rarely, a sandy bed in it has yielded water. The base of the London clay and the Woolwich and Reading series offer many obstructions to the borer, especially where the sandy beds are water-logged, and the finer sand becomes, in consequence, a veritable "quicksand." This nuisance is much greater than the beds of pebble gravel so frequently met with on the same horizon. The Thanet sands usually present no difficulty, but the "bull-head" bed is tough and requires some breaking through. The water met with in all the beds on the way down from the surface proved itself very useful in supplying various public and private institutions many years ago; but for several reasons the water direct from the chalk beneath is now more largely preferred, and it is customary, in well-sinking, to line the tube or well so that the water from these beds shall not mix with that from the chalk, the tube being taken right down through them, and ending well into the chalk. Again, it has been found desirable to sink many feet into the chalk (not lined) to get the best results; it is not sufficient to just tap the chalk, where a large supply is required. Our object in broaching the subject of water supply from beds above the chalk is to show that there is no hope of a large public supply being obtained from them, and it is doubtful whether the water derived from those levels—at any rate, in the Metropolitan central area—would be permitted to mix with that from the chalk in any attempt to augment the supply that may be got from the latter.

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* For first article, see *Builder* of December 17, 1898.

We now turn to the distribution of superficial drift deposits. These may be classified for our present purpose into two groups, namely (1) those lying on the Tertiary beds (the dotted portion of the sketch [map, fig. 1) and (2) those resting on the chalk. Group No. 1 may be dismissed in a few words, for, lying for the most part on an impervious clay (London clay), they have no influence on the chalk water question. The rain falling on to them is either retained in the deposit, or is discharged from them into the nearest river. That water, enormous in quantity, which would find its way into the chalk if it were not for the intervening impervious clay, is thus lost for water supply purposes unless the water be taken from the river. Occasionally, however, fairly large volumes of water are discharged over the fringe of the outcrop of the London clay and the lower Tertiary beds beneath, and finding its way on to the chalk, is swallowed up by the latter formation, often through the medium of "swallow-holes." This water then becomes available from the chalk, which really imbibes a great deal in the manner indicated. Neither this group of the drift nor that reposing on the chalk are shown on our sketch maps—the scale of the latter being too small to permit of that being done.

Turning to Group No. 2, we find that the drift resting on the chalk is of variable lithological character, here a sand, there a clay, sometimes loamy brick-earth, and gravel. This drift is distributed along the river valleys and on the higher plateaux of the chalk plains. Where sand or gravel, or both of them, occur lying immediately on the chalk, rain water soaks easily through them and rapidly finds its way into the chalk, almost as though they did not exist—they are readily porous. But where the brick-earth is alone, or in conjunction with them on the chalk, there is a partial stoppage in the flow of the water, for unless the brick-earth is very sandy, but little water gets through into the chalk. Where the clay beds of the drift are developed, either singly or in company with either of the foregoing drift deposits, rain water cannot get through at all, though much of it may be discharged on to the surrounding outcrops of chalk, and is thus available. When it finds its way into a river it may be lost to us, unless the chalk were exposed farther down the river valley and was absorbent enough to abstract water direct from the river.

The influence of this drift on local water-bearing properties of the chalk is now well understood. The Royal Commission of 1893 found that, taking that portion of the Thames basin which lies above the intakes of the water companies, the total area of chalk in it is 1,005 square miles. Of this area there are 292 square miles covered with superficial drifts of a mixed or partly permeable, partly rather impermeable, character; 135 square miles are covered with pervious deposits, leaving 578 square miles, or rather more than half of the whole area, where bare chalk comes to the surface. If, however, we take the bare chalk, and the chalk concealed by a permeable cover to be the same (following the Commissioners), the whole area of readily permeable material forming the surface in this portion of the Thames basin is 713 miles.

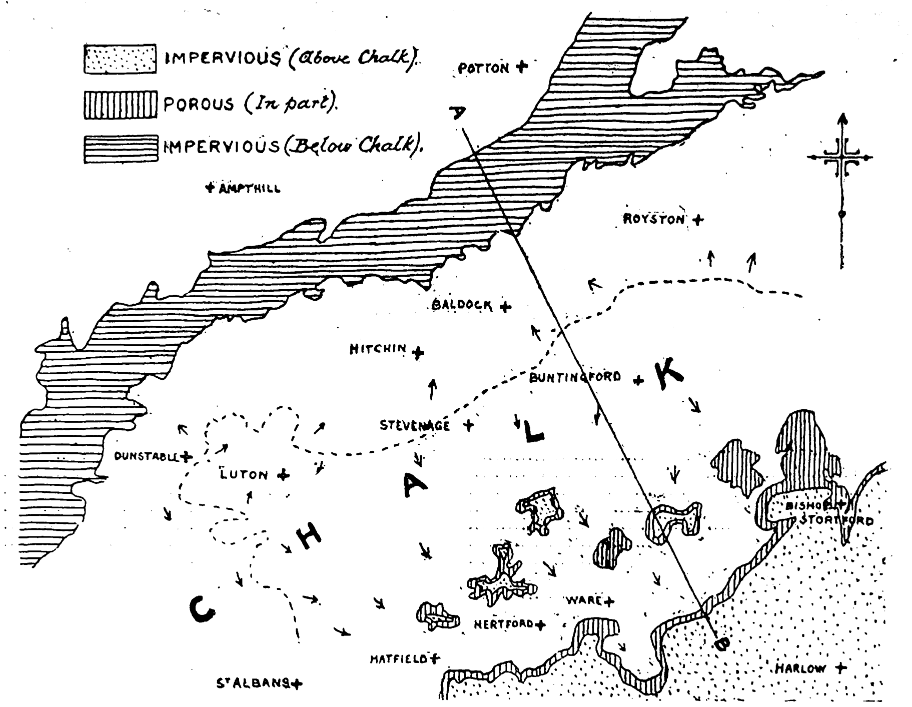


*Fig. 2.—Sketch Map of Part of Herts, showing the Porous, Partly Porous, and Impervious Beds, with the Outcrop of Chalk, in District No. 1.*

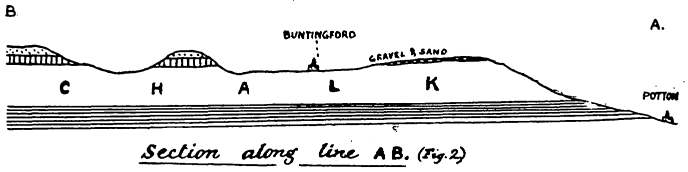


*Fig. 3.—Section through District No. 1.*

In regard to another area, lying to the east of the Kent Water Company's ground, but to the west of the Medway, the late Mr. Topley has estimated that the total chalk area amounts to 78 square miles. Of these, 47 are bare chalk, 18 mixed drifts, and 13 chiefly permeable outliers and spurs of Lower Tertiary strata. The total extent of the chalk east of the Medway amounts to 361 square miles, whereof 207 are bare chalk, 136 mixed drifts, and 18 chiefly permeable Tertiary strata.

As the result of separate and special investigations by Mr. Middleton and Mr. Topley, the conclusion arrived at in another area, the Lea Valley above Feilde's Weir, is about 422 square miles. This has been divided as follows:—

| | Sq. miles | Sq. miles |
|---|---|---|
| Bare chalk ... ... ... ... ... ... | 95 | |
| Chalk covered with permeable beds ... | 50 | |
| | | 145 |
| Chalk covered with mixed beds, partly permeable and partly impermeable ... | 60 | |
| Impermeable beds draining on to the chalk ... ... ... ... ... ... | 146 | |
| Impermeable beds not draining on to the chalk... ... ... ... ... | 71 | |
| | | 277 |
| Total ... ... ... | | 422 |

We shall find these figures useful when dealing with the water-bearing capacity of the chalk in the eleven separate areas (see fig. 1), and in the summary which we propose to give.

Let us now consider more in detail the areas marked out in fig. 1, which, as the reader will have noticed, correspond with the divisions made in our previous article (December 17, 1898 (pp. 564-7). The cross in the centre of the diagram (in district No. 3) marks the position of London. It will be seen that the sketch map comprises more than the London basin technically so-called, even if we include the north Kent area as being within it, as geologists mostly do. We think the Commissioners might have materially added to the interest of the inquiry (1893), and have given the chalk a better chance, had they assumed that the water in the chalk immediately outside the London basin was also largely available as a source of supply. It is admitted that water thus obtained might have to be brought over into the watershed at the surface, and the engineering part of the problem might thus have to be considered apart from a general scheme of getting the water within the watershed, but the added engineering does not amount to even the shadow of a difficulty, and could be easily overcome. If this great chalk area just outside the basin is admitted for supply purposes, and we propose that it should, the usual figures relating to the outgift of water from the chalk are capable of great augmentation. Moreover, this places the chalk water supply question in a totally different and more serious light, as we shall see.

*District No.* 1.—The area comprised within this is roughly sketched in fig. 2, and the general structure of the ground may be better understood on examining the section, fig. 3. As before mentioned, this district is already extensively drawn upon for the public supply. The New River Company has captured the whole of the Chadwell spring, which rises from the chalk at Amwell, near Hertford. The flow of this spring is very variable, according to seasons of drought, which seems to show that the bulk of the water comes from but little depth from within the chalk. Its maximum flow per day is about 4,000,000 gallons, but sinking as low as 500,000 gallons per day in very dry weather. It has, however, sometimes averaged over 4,000,000 gallons a day for a year. In addition to this, the same company takes a considerable quantity from wells, by pumping, three wells being situated near Ware, others at and near St. Margaret's, and between Broxbourne and Cheshunt, at Cheshunt, near Enfield, at Edmonton, Hornsey, and New Southgate. The average amount taken from these wells in 1891 was 8½ million gallons, and the wells of this company, no doubt, yield much more at the present time. We shall have to make a slight reduction on this figure, as some of the wells (at Hornsey and New Southgate) are situated just outside our district No. 1. The East London Company also derives a considerable quantity of water from the chalk of the Lea Valley, the precise amount of which, however, we are not aware of at the present moment. It amounted to 1,750,000 gallons in 1891, and will now, probably, have to be doubled, or trebled.

Sir John Evans has estimated that the New River and East London Companies were taking, in 1891, about 11,000,000 gallons of water daily from the chalk; and, at the present time, we may assume that they get at least 14,000,000 from that source. That does not by any means exhaust the available supply, and the 1893 Commission found that even in very dry years the companies could calculate on obtaining at least 40,000,000 gallons a day from wells in the Lea valley alone. It was a pity that this promising information did not suggest to the Commissioners the advisability of more closely studying the chalk areas to the north-east and south-west of that valley, and of paying the same attention all round to chalk in the western parts of the basin.

It should be borne in mind that a great many wells, other than those already mentioned, exist in this district No. 1. Mr. Whitaker, who has always taken a great interest in borings, records practically, all of them, though we do not often see information as to the output of the wells. We select a few within our district either sunk direct into the chalk, or through Tertiary beds down to it. These are for the most part wells sunk by local waterworks companies or district authorities.

Abbots' Langley waterworks; water level, 5½ ft. down.

Barnet waterworks; water rises to 155 ft. from surface, and is lowered by pumping to 186 ft. Very copious yield.

Bushey; Colne Valley waterworks. Old well (1876) yielded in March, 1886, about 820,000 gallons per day; in May, 1887, 650,000 gallons; in 1881, the pumps having been lowered 20 ft., about 1,000,000 per day were obtained. A new well was sunk in 1885-7, and joined to the old by a tunnel, when the water flowed from the top of the bore-hole at the rate of 656,000 gallons per day, which amount has subsequently decreased, as recorded by Mr. Whitaker, to 555,000 gallons per day.

Gade Valley; Paper Mills, three wells. (1) Apsley Mill; supply 260,000 gallons per day. (2) Nash Mill; supply 467,000 gallons per day. (3) Home Park Mill; supply 473,000 gallons per day.

Watford; Local Board. Estimated supply 792,000 gallons per day.

Some of these wells, as at Watford and Bushey, are on the borders of our districts Nos. 1 and 4, but are included here for convenience, as much of the inquiry made in recent years includes both the valleys of the Lea and Colne. A cry was raised that the water abstracted had already depleted the available supply from those parts of Herts, and the 1893 Commission sent Mr. Middleton to inquire into the matter. As was anticipated, he found that the reports were without foundation, such alleged depletion being merely seasonal variations in water-level. He discovered that there was no reliable evidence of the permanent depletion of any well except from local pumping, and the evidence regarding the drying up of certain wells was confined (except as regards local pumping) to such as were sunk in a high-water season, and were not sufficiently deep to meet the seasonal fluctuations, or to such as are not supplied from the general area of the chalk basin. He further ascertained that there did not appear to be any evidence of the permanent lowering of the source of any river within the areas alluded to.

This is most interesting evidence in regard to our present inquiry, for, in spite of the numerous wells and the large body of water at present abstracted (which, with what the water companies take, and the private wells, possibly amounts to about 21,000,000 gallons per day) we see that practically no impression is made on the water-bearing capacity of even this limited portion of the chalk area. As we said in our last article on this subject, the question of water supply from the chalk is eminently a local one, and by the comparative absence of large fissures, or by a bore-hole of insufficient diameter, a well can often be easily pumped dry, especially when shallow.

Again, it must not be assumed that because the output of a well gradually decreases, and the water-level is lowered in it, that the area is necessarily running dry. Continual pumping towards a central point tends to the accumulation of insoluble matters brought by the water at that point, which partially clogs up the joints and fissures which act as the underground water conduits. If several wells in the same vicinity showed the same symptoms, that would be a different matter. We submit that in this district alone a great deal more water might be obtained if wells for the public supply were more numerous and placed closer together. They should be far enough apart not to interfere with each other's "cone of depression;" they do not do that at present, as we have seen, so that the judicious planting of intermediate wells might have the effect of showing us what may really be drawn from that part of the chalk area without resulting in serious depletion.

The sinuous dotted lines on our sketch-map, fig. 2, show the underground watershed of the chalk; whilst the arrows indicate the direction of flow of underground water in that formation. The information is adapted from the elaborate map drawn up by Mr. Middleton. It is useful as indicating where a well may not be sunk—*i.e.*, anywhere along that underground watershed. Failures to get a good supply from the chalk have frequently arisen from the well-boring being situated on or very near to an underground divide, such as this.

It has frequently been remarked that if we abstract so much water from the chalk we shall inevitably deplete the rivers arising from within the underground watershed. Nobody will gainsay that. But we do not hold briefs for any particular rivers, and it seems only natural from a water-supply standpoint that it should be more wholesome to capture the water underground than to wait until it rises to the surface and becomes polluted. Rivers are simply the discharge of surplusage, and if the watersheds underground only coincided with those above ground we might be well assured that all that we took from underground would be at the expense of that surplusage. But these watersheds do not coincide, and it is in the highest degree probable, in most cases, that by capturing the water underground we are preventing leakage into other basins, or preventing absolute waste, as when the water finds its way underground into the sea. We do not think, therefore, that when 1,000,000 gallons of water are captured underground, that that means, in the majority of instances, that the rivers above, in the watershed in which the well is sunk, are depleted to the extent of 1,000,000 gallons. They will suffer to some extent, no doubt, but not to the full extent, and that is why it is more economical, as saving water, to go underground for it. These observations specially apply to district No. 1 under consideration, for much of the water from the chalk within it runs away under Essex, and is partially lost.

In our next article on this subject we purpose to commence with district No. 2, in Essex, to see what becomes of the water referred to.

◆

## NOTES.

The New Vauxhall Bridge.

WHEN we published last week the design for the new Vauxhall Bridge we abstained from any comment, leaving our readers to form their own opinion. But we think it is really necessary that some protest should be made, while there is time, against the design as it stands. Although we have escaped the actual repetition of Blackfriars Bridge with which we were threatened, just the same kind of mistake has been made in treating the facing of the pier as an immense thick short column, in this case not carrying a balcony, as at Blackfriars, but a lamp-standard, or rather a pillar carrying two lamp-brackets. This is designed so as to appear as if it were a kind of continuation of the short stumpy column on the pier. The effect of these, when the bridge is finished, will be almost absurd; they will look like a succession of immense scaffold-poles. The whole treatment is marked by an entire absence of the sense of architectural scale; and this is shown again in the enormous moulding which forms the lowest member of the pier, which falsifies the whole scale of the details, and makes the rusticated quoins on each side of the column look like toy masonry. In endeavouring to give "great boldness" by the employment of very large rustication in the archivolt course of the arches, and leaving the sprandrels of plain masonry, the very means has been taken to destroy breadth and solidity of effect, by entirely disconnecting the spandrel masonry from the arch. It is the old story; engineers cannot understand what architectural design and scale mean, and as soon as they depart from mere practical building they produce absurdities. If this bridge is allowed to be carried out as designed it will be a laughing-stock to foreign visitors who know anything of architecture.

### Burne-Jones's Drawings at the Burlington Club.

THE collection of drawings by Burne-Jones which has been got together at the Burlington Fine Arts Club is of the greatest interest, and shows some qualities of the painter's genius which are not seen in his pictures. The delicacy and beauty of many of the pencil drawings is extraordinary, and even where they are studies for pictures they have their own beauty, peculiar to themselves, and different from that of the pictures. It is interesting to compare the general studies for the whole composition of a picture with the manner in which the details are worked out. We have one large study, for instance, for a wall painting of the splendid episode of the "Masque of Cupid" from the "Faërie Queene." This is only, however, for the composition of the figures, in two groups moving across to the right, divided by a door in the middle of the wall space. The character of the faces has not been much studied, though the scale is pretty large; what the artist meant to make of it we get some idea from the separate studies of the three heads of the lady and the figures of Despite and Cruelty who led her (65). In the general drawing these seem weak in character; in the separate studies of the heads, marked "Crudelitas" and "Sævitia," there is an intensity and fury which takes one by surprise; these heads present qualities that are certainly unusual in Burne-Jones's finished paintings. The studies for the hands and sleeves of two or three of the figures in the "Days of Creation" show how carefully the artist went into such details in his preparatory studies. The finished study for the head of the figure of "Desiderium," for the "Masque of Cupid," is another very fine example; and one rather wonders, when looking at such studies as these, why the artist put so little individual character into the heads in his paintings, when he could show so much of it in his pencil studies. Among other things in the collection we may mention, as of special beauty, the silver-point figure entitled "Antonia" (72), the three pencil designs for the "Song of Solomon" (141), and the twelve designs for subjects from Virgil (158-164). A new side of Burne-Jones, and one little suspected by many, is shown in some of the humorous drawings for children which are exhibited. There are also a good many experiments in different methods of producing effect in a drawing. The whole collection is one which we may feel grateful to the club for having got together. The Introduction to the catalogue, by Mr. Cosmo Monkhouse, gives some interesting details about the painter's opinions and feelings in regard to his art. Among other things he said once that before he began to execute a design "he could always see it on the blank paper as if it had been drawn in lines thereon," so that the actual drawing became a kind of tracing on of these mentally-seen lines. Other painters have had the same faculty—Blake for instance, who is said to have drawn as if he were copying something before him.

### Architectural Publications in Germany.

PERHAPS one of the most interesting features in connexion with architectural events in Germany is the increased demand for illustrated publications on the lines of monthly magazines. In every part of Germany we now find an architectural publication, and most of them primarily contain reproductions of designs which may be termed "advanced," or illustrations of furniture and fittings representative of the crafts. It seems difficult to explain the reason for this rapid increase of regular publications, unless it is, perhaps, that the older journals, such as the *Deutsche Bauzeitung* and the *Centralblatt der Bauverwaltung*, have not kept in touch with the modern movement now prevailing in German art circles. It is true that the above-named journals, each comprising four, or at the most eight, pages, and appearing bi-weekly, may be simply regarded as "news-sheets," although their character is scarcely in this direction. Some German architects advance the theory that the men of to-day are acquiring a broader view of their profession, and wish to be kept posted as to what is being done in the world. Others, again, say that the younger school of architects are prone to be copyists, and use the publications for so-called "ideas." Whatever may be the reason, it is an interesting development in German art life, and may, more or less, influence German architecture of the future.

### Theatre Building in London During 1898.

EXCEPTING for the constant increase of the suburban playhouse, there has been no activity in theatre building in London during the past year. In fact, not a single new theatre has been opened during 1898 in the West End. With the present year there may, however, be some changes, for the Strand improvement will be doing away with some of the older houses, and new ones will have to take their place elsewhere. Two new theatres, we believe, have already been commenced, one of which is being built for Mr. Charles Wyndham. When the new homes for the drama are taken in hand, we trust that there will, however, be some improvement upon the orthodox model with its intricate plan, nondescript façade, and ugly interior; and what is more, it is to be hoped that the stage will also have a better equipment, and the application of modern methods. Our scenery is too often marred by lack of proper mechanism. In no class of building are we so far behind the other countries of Northern Europe as in the theatre, and it must be remembered that not all Continental theatres have the much-talked-of subsidy. Of the suburban theatres of 1898, the only one that can lay claim to architectural pretentions is the Crown Theatre, Peckham. As to alterations or improvements in the older West End houses, during 1898, the Alhambra Theatre has had a new wing and entrance added, whilst the Theatre Royal, Drury Lane, has been equipped with an installation of electrical stage appliances,

### The Metropolitan Fire Brigade, 1898.

THE past year has not been a particularly eventful one as far as fires within the London area are concerned, though there have been several important conflagrations. On the other hand the year has seen some material improvements in our Fire Brigade, amongst them the introduction of a simpler method of calling out the force where a strong attendance is necessary. The introduction of the "District Call" and the "Brigade Call" at last gives us something on the lines of the "medium" and "great" alarms so long practised on the Continent. Then we have the formation of a Central District, which should be of special assistance in coping with outbreaks in the City and West End, and this district should, in time, practically become the main guard of the force. In regard to the *personnel*, we notice that a third officer is to be appointed, but curiously his qualifications are to be more in the engineering than in the constructional direction. A complement of three skilled officers as distinct from the superintendent or non-commissioned officers is, however, still quite inadequate for our requirements. The introduction of the horsed escape is a great improvement, but why the escape should have to be loaded up on a truck, and is not constructed to run on its own wheels, we do not understand. Among minor points the possibility of at last using the telephone on alarm posts deserves mention, as also the somewhat primitive indication of the position of an alarm post by painting the nearest lamp-post in a bright red colour. Altogether, there has been some slight progress in the right direction, and that is already much in a brigade in which the traditions of 1870 are still observed, and modern methods of fire protection have as yet found little favour.

### Epping Forest.

A BILL of a somewhat unusual character is prepared, for the coming Session, by the Governors of the Infant Orphan Asylum, at Wanstead. Under the Act for disafforestation of Epping Forest, carried by Sir H. Selwin Ibbetson, M.P., in 1878, the Forest was secured for ever "as an open space for recreation and enjoyment," and Sir Arthur Hobhouse was appointed as arbitrator to determine how much land should be lawfully retained as "curtilage" for each house that had been erected upon the lands then in the hands of the several lords of the manors. On a strip of land at Snaresbrook, bordering upon the Forest, conveyed to them in 1869, the Asylum authorities lately began, through inadvertence, to build a gymnasium; it is to indemnify them from the consequences of their mistake, and to obtain relief from liability under the Act of 1878, which provided that the land should not be built upon, that the Bill in question is to be introduced into the House.

### Surveyor's Report for Willesden District.

THE annual Report by Mr. Robson, the Surveyor to the Willesden District Council, contains the usual full and precise information which has always characterised these reports, and which renders them specially valuable documents of their class. Among the points on which information is given we may notice that the tar-paved footways have proved inadequate for the wear of extensive traffic, and it is recommended that York paving should be substituted in such positions. Nearly 500 new trees have been planted in various roads, all plane trees with the exception of twenty-five acacias; the planes are found to thrive best. There are still several districts where surface-water drainage is inadequate during abnormal rainfall, and it is suggested that this matter should have the attention of the Works Committee as soon as possible. In regard to the flushing of sewers, it has been found that the automatic tanks at the heads of sewers were of little utility on account of their small capacity, and flushing has been carried on, once every fortnight, by flushing vans and meter-barrow with hose attached. "Upwards of 5½ million gallons of water have been used for this work, and the inverts of the sewers are free from deposit where frequent points for the convenience of flushing are provided." It would probably, we think, have been an economy in the long run to have placed larger automatic tanks to begin with. The system of substituting upcast shafts for ventilating grids from the drains has been further pursued with good results; it is noted that complaints have been received in regard to a supposed smell from a grid after the grid had been actually closed. There is a great deal of important information as to drainage and filtration on land, to which we can only call attention in passing. It may be noticed that the sewage from laundries has been difficult to deal with owing to the excess of soapy and greasy matter which will not precipitate, and passes out of the tanks with the effluent. In regard to lighting, it is recorded that although the incandescent street lights used were at first a cause of extra expenditure, while their maintenance was in the hands of the Gas Company, the employment of an improved burner and the maintenance of the lamps by the District Council's own employees has resulted in a great reduction of the expenditure. We recommend the whole Report to the attention of District Councils and their surveyors.

Girton College, Cambridge.

MESSRS. A. WATERHOUSE & SON have been appointed as architects for the additions about to be made to Girton College. The proposed new buildings comprise a dining-hall, with capacity for 300 persons, kitchens, a chapel, lecture-rooms, and rooms for twenty-five students. The completed scheme is estimated to cost about 40,000*l*., towards which sum the authorities have a total of 18,000*l*., derived from subscriptions, legacies, and accumulated profits. If the contemplated project can be carried out, the present dining-hall will be converted into an annexe to the library. It is hoped that eventually sufficient funds will be forthcoming to provide for a further block of students' rooms at a cost, it is calculated, of 10,000*l*.

A Memorial to Thomas Campbell.

THE British colony at Boulogne are about to erect a statue to Thomas Campbell, the poet, who died at his house in the Haute Ville, on June 15, 1844. He removed thither, with his niece, after bidding farewell to Moore, Rogers, Milman, and others, at his house, No. 8, Victoria-square, Pimlico, of which he had taken a lease in 1840. The house in the Haute Ville stands close by the one distinguished by a tablet (when we last saw it), in which Le Sage lived, and wherein Charles Churchill died, 1764, when on a visit to Wilkes.

Fine Art Society's Gallery.

THE Fine Art Society has instituted a small exhibition of the works of several artists, each set being grouped together; the result is a very interesting little exhibition. We commence with eleven watercolours by Mr. H. S. Hopwood, Associate of the Society of Painters in Watercolours, who paints in an exceedingly broad and free style both sea and coast subjects and figures; the seas in fact are little more than brush dabs with white spaces between, but the look of sea is fairly given. Among the interiors "Cottage Service in the Hebrides" is not only pathetic in the character and expression of the figures, but remarkable for the bright effect of the small window in the wall opposite, and the mountain landscape just indicated as seen through the glass. Five pictures by Mr. Wyllie follow, two of them excellent yachting pictures; another, "Discharging Timbers in Queenborough Swale," with a white ship at anchor in the river, is the most pleasing of the five in the picturesque sense. Mr. Caffieri's figure subjects do not interest us very much. Mr. John White contributes ten landscapes not marked by any very striking qualities; "Street in Axmouth" is the best. Mr. A. W. Weedon's are in a broader and more true watercolour style, the small drawing entitled "Returning from Sandwich" reminding one a good deal of David Cox. Mr. Napier Hemy occupies the end of the room with some very powerful sea-pieces, somewhat unlike his usual style. "A Strange Sail" is a fine coast sketch with a grand sky, and "Driftwood" an exceedingly wild picture of a grey stormy sea, the character of the rocks suggesting the North Devon Coast. Of Mr. Brewtnall's forced stage effects we have nothing to say; the only one of his contributions which is natural and true is the small one entitled "The Tossing and the Tumbling of the Sea." Mr. Thorne Waite exhibits eleven works, among which the style and tone of "The Brighton Downs" remind one very much of the late Alfred Fripp's work; "Haymakers" is a fine fresh little landscape, and "Cattle at a Pond" a beautiful evening pastoral. Mr. Lucien Davis's overworked figures with no mind in their faces are not worth much in an artistic sense. Those of Mr. Dudley Hardy, though somewhat pretentious in style, include one or two of really fine quality of design and colour; especially the one entitled "A Rest," a seated semi-nude figure amid a very fine harmony of coloured draperies. Some pencil sketches of street types by Mr. Phil May round off the collection.

Messrs. Dowdeswell's Gallery.

THE collection of pencil drawings of figures from real life, by Mr. E. Borough Johnson, at Messrs. Dowdeswell's Gallery, are good studies, but not of very special interest. It is otherwise with the watercolour drawings by Mr. Montague Smyth. These, mostly studies of landscape in Holland and East Anglia, are slightly sketched in and slightly coloured; but the artist has a style of his own, and contrives to indicate a great deal without laboured execution. Among the best are "Dutch Natives," a scene on a quay with a number of stolid Dutch sailors and the coloured sails of the craft rising above; "On the Blythe," where a calm river and the reflected light are rendered with great truth; and "The Day of Rest," a churchyard scene on Sunday, with a remarkably odd and characteristic piece of church architecture; but the whole collection is good and original work, and worth a visit.

A Proposed Model House.

A GROUP of French architects and artists, among whom are Messrs. Alexandre Charpentier, Plumet, Dampf, Desbois, Moreau, Selmersheim and others, have applied for a concession to erect at the Paris Exhibition of 1900 what they describe as a "type de maison moderne." The position for the proposed erection has not yet been decided on, but it will no doubt be carried out, and, considering the position and abilities of the architects and artists who are taking it in hand, it will probably be an erection of considerable interest.

## THE WINTER LOAN EXHIBITIONS.

IT would perhaps be impossible to imagine a more striking and even sensational contrast than is afforded by the simultaneous opening of two representative exhibitions, the one of the works of Rembrandt, the other of the works of Burne-Jones. The two names seem to represent almost the opposite extremes of method and aim and feeling in the art of painting. On the one side we have the highest degree of masculine vigour of style and execution, comparative indifference to the charm of colour, little or no sense of pure beauty or of decorative effect, and the almost total absence of sentiment. At the New Gallery we are in the presence of works almost effeminate in sentiment and style, but in which beauty both of colour and of decorative effect is everywhere present and is regarded as the highest end in itself, which are completely removed from real life and entirely pervaded by a poetic sentiment always pleasing and suggestive though somewhat monotonous. The two painters are so different that it is impossible even to compare them; there is no ground for comparison. But the contrast is most effective, and serves to illustrate how wide and varied is the field of the art of painting, in which two men who are both defined as "painters," using the same class of materials and implements, can produce works which seem almost as if intended to appeal to entirely different faculties in our intellectual perception.

The idea of devoting this year's exhibition at Burlington House to Rembrandt was no doubt suggested by the recent exhibition on the Continent, with a desire to show how rich is this country in the works of the painter; for the great majority of the pictures, and all the finest ones, are lent by English owners. There was thus a definite reason for the enterprise, though we can hardly wish that it should be a precedent that the winter loan exhibitions should be confined to the works of one painter; their interest for the public would certainly not be so great in that case; and in the present instance, though this collection contains many splendid works, one cannot avoid a feeling that it is possible to have too much of Rembrandt at one time. The element of beauty in his works is so small, for one thing; the only picture of a young woman which can be said to present any beauty is the half-length portrait of Saskia belonging to Mrs. Joseph; and that is rather beautiful relatively, and by comparison with his other female models, than in a positive sense. As a work of art it is however one of the most original, especially in regard to colour, of all the pictures in the collection. The most interesting and, in a sense the most beautiful, of the portraits of women are one or two of those of old ladies, into which Rembrandt infused a great element of dignity, as well as of character and expression in the features; among this class of paintings the "Portrait of an Old Lady" (45) belonging to the Queen, and the "Portrait of a Lady" (69) lent by Captain Holford, are pre-eminent; in the latter the face is really beautiful, as an old face, and must have belonged to a lady of high rank and position; it has none of the coarseness and stolidity of the Dutch *bourgeoise* countenance, as it meets us too often in the portraits both of Rembrandt and Rubens. It was in painting men that Rembrandt was at his best; more especially elderly men. The well-known picture called "The Ship-builder and his Wife" (67), also lent by the Queen, is a notable example of this; nothing can be finer and more dignified than the face and general pose of the man, but his wife (if it be his wife) who enters with the letter, is a common *Hausfrau*, without attraction or manner of any kind. Rembrandt nowhere showed his power in painting more remarkably than in the pourtrayal of his own remarkable personality. Of these portraits of himself there are eleven in the exhibition; suggesting the conclusion that when sitters were scarce he fell back on his own figure simply as the readiest available model on which to found a picture. Of these the finest undoubtedly is that in Gallery I. (20) belonging to Lord Iveagh, the half length in a brown mantle and white cap, with palette and mahlstick; and equal in interest, though not quite so fine in artistic quality, is that tremendous and overpowering portrait, larger than life, belonging to the Earl of Ilchester, which now hangs (61) in a corner of the large gallery, where in a former Old Masters exhibition it occupied a central place. It is noticeable that this was painted in 1658, the year after the breaking up of his home and studio and the sale of his collections; as if he were determined, in spite of adversity, to show the world what a picture he could make from no resource but his own likeness, and exhibit his own figure as that of a man still strong and defiant in the midst of his calamity. The finer portrait in the first room —more balanced and complete in style and colour, was painted not very long after this colossal one, and seems still to show the same kind of purpose—the self-pourtrayal of a figure still strong against adverse fate. As a contrast to these one may notice the fine and *spirituel* portrait of himself as a young man, seated before a board on which he is drawing, and with an expression of eagerness and genius which render it one of the most attractive pictures in the collection. Among other paintings of men which are especially remarkable for power and artistic completeness is that grand one of "A Rabbi" (83) lent by the Duke of Devonshire; the original was possibly a commonplace old gentleman enough, as he appears in the other portrait of him (57) belonging to Viscount Powerscourt; but in the Duke of Devonshire's picture Rembrandt has contrived to impart to the head an intensity of expression which is as striking as the splendid and effective painting of the costume. The painting called "The Burgomaster Pancras and His Wife" (80), lent by the Queen, is (we are told in the catalogue) "now generally believed to represent the painter and his wife"; but in the absence of any documentary evidence we should regard this as very doubtful; the head of the man does not seem to accord much with either the older or the younger portraits which are undoubtedly those of Rembrandt.

Among the two or three subject pictures which are to be found in the collection, all from biblical subjects, the only one which touches the feelings is the small picture of "Isaac and Esau" (10), lent by the Duke of Devonshire; a picture which, like all Rembrandt's Bible pictures, is almost absurdly devoid of truth of historic character or costume; but nevertheless there is real pathos in the enfeebled figure of Isaac, and the effect of light is very fine. It is in his comparatively rare landscape pictures, however, that Rembrandt showed the poetic side of his nature. Of these the well-known picture of "The Mill" (40), belonging to Lord Lansdowne, is the most remarkable example in the collection—a perfect poem of evening effect. A less known but almost equally beautiful example is the small picture in the second gallery, "Shepherds Reposing at Night" (51), lent by the National Gallery of Ireland. In this painting the radiance thrown by the moon over the shoulder of the dark hill is a wonderful instance of the realisation of the effect of light by the medium of pigments.

The drawings in the Water-colour room are mostly very slight sketches and studies, not quite so interesting as we expected. Two studies of lions (159 and 184) are among the best things; and there is an interesting monochrome sketch (163) for the picture of "The Nativity" in the National Gallery.

The collection of Burne-Jones's work at the New Gallery is a very full and representative one, on which however we need not dwell in detail here, because nearly all the works have been exhibited before, some of them many times, and at the time of the painter's death we summed up our view of his art, which is not exactly the popular one. If we take the paintings and the drawings here, and the drawings at the Burlington Fine Arts Club, they form an extraordinary record of constant and conscientious labour in pursuit of an aim always steadily kept before him, that of making painting subservient to the expression of a poetic ideal. In our opinion his ideal was a somewhat narrow one, and the pictorial results, though always beautiful, somewhat monotonous; but an ideal it always was. The catalogue numbers commence with some of his early works on a small scale, and some of these—"Clerk Saunders" (1), "The Backgammon Players" (5), "Sidonia von Bork" (24), and others, are curious to contemplate now; they are so completely in the same style as Rossetti's small paintings of his early days, that it would be easy to take them for his. Some of them show also how careless he was in those days about the drawing of the figure; see the shoulders and arms of the girl in "St. Valentine's Morning" for instance (19). From the great number of small figure studies he has left, it is evident that the artist had long ago recognised his weakness in this respect, and worked hard to conquer the figure; but it may be questioned whether he ever quite achieved this in his larger paintings; the nudes in "Pygmalion and the Image," painted many years later than these small works, are not satisfying to the eye; and next to this is the "Marriage of Psyche" (133), painted in 1895 (or at least exhibited then) with figures some of them at least ten heads high.

The first room at the New Gallery contains "The Days of Creation" (39), and two of the most beautiful and poetic of his smaller works —"Love Disguised as Reason" (54) and "Pan and Psyche" (61). In the West Room, among other well-known works, we find the "Chant d'Amour" and "The Wine of Circe," the former to our thinking his finest work; attention should be drawn to what is often overlooked in this picture, the interest of the architectural background and the care with which it has been designed. There are also here the beautiful portrait of Mrs. Bonham (85), "The Hours" (93), the "Wheel of Fortune," a fine conception not altogether satisfactory in execution, "King Cophetua," "The Depths of the Sea," one of his finest works and for once showing a face which is not a mere repetition of a conventional type—one could hardly have thought that Burne-Jones, of all people, could have succeeded so well with the expression of malice and cunning in a female face; "The Mirror of Venus" and the "Golden Stairs," with its decorative lines and curiously false perspective, or absence of perspective. In the North Room are various pictures of the Perseus series, the "Tree of Forgiveness" (otherwise "Phyllis and Demophöon"), the "Fall of Lucifer," a picture of beautiful decorative effect though very weak as an illustration of the subject; and a large unfinished picture of "Arthur in Avalon," which is remarkable among other things for the original architectural detail. In this room too is the small picture of "Cupid and Pysche" (137), which is noteworthy for the beauty of the face of Psyche and the fact that it is far less conventional, more expressive of real human feeling, than most of his female heads, which are beautiful, but only beautiful dreams, with no human character in them. In the same room too is "The Dream of Launcelot," in which Burne-Jones's feminine weakness of conception is displayed in an almost exaggerated degree. How can any one look at such a weak figure as this, as a conception of a great fighting knight, and deny that Burne-Jones was deficient in masculine force in his style and conceptions? He seems to have himself felt the mistake in this case, for in the larger design of the same subject in the Stanmore Hall tapestry (224—in the Central Hall) he has altered this figure and endeavoured to give to Launcelot a more powerful and masculine physiognomy; but such an effort is so unusual—almost unique, with the painter, that we may suspect that in this case it was due rather to external prompting than to his own feeling.

The great picture sketched in outline, "Love's Wayfaring" (in the Central Hall), showing Cupid mounted aloft on a broad-wheeled car drawn by his victims, would have been a remarkable work if completed.

## THE ARCHITECTURAL ASSOCIATION:

### HOUSE-PLANNING FROM THE ÆSTHETIC POINT OF VIEW.

AN ordinary fortnightly meeting of the Architectural Association was held on Friday last week in the Meeting room of the Royal Institute of British Architects, No. 9, Conduit-street, Regent-street, Mr. G. H. Fellowes-Prynne, President, occupying the chair.

The minutes of the last meeting having been agreed to, the following gentlemen were elected members of the Association:—Messrs. F. Mount, H. G. Turner, and J. M. Lethbridge.

The Chairman announced that the classes on "Elementary Construction" would commence on the 16th inst. He also nominated Mr. H. W. Pratt to serve as a trustee of the "A. A. Travelling Studentship Fund," in place of the late Mr. E. C. Lee.

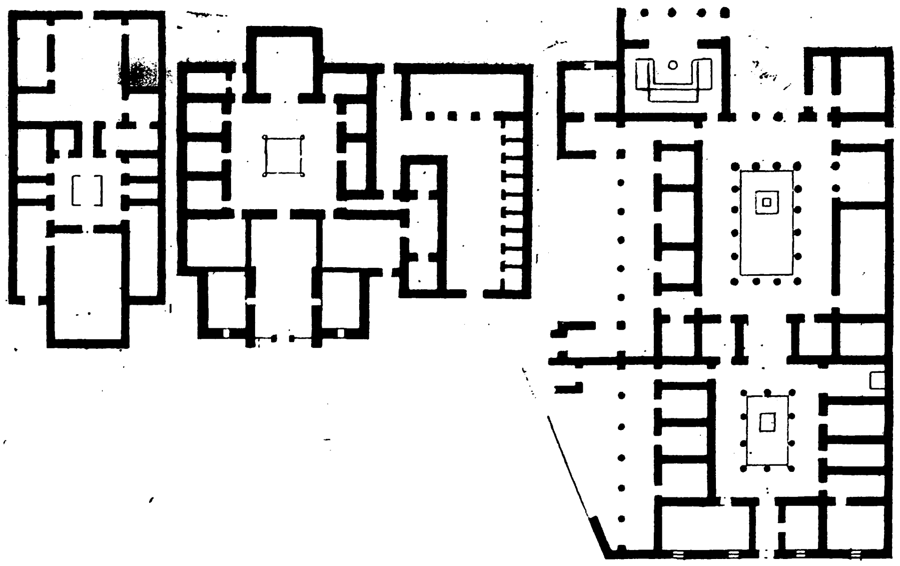
The nomination having been agreed to,

Mr. H. H. Statham read the following paper on "House Planning from the Æsthetic Point of View:"—

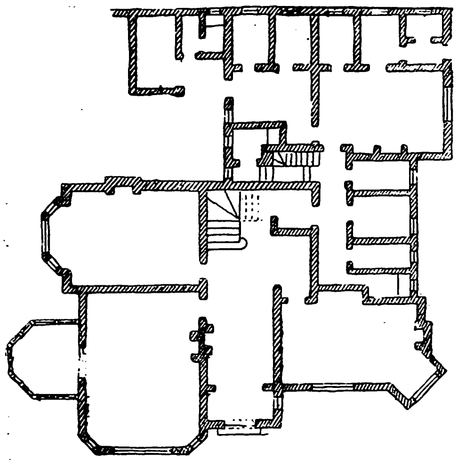
When Mr. Paul Waterhouse read his interesting paper on "Oriels and Bay Windows" before the Association a few weeks ago, he commenced it by praising the judgment and benevolence of the Council of the Association in themselves laying down or suggesting the subject to be treated, thereby setting the reader of the paper a definite task, saving him from the onus of making up his mind on a subject, and encouraging him to acquire some definite information on the subject he had been invited to treat of. And he implied that this was the course now usually pursued by the Association in asking for papers. If that is really the case, why have I been, so to speak, left out in the cold? No such benevolent and stimulating process of selection of a subject was exercised on my behalf. I was asked simply to read—"a paper"; the universe being left open to me for choice. The universe is doubtless a fine field, but a little embarrassing to select from. Under such conditions the only course is either to take a subject which you have for some reason or other been led to think about, or—to decline. I do not approve of what may be called "paper-making" for its own sake. If people tell you that they wish for your views on some particular subject, it is another matter. You may give them your views, even if the subject is one not specially interesting to yourself. Otherwise, on two or three occasions when other societies have been complimentary enough to ask me for a paper, I have felt compelled to say frankly that there was no subject on which at the moment I had any particular opinions or thoughts which I was anxious to give expression to; therefore I must decline. I recommend my own moral example to others who receive general invitations to read papers on any subject they please. It is a dangerous temptation, and tends to put papers in the same category as after-dinner speeches, where you speak not because you have got something to say, but because you have got to say something. In one of the finest verses in the Psalms we read—"While I was musing the fired burned; *then* spake I with my tongue": but not till then. If you have nothing to say, don't be persuaded to say it. And therefore, if the Council of the Association have, as I gathered, made it a general practice (though not applied in my own case) to specify the subject when inviting any one to read a paper, I recommend them to keep up that practice; only I would suggest that, after specifying the subject, a rider should be added —"unless there is any other subject which you specially wish to treat." By tying a man absolutely to one subject you may possibly be preventing him from dealing with another which he would treat better; and if he is willing to dispense with the assistance given by having a definite suggestion made to him, it is probably because the other subject is one that he really cares about.

So much for the general ethics of the paper-chase, which are worth a little consideration. In the present instance the request of the Council for a paper happened to reach me at a time when my mind was rather full of a subject on which I had wished, sooner or later, to say something; and therefore I could not do better than say it here, thereby complying with your request without falling into the sin of paper-manufacture.

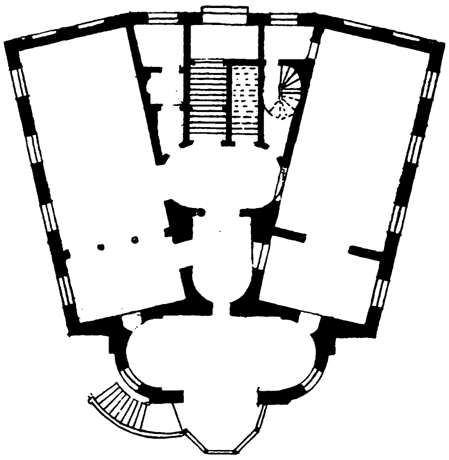
Although the architecture of the House cannot, except in the case of such mansions as may be called palaces (which are necessarily somewhat rare), rise to the archi-



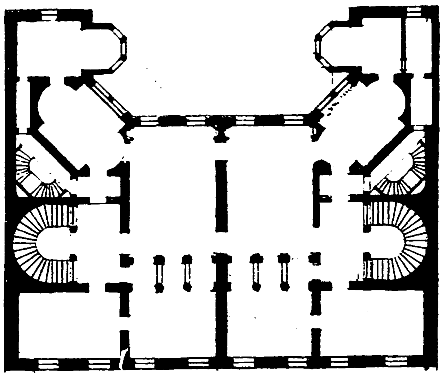
2. *Plans of Aryan, Ionian, and Athenian Houses (according to Viollet-le-Duc).*



1. *An Average Modern English Plan.*



3. *House at Frankfort (no Scale).*



4. *Apartment House, Cologne (no Scale).*

tectural grandeur of the temple or cathedral, yet there is no branch of architecture more fascinating in its interest. It is the most intimately connected of all with the lives and characters of men. In an architectural sense, the designing of a house is not merely the arrangement of rooms so as to be comfortable in themselves and commodious in their relation to one another, though these are points of the greatest practical importance. That is a merely utilitarian view of the problem. The object of architecture is to transfigure the house from a collection of rooms conveniently arranged, to raise it to the level of a distinct and individual architectural conception or idea which should govern the whole arrangement; to give it as much of interior effect as is compatible with its size and with the practical convenience of internal traffic; to make it something more than a mere dwelling-place; the expression of an artistic thought—whole, complete, and indivisible. Of course it will be said that we take a great deal of trouble to make houses architecturally expressive or picturesque. We have our pilasters, our window pediments, our balustrades, our broken cornices over the doors, and pots on the attics, and cut brick cherubs and garlands; or our gables and roofs cutting into each other in different directions and at different heights, our sham half timbered walls, and coloured rough-cast, and plaster devices and what-not; but all these will not save our souls; a house may have them or not have them, and be neither much the better nor much the worse in either case. The plan is that in which the artistic idea of the house is really embodied; that is the basis of the whole; if there is a good idea in the plan, even bad external detail cannot entirely spoil it; if there is no idea in the plan—nothing beyond a commonplace collocation of rooms in convenient positions, the best exterior detail will do little or nothing to conceal the poverty of the main conception. Of course in any case the treatment of the masses of the plan is half the problem; and as we shall have occasion to notice, there have been splendid plans which have not been made nearly as much of as they might have been in regard to exterior architectural effect; but it is mainly the plan which distinguishes the house which embodies an idea from that which does not.

Now in this respect among others, the mediæval revival, so vaunted at the time, has left an ill influence behind it. To take the ordinary scale of dwelling-house first; it is since the mediæval revival that we have been taught to regard the ordinary-sized dwelling-house plan as consisting merely of the fitting together of so many parallelograms of room-spaces, something like a puzzle map, the end of one abutting on the side of another, the angle of one projecting beyond the wall of another, so as to show where the rooms fit on to each other; the result being a plan that is no shape at all, and which cannot be walled and roofed in under the guise of any formal and distinct architectural conception. Take fig. 1, which is a tolerably typical specimen of this class of house plan; how can one call that an architectural conception? It is simply some rooms tacked together; it is devoid of internal effect, and externally it can only be treated as an irregular collocation of wall and roofs. This way of building is supposed to be "picturesque" and "truthful"; a house is a collection of rooms and it is to be treated so; it accords with the irregularity of Nature; and so on. A house is not called upon to accord with the irregularities of Nature, any more than a garden; it is an artificial creation and should be treated as such. If it is a mere collocation of rooms, that is the architect's fault; it ought to be something more; it ought to be a plan conceived as a whole, the rooms designed and placed so as to be subordinate to that governing idea while retaining convenience of internal position. That is just the *crux* of artistic house-planning; the mere irregular fitting of rooms together is an evasion of it. And if we look back at the history of the habitation, we find that after men had emerged from that primitive stage in which, as the soldier sings in "Philip van Artevelde"—

> "Two sticks and a mat
> Make a very good house,"

at a comparatively early period they arrived at the perception that a house should be planned on a centre line, and should have so much of interior architectural effect as space permitted. We may take, for convenience sake, three types as given by Viollet-le-Duc in his "History of the Habitation" (fig. 2); they must not perhaps be taken as quite archæologically accurate, for Viollet-le-Duc possessed imagination as well as industry, and (like other French archæologists) what he thought probable he treated as historic fact; but they are probably near enough to fact in their main characteristics. In the Aryan house on the banks of the Upper Indus a locality which has long been the accepted "cradle of the human race" (though Mr. Traill complains that "they are moving that bassinet about a good deal lately"), we see a plan drawn out on a centre line, and with the large outer court and inner hall for family life, which is the precursor of the *atrium* of the Roman house, probably through the 'αίθριον or open-air hall of the Greek house. In the Ionian house we have the same centralised system, but the inner rooms have increased in importance; and it is curious to notice on one side what would now be called the "stable wing," much as we see it placed in some of the English eighteenth century mansions. Then we have the Greek house in which the inner colonnaded hall has become the principal feature, and provides a really fine piece of interior architectural effect in a house of moderate dimensions, and which we find reproduced more or less in the Pompeian house. We cannot in this climate have the open-air colonnaded apartment in the centre, though we can have something like it in the disposition of apartments; but at all events this is a far more artistic conception in house-planning than fig. 1.

I am not arguing necessarily in favour of bi-lateral symmetry in the average-sized house, though I am inclined to say that in the majority of cases bi-lateral symmetry in the main masses at least (with diversity in some of the details) will produce the best architectural result, more especially in the case of a house which is combined with a garden. We have all learned to recognise of late years the beauty and suitability of the formal garden, differentiating the garden, as a work of art, from the informal lines of nature; and the formal garden will only go well with the formal house. But apart from the bi-lateral question, at all events we ought to see the house modelled on a distinctly conceived and predominating design which moulds the whole of it; not merely put together as the rooms may fit conveniently. The attempt to do this, as it appears to me, is not often made among us. Occasionally we see such a thoroughly original conception as that house by Mr. Prior, of which the model was exhibited two or three years ago at the Academy. A small house by Mr. Townsend* is noteworthy as an example of a plan and architectural treament which form a complete and original conception; so is the plan of a house by Mr. Horsley,† with its entertaining rooms and gallery *en suite* on the garden front, forming a much more dignified architectural interior than is generally attained in a house on this scale; and other examples will probably occur to some of my hearers. But in the attempt to give special character and unity of conception and design to houses of average size, both the Americans and the Germans are a good deal in advance of us.

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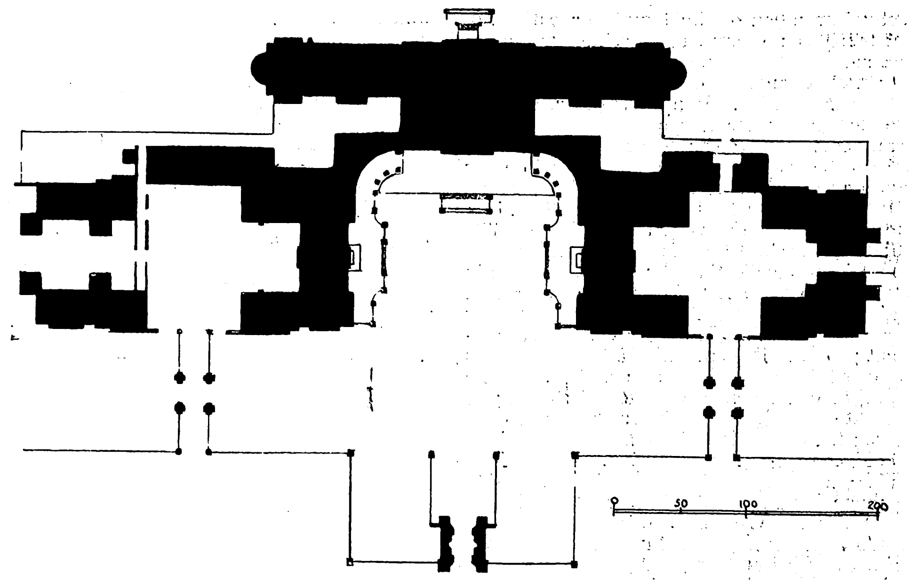
* Published in the *Builder* of October 15, 1898.

† *Builder*, November 5, 1898.

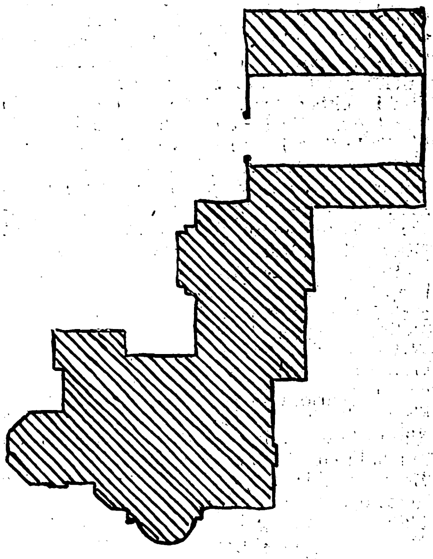
I am thankful to say that I cordially hate modern German architectural style and detail for the most part; but in turning over a collection of plans of German houses one is surprised to find what an amount of variety and ingenuity are shown in the arrangement of the plan (see figs. 3 and 4), and how little of the ragged and accidental character which is so often found in English plans; they are almost always laid out in accordance with a leading idea which gives unity to the whole. We have a good deal to learn from the Germans in this matter of house-planning on an architectural system; it is when they begin to raise and to decorate the elevations that they make such a terrible business of it.

But let us turn now to what in my own mind was the main object of this paper, the treatment of plan in the largest class of houses—those which can be dignified by the name of "mansions.' It is here especially that the taste fostered by the mediæval revival has injured us. The mediæval mansion was in the first instance the castle, and the castle and the habitable portions included in it were naturally built with what we now call a "picturesque irregularity"; which was not picturesque in the eyes of those who built the castles, but simply utilitarian. Castles were usually, or one might say always, built in as commanding and as isolated a position as could be selected, to secure them the better against attack by force or by surprise. The plateau on which they were built was often irregular in shape, and the most was made of it; after the castle had expanded to something beyond the mere "keep" or single tower, the outer wall followed the natural line of the high ground, and the habitable buildings were got in where it was most convenient and where they were safest. It was only when the times became a little quieter and more civilised that castles or châteaux began to assume regular forms uninfluenced by the nature of the site. We can see the change in progress in the plan of the Château of Chambord, where the inner and outer blocks with their angle towers are quite symmetrical in disposition, but internally the circular towers are cut up by partitions in a quite irregular manner; they are still purely military and utilitarian towers, their circular shape having no reference to any object but their engineering suitability as angle defences. With the commencement of the Renaissance period, when architects had become familiarised with the symmetrical temple buildings of the Romans, came the age of the great symmetrically-planned mansions, first in the Elizabethan form of the courtyard or quadrangle, next in the later Renaissance form of the main central block and the outlying "wings." Later in the Georgian period the wings disappeared and the symmetrical block alone remained; the accessory buildings, such as stables, laundries, &c., no longer forming any portion of the main design, but being relegated to separate buildings at more or less distance from the house. Then after the Gothic revival came the idea that symmetry was not picturesque; there was a reaction against the formal plan, and then followed the taste for what I call the rambling plan, in which the object apparently was to make it appear as if the plan had grown up by accident, or had arisen from the gradual enlargement of the house by successive additions. This habit of deliberately planning a house to look accidental and picturesque is, like the twisting walks and quasi-natural plantations of the landscape gardener, an entirely modern invention. For houses of the largest class there is no precedent for it in any previous age. The irregular castellated dwellings of the mediæval period, as already observed, were irregular for merely utilitarian reasons—to suit the site and make the most of it. There are various old houses in the country which have arrived at picturesque irregularity by dint of successive additions and alterations, but I think there are few if any that were deliberately built so, without anything in the nature of the ground to suggest such a treatment. It is a modern fancy engendered by the mediæval revival, and so far as it has been adopted it has robbed us of the finest and most impressive architectural qualities which are possible in a great mansion.

Those who were present at Mr. Aston Webb's charming little lecture to the Class of Design at the beginning of the session will not have forgotten his remarks on the advisability of having a little mystery or surprise in the planning of a house; inasmuch as the hos generally rather enjoyed showing his guests over the house, there was not the same occasion for plain and direct planning as there was in a public building where strangers had to find their own way about. I quite agree with that as far as it refers to the averaged-sized dwelling-house. But where you come to the largest class of mansion, mystery-planning may become an inconvenience rather than an enjoyment to the guest. Your host may give himself the pleasure of escorting you from the smoking-room through a labyrinth of passages to your bedroom door at night, but in the morning you may find yourself under the necessity of ringing for a servant to show you the way to the breakfast-room. This is a mere point of convenience, not of art, but it is worth consideration. It is a nuisance to be losing yourself in a great house, and getting into the wrong rooms. But this is a minor consideration in comparison with the æsthetic one. It is often urged, I know, that the rambling and irregular house is the more homelike. But it is forgotten that a mansion on the largest scale may (I say, should) aim at something more than homeliness. It is to some extent a house of state; it should aim at the qualities of stateliness and dignity. And it is here that the great charm of house architecture comes in. Here there is the opportunity of combining architectural dignity with novelty and originality of grouping; the interest of arranging and shaping rooms so as to combine architectural effect with convenience. There are no by-laws or requirements of public bodies to hamper the architect; if his client is wealthy and really wants a fine and impressive house, the architect has the opportunity of evolving and shaping a new and original architectural creation which may be of the highest order, and imparting to it the dignity and symmetry which should belong to an architectural design thoroughly thought out and modelled. To adopt the rambling plan is to throw away a great deal of this opportunity. The rambling plan is not shaped at all, it is merely thrown together; it is supposed to afford a basis of picturesque effect, which really means a crowding together of different blocks of building, with a tower at some corner where you do not expect it, without any real design at all. The picturesque, in that sense, is not a difficult business; but what has become of the dignity which should belong to the great house of the neighbourhood? "The stately homes of England," as they are called in some popular ballad, are stately no longer. Compare, for example, the block plan of Castle Howard (fig. 5) with that of one of the rambling plans (fig. 6); the one is obviously the foundation for a dignified and grandiose mansion; the other may have character but it can have no grandeur; it is a shapeless plan destitute of any leading idea.



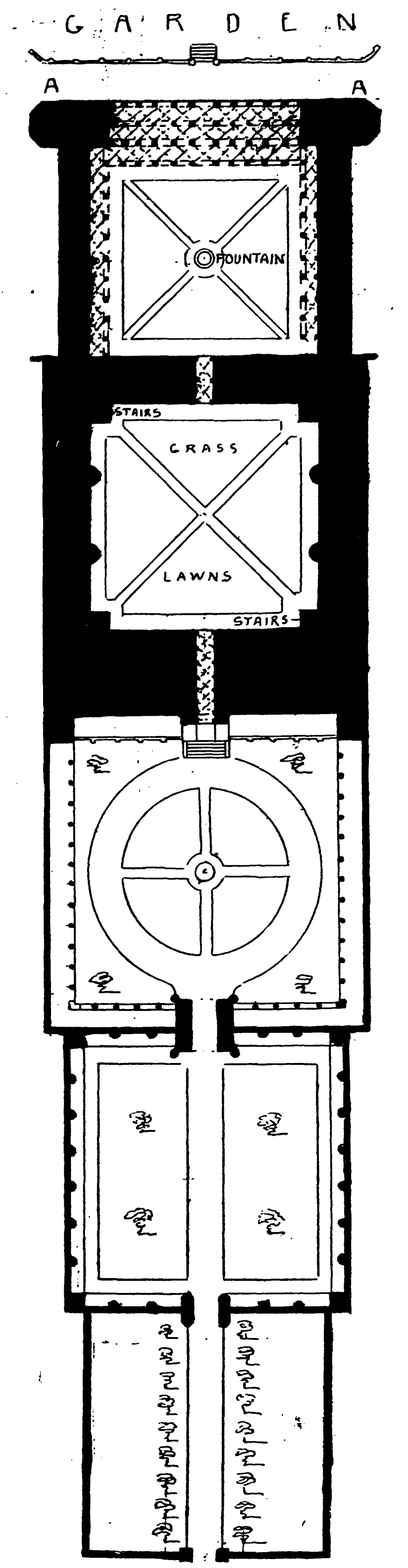
5. *Block Plan of Castle Howard (Vanbrugh).*



6. *Block Plan of "Rambling" House (no Scale).*

It is worth while to endeavour to realise what was the ideal mansion of the great philosopher of the Elizabethan era, when he published, towards the latter end of Elizabeth's reign, his famous Essays, including the one "On Building." In Bacon's time the courtyard or quadrangle system of planning was still in favour, and he requires no less than three courtyards before you get to the house, an arrangement which I should think has never been carried out in actual building, unless it were a Babylonian palace or an Egyptian temple. The three courts are to form a kind of *crescendo* for the state approach to the house (see fig. 7); first "a green court with a wall about it; next a court of the same, but more garnished with little turrets, or rather embellishments on the wall; and a third court to make a square with the front" (the front of the mansion to form one side of it), "but not to be built nor yet enclosed with a naked wall, but enclosed with terraces leaded aloft . . . and cloistered on the inside with pillars, and not with arches below." The last words are rather obscure. I think there ought to be a comma after "arches," and that he merely means that he wishes the cloister to be a colonnade and not an arcade: an indication of the Renaissance taste for columns which was just then beginning to reach England. This is the only indication of style in architectural detail that can be extracted from the description. When we come to the house itself, the front is to have on one side a great banqueting hall 40 ft. high "for feasts and triumphs;" this is to be "above stairs" (*i.e.*, it is to be raised on a lofty basement story), with a room for preparation under it. The other side of the house is to be in two stories, the main one divided into a hall and a chapel, and "at the farther end a winter and summer parlour;" this looks as if one parlour was to face to the front and the other to the inner quadrangle, that on the sunny side being of course the winter parlour; in that case "the farther end" means the end farthest from the centre axis of the building. The two sides of the front are to be "uniform without, though severally partitioned within," a principle which was destined to be only too well carried out in many an English house of the following two centuries. Beyond this front is then to be a fair court "(quadrangle)" but three sides of it a lower building than the front; the return on the banquet side to be all stately galleries, with three or five cupolas in the length of it; the other side to be ordinary presence chambers and some bed-rooms; but all three sides to be "a double house without through lights on the sides, that you may have rooms from the sun both for forenoon and afternoon." This is rather lightly said, and could surely have hardly applied to the side with the "stately galleries." As to communication, probably Bacon counted on all these rooms opening out of each other, as they do all round in such mansions as Burleigh House and others, and even with the greater part of Hampton Court, which is of course a good deal later. Four staircases were to be placed in turrets projecting into the court at the re-entering angles. Embowed windows have their advantages; "they be pretty retiring places for conference; and besides they keep both the wind and the sun off, for that which would strike almost through the room doth scarce pass the window. But let them be few; four in the court, and on the sides only." He probably means two on each of the return wings; the front wing could not have one, as the centre entry to the quadrangle would be in the way. The quadrangle is not to be paved, "for that striketh up a great heat in summer and cold in winter"; only with paved side and cross walks, and the four spaces laid out in grass. Beyond this court is to be another of the same size and height, which (outside) is to be environed with the garden on all sides, and on the inside, "cloistered on all sides upon decent and beautiful arches, as high as the first story." This cloister apparently is to be an arcaded one. "On the under side, towards the garden, it is to be turned into a place of shade, and only have windows towards the garden"—*i.e.*, on the outer side of the buildings. Then, after a reference to the arrangement of the rooms on the fourth or farther side, he adds that here there is to be "on the ground story a fair gallery open, upon pillars." This description forms a curious coincidence with the actual arrangement of the Second Court of Trinity College, Cambridge, where there is an arcaded cloister on three sides, and an entirely open space on the fourth side, with piers to carry the library above. Bacon adds that the third story, on this farther side, is also to be "an open gallery on pillars, to take the air and freshness of the garden." In this upper gallery there were to be fountains running from the walls. One further detail: "At both corners of the farther side, by way of return, let there be two delicate or rich cabinets, daintily paved, richly hanged, glazed with crystalline glass, and a rich cupola in the midst." I confess I cannot make out exactly where these "delicate cabinets" were to be placed; but considering that they are called "returns," perhaps we may be right in assuming them as occupying the positions A, A.

Such is Bacon's idea of a great mansion on the quadrangle principle of plan. It would not be a bad study for the Academy or the Institute to set as the subject of one of their prizes—the Travelling Studentship or the Soane Medallion—to restore Bacon's mansion in plan, section and elevation. Bacon, it may be observed, deals only with the superior portions of the mansion: "as for offices," he says, "let them stand at a distance, with some low galleries to pass from them to the palace itself." This is really much the way they were placed by Vanbrugh at Seaton Delaval,* only that Vanbrugh had them flanking the front or entrance courtyard of the house; masked by the colonnades, it is true, but still pretty well in evidence; whereas I think Bacon wanted them out of the way of notice altogether. "Offices" probably did not with him include the kitchens, as he rather implies, in the course of his essay, that these would be in the basement of the main building.



7. *Sketch Plan of Bacon's House (no Scale).*

The quadrangle system of plan is no doubt one of the best for combining a considerable degree of architectural effect with a certain degree of retirement and domestic feeling. It is not the most effective for an exterior view, as in most cases one only gets the architectural impression of the front; nor is it the most wholesome form of plan in a sanitary sense. The E plan, with or without the centre shank to the E, gets over two of these objections, and especially with a low screen or colonnade across the fourth side, is highly effective architecturally; but it introduces the new objection, for internal convenience, that each end of the returns is a *cul-de-sac.* Hatfield (fig. 8) is a good example, and contains also a fine interior point in the long and wide gallery running from end to end of the principal mass and connecting the two largest rooms, with the added dignity of a colonnaded screen at each end. As a contrast to this grandiose arrangement, it is curious to observe that in one wing the only means of reaching the bedrooms is through the gallery of the chapel; though this may be defended as a pious arrangement to induce the guests to say their prayers before going to bed. Before long, however, the quadrangle plan was destined to give way almost entirely before the favourite scheme of the later Renaissance, that of the centre block and wings, and as a system of house-planning on a great scale nothing so grandiose has ever been devised. Vanbrugh, though he did not actually invent it, was the great high priest of this movement, the leading motive of which was, instead of hiding the offices away, as Bacon suggests, to make them contribute to the show. If we have to cover so much land with building, the architects seemed to think, let us make the most of it in the architectural result; let our stable wing on the one hand and our kitchen or laundry wing on the other serve to extend the effect and act as architectural supports to the central mass. Mr. Blomfield, in his admirable book on the English Renaissance, quotes the words of Reynolds in admiration of this treatment as used by Vanbrugh:—

> "To support his principal object he produced his second or third groups or masses; he perfectly understood in his art what is the most difficult in ours, the conduct of the background . . . and no architect took greater care than he did that his work should not appear crude and hard, that is, it should not abruptly start out of the ground without preparation."

In fact, Vanbrugh had a great deal of the feeling of those who have been called sculptor-architects. Observe, in the case of Castle Howard (fig. 5), how the lines of the balustrade fence on each side of the courtyard are as it were, *modelled* in and out in breaks and curves, to escape what Reynold's calls the "hardness" of straight lines. This same modelling of wall lines is a point also with Wren, as is shown, *inter alia*, in the admirably designed plan of the boundary walls between the street and the courtyard of the old Trinity almshouses, which we have lately just managed to save, and of which Mr. Thackeray Turner remarked with truth that those walls alone were enough to indicate the hand of Wren. Vanbrugh's great work is of course, Blenheim, a plan of the grandest type, with its great terraced and cloistered forecourt 350 ft. long by 300 ft. wide, and the kitchen and stable courts, each (with their surrounding buildings) about 250 ft. by 200 ft., opening from it to right and left. The plan is absolutely axial in both directions, two great longitudinal corridors running in parallel lines from wing to wing. Among other points it may be observed that the use of internal courts to light the corridors, which is sometimes regarded as a very modern expedient, is used here for the principal corridor at all events. The quadrant treatment connecting the wings with the centre is another example of Vanbrugh's modelling. The use of quadrant corridors to connect the house with the separate out-buildings became a constant feature of the later Renaissance plans; in this case it is not a corridor, but a portion of the main building treated in this shape; it looks very fine in effect, but there is always this objection, that it involves the existence of odd-shaped triangular rooms in its rear. At Blenheim these irregular spaces are utilised as dressing-rooms in connexion with rectangular bedrooms. It is one defect in the plan that the extreme right wing is one great gallery (180 ft. long), and the corresponding left wing is divided up into rooms, though the exterior architectural treatment is identical in both cases. The great gallery should certainly have been a special feature; that is one of the pitfalls of absolute symmetry. Vanbrugh has been laughed at, too, for having made the chapel and the kitchen balance each in the angles of the outlying blocks, but this is not so illogical as it is said to be. Man was philosophically regarded in those days as a being composed of two elements, body and soul, neither of which could in this world exist apart from the other. The needs of the soul were provided for in the chapel on one side, and those of the body in the kitchen on the other side; both were equally necessary to a complete mundane existence, and Vanbrugh treated them accordingly, with architectural correctness.* The principal defect of Blenheim in an architectural sense is the want of a grand staircase appropriate to the general grandeur of the plan. The main staircases, in two side halls on each side of the great hall, are convenient enough, but these halls are only 11 ft. wide, leaving only about 5 ft. for the width of each flight; a miserable proportion for so great a house. At Castle Howard the staircases are planned in just the same way and of the same size. The staircase alone, in these plans, seems to be treated in a purely utilitarian manner; regarded as a means of ascent only. The architectural glory of a great staircase does not seem to have dawned on the mind of Vanbrugh.

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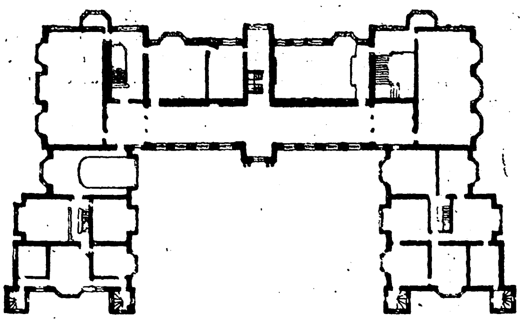
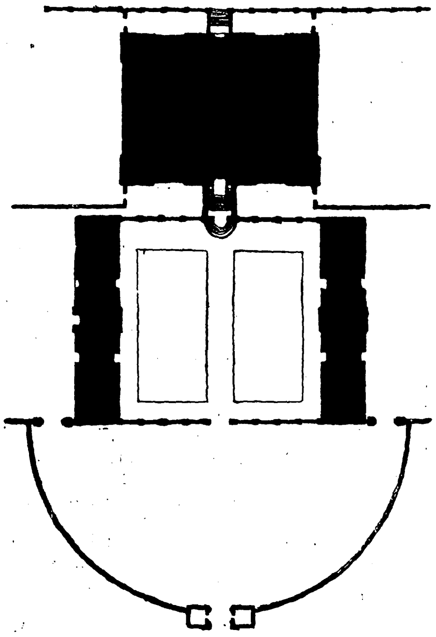
* See the plan published in the *Builder* of April 22, 1893.

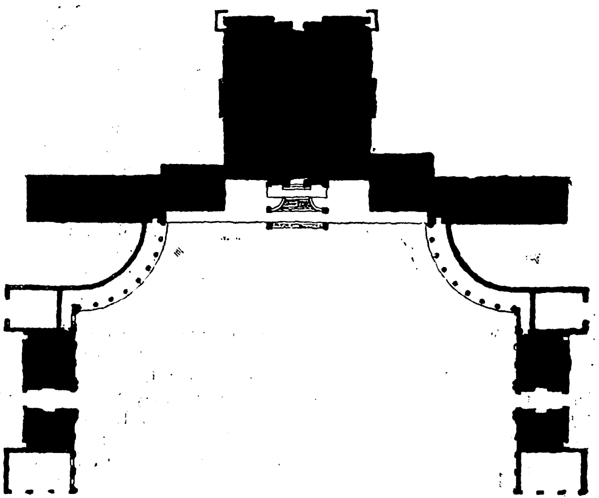
* The symmetrical treatment of chapel and kitchen occurs in other plans in the "Vitruvius Britannicus"; it is not confined to Vanbrugh.



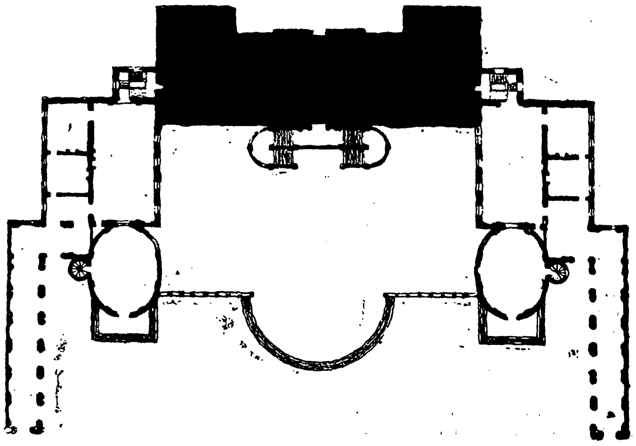
8. Hatfield House.



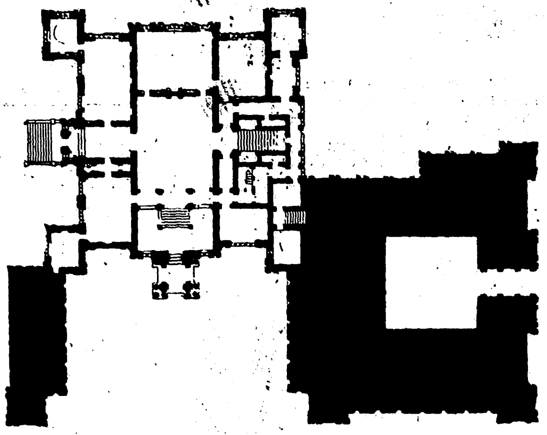
10. Eaton Hall.



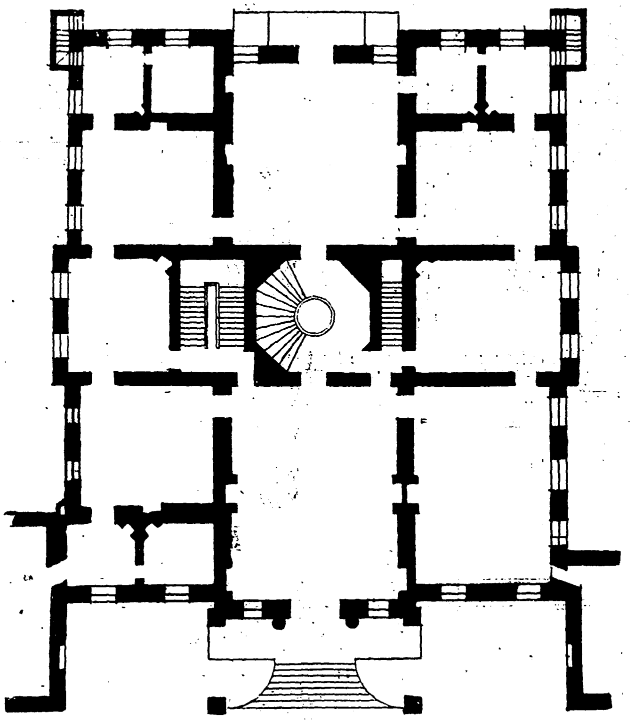
12. Hapton : General Plan.



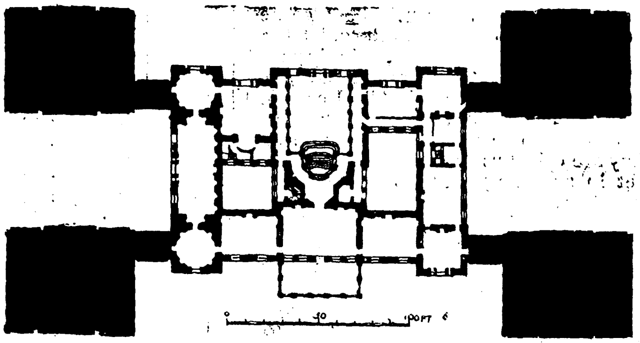
14. Lowther House.



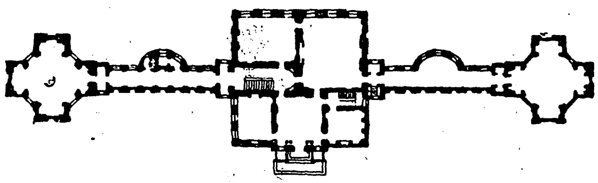
11. Mentmore (Paxton).



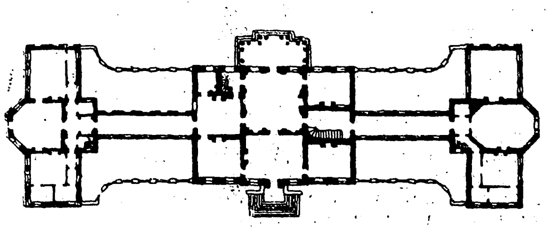
13. Hapton : Plan of Centre Block, enlarged.



17. Holkham Hall (Kent).



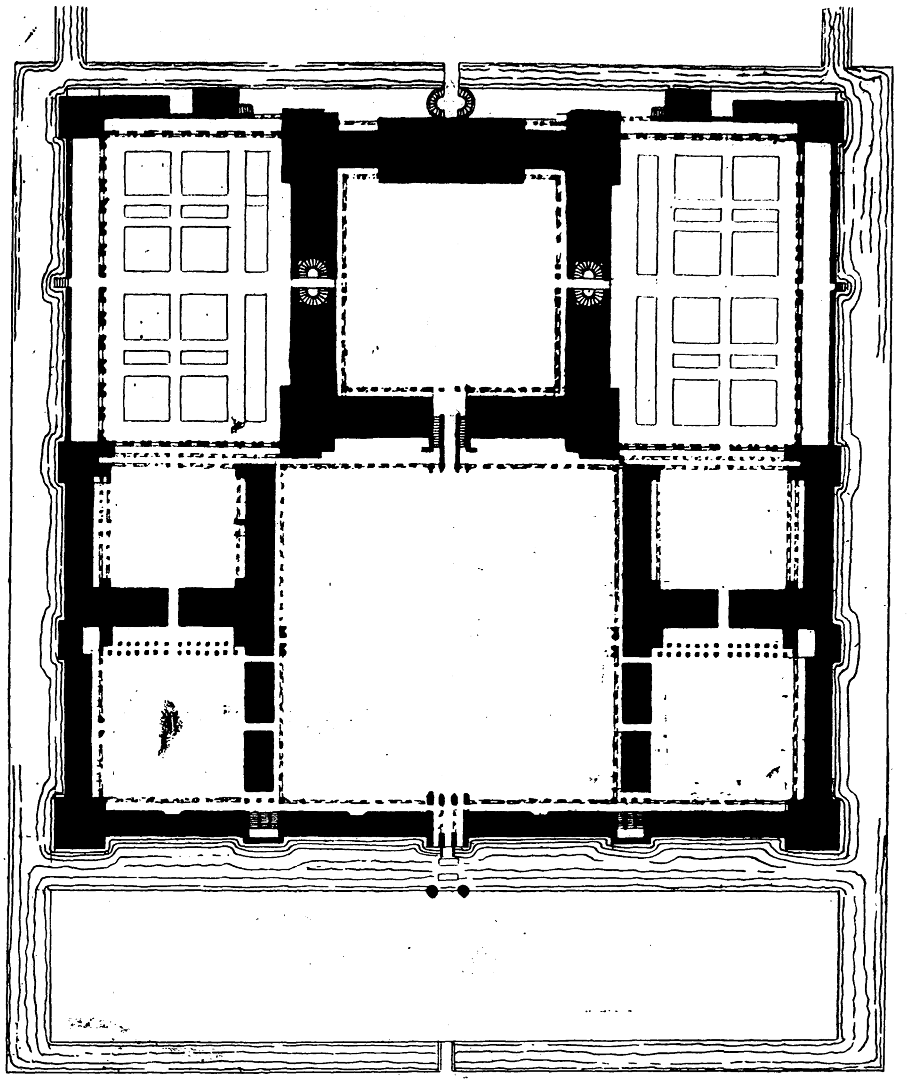
18. Buckland (Wood).



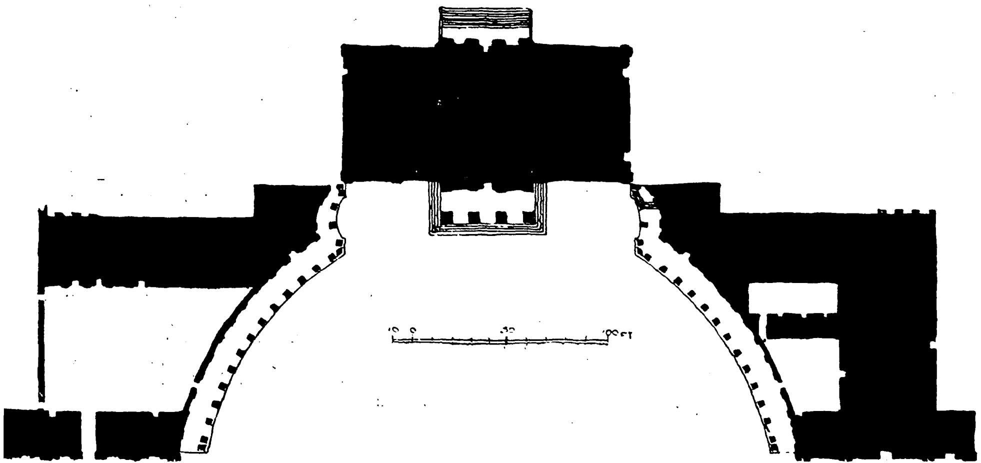
19. Stanlinch (Wood).

*Comparative Plans of some Renaissance Mansions.*

NOTE.—These plans are all reduced to a scale of 100 ft. to an inch.



9. Charleval (from du Cerceau : no Scale).



20. Moor Park (Thornhill).

*Comparative Plans of Some Renaissance Mansions.*

We may compare with Blenheim the magnificent plan of Charleval given by Du Cerceau (fig. 9), which, with its series of colonnaded courts, the great one in the centre and smaller ones on each side, the great square central block flanked by gardens, and the surrounding canals, is really sublime, and seems more like a castle in the air or a château on paper than a design seriously intended for execution.* Across the canal at the back is a great formal garden as large as the whole of the rest of the plan. Turning to the less magnificent but most interesting and varied English Renaissance plans collected in the "Vitruvius Britannicus," we find all kinds of variations played on the idea of outstanding wings connected with the centre by colonnaded quadrants. At Rowhampton House, by Archer, the quadrants are convex, and the front walls of the forecourt show that same kind of modelling in curves which seems to come naturally from Wren's pupil. In the plan of Eaton Hall (fig. 10), the general square lines of Seaton Delaval predominate, the stables and other offices flanking the courtyard without even being masked by arcades; but the great semi-circular sweep of the wall of the outer court is fine. At Beaconsfield (Millner), where the concave quadrant is again employed, the stable openings are round on the outer side, not towards the courtyard. In that remarkably stately modern plan, Mentmore (fig. 11), we see how in like manner the kitchen wing fronts away from the house, and the back walls of kitchen and conservatory blocks, facing each other at each side of the forecourt, are made use of as decorative screens with niches for sculpture, so that they form part of the architectural pomp of the entrance. The quadrant connexion at Beaconsfield is badly managed, as it does not butt against the house block, but returns on itself, leaving an open end. At Hapton House, Scotland (Sir William Bruce—" justly esteemed the best architect of his time in that kingdom "), the convex quadrant is again employed (fig. 12), this time better managed in its connexions; the staircase occupies a fine position in an octagon hall in the centre of the house (fig. 13). At Lowther House, Westmoreland (no architect's name) we have an entirely original arrangement (fig. 14), the advanced wings ending each in an elliptical hall (the chapel on one side, the library on the other), the forecourt slightly raised and protected by a balustrade, and reached by a semicircular range of steps projecting outward at a 40-feet radius; the whole embraced, as it were, by a range of arcaded cloisters on each flank, projecting beyond the forecourt. Braman Hall, one of Colin Campbell's own designs, shows a square block with two small wings connected on each side to the house by a lofty colonnade of three bays, with very bold effect; here, as at Blenheim, the outer blocks are the chapel and kitchen, treated identically. Castle Ashby, a courtyard plan by Inigo Jones, takes us back a generation and illustrates one point in Bacon's plan, the staircases being placed in projecting turrets at the re-entering angles of the courtyard. Eastbury, by Vanbrugh, is very much on the same lines as Seaton Delaval, with the square forecourt with arcades down each side to mask the stable and kitchen wings, and the same vast rusticated order to the house. Here Vanbrugh again uses his favourite arrangement of the two staircases one on each side of the central hall, but in this case he is more liberal to the stairs; the central hall or vestibule, about twelve feet wide, is here only a connexion between the great hall in front and the "Salon" at the back, while the stairs have an ample space twenty feet wide on each side, but shut off from the vestibule. At Seaton Delaval (see *Builder*, April 22, 1893), the stairs are provided in a projecting tower at each end of the main longitudinal corridor (which crosses the end of the great hall), the towers being square externally but the stairs elliptical on plan. At Grimsthorpe Vanburgh goes back to the quadrangle plan, and for once aims at a fine effect with his staircases, which are of ample width and placed within a double screen of columns at each end of a hall 125 ft. long; the staircases visible through the columns and not shut away out of sight. At Burlington House the stable and kitchen wings occupied the middle portion of each flank of the courtyard, where the buildings of the learned societies now are, and the court was closed by the two quadrant colonnades at the end opposite the house—that colonnade which was so stupidly removed and allowed to go to pieces. At Houghton (Colin Campbell) the kitchen and laundry wings, connected by the habitual quadrant, are set back into the rear instead of being brought to the front, and the same is the case with the stable and offices wings at Duncombe Park (W. Wakefield) in which the quadrant is dispensed with, and the outlying blocks more conveniently connected with the house than usual. In "Mereworth" (fig. 16) Campbell contrives a square house with a portico on each face and a central domed hall, which might be capable of charming treatment; unfortunately he has found nothing better to do with his staircases than to make them corkscrews in the piers of the dome; a very mean treatment for a house of this class.

The plan of Kedlestone (as shown on paper) with its outlying pavilions connected by quadrants, is well known, it has been in so many books; it is a kind of plan which looks more effective on paper than it ever can look in reality, as you can never see it all at once; moreover the quadrants are badly managed; instead of butting on to the wings they terminate in a blank end and you have to make a right-angled turn to enter the wings. The treatment of the centre block of the house, with its great columned hall leading into the square salon and thence to the garden steps, is really fine; on the other hand, the staircase is ignominiously packed out of sight in a side recess. The quadrants at Kedlestone, it may be observed, are closed and with windows; not colonnaded. At Nostel (Paine) the same idea is better carried out, though the interior plan of the house is very commonplace compared with Kedlestone. At Nostel we find a recognition of one of the drawbacks to the use of the colonnaded quadrant; the colonnade looked very pretty in itself, but the servants

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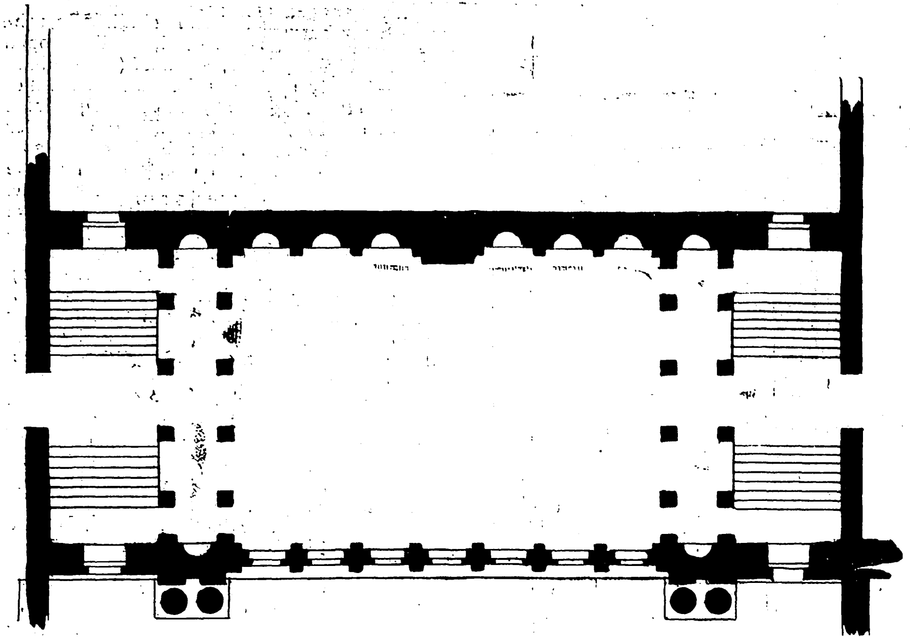
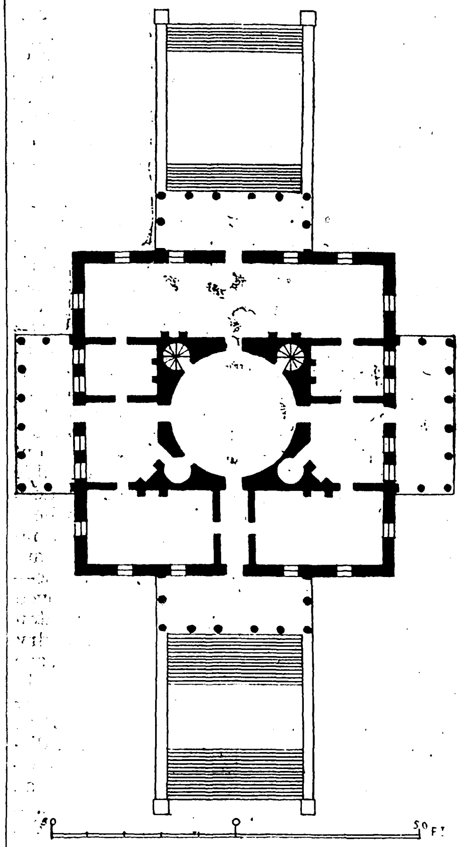
* There is a small building of church-like plan in the centre of each of the two smallest courts, which was duly drawn in my copy of the plan, but which the engravers, through some oversight, have omitted; an omission which spoils the point of the plan very much.—H. H. S.



15. *Staircase Hall, Grimsthorpe (no Scale).*



16. *Mereworth (Colin Campbell).*

passed visibly to and fro along it, which must have looked out of place sometimes. So at Nostel the quadrant consists of a walled passage for the traffic, with the colonnade in front and concentric with it for effect; thus making the best of both worlds. The same contrivance was carried out at Fonthill and in some others of the houses of this type. At Holkham Hall (by Kent) the pavilions at the angles are rectangular (fig. 17) and more closely connected with the house, but the main idea is the same as at Kedlestone. The treatment of the staircase at the end of the hall, with its wide lower flight of steps, is more dignified and stately than in most of these examples. A remarkable plan, standing quite alone in character, is that of Buckland, by Wood, of Bath (fig. 18). It has, indeed, more of the character of a kind of State villa than a mansion, but it is a very fine plan for internal effect. In this case the two end octagons are the chapel and the library, representing architecturally, shall we say, the soul and the intellect; the body is cared for in the basements under them, which are respectively wine and beer cellars, like Mr. Sherrick's vaults under Lady Whittlesea's chapel, in "The Newcomes." Stanlinch (fig. 19), which is also by Wood, shows somewhat the same general idea, but the arrangement of the doors in the central portion of the house is such as to lose the vista from end-to end; this was probably intentional, as the right hand wing is a very spaciously planned bedroom suite, and privacy of aproach to it would probably be consulted. In the left hand wing is the principal room — the dining-room; in this less religious plan the chapel is wanting. The staircase, unfortunately, is very poorly treated. Lastly, Moor Park (Thornhill) is a remarkable example of a stately approach, in which the quadrant colonnades, instead of being merely connexions with the wings, are extended so as to form a mask to them entirely (fig. 20), leaving the planning behind them rather inconvenient; but the fine effect in front may be said to atone for this. The idea was probably suggested by Bernini's colonnades at St. Peter's.

There are few things, to my mind, more fascinating than the study of this collection of plans, so full of fine suggestions of effect, so uniformly stately and dignified in their variety; one cannot help thinking, again and again, what one could do with them in actual architectural treatment. It is true that our enthusiasm, in a sense, is damped on turning to the elevations, except those of Vanbrugh and one or two others. The mechanical manner of the engraving and shading does not assist them; but apart from that, one cannot help wondering that men who had such fine ideas of the basis of architectural design in plan, should have had such tame and formal ideas of their decorative treatment. But what of that? That only shows that there is something left for us to do. Now that we have shaken off the deadening influence of architectural scholasticism and red tape, what splendid things we could do (couldn't we?) if we could only get the chance of treating some such mansion plans as these with the freedom and the richness of detail which we could impart to their treatment in the present. Surely we could make something finer of this type of plan than of the irregular and so-called "picturesque" plan?

But then there is the question of convenience—a question which will not be shirked. Mr. Blomfield remarks on this head:—

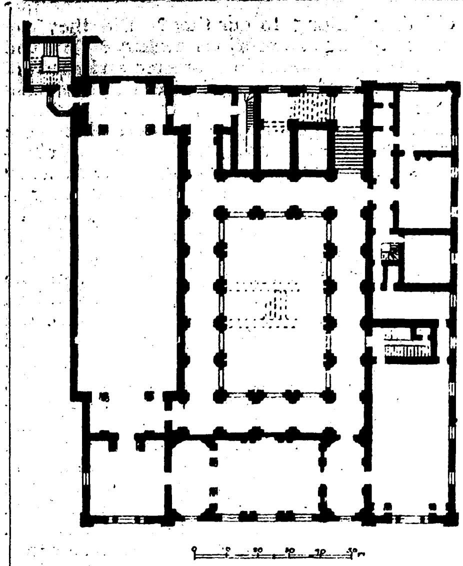
> "It is, of course, necessary to isolate the kitchen and servants' quarters from the big rooms of a house, but such a total disregard of convenience and economy as is shown in these eighteenth-century plans would not be tolerated for an instant in modern house planning. The point of view has shifted."

True enough; but has it not shifted a little too far? Let us continue Mr. Blomfield's sentence:—

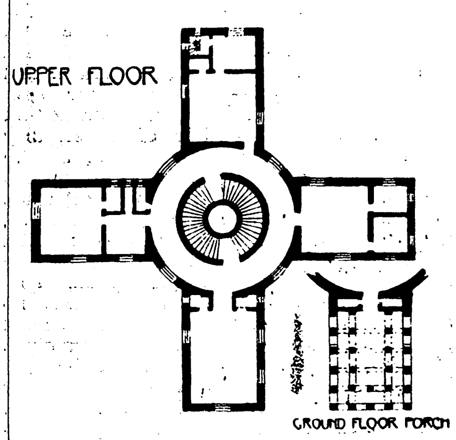
> "Vanbrugh and his successors were permitted to subordinate the comfort of the house to its external architecture. They began from without and worked inwards; the entire design was handled with a view to the realisation of a certain composition, without regard to convenience of arrangement; and the consequence is that there is always a distinct architectonic conception running through the whole of any one of their designs, which is necessarily absent in the heterogeneous assemblage of buildings which compose most modern country houses."

I think the latter half of Mr. Blomfield's paragraph rather gives away the first half. "A distinct architectonic conception"! Is not that worth sacrificing something for, unless we are to return to the "two sticks and a mat," in principle at all events? Let us consider that for a moment. What does the inconvenience really amount to? It lies mainly in one point—the position of the kitchen. That is what you will find again and again in architectural books—the kitchen was 100 ft., 150 ft., 200 ft., from the dining-room; &c. Even in the modern example, Mentmore, before referred to, the distance from the kitchen door to the dining-room door, taking the line along the passages, is 147 ft. (I measured it on the plan). One could hardly in such case say with Milton (referring to the meal in Paradise), "no fear lest dinner cool." That is a real inconvenience; but there is no occasion to revive that. In these days of lifts the kitchen might be in the basement, or it may even be in the attic—perhaps with greater advantage to the avoidance of possible smells. All the provisions can soar up there in the lift with the greatest ease, and when prepared, by the same means descend to the serving-room. Apart from that kitchen question, the wing system of plan may retain all its architectural attractions, not only without any sacrifice of convenience, but even with a certain convenience and suitability. In most houses of the largest class there is now a bachelors' stair and a bachelors' suite of rooms, for visitors who are of that persuasion. Why not a bachelors' wing as a separate block, with a smoking-room on the ground floor and bedrooms above? And then, if one were to match that at the opposite angle by a young ladies' wing, with a charming drawing-room or boudoir on the ground floor. Then what opportunities for a delicate and appropriate contrast in the design of detail and ornament in the two wings, suggesting their opposite characters—boldness and vigour symbolised in the one, beauty and grace in the other, at the same time keeping the general mass and outline of both sufficiently alike for architectural symmetry; a kind of symmetry far more interesting and eloquent than that frigid mechanical symmetry of the Renaissance, each pilaster and each urn on one side answering to a precisely similar one on the other side. I declare one's imagination is quite stimulated by the thought of the artistic opportunities that such an arrangement would afford. Nor is there any inconvenience in the arrangement of a laundry wing, and some other offices perhaps, connected with the main house by corridors, and yet separate, and turning their backs on it; the back walls being treated, as at Mentmore, in a decorative manner. The stable wing, it is to be feared, will hardly be accepted, unless where, as at Blenheim, the scale is so great that it is really a long way from the house.

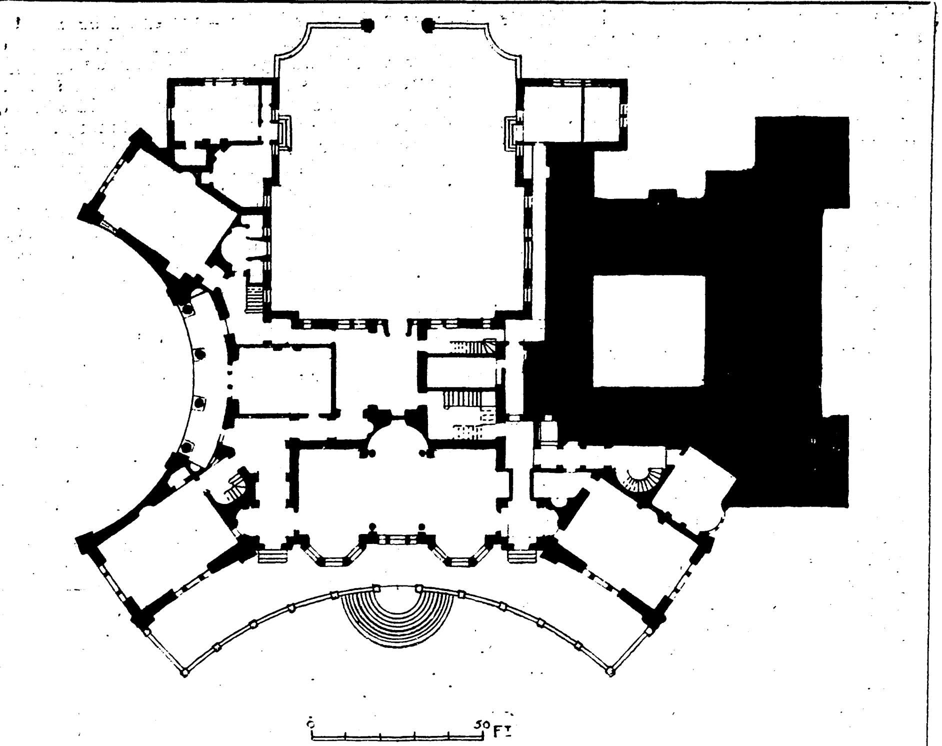
There is no occasion, however, that we should imitate the favourite form of plan of the Renaissance architects. I would only urge that it is not necessarily inconvenient, and that its architectural capabilities have not been exhausted. But let us summarise the problem from the present point of view. In a mansion of the largest class we have to provide for two distinct departments, very different in their architectural requirements, and yet which must be in tolerably close relation with each other. We have the owners and their family and visitors on the one hand, with the rooms in which their life is to be lived; and on the other hand the servants and the rooms in which the work and supply of the house have to be carried on. Granting the principle that the mansion should be treated architecturally in a symmetrical manner (because no other treatment is so dignified), how are we to treat these two departments? The Georgian system was to have one great parallelogram of building, and divide it up as convenient, without any reference to the exterior design; which can hardly be called an architectural method. But if you wish for one great block, it is possible to divide the two departments vertically, and not horizontally; to have a lofty two-storied basement, with a very wide sunken area for the lower windows, and place the state rooms and living rooms on the first-floor, with a great staircase up to their level. That is the old system of the Italian Renaissance palaces; it has been little if at all tried



21. *Bridgewater House (Barry).*



22. *Plan by du Cerceau (no Scale).*



23. *Chesters (Mr. Norman Shaw).*

in England, but it naturally suggests an architectural treatment which would be very fine and effective indeed, and is worth thinking of. On the same principle of vertical division the servants' bedrooms could all be collected in the highest story, occupying what in a classical building would be called the attic; and, as before observed, in these days of lifts there is no difficulty in such vertical division. Another method is the favourite one of the Renaissance architects, of the wings connected to the house by corridor buildings, which has the merit of making the subsidiary departments subserve the general architectural effect, and the inconvenience of which, as I have ventured to suggest, is, if it is properly managed, more imaginary than real. Then we may have, what is the more favourite scheme now, the servants' quarter and offices rather more closely attached to one angle of the main building, forming a second parallelogram placed *en echelon*, or a long wing stretching away to the rear. But in this case it is difficult to make it in any way part of the main architectural design; it must be retired and planted off out of sight. A central connexion of the offices with the back of the main building may sometimes be possible—it depends on the plan of the house and the direction in which the garden is laid out; but in the most stately type of house, as a general rule, it is desirable to have the garden entrance on the central axis line and opposite to the main entrance, as it is in nearly all the great Renaissance plans.

In regard to the house itself, there are three main points to consider: the approach and entrance, the hall and staircase, and the entertaining rooms. A forecourt of some kind, if possible flanked by something in the way of a colonnade or cloister on each side, always adds to the dignity of the house; the conventional sweep-drive up to the door is a wretched landscape-gardener's substitute. And for the access to the house there is nothing so fine as a flight of steps — still more a double flight, in two curves, provided the basement is high enough to afford opportunity for it. We have had no greater loss than that of these beautiful flights of steps up to the doors of the old mansions; for which, in our modern anxiety for comfort, we have substituted that odious excrescence called the *porte-cochère*. Certainly, were I a millionaire and could build a mansion to suit my own tastes, I would revive the flight of steps; but people coddle themselves so now that they are quite afraid of walking up an out-door flight of steps; they must forsooth be set down under cover, and for the sake of their vile bodies they sacrifice architectural dignity. If we must have a *porte-cochère*, better to have a central projecting tower or pavilion and make the ground story an open arcade or colonnade; then you may have a fine effect; then it appears as part of the architectural design; while the mere *porte-cochère* never looks like anything but an excrescence. Inside the house, we must have a large central hall, lighted from above, unless it goes right through the house with a great window at each end; and we must have above all things a spacious and noble staircase, not hidden away out of sight. A flight of stairs, well designed, is one of the finest objects in architecture; and on a reception night with a crowd of guests, it plays a great part in the show; like Jacob's ladder, angels ascend and descend upon it. Where there is a very large hall, the stateliest staircase will probably be one which is in the hall and forms as it were part of it; one may even commence it with a short flight of a few steps extending right across the hall. The difficulty in such a case is to plan it so that it will not interfere, above, with the integrity of the gallery or loggia which you will certainly have round the hall on the upper level. In the case of Bridgewater House (fig. 21), Barry, as Professor Kerr mentions in his book, intended at first to have the stair in the midst of the cortile, where the dotted lines are shown; on second thoughts he took it out of the cortile and made it a separate staircase at the end; the cortile may have gained, but the stair lost in dignity. Delicately modelled curves of the edges of the steps, in the wide lower flights especially, add much to the beauty of a staircase; on a small scale this is very well done in the charming staircase designed by the late Mr. Cockerell for the Society of Water-Colours' rooms, which I recommend students to look at. The weak point in a staircase to my mind, is the raking soffit, and it is well where it can be designed so that this is hidden and only the steps themselves visible. This is very well done in the grand staircase of the Paris Hôtel de Ville, where two broad flights, between marble-lined retaining walls, start right and left from the lower hall; and this kind of staircase may be also applicable to a private mansion on a large scale, where the upper plan was such as to admit of landing the staircases at two widely removed points. At the same time it may be said that the double staircase has more affinity with the idea of a public hall than of a private house. Where the general plan allows of it, a flight of stairs on a long curve is nearly always fine; not a circular stair—that looks too utilitarian, as if it were done to save space, and the curve is too quick; but an elliptical hall, for instance, with a stair following its curves up on each side, is a noble scheme. But there is no end to the beautiful things that may be done with stairs, where there is space enough; they are the poetry of internal architecture. [In connexion with this subject the lecturer mentioned, illustrating it by a sketch on the board, the plan of a staircase which he remembered in an old book of French plans of mansions, where the state rooms were on the first floor, in two parallel suites running from front to back of the house, while between them a very wide staircase, in a succession of short flights, went from the entrance right to the back, landing in a vestibule connecting the further ends of the two suites. There could be nothing finer for a stately effect. The late Edward Barry, he said, had planned the stair in a similar way in his design for rebuilding the National Gallery.]

As for the entertaining rooms, the great desideratum for them is that which applies also to the whole ground-plan of the house, viz.: that they should represent an architectonic conception, in the configuration of each room and in their relation to each other. Systems or ideas in planning are endless; the great thing is that there should be an idea, and not merely a space divided into rooms by walls. Another point that will almost always be right (though there may be exceptions in special cases) is that the principal dining-room should be on the opposite side of the hall from the drawing-rooms. Another is that the principal rooms should be planned on an axis, and should be capable when desired of opening out a vista through the greatest length of this portion of the house; remembering, as before suggested, that mystery is not the attribute of a great house so much as grandeur. Then as to the question of inter-communication, a corridor, of the ordinary proportion of width, is not the best suited to a mansion; it is a feature more characteristic of a public building; if there is a long apartment of communication, it should be rather of such proportionate width as may remove it from the category of corridors to what is more properly called a "Gallery"; not a mere passage, but a long room which is also a passage. And in a state suite of rooms it is a question whether some of the rooms of ordinary proportions may not quite fitly be planned to open one out of another, and one be used as the passage to another. Upstairs, of course, we must have corridors—we cannot in the present day walk through each other's bedrooms in the nonchalant manner in which the inhabitants of many Elizabethan and Stuart mansions must have done; but in a suite of entertaining rooms on a great scale there is no objection to walking out of one into another, and there is even a certain added dignity in the arrangement, as if the house were on too grand a scheme to stoop to the mere utilitarianism of corridors.

In conclusion, I would encourage those who have the chance of building large houses to endeavour to revive in them some of the old stately character which, as it seems to me, has been sadly lost during the present century, through a mistaken craving after what is called the picturesque; and not to be afraid of trying new and original dispositions of plan merely because they are new and original. Why is a form of plan which promises a fine effect to be shirked merely because it is unlike what people are used to? You would perhaps say, or your clients would say, that this plan of Du Cerceau's (one of his numerous suggestions) was a very *outré* idea for a house (fig. 22); and it must be admitted that as it is shown by Du Cerceau it is a very bald suggestion—merely a kind of skeleton plan; but what a beautiful thing, both internally and externally, might be made out of that idea, if it were worked out in a more complete and architectural manner. As an example of a modern plan of great originality and beauty we may take that of "Chesters," by Mr. Norman Shaw (fig. 23); also a plan, as you see, with an idea, and which is a fine example of the novelty and effectiveness in house-planning which is within our reach if we will give our minds to it. There is far more to be done in the way of invention and fine effect in the planning of the higher class of mansions than has yet been done; while we can emulate, in new forms, the stateliness combined with variety of the Renaissance plans, we can clothe them with detail much more free and expressive than the dead scholasticism of the Orders with which our able Renaissance predecessors were fettered. But we must begin with the plan.

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The Chairman, in opening the discussion, said they all welcomed Mr. Statham for he took such a real and continued interest in the Association. None of those who were present on the occasion would forget Mr. Statham's extremely interesting lecture before the Association on London bridges, and the present paper had been looked forward to with a good deal of interest. No one could regret that the choice of the subject was left to Mr. Statham. The paper had brought together a large audience, and they were honoured by the presence of the President of the Royal Institute of British Architects, Professor Aitchison, whom he would ask to address the meeting.

Professor Aitchison, in proposing a vote of thanks, said he had little to say except to endorse the remarks of Mr. Statham as to the very much greater effect to be got by having the plan made architecturally than by letting it grow in a haphazard manner. When he saw Castle Howard and Blenheim, the greatest want he noticed was the absence of a fine staircase. There were two staircases at Blenheim, opposite one another and on either side of the hall, and they were ridiculous in scale for the size of the house. He tried to solve the reason of this and he had come to the conclusion that as the state rooms were on the ground floor, there was no reason for a grand staircase to reach the private rooms of the house and the servants' quarters. There could be no doubt that a fine staircase was a great attraction in a house when the rooms were to be used for state or for receptions. When the principal rooms of a large house were on the first floor, the staircase ought to be striking in character. A London house, designed by Anthony Salvin, with a very fine staircase, was Lord Leconfield's house in Chesterfield-gardens. The staircase had a single flight up to the landing, and from it two to the first floor gave a very fine effect, indeed. He was not sure that any finer effect could be obtained than from the *scala regia* which Mr. Statham had sketched on the blackboard, and no doubt most of them had seen one of Soane's designs for a *scala regia* for the Houses of Parliament. The next finest staircase, in his opinion, in London was the one at Ashburnham House, by Inigo Jones. The effect was perfectly wonderful in coming on to that staircase from the comparatively mean and low hall. He did not quite agree with Mr. Statham as to the circular staircase; it would make a fine line if the steps could be got to run up continuously; though, of course, when there were landings, they, as may be seen at Somerset House, produced a hideous shape. Where it could be designed on two sides of an ellipse it looked well if without landings. He recommended students to study the staircases of some of the late Italian palaces, for they were very fine, and beautiful in design. The staircase built by Colin Campbell, and improved by Edward Barry, at the Royal Academy, was very fine, except that the light was not good at the top. There was a harmony of proportion in all Sir Charles Barry's classical work, but for purposes of convenience, he was too fond of designing the staircases of his houses, like some of those in the Italian palaces, between two walls; for unless they were on a magnificent scale they lost a great deal of their effect. The German plan, which Mr. Statham had shown, was very interesting, and it seemed to be a very good one. He had never previously seen the plan of Mr. Norman Shaw's "Chesters." There was no doubt that it was a most original and effective plan.

Mr. Halsey Ricardo, in seconding the vote of thanks, said he had listened with sincere admiration to Mr. Statham's paper — to its thoroughness, comprehensiveness, and logic. The leading idea in the paper was that of the architectonic conception of the plan, and it was that that made a building interesting to posterity. He agreed almost entirely with Mr. Statham's views; the difference he would suggest in their way of looking at the matter was that Mr. Statham, in speaking with great enthusiasm of the plans of the grand houses which he had exhibited (an enthusiasm which he thoroughly shared), seemed to think that those plans were good material for use in the present day, and that there was a great deal in them to be boldly and bodily incorporated. He (the speaker) did not know how many of his hearers would agree with him in thinking that those plans had a sort of echo of the past about them. They were exceedingly interesting—rich in association and history—and had a pathetic interest for us because they did not belong to our own time—one wished they did. They had an interest for us similar to that one felt for the castles referred to by Mr. Statham. The Elizabethan dwellings that followed the Mediæval castles were quite different from them, because the conditions had changed and the inmates had no fear of attacks from marauding bands. Then came the Renaissance, which, in England, he thought, was less genuine and expressive than the preceding architecture. The Renaissance in Italy was a natural occurrence; there was a sort of tumultuous character about the people, and life was extremely vivid and real, because it might be lost at any time. The Farnese Palace represented Farnese, and the kind of person he was, and the sort of entertainments and receptions he gave; they were a very natural kind of embodiment of him and his aspirations and hopes and fears. Again, the same remarks applied to France, in the time of Louis XIV., when that monarch tried to do the Imperial Cæsar. But in England we had not had that kind of person so much, although there was something of it. "The stately homes of England," that Mr. Statham had been showing were, he thought, not representative of English thought and feeling. If it were desired to build so as to interest the thoughts and feelings of posterity, they must embody the thoughts and feelings of their age in their buildings, and he did not think that such a building as Blenheim, for instance, represented that; Blenheim was extraordinarily ingenious, but was it not rather a dreary affair to look at? It was interesting to the architect because the architect understood the difficulties faced in its design. These—or even earlier work like that at Whitehall—were creations of the brain rather than the heart. This—intellectual architecture he would call it—had no hold on the people: they did not feel its influence. We talked about "masterpieces," and yet we let two fine Portland stone-fronted houses, balancing each other in Cavendish-square, be spoilt by the buildings put up against them; and we tranquilly bore the ruination of Stratford-place. This academic architecture interested people very little; and was that not a call to get closer to the character of the people they built for if they meant their work to last? When architects talked about fine effects, were they not referring to effects that were born of the office and not of the real world outside? The "stately rooms" of stately palaces, &c., did they belong to our time? Did they not rather belong to a previous century? We had changed very much in character and mode of life since 200 years ago. He heard in that room recently a statement that the architectural works of the present time that were most characteristic and actual were the public-houses and the underground conveniences.[*] He would rather say that the most characteristic and real architectural works of the present day represented the humane side of our human nature, viz., our great hospitals, our public libraries, and our Board schools, and he thought that in time to come people would look back with pride upon them. Our architecture, he thought, should embody that view, and should be more humane in its character. The houses dealt with by Mr. Statham were rather frigid, stately things, and when they asked themselves: "Would I have this grand house for my own, to live in?" They would say: "No; I do not mind looking at it and admiring it from a place just outside the Park, but to live in it would be a misfortune." They were glad that these buildings existed, but to reproduce them or their sentiment would be a mistake, for they belonged to another time. The idea that they had to get in their architecture was the humane and kindly one. The offices, for instance, in houses should be on a different scale from what they were in Blenheim and such houses. The servants should be properly treated and should not be ignored—cramped in the basement and skied in the garrets, and put behind screens; at the same time, of course, they could not live in the house sharing all the advantages of the owners. He thought that the doors of rooms were often wrongly made to open so as to disclose a dead wall, whereas, in his opinion, they should open to exhibit a window, with its sense of expanse, and the romance of incident and colour beyond. This was a shy, private age, and there was no reason, therefore, why our architecture should possess the ostentation and size of the buildings of 150 years ago. The more heart they put into their buildings, the more interesting they would be to the people who lived in them and the more interesting to the people of succeeding times.

Mr. Beresford Pite said it gave him great pleasure to join in thanking Mr. Statham for the liberal use he made of his gifts. They not only remembered Mr. Statham's lecture on the bridges of London—there were his recent excellent lectures on design to the students, and his lecture on street architecture. The subject of the present address—which no doubt would bear fruit in the studies of members of the Association, as Mr. Statham would wish—was a very interesting one. We had, he supposed, now arrived at an era of house building, having passed through the era of church building—in which they studied cathedrals in order to build small churches—and Board school building—about which he could not agree with Mr. Ricardo that they would go down to posterity. We had passed on through the era of free libraries and municipal buildings of one sort and another, and had unconsciously, perhaps, been introducing into them the porticos, pilasters, &c., of the Italian palaces, and Kedlestone and other large and grand houses had been drawn upon for the municipal buildings of the present day. He did not know what had directed Mr. Statham's attention to this class of building; his survey was not, perhaps, so wide as he had accustomed them to. Perhaps Mr. Statham had been over-fascinated by the "Vitruvius Britannicus" and had fallen unduly under the bewitchment of the grandeur of the quadrants and courtyards shown in it. But they must not forget that Mr. Norman Shaw had fascinated their world with the art of romantic Gothic planning long before "Chesters" was thought of through the hundred and one things which he imported into the planning of a modern mansion to give the charm of a mediæval building. There was an art and charm in Mr. Shaw's picturesque planning as there was in his geometrical planning. The interest of the subject was due to the subject and not to its relation with everyday practice. One of the earliest papers read there that he heard was by Mr. Ingress Bell, on ideal dwelling-houses, in which the author pictured the ideal dwelling-house as described by Thackeray, Dickens, Tennyson, and other writers; and had quoted from Thackeray a satirical description of the gaunt portico. They had passed away from that distant period, but now there appeared to be a swing of the pendulum. Lord Curzon, they understood, would find Kedleston in Calcutta, and Mr. Statham was putting before them, with the intention of cultivating their imagination, the plans of houses with the "gaunt porticos," and was suggesting that they should regard those plans as useful pabulum for architectural design in the present day. Those plans had an undoubted interest—as a series of cathedral plans or other plans would have. Every arrangement of plan, in fact, was interesting and charming. But when they came to plan a building artistically they would be faced with the difficulty of cutting down in order to deal with their client's views, with comfort — or modern ideas of that — and economy. These were the conditions which governed them right and left; they would not have the scope, either in town or country, of the designers of the buildings dealt with by Mr. Statham, and they would have to use their inglenooks, &c., and be content with them. But they had more opportunity for planning a house in the real exercise of the art of architecture than some of them imagined. That was in facing the everyday and well-known circumstances and needs of life, and dealing with them suitably and attractively. There were no complicated problems to deal with, but there were needed the use of a cultivated intelligence and the love of beauty (which constituted their art)—the suitable planning of a door in a dining-room, for instance; the getting rid of such awkward things as chimney-breasts; and, generally, making the room as interesting and beautiful as possible, were some of the conditions, even to placing the kitchen where it would obtain a north light, and as suitably for the cook as possible. Architects must take their ideas, to a large extent, from their clients, and do the best they could for those clients, but whether they could analyse the motive of the age in which we live sufficiently to translate it into brick and stone was, and would be, a puzzle.

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[*] See report in the *Builder* for November 19 last, page 461.

Mr. Francis Hooper said that previous speakers had referred to differences in the conditions of to-day compared with the times when the magnificent houses referred to by Mr. Statham were erected. Many of the owners of those buildings were the favourites of the Court, depending for their possessions on the favour of the Sovereign. To-day some of our largest houses have been built for those who have been so fortunate as to strike a mine of some sort, and their wants were not of a very dignified character, and it was not remarkable that architects failed to get much inspiration in studying those wants. While we heard a great deal about the houses of the wealthy of the past, we learnt little or nothing about the dwellings of the poor. To-day we were erecting artisans' dwellings, some of which would probably live for 300 years—unless they were pulled down because they were insanitary, which was not unlikely. In our costly hotels and in our town halls—our County Council buildings, our Polytechnics, and institutions of that sort—much skilful planning was necessary, and many opportunities were afforded for producing the symmetry which was secured in days gone by. What he wanted to suggest was the possibility of getting symmetry in a group of cottages. At Guildford Mr. Ernest George had erected some beautiful almshouses for Lord Onslow, and they all knew the group of almshouses, by Wren, at Mile End; was it not possible, in our modern dwellings, to get something of that charm, instead of the barrack-like effects which appeared to satisfy to-day? Then as to hospitals. So far as sanitation was concerned they were magnificent buildings, but their architects had to apologise if they put in them anything in the way of architecture, and as to ornament, an excuse had also to be found for it. In studying the bodily needs of the inmates of these buildings, one should not forget or neglect their mental wants, nor the needs of people who were sound in mind and limb. In planning houses in rows, too, was it not possible to get an effect by grouping—something to break the monotony of the modern street fronts?

The Chairman, in putting the vote of thanks to the meeting, said he could not help noticing particularly one remark Mr. Statham made in his paper—viz., about the Gothic revival—a remark that was made in nearly all the papers they had now. Nearly every one seemed to think now that the poor Gothic revival was responsible for so many sins. No doubt to some extent it was, but it had also been responsible for good, and no one could help acknowledging it. Mr. Pite had struck the chord in his (the speaker's) mind. There had been no other recent generation that, in house planning, had produced a man who had planned such grandly-picturesque houses as Mr. Norman Shaw. That planning came about through the Gothic revival, too, and he thought that we might claim it as a really and truly representative of our national domestic architecture. Much as he admired the German and French house planning, he felt we had a distinctly national form of planning in our domestic buildings, and that neither in those countries, or in America, or anywhere else, was there such truly domestic architecture as in our own country. He most thoroughly agreed with Mr. Ricardo that, in the humane side of planning in hospitals and lunatic asylums, for instance, they had work that would be specially distinctive of the time in which we live. As to picturesqueness, surely that was, and should, be, found in small houses. The word had been rather sarcastically used, but he thought it had a good meaning to many of them and it should not be despised. In large and stately buildings greatness and not picturesqueness should be sought after, but the picturesque plan was the result of an insufficiency of means in the designing of a building, and surely it was not out of place in such buildings, where grandeur was impossible.

The vote of thanks having been heartily agreed to,

Mr. Statham, in reply, said the worst of reading papers was that people always made out afterwards that one had meant something one did not mean. His friend Mr. Ricardo remarked that the houses he had been specially referring to were too frigid and stately. He (the speaker) had said so; he suggested that the same ideas could be treated in modern days in a more interesting manner. He had never said he wanted any one to imitate the Renaissance plans; what he did say was that they were suggestions for ideas; and he thought they showed finer ideas than what he had called the rambling plan. Mr. Ricardo thought a modern house of the kind would be all very well to look at, but not to live in. In that he differed *in toto* from Mr. Ricardo, for he had a passion for grand houses, and he would like nothing better than to live in one. Mr. Pite was mistaken in thinking that he had been fascinated by the "Vitruvius Britannicus." The fascination had grown long before looking at that book. He had merely gone to the "Vitruvius Britannicus" for illustrations, not for inspiration. He sympathised with Mr. Pite's feelings about Mr. Norman Shaw's plans, and he had a great admiration for Mr. Shaw's houses generally, but all those "hundred and one things" that Mr. Pite referred to seemed to him like an attempt to make the picturesque on purpose; a modern pose, in fact. As the Chairman had said, picturesqueness had its place in small houses, but what he wanted to see was distinct form in houses—a distinct idea. When the Chairman spoke about the national form of house architecture, he thought, Is it not a national no-form? Some of our best architects designed houses in this rambling manner, and in German and American houses he saw more thought and more endeavour to make a consistent whole of a house.

The Chairman announced that the next meeting will be held on the 20th inst., when Mr. Beresford Pite will deliver an illustrated lantern lecture on "Ancient and Modern Buildings in Palestine."

The meeting then terminated.

A Disputed Contract.—On the 5th inst., at the Surveyors' Institution, Savoy-street, Victoria Embankment, an arbitration case came on for hearing before Mr. Latham Withall, as umpire. The parties to the action were the St. Luke's Vestry *v.* Pedrette & Co., contractors, and the counsel for the parties concerned were Mr Bartlett Dennis for the Vestry and Mr. M'Coun for Messrs. Pedrette.—Counsel for Messrs. Pedrette stated that that firm had contracted with the St. Luke's Vestry to carry out certain work under contract at a price of 6,870*l.* It was subsequently found necessary to extend the works, and eventually the total price came up to 11,000*l.* Of this sum about 2,000*l.* was disputed by the Vestry. Claimants contended, however, that the whole of the work done was necessary, and that the prices charged for the work were reasonable. This was disputed by the Vestry.—After hearing evidence the arbitrator reserved his award.

## *ARCHITECTURAL SOCIETIES.*

**Sheffield Society of Architects and Surveyors.**—The ordinary monthly meeting of this Society was held at the School of Art on the 10th inst., when Mr. Frank Baggallay delivered a lecture on "Some Common Errors in Architectural Design." We hope to be able to print the paper in our next issue. The lecture was illustrated by drawings and diagrams. On the motion of Mr. E. M. Gibbs, seconded by Mr. J. B. Mitchell Withers, and supported by Messrs. W. C. Fenton, F. W. Chapman, W. J. Hale, and the Chairman, a hearty vote of thanks was given to the lecturer. It was announced that the series of lectures by Mr. H. Stannus, of London, would commence on Thursday, the 19th inst., and on each Thursday evening up to and inclusive of March 23, in the Montgomery Hall.

# Illustrations.

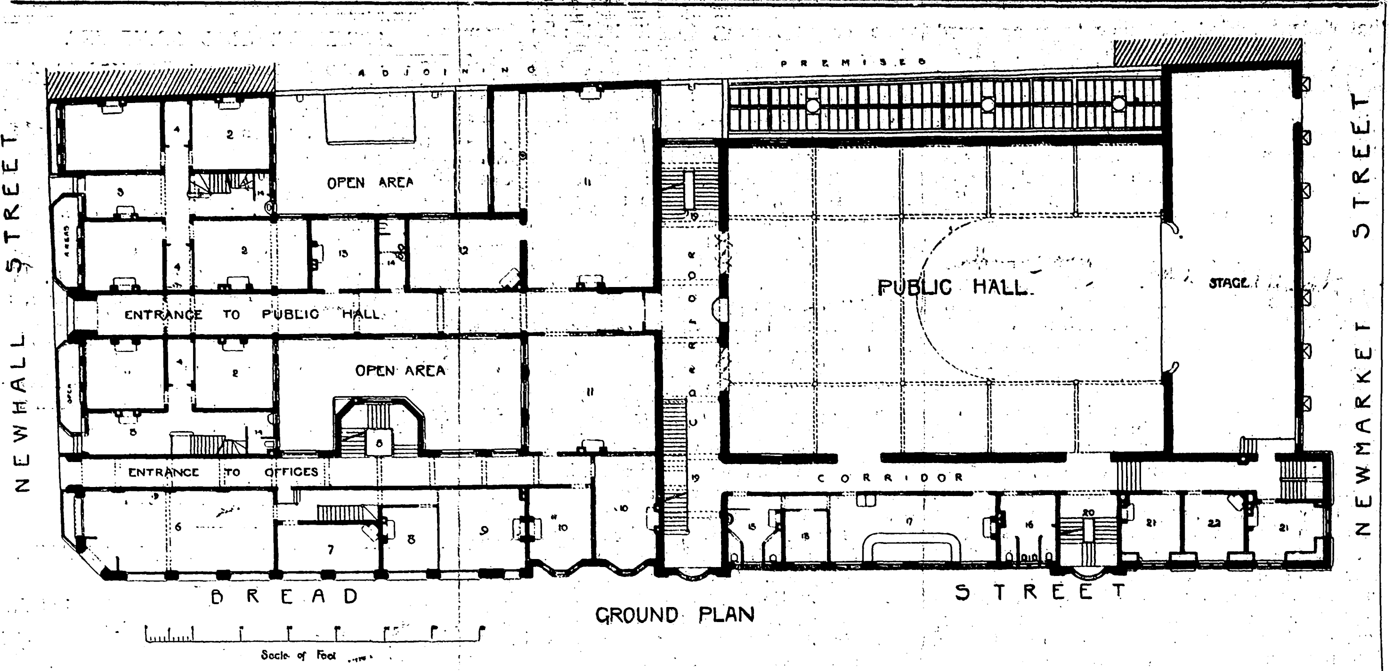
### DESIGN FOR A LIBRARY CHIMNEY-NOOK.

THIS design, which was exhibited at the last Royal Academy, is by Mr. A. F. Brophy, who sends us the following sketch of his intention in the design: "The idea is to take the story of Adam and Eve for the foundation or surrounding to the fire—the first generating element. From the keystone springs the Tree of Knowledge, and the fruits thereof are shown in the books giving the history of man, on the shelves ranging with the relief panels. I crown this portion with the bust of Lilith; I take her as typical of woman's power, given to her by her beauty and wit."

### WORKMEN'S CLUB, &c., BIRMINGHAM.

This building, which also includes a savings bank and offices, is being erected on a site with a frontage to Newhall-street, Birmingham. The plan of one floor is appended. From the Newhall-street level the building will rise to the height of four stories, the attic story in the front being continued as a mansard in Cornwall-street. The material will be red brick, enriched with bands, mouldings, and arches of buff terra-cotta. Having in view the use to which the Newhall-street side will be put, the architecture there will be almost domestic in its character. The design has been adopted by the architects from that of an Elizabethan mansion. The front, recessed from the street line so as to give room for a palisaded area, will be broken at each end by projecting sections crowned by gables of curved outline. The high-pitched roof of the gables in front and the mansard roof at the side will be of grey-green slates. The middle entrance, leading to the public hall, which forms an important part of the scheme, will be a projecting porch with a boldly-moulded arch and pediment. A smaller entrance of similar design will be provided for the offices' staircase, and in the base of the turret will be a large arched door for the bank, the adjoining window of which, in Newhall-street, will be similarly treated.

The "Workmen's Hall" block, with its subsidiary buildings, will extend to New Market-street. Its architecture will be in harmony with the rest, and the material will be the same. The ground floor, corresponding with the basement of the front portion, but given a greater height by the drop in the level of the street, will be laid out partly as a club. It will have a smoke-room (35 ft. 3 in. by 62 ft. 3 in.), a dining-room (44 ft. 6 in. sq.), a games room (35 ft. by 31 ft. 3 in.), with a porter's room, a servery, a bar, and other conveniences, and committee-rooms for the institutions using the building. The rooms above will serve as offices for the institutions using the buildings. The doctors' rooms, entered by their own doors from Newhall-street, will be on either side of the main entrance, three suites being provided on the ground floor and four on the first floor. Twelve suites of offices will be included in the letable space of the front block. The public hall will hold from 1,700 to 2,000 persons. There will be a stage, 80 ft. by 28 ft., with green-room, dressing-rooms, scene-dock, and a sunk enclosure for the orchestra. The auditorium will measure 90 ft. by 64 ft., with a height to the centre of the elliptical ceiling of 48 ft. and to the wall-plate of 36 ft. On three sides will be a gallery rising to the top of



*Workmen's Hall and Club, Birmingham,—Plan.*

References to Plan.

1. Consulting Rooms.
2. Waiting Rooms.
3. Entrance to Doctors' Chambers.
4. Stores.
5. Lift and Stairs to Offices.
6. Banking Room.
7. Manager's Room.
8. Auditor's Room.
9. Clerks' Room.
10. Offices.
11. Meeting Rooms.
12. Committee Room.
13. Secretary's Room.
14. Lavatory.
15. Ladies' Lavatory.
16. Gentlemen's Lavatory.
17. Bar.
18. Attendant's Room.
19. Stairs to Public Hall.
20. Exit Stairs.
21. Dressing Rooms.
22. Green Room.

the room, and having eleven tiers at the end and five at the sides. Access to the gallery will be given by corridors running round the hall at different levels. The stage will be structurally isolated from the auditorium, and will have an iron curtain, while there will be an ample number of exits from the hall.

The contractor is Mr. A. B. Hollingsworth, and the architects Messrs. Essex, Nicol, & Goodman, of Birmingham.

## COMPLETION OF TOWN HALL BUILDINGS, CLERKENWELL.

This drawing, which was exhibited at the Royal Academy of last year, shows the elevation of the building at the junction of Middleton, Exmouth, and Rosoman streets.

The tower has been so far omitted in execution, but it may be carried out in the event of Clerkenwell becoming a municipality.

The architect is Mr. C. Evans-Vaughan, and the builder Mr. B. E. Nightingale.

## DESIGN FOR A TOWN CHURCH.

This is the design which gained for its author, Mr. W. Hawke, the Royal Academy Travelling Studentship for 1898. The subject was a church to seat 800 persons, on a given site.

We give the plan, two elevations, and one section of the design. As we have already said, we think the position of the dome should rather more decisively govern the character and setting-out of the plan; perhaps the lines of seating, running unbroken past the western piers of the dome, rather tend to increase this appearance of a want of decisive design in the plan. The author has adopted the system of an outer and inner dome (both of masonry), the inner one being of elliptical section.

## NEW CHURCH FOR ST. LUKE'S PARISH, DARLINGTON.

This drawing, which shows the perspective view and plan of a new church design for the Parish of St. Luke, Darlington, was exhibited at the Royal Academy of last year.

The plan, as will be seen, is rather unusual; that of a two-aisled church, with a transeptal projection on the south side only. Externally the whole groups very well.

The architects are Messrs. Clark & Moscrop, of Darlington.

## THE SURVEYORS' INSTITUTION:

### DISTRICT AND VESTRY SURVEYORS.

A meeting of the Surveyors' Institution was held on Monday in the temporary premises, Savoy-street, Victoria Embankment, W.C., Mr. Robert Vigers, President, in the chair.

The minutes of the last meeting having been read and confirmed, and some donations to the library having been announced, the discussion on Mr. W. Weaver's paper on "The London Building Act and the Official Supervision of Buildings," read at a previous meeting,* was resumed.

Mr. J. Douglass Mathews said he was somewhat surprised that Mr. Weaver, as a practical man, should have brought the subject forward, though he would not have wondered if some legal member had done so from a theoretical point of view; but now that the subject was under discussion it was important that it should be considered from both sides. He was surprised that Mr. Weaver should seriously propose that the work which had for so long been carried out by two officials should be performed by one. Before any change was made it should be shown what necessity there was for it, and until this was done District Surveyors ought not to be dispensed with unless they were incompetent or careless. Much of the difficulty had arisen in the confusion of the two offices by the use of the word "surveyor," which might have been avoided if the term "engineer" had been used. The positions of the District Surveyor and the Local Surveyor were dissimilar; one was appointed for life, unless incompetent, and the other by the local authority, and liable to dismissal by his employers. The position of District Surveyor, dated from the time of the Fire of London, and it had always been regarded as one of importance, and has attracted good and well-known men who did not seek office, as had been suggested, for the sake of obtaining private practice. That position had been altered comparatively recently by a resolution of the London County Council, and though the surveyors who were still appointed made good and able officers, yet it was an undeniable fact that the number of men who now came up for examination as District Surveyors was not a sixth of those who formerly entered. The education and training of a Local Surveyor was rather gained in an engineer's office than in an architect's, and an examination for such an official would most likely be held in connexion with the Institute of Civil Engineers rather than the Institute of Architects; as, of course, the examinations differed a great deal. As to the qualifications of candidates, after an experience of twenty years' on the Statutory Board of Examiners, he was able to say that it was not those who prepared the best designs who necessarily obtained their certificates as District Surveyors. Although many artistic architects had passed the examination, but did not seek the appointment of a District Surveyor, though amongst that body there were many who were both artistic and practical men. The certificate for a District Surveyor could not be gained merely by a knowledge of materials and such information as could be obtained from books. He had to satisfy the examiners that he could design a building constructively, and was likely to use materials of such strength and in such a way that they were properly fitted for the work they had to do. The examination was a searching one, and the examiners tried to test the fitness of the candidates in every way. Amongst other duties, the District Surveyor had to approve or reject drawings of public buildings in all the details of construction. Many public buildings were designed by architects of knowledge and skill, and it was very necessary for the surveyor to have as good a knowledge as the architect. In the case of dangerous structures, a great deal of experience and knowledge was necessary on the part of the surveyor, for although a crack in a building may appear, it was often not supposed to cause the building to be dangerous, and the District Surveyor, in such work, had to act with care and discrimination. Builders, large and small, were generally satisfied with the present arrangement, and were not at all anxious for a change to be made. Many small builders looked upon the District Surveyor as a guide and friend, for he explained to them the Building Act, and pointed out what they could and could not do. He was easily approachable, and at a very short notice he gave his opinion or decision. The District Surveyor endeavoured as far as possible to aid and promote building rather than delay it, and architects, even, were not beyond seeking the advice of District Surveyors. With the enormous amount of building that went on in London the District Surveyor clearly did his duty or there would not be so few accidents as there were. As to jerry building, it was not confined to London, nor did it apply to walls alone. It applied just as much to bad carpentry, plumbing, drainage, and other work, as to the structure generally, and the District Surveyors, both in 1878 and 1894, did their utmost to obtain more stringent measures to prevent this class of work, and, he considered the results had been satisfactory. Could the work of so useful an official be better done by a Local Surveyor; or, as Mr. Weaver put it, could the work of the Local Surveyor be done by the District Surveyor? He believed there was no District Surveyor who would venture to take up the work of the Borough Surveyor; and the duties of the Local Surveyor were so multitudinous that he had no desire to undertake them. If the Local Surveyor attempted to carry on the work of the District Surveyor, it would result in the appointment of inspectors, which would not be for the benefit of building. A Local Surveyor would not be able personally to give that time and attention to the details of building (which was such an important part of the District Surveyors' duty), and when an inspector reported anything of difficulty to him, he would, if there was any serious question involved, have to take the matter to his committee. The District Surveyor, on the contrary, acted independently. As to Mr. Weaver's remarks about the fees of the District Surveyor, he (the speaker) thought that the general feeling would be that the fees should be part of the expense of building, and as they were not large, it was better to be paid by the builder rather than for them to come out of the rates. The fees were not by any means excessive, considering the amount of work done, and it was only the number of works in hand that made the position acceptable.

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* See our issue for December 17 last for a report of the meeting at which the paper was read.

Dr. Longstaff said it was one thing to consider how building in London was to be regulated, and another thing to consider how the existing method was to be carried on. Mr. Weaver attached great importance to the method that was everywhere the rule except in London, that a building should be supervised in all respects by the municipal officer. We had to deal with London as it is, and the Building Act as it is, and, as far as he knew, and he had examined several local codes on building, he did not think that any municipal building surveyor had the same duties to perform as the District Surveyors of London. He was not at all certain that that was to the advantage of London. He would like to repeal about one-half of the London Building Act, and it might be the portions which they (the surveyors) would not like repealed. The Building Act was weaker than it should be and it was more meddlesome than it ought to be, and he was not certain that the large power given to a District Surveyor to supervise a building was necessary, and, if not necessary, it ought not to be. But they had not met to tear up the Building Act, and so long as this special power was given to District Surveyors, it was plain that it should be exercised by an architect—by a thoroughly educated architect. It would be absurd to put a parish surveyor in the place of the present District Surveyor, for most parish surveyors did not possess the necessary education to enable them to pass a proper opinion as to whether a building was being constructed in every respect according to the Building Act. So long as these powers were given to District Surveyors, every endeavour should be made to get the best officers possible. As to the new rule about District Surveyors not taking private practice, there was a good deal to be said for and against it. The change, however, had worked better than he thought it would. One point made by Mr. Weaver, and a sound point he thought, was as to the apparent conflict of jurisdiction, as to the drainage of a house, between the Local Surveyor and the District Surveyor. That was an anomaly, and in every other part of England the whole of such matters was dealt with under one act—by by-laws of the Public Health Act. Could not the inconvenience be minimised of this kind of work being passed by the District Surveyor, and then disapproved by the Local Surveyor? As far as he knew, there was only one real inconvenience of this kind, viz., as to water-closets. He thought that there might be a small amendment of the Building Act so as to bring the by-laws of the Public Health Act, which regulate the position of a water-closet, under the Building Act. It was obvious that the deciding in what part of a house the water-closet should be was architects' work, and should be part of the original plan of the house; but this was not provided for in the Building Act. It was felt desirable by the London County Council, in drawing up by-laws under the Public Health Act, to include a special by-law regulating the position of water-closets. The by-laws wanted alteration, and to transfer this by-law to the Building Act would involve no radical change at all, and if that were done this small matter would become part of the district surveyor's work, and it would no longer be possible for the local surveyor to have anything to do in the matter. For a long time he had had much sympathy with Mr. Weaver's views, and he had tried to imagine circumstances under which those views could be carried out. The nearest approach he could get to it was to have the district of the District Surveyor coterminous with that of the local authority—and that would be a distinct advantage. At present it was inconvenient and awkward for a man to be in Hackney, say, as regards drains, and in Highgate as regards something else. That difficulty could only be got over by the gradual adaptation of the rules of one district to another district. As things were now, he did not think it would be possible or advisable to carry out Mr. Weaver's ideas. There must be one man to inspect the drains and another man to inspect the architectural work of the house; the work was too great to be done by one man and a superior man was required to do one part of the work. Desirous as he was to hand over this work to the local authorities, he felt bound, in giving evidence before the recent Royal Commission, to speak very much as Mr. Mathews had done.

Mr. Henry Lovegrove said he thought that Mr. Weaver had better have left the matter alone, as, if some of the District Surveyors wished, they could find many shortcomings in the Parish Surveyors of London—of repairs to pavements neglected, the scavenging badly done, as anybody could see by comparing the streets under the vestries with those under the mother of municipalities—the Corporation of the City of London. He could not understand anybody thinking that a mere acquaintance with the practical details of building construction should be preferred to an experience of many years in general practice. He thought that all the present District Surveyors had had architectural training. Surely a man skilled in taking levels, in planning sewers, was not better qualified than an architect, and he considered that the action of London vestries clearly proved that the members did not consider their surveyor qualified to undertake architectural work, as if anything in the way of designing was required an outside architect was engaged. He could not think that the County Council would ever consent to lose the management of the Building Act, and he was sure that the public would strongly object, so that the only persons desiring it were the vestrymen, who wished to increase their importance; nor could he imagine Parliament approving such a change. He could see no fault in the present system: a builder gave notice to the District Surveyor and was able to have the plans approved at once and to commence the work in two days; he then had to consult the Vestry Surveyor about the drainage—one small branch of the building. In the provinces weeks elapsed before plans could be approved, and absurd questions were discussed by the local bodies, and in many instances difficulties were raised by members who were probably rival tradesmen with the proprietor of the new building. Many provincial architects had expressed their surprise at the expeditious way in which work could be started in London contrasted with the provinces, where the Chairman of the local board might be a builder who had tendered against the successful competitor, or be opposed in business to the employer, and the by-laws were strained in every way to injure and delay the building owner. He thought that many of the Vestry Surveyors went beyond their powers (instructed by the committees) and required more information about the intended building than the law justified. Mr. Weaver had no right to state that District Surveyors neglected their duties and allowed buildings to be erected in advance of the building line, and had to be kept right by the Parish Surveyor. He could not conceive how the proposed change would prevent the erection of wooden buildings in back gardens; their name was legion, and when discovered he usually got them removed. He first requested removal within a few days (failing which he reported to the County Council), and in nearly every case the structures were removed. Mr. Weaver objected to the present system of treating dangerous structures, and as he had had as many as any District Surveyor, he defied Mr. Weaver and all his Vestry to find any fault or defect in that department of his (the speaker's) official duties, and in praising his system he should acknowledge the valuable assistance rendered by various Parish Surveyors and Sanitary Inspectors. The proposal to abolish fees would not be approved by the general public, as those who build most were professional speculators, and the fee came out of their usually large profits. In the paper nothing had been said against the integrity and honesty of the body of District Surveyors who throughout long years and many changes had been above suspicion. As to the alteration in the system of appointing District Surveyors, much could be said on both sides. It would appear that in the future inferior men might offer themselves, but the argument of some members of the Council had been that it was better to have a second-rate man who would perform the duties personally than a first-rate man who would delegate a greater part to an unqualified clerk; a modification would probably meet the views of all parties.

Mr. G. Livingstone said while he did not think that Municipal Engineers or Vestry Surveyors desired to lay claim to be architects, for which profession they had not as a rule been specially educated or trained, he yet held the opinion that the qualifications of most Municipal Surveyors were such as would enable them to discharge the duties of District Surveyor so far as they had relation to the construction of buildings under the by-laws as defined by the Building Act, or any by-laws relating thereto. It was the practice in most provincial towns for the Borough Engineer to act also as the Building Surveyor, and this arrangement he believed had been found to give satisfaction, and he saw no reason why a similar arrangement could not be carried out in London with equal advantage. He considered the argument advanced by one speaker—namely, that the Vestry Surveyors were so fully occupied with their present multifarious duties that they would be unable to devote the necessary time, even if qualified, to the duties of District Surveyor—was equally applicable to the District Surveyors themselves, who, being for the most part gentlemen of considerable private practice (some distinguished in their profession), not unnaturally devoted the greater part of their time and attention to their own interests, and, as was not infrequently the case, relegated their duties as District Surveyor to an assistant, generally the only person to be found in attendance. This being so, there was surely no reason why the supervision of buildings under the Building Act could not be equally well administered by the Municipal Surveyor, or a competent architectural assistant in his office, as it is under the present system. At all events, he was of opinion that the duties of District Surveyor should be discharged by a salaried official paid by the Local Authority, and acting either independently or under the direction of the Surveyor of the district, and that such system would be preferable in the interests of the general public to that now in operation.

Professor Roger Smith said that Mr. Weaver's paper must be taken as an expression of opinion. From beginning to end of it there was very little argument, and the reasons for the opinions appeared, on the whole, to be unconvincing. He agreed with previous speakers in thinking that professional gentlemen did not seek the office of District Surveyor with the idea of extending their private practice. He never did anything of the kind, and he believed that other District Surveyors would say the same. There was no doubt something to be said in favour of the proposed change advocated by Mr. Weaver; but was there not something more important which would be lost by the change? In the first place, men of a different standard would be almost sure to take the place of the present District Surveyor. The District Surveyors of to-day were men whose professional work had trained them to supervise the erection of buildings, and that experience was not to be gained merely by getting enough information with regard to building construction to enable a man to pass an examination creditably; nor was it to be got by making estimates for building, or by measuring up or valuing a building afterwards. It was only to be got by practice in supervising the erection of buildings, and as long as the duty of superintending the erection of buildings was put upon a District Surveyor, he ought to be drawn from the class of men who had been engaged in work of this kind. He regretted that District Surveyors appointed now were not permitted to engage in private practice, because he thought they would get out of touch with building and be less aware of changes taking place outside their own districts, and so the work would get into the hands of those less competent to do it. In the next place, he apprehended that if the change proposed by Mr. Weaver were made, District Surveyors would lose their independence, which was so desirable, and would be directly controlled by the Local Authorities. There would be an amount of friction which certainly did not exist now, and the surveyor would be unable, as he did now, to fearlessly interfere with work going on, almost regardless of consequences. What happened in other places was not a very good guide for London, which was so large. The peculiarities of London life and buildings were different from what they were elsewhere, and even if the system worked successfully in provincial towns, it did not follow that it would in London. From some experience of building in the country, he doubted whether the system worked well there. The London system put a good class of men in very responsible positions, and he hoped that it would continue.

Mr. H. Gundry, President of the District Surveyors' Association, said it was known perfectly well that the surveyor of a Local Authority was not an independent man, and every case had to be brought by him before his committee, composed of men living in the neighbourhood, and very often the builders or the owners of the property being dealt with. He repudiated the suggestion that District Surveyors in adjoining districts favoured each other. In the London County Council report for 1897, quoted from by Mr. Weaver, it was shown that out of the 25,000 buildings erected under the jurisdiction of the County Council and the District Surveyors, only twenty-eight works were carried on by the surveyors, as architects, in their own districts. That was not enough to justify any such suggestion. The paper was conceived in a very parochial spirit, and seemed to ignore the very existence of London.

Mr. P. E. Pilditch said it would be useful to separate the paper. In the first part the author started with the assumption that the present system of building supervision was defective, and in the second part he proceeded to suggest a means of improving it. In his (the speaker's) opinion, much could be said for the first point, but he could not follow the author in his suggestions for improvement. There were several little difficulties arising from overlapping jurisdiction between the Vestry Surveyors and the District Surveyors, which he (the speaker) specified, and he thought that they could best be met by a short amending Act defining a little more clearly the duties of the two officials on these points. He agreed that it would be quite possible to find in some suburban districts men who could combine the duties of the two officials, but he did not think that would be possible in thickly-populated central districts. The District Surveyor was the proper official to have the supervision of structural matters and the administration of the Building Act, and that gentleman would not be able, he thought, to carry out the engineering duties of the Parish Surveyor. In Vestry Committees, though there was local knowledge, there was sometimes a great deal of local prejudice, and, in his opinion, the best security that an architect in London could have was to know that his work would be supervised by a statutorily appointed official and a central body like the London County Council. If Mr. Weaver's proposals were adopted, the result would be that in every Parish Surveyor's office there would be two specialists—specialist assistants: the specialist building assistant, and probably a specialist engineering assistant, and he thought that on the whole no strong case had been made out for the change proposed.

Mr. J. M. Knight said that he agreed with Professor Roger Smith's remarks, but he also agreed with some of Mr. Weaver's views. It was not Mr. Weaver's view, however, that the District Surveyor should be absorbed, but rather that the District Surveyor should absorb the office of the Parish Surveyor, and he thought there was much to be said in favour of that.

Mr. R. A. Robinson, L.C.C., said that many of the duties undertaken by the District Surveyors could be efficiently undertaken by the Parish Surveyors. The District Surveyor was not called upon to do artistic work, but what he had to do was to see that the conditions of the Building Act were complied with. At Tunbridge Wells the Surveyor had recently designed and erected some very large baths, as well as filtering beds and other works, and if he could do so other local surveyors could do the same. It must not be forgotten that a good many members of the London County Council were members of vestries, and that the present Chairman of the Building Act Committee was a Battersea builder. The argument of some gentlemen seemed to be that when sitting at Spring Gardens a member was an excellent man to appeal to, but when sitting on a Vestry he was a most unsuitable man. He thought it would be recommended in the Bill now being drafted for the improved government of London that the District Surveyor should be under the control of the Local Authority. That would simplify matters considerably.

Mr. A. King having spoken against the views of Mr. Weaver,

Mr. T. W. Wheeler, Q.C., said he thought that the changes recommended by Mr. Weaver would be made. It seemed to be generally acknowledged that the District Surveyor carried out his duties efficiently, and there was thus no necessity to enter into that. He had formed the opinion that the District Surveyor ought not to be paid by fees by the builders who, in fact, employed him. The builder regarded those fees as part of the cost of the building; that affected the rent, and that again the ratepayers. The District Surveyor should be to some extent a salaried officer of the District or Authority he represented, and his remuneration should fall upon the locality (*i.e.*, the rate) at large. As to whether the District Surveyor should be a surveyor or architect, he did not think that either the architect, who thought he should be an architect, or the surveyor, who thought he should be a surveyor, were in the least wrong; but the functionary was called by Act of Parliament a District "Surveyor."

Mr. E. W. Hudson then moved the adjournment of the debate.

Mr. W. Eve seconded, and the meeting was adjourned until February 6.

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## STOW'S SURVEY:

### A NEGLECTED TERCENTENARY.

THE present is an age of jubilees, centenaries, and anniversarial celebrations, yet no one has thought to commemorate that in the winter time, just three hundred years ago, Stow brought out the first edition—the copies are dated 1598 and 1599—of "A Survay of London," a quarto volume of 483 pages, printed in black letter, with an appendix consisting of an account of London (then printed for the first time) written in Latin by William Fitzstephen, the lively and worldly-minded chaplain of Thomas à Becket, and eye-witness of his master's murder.

John Stow was born, 1525, in the parish of St. Michael's, Cornhill, where his father and grandfather had lived and prospered as members of the Merchant Tailors' Company, to which Stow also belonged. When about thirty-five years old he exchanged his goose and needle for the historian's pen; in 1560 he edited Chaucer's poems and published the first annual volume of his "Summary of the English Chronicles," by which time was completed the survey for the map commonly attributed to Radulph Aggas. In 1580 appeared the first edition of his "Annales." A second edition, increased to 579 pages, quarto, of the "Survey" was issued in 1603. Meanwhile he had effected a republication of Holinshed, the "Flores Historiarum," and Thomas Walsingham's and Matthew Paris's Chronicles.

Following his natural bent, Stow turned author and paid the penalty. He acquired most of his information at first-hand by toilsome journeying on foot, transcribed books he needed but could not afford to buy, and, as he tells us, his works cost him many a weary mile's travel, many a hardly-earned penny and pound, and many a cold winter's night's study. But by his painful labours, to which the sixty MS. volumes in the British Museum bear witness, he gained nothing; and at last the father of London chroniclers was fain to accept his sovereign's gracious licence to beg "within the cities of London and Westminster and the suburbs thereof," and a recommendation to those who would give him of their charity. Having suffered contumely from the ignorant, and disappointment from the praise and promises of the great, Stow died on April 5, 1605, and was buried in the church of St. Andrew Undershaft, in Leadenhall-street, close by his later home "near the well within Aldgate." His widow Elizabeth erected a monument, which shows him in his habit as he lived, seated in a recess, writing at a desk rested upon his knees. The effigy is generally described as being of terra-cotta: it is for the greater part of veined English alabaster, having a white marble plinth, and black marble in the frieze. The upper portion of the composition, bearing the Merchant Tailors' coat-arms is, in its heraldical design so similar to the corresponding features of Alderman Humble's contemporary monument in St. Saviour's, Southwark, that one may fairly ascribe the two to the same architect's, or sculptor's, hand. Maitland says (1739) that Stow's remains were removed for the interment of some one else.

In 1618 a third edition, quarto size, and in 1633 a fourth edition, folio, of Stow's "Survey" were brought out by "A. M."—Anthony Munday. John Strype published his two folio volumes in 1720; his continuators followed with their two volumes in 1754-5. Meanwhile had appeared, in 1734-5, the two volumes known as (Robert) "Seymour's Survey," based upon Stow, and compiled by one whose real name, we may mention, was John Mottley, whereof another edition was published in 1753. At the dispersal, in 1889, of the Perkins Collection was sold, for 11*l*., a copy of the "Survey," bound in the original calf, and having the letters "Ex Dono Johannis Stow" stamped at the top of the front cover—J. Wolfe, 1598: the same volume was sold amongst the books and MSS. of E. H. Lawrence, F.S.A., at Sotheby's in May, 1892. Edmund Howes published his editions of Stow's "Summary of the Chronicles of England" in 1607 and in 1611; in 1615 he issued his expanded version of the "Annals," of which, however, a better and more valuable edition came out, under Howes's care, in 1631.

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## MAGAZINES AND REVIEWS.

THE illustrations in vol. v., No. 8, of the *Architectural Review* (Boston) include two sets of geometrical drawings of school buildings—the High School at Rome (New York State), by Messrs. Carrère & Hastings, and that of No. 17 Public School, Rochester (in the same State). The architectural treatment of the latter is too much inspired by that of the French Lycée—a mill-like building, only relieved by a campanile, with a rather graceful upper story, in the centre of the front. The other building is a pleasing example of plain and unpretending school architecture—not interesting, but on the other hand not prison-like, as are the Lycée and "No. 17." The United States Mint building at Philadelphia, by Messrs. Aiken and Taylor, seems like going back to the eighteenth century, of so staid and regulation a character are its simple Renaissance details; it would be a more pleasing design if there were something at each end to balance the central feature.

In the *Art Journal* the article by Mr. Ranken on "Tintagel" is rendered valuable by the opportunities it gives for Mr. F. W. Sturge's very fine sketches, which we imagine are the originating cause of the article. A paper on "The Colour-Printing of Textiles at Messrs. Wardle's Works," at Leek (by the late Mr. Gleeson White), is an interesting description of the processes employed, and is further adorned by some good patterns for textiles, designed, we conclude, "in the firm." Two articles are devoted to the works of Mr. G. H. Boughton and Mr. Sauber, the latter hardly an artist of a calibre to be made the subject of a special article, except that there must apparently be an article written about everybody nowadays.

By what seems an odd coincidence, the subject of Sir Thomas Wardle and printed textiles is treated simultaneously in the *Magazine of Art*, also with illustrations of designs. A shield designed and decorated by Professor Herkomer in enamels forms the subject of another article, with a general illustration of the shield and a good many of separate figures in detail. "Mr. Sargent as a portrait-painter" is the subject of another article. That Mr. Sargent is an ideal portrait-painter of men and women of the nineteenth century we quite agree, only we would add—rather too much so; the eighteenth century portrait ideal, with its calm and dignity, is a finer one. "Is Photography among the Arts?" is the subject of a "Symposium" in which M. Robert de la Sizeranne leads off; we presume other debaters are to follow. M. de la Sizeranne has never photographed, and therefore is not prejudiced in favour of photography, but he seems inclined to think that it has arrived at some claim to be reckoned as an "art." He sums up—"So long as man could set no stamp of mind or individuality on the picture we were fully justified in answering 'no' to the question at the head of this article; but now it is wiser to wait and watch events, and to say meanwhile, 'It may be.'" The French critic thinks that at all events new facts have arisen in photography; which is true; but none of their results have as yet persuaded us that photography has risen to the level of an art, or photographers to the rank of artists.

The *Studio* (December 15) devotes an article to Mr. Arnold Mitchell's house, built for himself at Harrow. "Primitive Art from Benin," by Mr. Ling Roth, is accompanied by some illustrations of curious detail from this part of the world. But both in this publication and the *Artist* the great object seems to be to sprinkle the pages with illustrations of various kinds, and there is hardly any text that seems to have a definite end except to fill the margins round the drawings. We observe that among the illustrations in the *Artist* are some of "a dining-room in Russia," the treatment of which, as shown in the sketches, may interest our readers.

The *Engineering Magazine* contains an article on "Electric Lighting in Great Britain," one "On Safety in Railway Travelling," apparently by an American contributor, concerning which we will merely remark that the subject is one on which American engineers and railway managers have a good deal to learn from us and nothing whatever to teach us. Mr. T. W. Parry continues his articles on the curious subject of "Oxford from an Engineer's Point of View," which has rather more engineering interest this time. The writer, remarking on the timber roofs which cover the mediæval stone vaults, observes that he has himself constructed cylindrical vaulting on the Indian State railways, but never placed a second roof above this covering, though the rainfall in India is far heavier than in England. Among the illustrations is a plan of the roof of the Sheldonian Theatre, a plan and section of the dome framing of the Radcliffe Library, and a general section of the same building.

The English general magazines are remarkably devoid of anything of artistic interest this month, and the American magazines are still largely occupied with martial subjects and recollections in connection with the recent war. The *Century*, besides an article on the proposed Nicaragua Canal, has a short protest entitled "A Word in Favour of the Panama Canal," pointing out that the latter is already partly made, and is in the hands of a company who evidently intend to finish it; that it is much shorter than the Nicaragua route and has better natural harbours at each end; *ergo*, that if both are made, it seems likely that the Panama will take away all the traffic from the other. In *Scribner* Mr. Russell Sturgis, under the heading "The Field of Art," writes a short article on "Mural Paintings in American Cities," appending a list of the existing ones, which is of surprising length. It may be doubted whether we can show anything like it in this country.

The *Antiquary* contains an interesting communication on "The Repair and Re-seating of a Parish Church, A.D. 1605," with a great many extracts from the accounts connected therewith. The church is that of Chesham (Bucks), which possesses a special record of this work in a manuscript folio volume.

The *Essex Review* (quarterly) is an interesting number in itself, but deals with no architectural subjects. There are some notes on a thirteenth century inscription cut on a stone in Fobbing Church, with a facsimile.

In the *Revue Générale* M. A. Goffin continues his essay on the art of Florence, with some excellent though small illustrations. His remarks on the peculiar effect of the blending of the Gothic and the Classic spirit in the mediæval churches are in a good style of architectural criticism.

Among the contents of *Knowledge* is a special article on Saturn, with a large illustration of the planet and some diagrams of different aspects of the rings. This piece of celestial architecture is always of interest.

We have received the *Genealogical Magazine*, the *Churchman*, and the *Quarry and Builders' Merchant* (the new title of the *Quarry*), the *Gentleman's Magazine*, and the *English Illustrated Magazine*.

## SANITARY INSPECTORS' ASSOCIATION.

THE annual address of the President (Sir John Hutton) of this Association was given on Saturday at Carpenters' Hall, London Wall. Among the leading points adverted to in the address (after references to the increase of membership to 685, and the proposed visit of the Association to Lincoln, and at some not distant date, to Belfast) was the continued diminution of the death-rate in the metropolis, in spite of many special difficulties of sanitary administration, in a community in which 4,484,727 persons are congregated. Of the forty-three sanitary districts of the metropolis the largest, Islington, contains a population of 341,134, a number sufficient to form a line extending from Euston to Manchester, if they joined hands. Lambeth with 300,000 and Camberwell with 257,000 were almost equally colossal. The metropolitan death-rate, 19·4 for 1897, was lower than in Manchester, Liverpool, Birmingham, Sheffield, Leeds, and other large towns, and the improvement at typical ages, such as under one year, at twenty and at sixty-five might, he thought, be fairly attributed to sanitary improvements. The crowded courts and alleys of the metropolis afforded an almost unequalled opportunity for the spread of zymotic diseases, like small-pox, scarlet fever, diphtheria, &c., but the figure in London, 2·58 per 1,000, was lower for these diseases than that of most of the large provincial towns. There was now a satisfactory prospect that every parish would have its own dust destructor. With properly-constructed refuse destructors little inconvenience was experienced, and in those cases where provisional electric lighting orders had been prudently retained by vestries a proportion of the generating power would be obtained from the refuse itself.

With regard to the constitution of the proposed Sanitary Inspectors' Examination Board, a matter that was at present before certain public departments, it would not be prudent to say more than that they had some hope that the reasonble proposals of the Council of the Association would be accepted, and an injustice be averted. Other points touched upon in the address were the provision of public abattoirs in place of private slaughter-houses, cremation, and the promotion of a Bill in Parliament for the superannuation of sanitary officers.

A vote of thanks was cordially given to the President on the proposal of Mr. Moss Flower, Chairman of the Council, seconded by Mr. G. T. Dee, and supported by Messrs. W. H. Grigg, H. Thomas, H. Alexander, W. W. West, Young, and Fairchild. These inspectors, in the course of their remarks, made practical suggestions or offered criticisms on several of the points raised in the address. In order to alleviate the burden upon the ratepayers of making the necessary improvements from time to time, it would be an advantage to revive the Coal and Wine Dues, and to tax land values. Not the slightest advantage had accrued to the people from the abolition of the former, while, as regards the latter, there were persons in many poor districts deriving enormous revenues from ground rents who never laid a brick or contributed a penny to the local burdens, and who never even visited the districts from which their wealth was derived. In one district at least (Battersea) the refuse destructor had been worked at a loss, and was now closed. It was found that the dust could be more advantageously disposed of to the brickmakers. With regard to the low death-rate of London, it was pointed out that the figures were somewhat misleading. London was constantly importing from the country strong vigorous young men and sending its invalids and old people back to the country or the seaside to end their days. The rates as stated were consequently hardly a fair measure of the healthiness of London. The President's views as to cremation and funeral reform were generally supported.

In acknowledging the vote of thanks, Sir John Hutton replied to some of the criticisms. He admitted that the health statistics might be to some small extent open to the objections referred to, but could not admit that there was danger of too much inspection or of being over-regulated. As an example of the benefit of strict inspection, the President stated that the practice formerly common of short weight being given by itinerant coal vendors had been nearly stamped out. Instead of the many hundreds of annual convictions common nine years ago there were last year but twenty-five. It could hardly be held that a community was over-regulated where they had only one policeman to every 400 persons.

# Correspondence.

*To the Editor of* THE BUILDER.

## THE BAR GATE OF SOUTHAMPTON.

SIR,—In commenting on the proposed destruction of the Bar Gate (which, by the way, is not likely to take place, the feeling in the town being too strong against it) you add the remark, "Southampton in itself is not very interesting."

I must say this remark is rather surprising; but I am afraid it is an opinion which is held by many people; allow me to take exception to it and to point out that the town is full of historical and antiquarian associations. A large portion of the old town walls, the original fortifications of the place, probably erected in the tenth or eleventh century, still remain, and always excite the interest and curiosity of strangers. Three of the original old town gates—of which, of course, the Bar Gate is the most important—still stand. St. Michael's Church has still traces of Norman (some would say Saxon) work in its interior; and directly opposite this is as picturesque an old house, constructed of timber and plaster, as you will find in any part of England; this is traditionally said to be the house Henry VIII. took up his residence in when visiting the town.

Besides these interesting relics of the past (and, by the way, I have omitted to mention the palace of King John, which still remains in a good state of preservation) there are several very interesting old interiors which are worth coming some distance to see.

St. Denys' Priory, although now only a fragment, still stands on the outskirts of the town, and the outline of an Early English window and doorway can easily be traced.

And it cannot fail to be of interest to your readers to know that the town possesses a church erected from the designs of Reveley, a pupil of Sir William Chambers; this is an important feature of the High-street, and has all the classic dignity that one might expect from the pupil of so illustrious a master.

Southampton residents take a great pride in their interesting relics of the past, and visitors are constantly discovering for themselves new objects of interest in the town.

R. CROPTON, JUN.

*Southampton*, January 7, 1899.

## OLD VAUXHALL BRIDGE.

SIR,—This work, by Messrs. Walker & Burges, the details worked out by Messrs. Hunter & English, was founded by "Caissons," also old Westminster Bridge by the Swiss engineer, Labilye, and Blackfriars by Mylne, where the platform of the floating caisson was bedded on bearing piles. At Westminster none were used, resulting in a bending up of the pier platforms. This was illustrated in Sir Fredk. Pollock's Paper (who was engaged on the works) in the minutes of the Inst.C.E.

Whether piles were used under the Vauxhall caissons will soon be shown.

J. W. REDMAN, M.Inst.C.E.

## BOOKS RECEIVED.

CABINET-MAKING FOR AMATEURS. By Various Hands. Edited by J. P. Arkwright (L. Upcott Gill).

SOCIETY FOR THE ENCOURAGEMENT OF THE FINE ARTS.—This Society has issued the programme of its forty-first session, which commences on Thursday, January 19. The papers to be read during the session include one by Mr. T. R. Spence on "The Elements of Design in Painting" (February 16); one by Mr. P. H. Newman on "Some Goldsmiths and Their Work" (April 13); and one by Mr. Henry Hewkley on "Lithography—Past and Present" (May 18).

NEW PUBLIC OFFICES, CARDIFF. — The Commissioners of Her Majesty's Works and Public Buildings will promote a Bill during the next Session of Parliament for acquiring a site for the erection of a County Court and Inland Revenue and other public offices in St. Mary's parish, Cardiff. The scheduled site is bounded by Park, Havelock, and Scott's streets, and, on the remaining side (south), by property belonging to Mrs. Crawshay.

# The Student's Column.

## ARCHITECTURAL HYGIENE.

### II.—SANITARY LEGISLATION.

THE principal enactments that refer to restrictions and regulations for buildings are as follows :—

I. THE PUBLIC HEALTH ACT, 1875.
II. THE VARIOUS FACTORY AND WORKSHOP ACTS.
III. THE METROPOLIS MANAGEMENT ACT, 1855.
IV. THE PUBLIC HEALTH (LONDON) ACT, 1891.
V. THE LONDON BUILDING ACT, 1894.
VI. LOCAL ACTS AFFECTING DIFFERENT DISTRICTS.

I. THE PUBLIC HEALTH ACT, 1875, consolidated and amended the previous Acts relating to Public Health in England, but it does not refer to the Metropolis. Amongst the more important provisions of this Act the Sanitary Authorities must require a proper drain to every house, and this must be done before it is occupied ; there must be an efficient closet or privy, and eaves gutters, and rain pipes may be ordered to be provided. No cellar may be used as a dwelling unless at least 7 ft. in height, 3 ft. of which is above the level of the street. Under this same Act the Local Authorities are entitled to make by-laws ; and the Local Government Board issued a set of Model By-Laws for the guidance of the Urban Sanitary Authorities. The by-laws made by the Authorities vary in different districts but are modelled on those brought out by the Board. The following are some of the principal provisions contained therein relating to buildings, &c.

1. *Refuse.*—The owner of any premises shall at least once a week remove the house refuse from such premises ; and shall cleanse every earth closet which has a movable receptacle for fœcal matter, and also every privy, once every week ; and shall cleanse once in every three months every earth closet with a fixed receptacle.

2. *Foundations.*—Foundations are not to be made on putrid ground, and the whole site is to be covered with 6 in. of cement concrete, or to be asphalted, and a 3 in. clear space is to be left between the concrete and the underside of joists, ventilated with air-bricks.

3. *Low-lying Sites.*—Finished levels of low-lying sites to be made up with proper materials to a specified datum level.

4. *Walls.*—New buildings to have external walls of properly bonded bricks, stones, or other incombustible material ; and hollow walls to be properly bonded. All walls to have proper footings projecting half the thickness of the wall on either side, and the depth to be two-thirds the thickness of the wall ; external and party walls are also advised to be carried above the roof to lessen fire risks. Every wall is to have a proper damp course of impervious material. No wood plugs or bond timbers, &c., are to be put in party walls ; and every girder is to have a proper template of its own full width, and every bressummer to have at least a 4-in. bearing at each end on a pier or story post.

5. *Chimneys.*—All chimneys to be built on a proper foundation or corbels, and the latter not to project more than the thickness of the wall. Unless flues be lined with fireproof piping, they are to be pargetted. Those used for trade to be surrounded with brickwork 9 in. thick for a distance of 10 ft. above the floor where the furnace is situated. Every chimney opening to have a proper arch and chimney-bar. No chimney jamb to be less than 9 in. wide ; no with to be less than $4\frac{1}{2}$ in. Flues are not to be carried up higher than six times the least width of chimney above the level of the highest point of the roof.

6. *Roofs.*—Roofs to be covered with incombustible materials, excepting as to frames and skylights, &c. Water from roofs to be discharged into gutters and stack-pipes.

7. *Open Spaces.*—No part of the front wall of any building except the porch, gate, &c.. to be nearer than 24 ft. from the opposite side of the street, except a fence or wall not exceeding 7 ft. high. The minimum open space at the back of any building to be 150 square feet above the level of the ground ; a closet and ashpit, however, may be above this level. The depth of such space to be not less than 10 ft.

8. *Windows.*—Each room to have at least one window opening directly to the open air. Windows to be at least one-tenth of floor area and half of this must be made to open. A habitable room without a fireplace to be ventilated by an opening carried into the open air not less than 100 square inches in area.

9. *Drainage.*—The subsoil is to be drained if necessary. The lowest story to be above the level of the sewer. Drain pipes are not to be less than 4 in. in diameter, and to be laid on concrete with a proper fall and with water-tight joints ; if they are laid under a building they must be bedded in concrete ; no right-angled junctions may be used and all drains must be properly trapped from the sewer. A *sewer*, as distinct from a *drain*, is that which contains branches from more than one house, and is made by (or acquiesced in by) the Local Authority. The importance of this distinction lies in the fact of the responsibility of the occupier of a house for the drain and of the Local Authority for the sewer. The house drain is to have two untrapped openings for ventilation, one at the lowest end and one at the highest. If one water-closet on the ground floor is not more than 10 ft. from the trap there is no need to ventilate the latter. No ventilation inlet to a drain is to be within a building. No trap is to be placed between a soil pipe and a drain pipe. Waste pipes are to discharge into the open air 18 in. away from the grating.

10. *Closets and Privies.*—One wall of every closet must be external, and must have an external window. The water-closet water supply must have a separate cistern or flushing apparatus from the house supply. The water-closet must not have container or D trap. Earth closets to be outside dwelling houses and to have dry earth receptacles. Fixed receptacles to be easily accessible for cleansing and not larger than 40 cubic feet, and not to receive rain or waste water, and to be above the level of the ground (movable receptacles may not contain more than 2 cubic feet) ; privies to be 6 ft. from any building and 40 ft. from any well or spring, and to have means of access without carrying the soil through the building, those with fixed receptacles not to contain more than 8 cubic feet, and no part to communicate with any part of a drain.

11. *Ashpits.*—No ashpit is to be within 6 ft. of a building, or 30 ft. of a well, and is not to contain more than 6 cubic feet. It should be constructed of brick or stone, and be 3 in. above the level of the ground and have an impervious floor. It must not communicate with the drain.

12. *Cesspools.*—Cesspools should not be within 50 ft. of a building or 80 ft. of any well or spring ; they should have access for cleaning without passing through any building, and must not be connected with any drain. They should be built of 9 in. brickwork in cement and rendered inside with cement, puddled all round with clay, and properly domed over and ventilated.

13. *Notice.*—Plans for new buildings or drainage works should be submitted to the Local Authorities, with descriptions of the materials, &c., to be used, and the sizes, depths, and inclinations should be figured thereon and the method of ventilation described ; and the house should be certified before being occupied. All work done in contravention of by-laws to be removed, altered, or pulled down.

II. THE VARIOUS FACTORY AND WORKSHOP ACTS.—These Acts are too numerous even to mention. They regulate the sanitary conditions of such premises as their titles imply, and give power to the Home Secretary to enforce special rules for the several kinds of manufacture. They require an air space of at least 250 cubic feet per head, and provide for efficient ventilation of these premises.

We will now deal briefly with the principal acts affecting the Metropolis only.

III.—THE METROPOLIS MANAGEMENT ACT, 1855.—Under this Act no drains are to be made except to the satisfaction of the Vestry or District Board, and the latter Authorities are empowered to inspect existing drains, privies, and cesspools, and to order the amendment of the same. In case of an alteration to a building which will temporarily affect the footway, a proper hoarding must be erected and a license for the same must be obtained from the Local Authority.

IV.—THE PUBLIC HEALTH (LONDON) ACT, 1891.—This Act includes the most important provisions of the Public Health Acts and Infectious Diseases Acts with many important additions. It prohibits the establishment anew of offensive trades, requires the licensing of cow-houses and slaughter-houses, demands that furnaces and steam vessels do consume their own smoke, provides for the cleansing of bakehouses and provides for the inspection and regulation of dairies. The *London County Council* are bound to make by-laws with regard to :—

i. The removal and disposal of refuse.
ii. Water-closets, earth-closets, ash-pits, cesspools, &c., and the proper accessories thereof in new or old buildings.

The *Sanitary Authorities* must make by-laws with respect to :—

(a) The efficiency of flush to water closets.
(b) The freedom from pollution of tanks and receptacles of drinking water.

The *Sanitary Authorities* have also to observe and enforce the by-laws made by the London County Council.

The *London County Council By-Laws* contain the following modifications of the *Model By-Laws* previously referred to :—

1. *Refuse.*—Where daily removal is inaugurated the householder must deposit refuse in a movable receptacle on the kerbstone.

2. *Closets.*—There must be a window at least 2 ft. square in the external wall. A closet may not be approached directly from any room used for human habitation. The pipes and unions connecting any water-closet with flushing apparatus to be at least $1\frac{1}{4}$ in. internal diameter. If more than one water-closet be fixed to a soil pipe the traps of such water-closets to have anti-siphonage pipes of nor less than 2 in. internal diameter ; such pipe not to be connected to the soil pipe till it is carried above the topmost water-closet.

3. *Soil Pipes.*—All soil pipes to new buildings must be fixed outside such buildings, and this must be done, if possible, when refitting a soil pipe to an existing building. When such pipe is carried within any building, it must be of drawn lead or of heavy cast iron of specified weight, and with caulked lead joints. No soil pipe to be of less diameter than $3\frac{1}{2}$ in., and it must be carried up undiminished in diameter to the highest part of the roof, and must be 3 ft. higher than, and not within 20 ft. of, any window. The connexion of all lead and iron pipes and traps must be made with a brass thimble with a wiped or overcast joint and caulked with molten lead to the soil pipe or drain. No waste pipe (except that from a urinal) to be directly connected with any soil pipe.

4. *Cesspools.*—Any cesspool must be at least 100 ft. distant from any dwelling, and it must be cleaned out every three months.

V. THE LONDON BUILDING ACT, 1894.—This Act consolidated and amended the enactments relating to buildings in London. The following modifications of the model by-laws are important :—

1. *Low-lying Sites.*—No building to be erected on a site which is below Trinity high-water mark (*i.e.*, 12 ft. 6 in. above Ordnance datum), and which cannot be drained by gravity into an existing sewer.

2. *Roofs.*—Means of access must be provided to roof. The slopes of various roofs are regulated. Not more than two stories allowed in the roof of domestic building. A story above 60 ft. from street level and made in the roof shall be of incombustible material.

3. *Open Spaces.*—The angle of $63\frac{1}{2}$ deg. is drawn from the rear boundary at the same level as the front pavement, and no part of a new domestic building is allowed to project beyond such line. With respect to domestic buildings to be erected in a street laid out before the commencement of the Act, the angle of $63\frac{1}{2}$ deg. must be taken from the rear boundary, but may start 16 ft. above the front pavement level. The front wall of a building not to be nearer than 20 ft. from the centre of the roadway.

4. *Height of Buildings.*—No new building to be of a greater height than 80 ft., and in streets laid out since August 7, 1862, no new building to exceed in height the distance from its front wall to that of the building opposite.

5. *Habitable Rooms.*—Every room to be at least 8 ft. 6 in. from floor to ceiling, except those in the roof, which must be at least 8 ft. high, but in the latter case such height need not be more than half the area of the room. If a room is over a stable, the floor is to be pugged 3 in. deep, and the under side of joists are to be ceiled with lath and plaster.

6. *Hard Woods.*—Oak, teak, and other hard

woods are recognised as fire-resisting materials when they are 2 in. thick.

7. *Separation of Buildings.*—Every building over ten squares in area and used partly for trade or manufacture, and partly as a dwelling-house, the former is to be divided from the latter by fire-resisting structures.

8. *Flats, &c.*—In buildings constructed to be used by more than two families, the staircases to be ventilated on every story, directly into the external air.

VI. LOCAL ACTS AFFECTING DIFFERENT DISTRICTS.—These Acts relate principally to the larger towns, and are framed to suit their various requirements.

They do not, as a rule, relate to buildings, but give special powers to Authorities for public works, sewerage, and water-supply, &c.

## *GENERAL BUILDING NEWS.*

NEW CHURCH, CAMBOIS, NORTHUMBERLAND.—On the 31st ult., the Bishop of Newcastle dedicated the new church (St. Andrew's), which has been erected at Cambois. The new church is a brick building, with stone ornamentation, and having accommodation for some 200 persons. The church has been erected by Messrs. Carse & Sons, of Amble, from plans by Messrs. Hicks & Charleswood, of Newcastle.

CATHOLIC CHURCH, KINGSTON-ON-THAMES.—The Roman Catholics of Norbiton and Kingston Hill who worship at St. Agatha's (temporary) Church have been enabled to go forward with the erection of a new church, which is being erected on a site adjoining the existing St. Agatha's School Church. The plan comprises a nave and sanctuary, terminating in a semi-circular apse. The church is placed north and south, the site necessitating the entrance being from the south, facing Wyndham-road. There are east and west aisle, and door from the presbytery, and door for arches opening into the sanctuary. The sacristy is on the east side, having a direct entrance into the aisle and door from the presbytery and door for the use of the acolytes from the side porch. Opening from arches in the wall of the east side are two chapels; at the south side of one of these chapels is an archway opening into the baptistry, which is semi-circular on plan, with semi-domed roof. Three windows light the baptistry. The principal entrance, facing Wyndham-road, is at the south end of the nave, and has a deeply recessed porch with wide arched doorway. In the semi-circular panel over the doorway it is intended to have a sculptured figure subject in high relief. The porch has cornice and pediment over. Over the porch is a large circular window, and the main gable above has a moulded cornice and pediment, in the centre of which is a niche for the statue of St. Agatha. Crosses of the early Christian type surmount the west gable and porch. The church derives its light from the twelve semicircular-headed windows in the clearstory. The two chapels are each lighted by semicircular-headed windows with circular windows over. Over the inner porch of the principal entrance, and approached by a staircase at the side, is the gallery for the use of the choir only. The nave, sanctuary, and chapels have stone columns with carved capitals. Two arches, the full width of the nave, springing from foliated capitals, divide the sanctuary from the nave and mark the opening of the apse. The roof of the nave and sanctuary are segmented in shape, boarded and panelled on the soffit with moulded cornice. The chapels have similar roofs, while the roof of the apse is a semi-dome. The internal dimensions are as follows:—Length of nave, sanctuary and apse, 95 ft. 6 in.; the width of nave and aisles is 46 ft. 6 in.; and the width of the chapel is 10 ft. The walls are faced externally with best red facing bricks; the cornices, pediments, arched window heads, and the strings are in moulded stone. The floors are laid with wood block flooring on bed of cement concrete 6 in. thick. The church is to be heated by hot air by Messrs. Grundy, the heating chamber being under the sacristy. The roofs are to be covered externally with green Welsh slating. The architect is Mr. John Kelly, of Regent's Park, London, and the contractors are Messrs. Goddard & Sons, of Farnham and Dorking. The church will be lighted by electricity, the installation and fittings being included in the contract, which amounts to 5,495*l.* The quantities were taken out by Messrs. Northcroft, Son, & Neighbour, surveyors, of Charing Cross.—*Surrey Comet.*

HALL, BAPTIST CHURCH, BENWELL, NORTHUMBERLAND.—A Baptist Church hall has just been erected in Buddle-road, near Elswick Railway Station. Messrs. Badenoch & Bruce were the architects. The whole scheme consists of church with naves, aisles, and transepts, having side and end galleries, and seated for 750. The choir and baptistry are placed behind the pulpit, with organ chamber on one side and minister's and deacon's vestry adjoining them, the hall being beyond. The principal entrance to the church will be at the west end, and advantage is taken of the fall of the site to place the caretaker's house and class-rooms under the church and hall. The hall is seated for 250, with two class-rooms on the same floor, and in the basement there are infants' class-room for 100, class-room or tea-room for 50, and heating chamber, &c. The ventilation is by Sherringham inlets and Cousland & Mackay's concealed roof extract ventilators, and the heating is by low-pressure hot water. Mr. N. W. Maughan is the contractor, and Emley & Sons are the heating engineers. The Gateshead Stained Glass Company, Limited, have supplied the lead glazing.

PROPOSED RESTORATION OF ST. DAVID'S CATHEDRAL.—It is proposed to raise a fund for the restoration of St. David's Cathedral. The present structure was commenced by Peter de Leia about the year 1180. During the time of Bishop Thirlwall, and subsequently under the direction of Sir Gilbert Scott and his son, Mr. Oldrid Scott, who is to be entrusted with the completion of the work, very extensive restorations were carried out; but these did not extend to the eastern group of buildings, which are now in a ruinous condition. The restoration of the eastern buildings, which will cost, it is estimated, not less than 12,000*l.*, is intended as a memorial to the late Dr. Basil Jones and Deans Allen and Phillips.—*Birmingham Post.*

NEW CHURCH, CARDIFF.—A new "Bible Christian" church and schools was opened last week in Cowbridge-road. The buildings comprise a chapel to accommodate about 625 worshippers, with vestry and small library attached—also two school-rooms, each 46 ft. by 25 ft., with kitchen and lavatory accommodation, and a caretaker's cottage. The buildings are built of local stone shoddies with Corsham Down stone dressings, in the Early English style of Gothic architecture. The internal woodwork is pitch pine, the roof boarding being left unvarnished. Mr. S. Evans, West Smethwick, supplied the lead lights. Messrs. John Williams & Sons, of Cardiff, arranged the gas lighting, the fittings being by Messrs. Stott & Co. and by Messrs. T. Brawn & Co., of Birmingham. The contractors were Messrs. Knox & Wells, of Cardiff, who carried out the work at a cost of about 4,100*l.* Messrs. Veall & Sant were the architects.

SUNDAY SCHOOL, PUDSEY.—A new Sunday school in connexion with the Mount Zion Methodist New Connexion Chapel, Fartown, Pudsey, was opened recently. The building has been erected on the site of the old school and the surrounding land. It consists of a central hall 66 ft. by 35 ft., with ten class-rooms, five on each side, measuring about 11 ft. by 10 ft. each. At the south-east end is an infants' room 24 ft. by 15 ft., adjoining which is another class-room 15 ft. by 12 ft., and a kitchen 15 ft. by 12 ft. In the basement is a room 32 ft. by 15 ft., to be used as a young men's institute, besides a heating chamber, &c. Four entrances have been provided for the main room, at the south-east end of which is a platform, so arranged that the adjoining rooms can be utilised as ante-rooms. The internal fittings are of varnished pitch pine throughout. The school and class-rooms are heated with hot water on the low-pressure system. The building, which is in a simple Renaissance style, has been erected from the designs and under the superintendence of Mr. Herbert Hodgson, architect, Bradford and Pudsey, by the following contractors:—Mr. John Ambler, Pudsey, masonry; Mr. Richard Farrer, Pudsey, joinery; Mr. Fred Thompson, Stanningley, slating; Mr. A. Taylor, Eccleshill, plastering; Mr. Joseph Scarth, Pudsey, plumbing; Mr. Samuel Walker, Pudsey, painting; Mr. B. Johnson, Pudsey, heating apparatus; and Messrs. J. Waddington & Sons, Bury, ventilators.

SCHOOL BUILDING IN GUERNSEY.—A new school is to be erected at St. Peter Port, Guernsey, and at a session of the State Assembly on the 28th ult. the plans prepared by Messrs. Colson, Farrow, & Nisbett, architects, of Winchester, and submitted in competition with several others, were adopted.

PETER SYMONDS' SCHOOL, WINCHESTER.—These schools are to be erected on a site which is close to the London and South-Western Railway station. The contract has been given to Messrs. Fielder & Son, of Winchester, for carrying out the works in accordance with the plans of Messrs. Chancellor & Hill, architects. The works included in the present contract comprise only a portion of the design for the completed scheme. This scheme comprises a central hall, 69 ft. long by 35 ft. wide, with eight class-rooms opening out of it, four on each side. At the north end of the central hall there will be a raised stage for use on public occasions. There will also be provided a dining-room for the scholars, lavatories, and cloak-rooms, room for the head-master and assistant masters, porter's office, &c. All these will be on the ground floor. On the first floor there will be chemical and physical laboratories, lecture theatre, and board room. In the first portion of the scheme the large central hall and five of the class-rooms, and a portion of the masters' quarters will be omitted. The ventilation and warming of the buildings will be carried out by Messrs. Haden & Son, engineers, Trowbridge. The first portion of the scheme will also include a manual instruction room, afterwards to be converted into a cloak-room for pupils. The main frontage of the building, which has a total length of 150 ft., will face south south-east, standing on the highest portion of the site, with the playgrounds in the front of it, care having been taken to leave behind the main buildings sufficient space to erect detached buildings for technical classes, which it is expected will ultimately be included in this scheme. The building is designed to be built of red brick, with Bath stone dressings to the doors, windows, and angle quoins. The completed scheme will provide accommodation for 300 scholars, the first portion of the building being intended to accommodate about half that number.

NEW SCHOOLS, LONGTON.—On the 9th inst. new schools were opened in Queensbury-road, Longton, Staffordshire. From the designs of Mr. T. P. Hulse, the new buildings have been erected by Messrs. Tomkinson & Betteley, the total cost being nearly 15,000*l.* Accommodation is provided for 1,050 scholars.

NEW BLOCK, PORTSMOUTH ROYAL SAILORS' REST.—On the 30th ult. the new block, built as an addition to the Royal Sailors' Rest at Portsmouth, in commemoration of the Queen's Diamond Jubilee, was opened by the Empress Frederick of Germany. The new building faces the back of the older block in Chandos-street, Landport, and the intervening roadway is spanned by a 30 ft. covered bridge. There are five stories, including four dormitory floors, as well as ground floor. In the basement a bicycle store is being fitted, and a part will probably be devoted to additional lockers. On the ground floor are a number of bedrooms, and a room which will be used for needlework purposes. There are 112 cabins in the block. This will bring the total number of beds to about 450. The new building was designed by Mr. Snell, of Plymouth. The builder is Mr. J. H. Corke, of Southsea.

EXTENSION OF ABERDEEN FISH MARKET.—The plans by Mr. R. G. Wilson, architect, Aberdeen, for the extension of this market along South Market-street—which were approved at the last meeting of Aberdeen Town Council—show that the building will be 426 ft. long by 36 ft. 6 in. wide, and will be set back 10 ft. from the edge of the wharf, leaving the entire width of street alongside the market 96 ft. The cost, exclusive of foundations, is estimated at 5,000*l.*

WAREHOUSE, GLASGOW.—A new warehouse is to be erected for Messrs. Pettigrew & Stephens in Sauchiehall-street, for which plans have been prepared by Messrs. Honeyman & Keppie, architects. It will occupy the whole of the ground from West Campbell-street to the Fine Art Galleries. The warehouse will be five stories in height, with an additional attic. It will be built of white sandstone, and the dome is to be covered with lead.

BUSINESS PREMISES, BISHOPSGATE, E.C.—New business premises have just been erected at 5 and 6, Bishopsgate-street Within, for Messrs. Bull & Sons. The present structure consists of over forty rooms, those above the ground floor being let as City offices. Messrs. Patman & Fotheringham, of Theobalds-road, are the builders, and the architect is Mr. G. Vickery, of Gresham-street. The shop fittings have been supplied by Messrs. Spreckley & Co.

HOTEL ENLARGEMENTS, HARROGATE.—The "Crown" Hotel, Harrogate, is now undergoing alterations and additions, under the direction of Mr. W. J. Morley, architect. The exterior of the new block, which will face the Royal Baths in Montpelier-road, will be of stone, having a tower at the angle joining up to the present building and an ornamental gable. The entrance hall and lounge will be 42 ft. by 32 ft. From this hall there will be a passenger lift to each of the upper floors. A dining-room will be constructed, 63 ft. by 58 ft., with oak wainscotting round, broken up by marble pilasters, with an ornamental panelled ceiling and marble columns supporting the same. New billiard and smoking rooms are to be provided. Lavatories and cloak-rooms are to be arranged, and the walls and floors of these places will be tiled. A recreation and ball-room is also arranged, with stage and ante-rooms at one end, and a winter garden at the other. A gentleman's needle bath, with dressing boxes attached, is provided in the basement, and with lavatory accommodation adjoining. The kitchens will be enlarged and improved. The public billiard-room will be enlarged to accommodate another table, and new lavatory accommodation provided adjoining thereto. The oldest parts of the present house will be pulled down, and about fifty new bedrooms provided. A new laundry and wash-house is to be built, and servants' bedrooms provided in the same block, and apart from the main building. The building is to be warmed throughout by hot-water radiators, &c.; fire appliances will be provided on each floor, and fire escapes at different points. The drainage is to be entirely new. Provision is also made for stabling bicycles. All the rooms will be lighted with the electric light.

ALTERATIONS, &C., THE WOOD MEMORIAL HALL, NEWCASTLE-ON-TYNE.—Some works of alteration and redecoration have just been carried out in connexion with this building. The contract for the woodwork and other alterations has been carried out by Mr. Nicholas Maughan, and the decorations are by Mr. Laidler. The architect for the whole work is Mr. Cackett, of Newcastle.

LUNATIC ASYLUM, CHADWELL HEATH.—At the West Ham Town Hall, recently, a Local Government Board inquiry was conducted by Mr. E. A. Sandford Fawcett, A.M.Inst.C.E., into the application of the West Ham Town Council for sanction to borrow a sum not exceeding 300,000*l.* for the erection of the new lunatic asylum at Chadwell Heath; 16,000*l.* with which to build a fire-station and firemen's dwellings in Barking, and 2,000*l.* for defraying the cost of erecting an underground convenience at the junction of Sebert-road and Woodgrange-road, Forest Gate. Mr. Lewis Angell is the Borough Engineer.

Archiepiscopal Palace, Canterbury.—The tender of Messrs. Barker, of London, for 18,967*l.*, for the erection of the archiepiscopal palace in the Precincts, Canterbury, as a permanent residence of the Archbishops of Canterbury, has been accepted. The architect is Mr. W. D. Caröe, of Whitehall-place.

Wesleyan Church, Newport.—Commercial-road Wesleyan Church, Pillgwenlly, Newport, Mon., has been rebuilt upon modern lines. The reconstructed edifice has an open-timbered pitch-pine roof. In the matter of light, an improvement has been made by the addition of five lead-light windows. A new school-room is erected, with pastor's vestry and offices. The room is built of pennant stone and white stone dressings. The interior is surrounded by six class-rooms, the whole affording accommodation for 750 scholars. The electric light has been installed, and there is a new heating apparatus on the low-pressure system. The total cost is 2,000*l.* The architects were Messrs. Habershon, Fawckner, & Groves, and the contractor Mr. Edwin Richards.

Lecture Hall, Birkenhead.—A new lecture hall and school buildings in connexion with the Wesley Chapel, Birkenhead, were opened on the 4th inst. Accommodation is provided for over 700 children, the cost being about 3,000*l.* The contract has been carried out by Mr. James Merritt from the designs and under the superintendence of Mr. T. W. Cubbon, architect, of Birkenhead.

Hotel, Cruden Bay, near Peterhead.—A new hotel is being erected at Cruden Bay, near Peterhead. It is Baronial in style, and is being built of red Peterhead granite, with dressings of Kemnay granite. It consists of a centre block of five stories, with two projecting wings at the back; and in the building, which has a frontage of 118 ft., are ninety-eight bedrooms, with coffee and breakfast rooms, dining-room, drawing-room, parlours, writing-rooms, billiard-room, and accommodation for a large staff of servants. A special feature is the provision that has been made for golfers. Those coming to reside at the hotel are to be conveyed from the station to the hotel in an electric tramway. The contractors for the hotel are—Mason work, Mr. Edgar Gauld; painting and decorating, Messrs. Garvie & Sons; plaster and tile work, Messrs. Roger & Baxter; plumber work, Messrs. Blaikie; grates, Messrs. Duncan & Co.; cooking apparatus and range, Mr. Charles Mitchell; patent glazing, Messrs. Helliwell, Brighouse; heating, Mr. Robert Tindal; electric bells, Mr. Middleton; tiling and sanitary fittings, Messrs. Doulton & Co. Mr. P. M. Barnett, the engineer-in-chief, has been consulted in the various departments of the works throughout. The general management and superintendence of work and the preparation of the designs have developed upon the Company's architect, Mr. John J. Smith. Mr. Thompson has acted as inspector of works; while the electric lighting has been carried out under the supervision of Mr. Pickersgill.

Hydropathic Building, Callander, Perth.—The re-erection of the Callander Hydropathic has now been completed, and the building has been opened. The structure is of white sandstone, the overhanging oriel windows being finished with half-timbered gables, boldly treated. The corners are carried up as towers, the upper stories framed in half timber construction, with projecting balconies. The building is four stories in height, and an attic story at the back, which contains the servants' apartments. From the portico the entrance-hall is reached. This apartment is panelled in wood, with a mosaic floor. On two sides are arranged the office, luggage-room, and the gentlemen's cloak-room. Through double glass doors access is got to a short main corridor, on the right of which is the manager's room and ladies' cloak-room; on the left is the luggage-room, the service staircase—a stone stair leading to every floor in the building—and the main stair, which is also of stone, leading to the upper floors. Through an archway the main corridor in entered, extending from end to end of the building, 156 ft. long by 12 ft. wide. On the right hand side of this corridor are placed the public rooms, consisting of drawing-room, library and reading-room, dining-room, with service-room, billiard and smoking-room. Along the entire front of this floor is a projecting balcony. From the centre of the main corridor a short corridor leads to the recreation hall and ante-room. This hall is fitted up with a stage and accessories for entertainments. Towards the west end of the main corridor, entrance is obtained to the west wing of the building. This wing contains a second main stair, leading to the upper floors. The two upper floors of the building, reached by both staircases, contain sitting and bed rooms. On the ground floor is situated the working department of the house and the baths. The latter consist of private baths and a set of public baths. These include Turkish and a specially large Russian bath. A complete new scheme of water supply has been furnished to the establishment. The building has been designed by, and carried out under the superintendence of, Mr. James M. Monro, architect, Glasgow, the contractors being Glasgow tradesmen.

## *SANITARY AND ENGINEERING NEWS.*

Waterworks, Portrane Asylum.—An important adjunct of the Portrane Asylum (now in course of construction) are the waterworks near Swords. The reservoirs are situated five miles from the Asylum, and the water is conveyed in pipes of 5-inch bore, laid partly on the road and partly through fields *en route.* The works were designed by Mr. J. H. Swiney, C.E., and carried out to the order of the Board of Control by Mr. W. Baird. The cost of the works was between 8,000*l.* and 9,000l.

Carriage Bridge, Sheffield.—Mr. W. Willcocks, M.Inst.C.E., one of the Inspectors of the Local Government Board, sat at the Sheffield Town Hall on the 4th inst. for the purpose of inquiring into an application by the Corporation for sanction to borrow 9,088*l.* for the construction of a bridge over the river Don at Ball-street, and 1,500*l.* for the purchase of land for the widening of that street. The Town Clerk, in explaining the need for the new bridge, said for a long time past people had moved for the erection of a carriage bridge in place of the foot bridge. On each side of the river at that point there were extensive manufactories and a large population. The foot bridge had fallen into a dangerous condition, and the Council decided to construct a carriage bridge 30 ft. wide. A contract had been entered into with Messrs. Braithwaite & Co., of Leeds, for the erection of the bridge at a cost of 9,087*l.*, and the work was now in progress. The City Surveyor, Mr. C. F. Wike, having given evidence, the inquiry terminated.

## *STAINED GLASS AND DECORATION.*

Memorial Window, Spetchley, Worcester.—The tenants, past and present, of the Spetchley Park Estate have erected a stained glass window in the Berkeley Chapel attached to the church to the memory of Mr. R. Berkeley, the late landlord. The window contains figures of St. Robert and St. Catherine, and also of the deceased gentleman and Lady Catherine Berkeley. The design was carried out by Messrs. Hardman & Co.

Memorial Window, Broadwas, Worcester.—A window has just been placed in Broadwas Church as a memorial of the late Mrs. E. H. Hill. The work has been done by Messrs. Burlison & Grylls, under the superintendence of Mr. C. Hodgson Fowler, F.S.A., who undertook the restoration.

Memorial Window in Aberfoyle Church.—A stained-glass window to the memory of the late Mrs. Dalziel, of Tigh-na-Traigh has been placed in Aberfoyle Parish Church. It consists of three compartments, which are filled with figures illustrating the Nativity. Messrs. A. Ballantine & Gardiner, of Edinburgh, carried out the work.

Memorial Window, Haslemere. — The memorial to Lord Tennyson in Haslemere Church is to take the form of a window, after a design by the late Sir Edward Burne-Jones, one of the last of a series illustrating the story of the Holy Grail, representing the vision which came to Sir Galahad in the little chapel.

Memorial Window, Upperthorpe Chapel, Sheffield.—At the Unitarian Chapel, Upperthorpe, on the 8th inst., the window placed in the chapel to the memory of the late Mr. Charles Woollen was formally dedicated. The window is by Mr. Henry Holliday, of London.

New Reredos, Coddenham Church, Suffolk.—A new reredos has been erected in this church, the gift of the Vicar and friends. The panels are carvings in high relief, decorated with gold and colour, and represent, on the left, the three Marys at the Tomb, and, on the right, the descent of our Lord from the Cross. Iron cranes of elaborate design, with curtains hanging therefrom, are fixed on either side of the reredos. The whole work was carried out by Messrs. Percy Bacon & Bros., of London.

New Window, Wembley Parish Church.—On Sunday last a new memorial window was unveiled in this church. It was designed and executed by Mr. C. Langford, of London and Wembley. The subject is Simeon with the Child Jesus and Anna, the Prophetess. Anna is in rich blue over-dress on white under-dress. Simeon is in diapered green over-dress on white under-dress, with sandals on feet, holding the Child Jesus. Behind each figure is a ruby curtain with cord and fringe.

Window, St. George's, Kidderminster.—A memorial window to the late Mr. J. T. Meredith, architect, was dedicated at St. George's, Kidderminster, on Sunday evening. The window, which is in the west end of the church, has been given by Mr. J. Pritchard, who was for many years with Mr. Meredith.

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The Electric Light at the Queen's Hospital, Birmingham.—An electric light installation has been provided at this hospital. The scheme has been carried out in accord with the specifications of Messrs. Henry Lea & Son, of Bennett's-hill, and Messrs. Verity, Limited, have been the contractors. Mr. Thomas Ions, Messrs. Verity's manager, has been personally supervising the work.

## *MISCELLANEOUS.*

The Widening of Parliament-street. — In our report on December 17 last of the London County Council's meeting held on the previous Tuesday, we stated that it was agreed to contribute, on the usual conditions, a sum of 12,000*l.* in respect of the making up of Parliament and Charles-streets by H.M. Office of Works. We may here mention some of the antecedent circumstances considered by the Council's Improvements Committee. To clear the area bounded by Parliament, Charles, King, and Great George-streets costs the Office of Works 405,000*l.*, a sum that includes 100,000*l.*, the value of land forming part of the Westminster Bridge Estate owned by them. The Office of Works invited the Council to attend a conference to determine what contributions should be made by the Council and the Westminster Vestry. It was stated at the conference* that Parliament-street is to be widened from about 60 ft. to at least 125 ft., and that the site of King-street will be taken for the new public offices, and suggested that the Council might properly contribute out of the county fund to the improvement, according to the value of the land, 17,858 square feet, being the difference between the area added to Parliament-street and that to be appropriated for buildings in King-street. Having regard to the fact that they would not lose the frontage value of the lands the Office of Works estimated at 6*l.* per square foot (or 107,000*l.*) the value of the land given up to the public way, besides the cost of paving the widened thoroughfare. But Mr. Shaw Lefevre, on behalf of the Council, pointed out that the clause authorising them and the vestry to contribute was not originally in the Public Offices (Westminster) Site Act, 1896, but was inserted during the progress of the Bil through Parliament without the Council or the Vestry being consulted in the matter, and that the Council was not asked to contribute until the land had been acquired. On these and other grounds it seemed to the Council they might rightly infer that the improvement would not entail any cost when the commercial value of the land was accounted for. The Improvements Committee say in their report—"It appears to us that the Council would not be justified in making a contribution to a public improvement, unless it were clearly shown that it was being carried out at a loss. As the Office of Works in 1882 so strongly represented to the Metropolitan Board of Works that in their opinion a scheme exactly similar . . . . could be carried out without loss, and as a body of private promoters were in 1896 also prepared to carry out this same scheme at their own cost, and under the belief that they would make a profit thereby, it cannot be shown that the Government is incurring a loss by the transaction. Moreover, it must not be forgotten that the Office of Works are retaining for the purpose of the public offices the very valuable frontages to the widened thoroughfare of Parliament-street. . . . We think that the Council . . . . may well desire to show its appreciation of the value of this work to the extent of taking upon itself the cost of making the widened roads in Parliament-street and Charles-street" [estimated by them at 12,000*l.*].

Presentation to a Borough Surveyor.—A dinner was provided at the Lynn Town Hall a few days ago in connexion with the presentation of a testimonial to Mr. E. J. Silcock, now of Leeds and formerly for eleven years Borough Engineer at King's Lynn. Mr. Jermyn, who acted as Chairman, said that during the past year, on the retirement of their late Engineer, there was a very strong desire expressed by several members of the Council, and others who had been members, that some little recognition of the great public service Mr. Silcock had rendered to the borough should be made, in order to show a tangible expression of the high esteem in which he had been held during his eleven years' residence in Lynn. Of the many measures which had been adopted, some had met with the approval of the ratepayers generally, and some had not, but they could not help looking back on the eleven years and noticing that the town offered a much better reception to any one who visited it or came to reside in it than it did eleven years ago. There were great difficulties to contend with when Mr. Silcock came to the town eleven years ago, but his ability enabled him to cope with them, and to surmount them. Mr. Jermyn then handed to Mr. Silcock a silver salver, on which was engraved:—"Presented to Edward J. Silcock, A.M.I.C.E., F.G.S., by past and present members of the Corporation of King's Lynn, in recognition of his services as Borough Engineer, August, 1898." Together with this there was tendered to Mr. Silcock an illuminated testimonial.—Mr. Silcock said the presentation had come upon him by surprise; the secret had certainly been well kept As had been said, a man holding the position of Borough Engineer—and more especially if the appointment of inspector of nuisances was coupled with it—had very great difficulty in carrying out his duties without hurting the feelings of somebody. He was bound, in the execution of his duties, to make many enemies. Therefore it was the more pleasing to find members of the Council appreciating his services, especially as they had a more intimate knowledge of his duties than anybody else, and the difficulties he had to contend with.

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* The Westminster Vestry did not attend, having resolved not to contribute to the improvement.

**Labour Class Dwellings, Liverpool.**—Mr. F. T. Turton, Deputy City Surveyor of Liverpool, has just presented to the Insanitary Property and Artisans' Dwellings' Committee of the City Council a report on the subject of dwellings for the labouring classes. With the report there was submitted plans showing the suggested labourers' dwellings proposed to be erected on land acquired in Dryden-street and Rachel-street. The boundaries of the land are somewhat irregular the total area of the site being 4,788 square yards. The houses proposed are of two types, designated "A" and "B" respectively, each type comprising three blocks of houses three stories in height, the inside dimensions of the rooms being as under, viz:—Type "A"—ground floor: living-room, 15 ft. by 10 ft. 6 in.; bedroom, 12 ft. by 10 ft. 9 in.; ditto, 12 ft. by 9 ft. 6 in.; ditto, 9 ft. 3 in. by 9 ft.; type "A"—first and second floors: living-room, 13 ft. by 9 ft. 3 in.; bedroom, 11 ft. by 11 ft. Type "B"—ground floor: living-room, 15 ft. by 10 ft. 9 in.; bedroom, 11 ft. 6 in. by 10 ft.; type "B"—first and second floors: living-room, 11 ft. by 11 ft.; bedroom, 10 ft. by 8 ft. 6 in. All the houses are provided with separate water closets, and, with a few exceptions, separate sculleries. Provision has been made in every case for the storage of fuel, each house has also a food locker, ventilated from the outer air, in addition to which the houses on the ground floor have yards for the exclusive use of their tenants. The entrances to the houses on the first floor will be from a balcony, the stairs to which are at the end of each block, while the houses on the second floor will be approached by stairs from the same balcony. In two of the blocks of type "A" the houses on the ground floor are interlocked so as to provide three-roomed houses instead of four-roomed houses. The total accommodation proposed to be provided is:—five four-roomed houses, eight three-roomed houses, and 119 two-roomed houses; total 132. It is proposed to let the houses, approximately, on the following basis per week:—Living-room, 1s. 6d.; each bedroom, 1s.; scullery and water-closet. 6d.; yard, 6d. The calculations as to cost are: 4,788 square yards of land at 12s., 2,873*l.*; estimated cost of buildings, 12,227*l.*; total estimate of land and buildings, 15,100*l.* The total estimated rental is: 1,108*l.* 18s. per annum; less 40 per cent. leakages, 443*l.* 11s.; net estimated rental, 665*l.* 7s. The Deputy Surveyor proposes that these houses should be erected by contractors, and not by men employed by the Corporation.

## *LEGAL.*

### THE STATUTE OF LIMITATIONS.

In the case Bolding *v.* Henderson, heard at Marylebone County Court on Monday, before his Honour Judge Stonor and a jury, a somewhat novel defence was set up. The action was brought by Messrs. Bolding & Sons, sanitary engineers, of Grosvenor Works, Oxford-street, London, W., to recover from Mr. Thomas Henderson, builder and contractor, of 18 and 20, Market-street, Mayfair, London, W., 28*l.* 8s. 1d., for goods sold and delivered. Mr. H. Crispe was counsel for the plaintiff, and Mr. J. Wilson defended.

Mr. Crispe explained that the goods in question were supplied in October, 1891, and the defendant, who did not dispute receiving them, pleaded non-liability under the Statute of Limitations, on account of six years elapsing without claim or acknowledgment of the debt. The learned counsel, however, maintained that the debt had been revived by letters passing between the parties. In a letter dated January 26, 1893, the plaintiff wrote to the defendant as follows:—"In answer to your letter of 25th inst., I am sorry to say that through unforeseen circumstances in connection with the land at Herne Bay, my affairs are about to be wound up, and my credit at the bank is stopped, so, if I give you a bill it will be on my own account, and not through the bank. Therefore, for the present matters must stand as they have been; but I must thank you for the leniency you have given me hitherto."

Counsel for the defendant submitted that the Statute of Limitations required, before a debt could pass from under its provisions, that there should be an acknowledgment of the debt, which implied a promise to pay, and that these conditions were not found in the letters of the defendant.

His Honour: But he admits his indebtedness in his letters, and says, "matters must stand as they have been." That seems quite sufficient. I do not think there can be any doubt about it. I find for the plaintiff.

### EMPLOYERS' LIABILITY ACT.

On the 9th inst., at the Wandsworth County Court, his Honour, Judge Lushington, Q.C., and a jury tried an action under the Employers' Liability Act, in which a painter, named Charles Edwards, of 61, Beachcroft-road, Tooting, sued George Godfrey, a builder, of Balham and Tooting, to recover 150*l.* for personal injuries sustained.

The plaintiff's case was that he was engaged at the "Towers," at Balham, on September 12 last, in glazing the roof of a studio that had been erected on the top of the house. The defendant's brother, from whom plaintiff received his instructions, was placing the last sheet of glass in the roof, when he told plaintiff to go and pack up the tools. The plaintiff stepped on a flat roof adjoining, which was covered with three or four loose sheets of zinc. He was near the edge, when, without warning, the zinc gave way, and plaintiff fell from the roof of the house to the ground, a distance of 35 ft. He sustained severe injuries to his spine. The plaintiff was twenty-two years of age, and earned from 30s. to 2*l.* a week. The defence set up was that the plaintiff fell from the roof owing to his jumping down on a narrow parapet, instead of getting down a ladder—the safe way. The jury found the plaintiff guilty of contributory negligence, and returned a verdict for the defendant.

### DANGEROUS DISCHARGES INTO SEWERS

At West Ham Police-court on the 9th inst., Mr. R. A. Gillespie gave his decision on two summonses, the hearing of which had occupied three special sittings of the court. The defendants were Messrs. Burt, Boulton, & Haywood, chemical manufacturers, of 64, Cannon-street, E.C., and West Silvertown; and the allegation made against them by Mr. Lewis Angell, the Borough Engineer of West Ham, was that on July 19 they had thrown, or suffered to be thrown, or to pass into a sewer belonging to the West Ham Corporation and into a drain communicating therewith a matter or substance by which such sewer or drain might be injured, contrary to section 16 of the Public Health Acts Amendment Act, 1890. The second information alleged that defendants turned into, or permitted to enter, the sewer chemical refuse which was dangerous, contrary to section 17 of the same statute. The case for the West Ham Corporation was that for a considerable time past complaints had been made that offensive matters were passing through the West Ham sewer. In March, 1891, and again in December, 1895, the manufacturers in the district were written to, having their attention called to the various provisions of the Public Health Acts dealing with the subject, but there was no apparent improvement. On July 17 last a serious explosion occurred in the North Woolwich-road sewer, the effects of which could be seen for nearly half a mile along the line of the sewer, six or seven manholes being blown off, and the sewer caught fire. The matter was at once investigated by the drainage inspectors; and after it was deemed safe to enter the sewer it was on July 19 examined from the end of the North Woolwich-road to a point some forty yards or so beyond the defendant company's creosoting works. Here a sample of the sewage was taken, and a light was applied to the contents of the bucket, with the result that the stuff burned for nearly three minutes, throwing up a flame some 18 in. high. Further investigations showed that similar stuff was in the sewer right along as far as a manhole just beyond defendants' works; there it ceased. From another manhole tarry matter was seen coming from a drain connected with Burt, Boulton, & Haywood's, and the corporation officials entering defendants' premises proceeded to an inspection chamber, where a sample of liquid running to the drain was taken. The liquid, which was of a tarry nature, had a temperature of 118 deg. Fahr., and when a light was applied to it it burned. Mr. Gabbetts, the manager, was sent for, and after an altercation as to the manner of the officials' entry and a dispute as to the fairness of the sample another sample was taken. Some of the tarry matter ran into the pail with the sewage; but when a light was applied to this bucket there was no burning. One-third of the first sample taken was left with Mr. Gabbetts and one-third was submitted for analysis by experts. It was described as a brown liquid with a strong odour of coal-tar naphtha, the surface being a dark-coloured, oily liquid, which flashed at the ordinary temperature of the room and distilled a small quantity of benzine. The sample also emitted an appreciable quantity of inflammable vapour, which, if mixed with warm water, became extremely inflammable. The case for the defendants was a denial that they were the persons who had put dangerous matter into the sewer. The substance that had been found in the sumphole on the occasion in question consisted of valuable products, which it was to the defendants' interest to retain, and which, as marketable commodities, the defendants used every known means to retain. There were other factories in the neighbourhood where such stuff as that found in the sewer was used in large quantities, and being waste it had to be disposed of. This was not so with the defendants, who had laid down a long series of sumpholes, or precipitators, for the express purpose of retaining every oily substance. The sample taken was alleged to be unfair, and, in support of this contention, it was stated that since the date of the alleged offence 300 bottles of samples had been taken, the worst samples having been analysed. Mr. Gillespie, in giving his decision, said he had gone carefully through all the evidence, and he was satisfied that the West Ham Corporation had made out their case under both summonses. On the first summons he inflicted a fine of 5*l.* and costs, and on the second summons 1*l.* and costs. On the question of costs, Mr. G. E. Hilleary, for the Corporation, said that, apart from the professional charges, the expenses of the Town Council would reach almost 100*l.*; and, eventually, Mr. Gillespie said he would allow eighty guineas costs in the first case, and 7s. costs in the second, the eighty guineas to include court costs.—*Times.*

### THE WORKMEN'S COMPENSATION ACT.

His Honour Judge Collier gave his decision in the Liverpool County Court on the 4th inst. in the claim under the Workmen's Compensation Act heard before him recently. The claimant was a labourer named Richard Rogers, and he sought compensation from Mr. P. Tyson, builder and contractor, Soho-street, Liverpool, for the death of his son, John Rogers, a bricklayer's labourer, who was killed by falling from a scaffold six stories high. The deceased was a single man, living in lodgings apart from his father, who is a widower, and it was urged on behalf of the respondent that the father was not entitled to recover under the Act, as he was not dependent upon his son at the time of the latter's death. His Honour held that there were no dependents in this case, and that, therefore, the claimant was not entitled to compensation. The respondent had paid 10*l.* into court to cover funeral expenses, and, by consent, his Honour directed that this sum be paid out to the claimant.

## MEETINGS.

### Friday, January 13.

*Architectural Association (Discussion Section).*—Discussion on "Recent Works on Specifications." 7 p.m.

*Institution of Civil Engineers (Students' Meeting).*—Dr. Archibald Barr, Professor of Civil Engineering and Mechanics in the University of Glasgow, will deliver an address on "The Application of the Science of Mechanics to Engineering Practice." 8 p.m.

### Saturday, January 14.

*Perth Architectural Association.*—Visit to Southern District School, South William-street.

### Monday, January 16.

*Royal Institute of British Architects.*—The Fifth General Meeting (Business and Ordinary).—(1) To elect candidates for membership; and (2) To read the Deed of Award of Prizes and Studentships for 1898-99. Mr. Lacy W. Ridge has given notice that he will move the following resolutions:—(1) That the administration of Local Building By-laws in rural districts is a matter calling for the action of the Royal Institute; (2) That the Council be requested to communicate with the Local Government Board on the subject, and to appoint a Special Committee to consider and take action thereon; (3) That matters of sanitation, including the preparation of the site for building, should in all cases be carried out under the supervision of the Local Authorities. That where separate tenements adjoin they should be divided by party-walls of incombustible material. That the interests of the public in buildings in rural districts are not such as to justify any further interference on the part of the public authorities with the construction of buildings. 8 p.m.

*Society of Arts (Cantor Lectures).*—Dr. Samuel Rideal on "Bacterial Purification of Sewage." I. 8 p.m.

*Victoria Institute.*—"A Demonstration of the Crookes and Röntgen Phenomena," by Mr. Gerard Smith. 4.30 p.m.

### Tuesday, January 17.

*Northampton Institute, Clerkenwell.*—Lectures on Mediæval Architecture, by Mr. Francis Bond. II.—"Architecture in the Dark Ages." 7.45 p.m.

*Institution of Civil Engineers.*—Papers to be read with a view to discussion: 1. "The Effects of Wear upon Steel Rails," by Mr. William G. Kirkaldy. 2. "On the Microphotography of Steel Rails," by Sir William C. Roberts-Austen. 8 p.m.

### Wednesday, January 18.

*Society of Arts.*—Mr. L. F. Vernon-Harcourt, M.A., on "Canals and Inland Navigation in the United Kingdom." 8 p.m.

*Builders' Foremen and Clerks of Works' Institution.*—Annual meeting of the members. 8 p.m.

### Thursday, January 19.

*London Institution.*—Mr. A. F. Sieveking, F.S.A., on "Gardens: Their History and Literature." Illustrated. 6 p.m.

*Society of Antiquaries.*—8.30 p.m.

*Society of Arts (Indian Section).*—Mr. J. Nisbet on "Railways in Burma and their Proposed Extension Across Yunnan." (Meeting to be held at the Imperial Institute.) 4.30 p.m.

*British Archæological Association.*—Dr. W. de Gray Birch, F.S.A., on "The MSS. of Romsey Abbey." 8 p.m.

*Civil and Mechanical Engineers' Society (Hotel Victoria, S.W.).*—Mr. E. H. G. Brewster on "The Inadvisability of the Water Supplies being in the Hands of the Local Authorities." 7.30 p.m.

*Institution of Civil Engineers (Students' Visit).*—To the Testing and Experimenting Works of Messrs. David Kirkaldy & Son, 99, Southwark-street, S.E. 2.30 p.m.

### Friday, January 20.

*Architectural Association.*—Illustrated lantern lecture by Mr. Beresford Pite, "Ancient and Modern Buildings in Palestine." 7.30 p.m.

*Royal Institution.*—Professor Dewar on "Liquid Hydrogen." 9 p.m.

*Glasgow and West of Scotland Technical College (Architectural Craftsman's Society).*—Mr. Peter Fyfe on "The Housing of the Labouring Classes." 8 p.m.

# COMPETITIONS, CONTRACTS, AND PUBLIC APPOINTMENTS.

## COMPETITIONS.

| Nature of Work. | By whom Advertised. | Premiums. | Designs to be delivered. |
|---|---|---|---|
| Fire Brigade Station | Bradford Corp. | 100*l.*; 50*l.*; 30*l.* | Feb. 1 |
| *Refuse Destructor | Tottenham U.D.C. | 25*l.*; 15*l.*; 10*l.* | Feb. 7 |
| *Dwelling House on Land Liable to Subsidence | Northwich Salt Compensation Board | 20*l.*; 10*l.* and 5*l.* | Mar. 1 |
| Isolation Hospital, Forfar, N.B. | Forfar and Dundee District Com- | 31*l.* 10*s.*; 21*l.*; 15*l.* 15*s.* | Mar. 31 |
| *Memorial Hall and Art Gallery | Bradford Corp | 150*l.*: 100*l.*; 50*l.* | April 14 |
| Technical Institute and Library | Gosport and Alverstoke U.D.C. | 100*l.*; 25*l.*; 10*l.* | No date |

## CONTRACTS.

| Nature of Work or Materials. | By whom Required. | Forms of Tender, &c. Supplied by | Tenders to be delivered. |
|---|---|---|---|
| *Earthenware Pipes | Belfast Corp. | J. C. Bretland, Town Hall | Jan. 17 |
| Additions to Poor Law Offices, East Parade | Leeds Union | T. B. Wilson, Archt. 12 East Parade, Leeds | do |
| Electricity Works | Rochdale Corp. | J Leach, Town Hall | do. |
| Hotel, Southminster, Essex | Gray & Son | P. M. Beaumont, C.E. Maldon | do. |
| House, Bratch Waterworks, Wombourn | Bilston U.D.C. | —Wilson, Archt. Town Hall, Bilston | do. |
| Paving, &c. Works | Bedford U.S.A. | Borough Surv. Town Hall | do. |
| Chapel, Walls, &c. near Sheffield | Handsworth Burial Bd. | E. Winder, Junr. Surv. Corn Exchange-chambers, Sheffield | do. |
| Police Station, Houses, &c. Huyton | Lancs. Standing Joint Committee | H. Littler, Archt. County Offices, Preston | do. |
| Road Metal | Rugby U.D.C. | D.G. Macdonald, C E. Rugby | do. |
| Six Cottages, Carrigans-lane, Londonderry | Trustees | R. E. Buchanan, Archt. 33, Shipquay-st. Londonderry | do. |
| *Steam Roller | Thedwastre R.D C. | R. E. Wilkes, Stowmarket, Suffolk | Jan. 18 |
| *Renewing and Repairing Asphalting | Sheffield Town Trust | Flockton, Gibbs, & Flockton, 15 St. James-row, Sheffield | do. |
| Fire Station, Strood | Rochester Corp. | W Banks, C.E. Guildhall, Rochester | do. |
| *House, Shillingford, Berks | ........ | S. Johns, Archt. Wallingford | do. |
| Additions to School Buildings | Eastdown (Devon) Sch. Bd. | J. Mayne, Eastdown, Barnstaple | do. |
| Business Premises, High-st. Enniskillen | ........ | T. Elliott, Archt. 37, Darling st. Enniskillen | do. |
| Twelve Houses, Meltham, near Huddersfield | ........ | J. Berry, Archt. 9, Queen-st. Huddersfield | do. |
| Cottage, Creyke's Siding, Goole | W. Smith & Co. | H. B Thorp, Archt. Goole | do. |
| House, Church Field-lane, Glass Houghton, Yorks. | ...... | A. Hartley, Archt. Carlton-chmbrs. Castleford | do. |
| *Carts, Vans, and Horse Brooms | Chiswick U.D.C. | A. Ramsden, Vestry Hall, Chiswick | do. |
| *Pipe Sewers | Ealing U.D.C. | C. Jones, Public Buildings, Ealing. W. | Jan. 19 |
| Workhouse Additions | Warwick Union | F. P. Treness, Archt. 8, Jury-st. Warwick | do. |
| Additions to Schools, Churchtown | Paul (Cornwall) Sch. Bd. | W. Curnow, U.D.C. Offices, Paul | do. |
| Two Houses and Shops, Cavendish-street, Keighley | ..... | G. H. Knowles, Archt. Burlington-chmbrs. Keighley | do. |
| Sewerage Works, Back Streets | Eccles (Lancs.) Corp. | Borough Surv. Town Hall | do. |
| Thirty-five Cottages, Aberdare | Cwmneol Building Club | T. Roderick Archt. Clifton-street, Aberdare | Jan. 20 |
| *Road Making and Drainage | Sutton Coldfield Corp | W. A. H. Clarry, Town Hall, Sutton Coldfield | do. |
| Business Premises, near Oldham | Delph Indus. Co-op. Soc. Ltd. | Secretary, Co-op. Soc.'s Offices, Delph | Jan. 21 |
| Hartshill Stone | Banbury T.C. | N. H. Dawson, C.E. Town Hall | do. |
| Kerbing and Channelling, Ford Cross | Dartmouth U.D.C. | T. O. Veale. Surv. Council Offices | do. |
| Alterations to Talbot Hotel, Whitby | Russell & Wraugham Ltd. | J. J. Milligan, Archt. 77, Baxtergate, Whitby | do. |
| Shoe Factory, Hudson-rd. Burmantofts, Leeds | .. | Smith & Tweedale, Archt. 12, South-parade, Leeds | do. |
| Villa, Greasborough, nr. Rotherham | J. Rawlin | J. Platts, Archt. Old Bank-bldgs. Rotherham | do. |
| Filter Beds, Gnoll | Neath Corp. | D. M. Jenkins, Engr. Gwyn Hall, Neath | Jan. 23 |
| Five Cottages, Rawtenstall | R. Parker | F. J. Hobson, Archt. King-st. Rawtenstall | do. |
| House, Newtowncunningham, co. Donegal | Committee | M. A Robinson, Archt. Richmond-st. Londonderry | do |
| Additions to Imperial Hotel, Porth | T. Davies | A. O. Evans Archt. Pontypridd | do. |
| Levelling, Metalling, &c. Stoke Prior | Bromsgrove R.D.C. | H. W. Smith, Surv. 4, Foregate-st. Worcester | do. |
| Refreshment Rooms, Guide Bridge Station, Lancs. | G. C. R. Co. | Engineer, London-road Station, Manchester | do |
| Schools, Hengoed, Wales | Gelligaer County School Governors | James & Morgan. Archts. Charles-st-chmbrs. Cardiff | do |
| Drainage Works | Birmingham Corp. | J. Price, City Engr. Council House | do. |

## CONTRACTS—*Continued.*

| Nature of Work or Materials. | By whom Required. | Forms of Tender, &c. Supplied by | Tenders to be delivered. |
|---|---|---|---|
| *Road Making, and Supply of Granite Kerb and Asphalte Paving | Woodford U.D.C. | Surveyor's Offices, Woodford Green | Jan. 2 |
| *Widening Road, &c. | Beckenham U.D.C. | J.A. Angell, Council Offices, Beckenham | do. |
| *Articles and Works (various) | Chelsea Vestry | T. W. E. Higgens, Town Hall, Chelsea, S.W. | Jan 24 |
| *Additions, &c. to Laundry, Fitting and Alterations to Stores | Croydon Union | F. West, 23, Coombe-road, Croydon | do |
| Roads, Bargoed, Aberdare | .. .... | G. Kenshole, Archt. Ystrad Mynach, Aberdare | do. |
| *Oak Fencing | L.C.C. | Parks Dept. 9, Spring-gardens, S.W. | do. |
| *Post Office, Stalybridge | Commrs. H.M. Works | Offices. Storey's Gate, Westminster | Jan. 25 |
| *Thames Ballast and Sand | Hackney Vestry | J. Lovegrove, Town Hall, Hackney, N.E. | do. |
| *Boiler House, Boilers, Cooking Apparatus, &c. | Cranbrook Union | The Master, Workhouse, Cranbrook, Kent | do. |
| Cottage Houses, Manstone | Isle of Thanet Union | L. Grant, Archt. High-st. Sittingbourne | do. |
| Ornamental Railings, Buckley Wells | Bury (Lancs.) Corp. | Boro. Engr. Bank-street, Bury | do. |
| Street Works, &c. | do. | do. | do. |
| Additions to Central Station, Blackpool | L. & Y. and L. & N. W. Ry. Co.'s | C. W. Bayley, Hunt's Bank, Manchester | do. |
| *Alterations at Workhouse, Ratcliff, E. | Stepney Union | R. Banks Martin, 103, Plashet-grove, East Ham | Jan. 26 |
| Sewerage Works, Egerton-rd. &c. | Withington (Lancs.) U.D.C. | A. H. Mountain, C.E. Town Hall | do. |
| Chimney Shaft at Workhouse, Penbury | Tonbridge Union | F. W. Stone, 23, Church-rd. Tunbridge Wells | do. |
| Water Supply Works, Cropton | Pickering R.D.C. | R. Kitching, Eastgate, Pickering | Jan. 28 |
| Service Reservoir, C.I. Mains &c. | Midhurst (Sussex) R.D.C. | Taylor, Sons & Co. Engr 27, Great George-street, S.W. | Jan. 30 |
| Sewers (5 miles) | Ampthill (Beds.) U.D.C. | T. Hennell, Engr 6, Delahay-st. S.W. | do. |
| *Government Offices, Manchester | Commrs. H.M. Works | Offices, Storey's Gate, Westminster | do |
| *Works and Materials | Wandsworth B. of W. | Offices, East Hill, Wandsworth, S.W. | Jan. 31 |
| Police Station, Church-st. | Berwick-on-Tweed T.C. | R.B. Dick, Archt. 55, Northumberland-st. Newcastle-on-Tyne | do. |
| Bathrooms at Workhouse | Northallerton Union | Fairbank & Son, C.E. 13, Lendal, York | do. |
| Main Drainage | Chipping Norton T.C. | N. Lailey, C E. 16, Great George-st. S.W | do. |
| *Underground Convenience | Camberwell Vestry | Surv. Vestry Hall, Peckham-rd. S.E. | do. |
| *Brickmaking | East Sussex C.C. | F. J. Wood, County Hall, Lewes | do. |
| Road Materials, nr. Exeter | St. Thomas R.D.C. | A. E. Ward, 9, Bedford-circus, Exeter | Feb. 1 |
| Bridge Work, Horninglow-st. | Burton-on-Trent Corp. | G. T. Lynam, Borough Engr. Town Hall | do. |
| *Technical School | Bootle Corp. | J. H. Farmer, Town Clerk, Bootle | do. |
| *5½ miles of Aqueduct | Birmingham Corp. | J. Mansergh, 5, Victoria-st. S W. | Feb. 10 |
| *Isolation Hospital | Wimbledon U.D.C. | C. H. Cooper, Council Offices, Broadway, Wimbledon | Feb. 13 |
| *Public Baths | Poplar Vestry | Clarkson, 136. High-street, Poplar, E. | No date |
| Alterations to Business Premises, Queenstown, Ireland | T. Murray | A. Hill, Archt. 22, George's-st. Cork | do. |
| Four Houses, North Grange-road, Headingley | ...... | Kendal & Bakes, Archt. Victoria-square, Leeds | do. |
| Alterations to Holland House, Bantry, Yorks. | ... | J. F. Walsh, Archt. L. & Y. Bank-chambers, Halifax | do. |
| *Villa, Felixstowe | ...... | G. W. Thompson, Archt. Granville House, Arundel-st. London, W.C. | do. |
| Two Houses, Brampton, nr. Carlisle | ...... | J. S. Thompson, Bank-st. Carlisle | do. |
| Four Houses, Bridlington Quay | Whitaker Bros. | Chorley, Connon & Chorley, Archt. 15, Park-row, Leeds | do. |
| Two Pair Villas, Headingley | ...... | Kendall & Bakes, Archt. Victoria-sq. Leeds | do. |
| Four Houses and Shops, Strand, Exmouth | W. J. Sellers | P. Kerley, Archt. Exmouth | do. |

## PUBLIC APPOINTMENTS.

| Nature of Appointment. | By whom Advertised. | Salary. | Application to be in. |
|---|---|---|---|
| *Quantity Surveyor (Temporarily) | Reigate Corp. | 3*l.* 3*s.* per week | Jan. 16 |
| *Inspector of Works | Deal Corp. | 2*l.* 10*s.* per week | Jan. 18 |
| *Clerk of Works | Aylesbury U.D.C. | | Jan 19 |
| *Engineer and Surveyor | Sunderland Corp. | 700*l.* increasing to 800*l.* per an. | Jan. 21 |
| *Main Road Inspectors (Three) | Essex C.C. | 156*l.* per ann each | Jan. 25 |
| *Inspector of Street Cleansing | B. of Holborn District | 2*l.* 10*l.* per week | Jan. 31 |

*Those marked with an asterisk* (*) *are advertised in this Number. Competitions, p.* iv. *Contracts, pp.* iv. vi. & viii. *Public Appointments, pp.* xvii xix. & xxi.

## RECENT PATENTS:

### ABSTRACTS OF ACCEPTED SPECIFICATIONS.

### *Open to Opposition until February 14.*

[1898] 23,939.—SLIDE BEVELS FOR MARKING THE BEVELS OF ROOF TIMBERS, &C.: *C. D. Bevan.*—The contrivance combines an L-shaped blade moving freely in a stock. The stock, representing the rafter, can be fixed at any angle desired, and is made of two metal halves (each half being channel or U-shaped) rivetted together at the ends, and kept apart sufficiently to allow the blade to slide between them. Each half of the stock has a long slot to allow the clip-screws to slide along it. The blade is graduated on one face with inches and parts, on the other with feet and parts, according to a scale of 1 in. to a foot; and the two face edges of the stock are respectively graduated to correspond. The two clips hold the blade in the stock; in operation, suppose a roof-truss with a rise of 4 ft. and a span of 12 ft., to obtain the angles made by the rafter with the tie-beam, and with the perpendicular from the tie-beam (at the apex of the roof), the stock's face-edge is fixed in a line coinciding with a line drawn from a point distant 4 ft. (by the scale on the blade) in a vertical direction from the outer angle-point of the blade to a point distant 6 ft. (by the same scale) in a horizontal direction from the blade's outer angle-point. When the bevel is set to the required angle, if the face-edge of the stock is held against the back of the rafter the two edges of the blade are respectively parallel to the top and bottom bevelled ends of the rafter and may be used for marking either or both of the angles—thus the slide bevel can be set to mark the two angles with one setting, and two separate bevels need not be used to mark the two angles when the angles are not equal to one another.

### *Open to Opposition until February 20.*

[1897] 29,067.—DOOR FASTENINGS: *A. Laisis.*—The invention consists of a series of bolts arranged along the rabbet and operated by means of rods and bell-cranks connected with the bolts in such a manner that the latches of all the locks are moved by operating the key and bolt of the main lock; the lock admits of several modifications and may be used for fastening French windows and for other purposes.

30,065.—KEY SWITCH HOLDERS FOR INCANDESCENT ELECTRICAL LAMPS: *J. M. Huisman & H. C. Gover.*—The claim is for the combination of two spring pistons or pins, a circuit-closing device, and contact screws embedded in an insulating block, which is divided in such a manner as to completely enclose the contact-breaker and all working parts—the spring pistons excepted.

30,507.—BORING ARTESIAN WELLS: *M. J. Badon.*—The principle of the invention is the electrical transmission of power for boring purposes; an electrical motor is placed at the bottom of the well in a hermetically closed box which slides in a tubing and imparts a rotatory or percussive motion to the boring tool, the current being supplied from any desired source of electricity situated at the ground's surface; to counterbalance the external pressure of the water upon the box, and to prevent water from entering into it, there is introduced into the box, through a tubular union, air or another gas compressed, which presses upon a bath of oil which covers cupped leathers in the joint of the box; a float on the oil will rise to operate a bell in case any water should enter the box.

[1898] 664.—WATERPROOF COATING FOR WALLS, &C.: *E. Toussaint.*—For a hydro-carbon coating that shall have penetrative and hardening qualities, is made a mixture of benzine (35 parts), beeswax or cerasin (1 part), and Judæan bitumen or dammar gum or colophany (10 parts): it is claimed that the coating may be used upon all materials—including cements, plasters, stones, wood, and leather; and when mixed with white lead or zinc white and pigment will form an excellent paint.

2,299.—JOINTS BETWEEN THE GLASS GLOBES OF ELECTRICAL ARC LAMPS AND THEIR SUPPORTS: *P. H. Guerin.*—In order to diminish the consumption of the carbons the joint between the globe and its support is made air-tight, or as air-tight as is possible, by means of a hydraulic joint, or a sand joint, so that the carbons are burned in a vacuum (more or less so) or in the gases produced by the combustion of the carbon; the body of the arc lamp has a cylinder enclosing the apparatus for regulating the carbons, and the cylinder's lower end is extended downwards to dip into a channel or recess around the glass globe's neck, and is filled with water, sand, or other suitable material to form the joint. The channel's diameter and width may be varied, and it may be made separately of metal or other material set in cement.

2,822.—FIREPROOF CEILINGS AND PLATES OR TILES THEREFOR: *H. H Leigh.*—The plates or tiles of fireproof materials are joined to one another by groove and tongue, are stepped at their ends, and are designed to be supported between the beams or girders of a building which are provided with lateral projections to engage with the steps in the tiles; the plates or tiles are so arranged between the beams or girders that their under-face projects beneath the under-faces of the beams, so as to leave a free space to be closed by network or gratings and filled with mortar; the moulding-box for making the tiles has, between its two sides, a sliding transverse wall, moved to and fro by a rack-and-pinion gearing, and the box's interior is shaped to correspond with the shape of the edges of the plates or tiles.

3,622.—MULTIPLE WATER-SUPPLY TAPS AND ACCESSORY FITTINGS FOR BATHS, LAVATORIES, &C.: *J. Shanks.*—The contrivances comprise various modifications to meet different requirements. In one form a tap for delivering hot or cold water, or both, from one nozzle, consists of a cylindrical box, having around it inlets for hot and cold water, and an outlet delivery, with external screw caps giving access to inlet spaces, in which are arranged disc valves that close under the pressure, springs being added to prevent displacement and to ensure the closing. Each valve has a spindle projecting into the box; an eccentric upon the spindles opens the valves; if it is required to direct the water to one or other of two or more delivery nozzles the outlets are provided with valves actuated by eccentrics or cams, and the outlet ports from the valve box may be closed by sliding covers centred upon pins. A pointer, connected with the valve spindle, moves over a disc and indicates the position into which the spindle is to be turned to open communication with whatever delivery nozzle is desired.

3,641.—SUPPLY CISTERNS FOR WATER-CLOSETS: *F. A. Small.*—The inventor's object is "to produce a supply cistern . . . . which, while closing the ball-tap of the water supply while the water is drawn off to the closet by the outlet valve, closes the valve and opens the said ball-tap when the water is exhausted, and moreover has all its working parts above the water." He uses a second float, which operates a pivotted lever having an extensible end, by means of which lever and an intermediately-placed pivotted crank a hanging bar or rod attached to the valve-lever's outer end is disengaged from a pawl or detent, and allows the weighted end of the valve lever to fall and drop the outlet valve, which closes and stops the outflow of water, and also allows the floating ball of the inlet or ball-tap to fall and open the inlet tap, and so admits a fresh supply. The extensible end enables the plumber to regulate the time for duration of the action, as it may be adjusted to act either when the cistern is half empty or at any other stage of the flow. The ball-tap lever is so connected to the weighted end of the valve lever by a chain that it can only fall with the flow of water a limited distance, but it can rise sufficiently, as the water rises in the cistern, to close the inlet tap.

6,002. — EXHIBITIONS AND SIMILAR TOWERS: *T. Bradley.*—The tower, or other structure, is built of such a form that a roadway or path may be made to lead from its base to its summit by a gradually circuitous gradient; the winding roadway may also be made of solid masonry, or constructed upon supports, and may be provided with a tramway either upon or beneath it.

15,175.—AUTOMATICAL ACETYLENE GAS GENERATOR: *W. Marrs.*—This consists of (1) an enclosed water cistern fitted with escape pipes for conveying the gas into store chambers, whence the gas passes to a purifier, (2) an automatical generator inside the cistern (or two generators for double action), each generator being fitted with a moveable basket containing the carbide of calcium.

20,114.—CHIMNEY COWLS OR CAPS: *R. Kowalski.*—The cowl's cover has a door which leaves between itself and the cover a space having a downward inclination into which a current of outer air can enter from the top, as the current flows obliquely into the cowl's interior it disperses the smoke and leaves the space free for the following gases of combustion.

21,377.—SPRAYING APPARATUS, CHIEFLY DESIGNED FOR BATHS, &C.: *G. W. Weston, W. H. Weston, & M. Ancker.*—The novelty lies in the means for adjusting the rose to different altitudes or angles, and for adapting the sprinkler for application to faucets for hot and cold water; one end of the spout is connected with the rose or sprinkler, and the other end is fitted to a flexible nozzle, inserted in the faucet, and is held therein either frictionally or otherwise; to adapt the sprinkler to faucets of hot and cold water the lower end of the spouts is received into a coupling on which is a branch carrying the rose, the spouts being connected with the elastic or flexible nozzles, fitted respectively into the hot and cold water faucets.

22,591.—[illegible]PPING OR CLOSING DEVICES FOR PIPES OR CONDU[illegible] *F. T. Farrer & W. W. Brown.*—To obviate the employment of a separate stopper for each size of pipe, and to enable the stopper to be used in a curve or bend, is contrived a cylindrical bag having hemispherical ends to one whereof is attached a short tube connecting with the inflating apparatus.

22,964.—PLUG SWITCHES OR WALL CONTACTS FOR ELECTRICAL CIRCUITS: *A. Vandam & T. H. Marsh.*—The invention relates particularly to switches wherein the leads are connected to concentric terminals, insulated from one another by a tubular piece of non-conducting material and an outer, partially tubular piece thereof. Its object is to provide for connecting one of the terminals to its respective lead by means of a fuse wire, which is passed over supports projecting from the outer partially tubular non-conducting piece.

22,980.—CONSTRUCTION OF FLAT ARCHES OR VAULTS: *M. Koenen.*—For arched structures in which a flat middle portion of the arch is supported by two arched haunches combined with iron bars embedded lengthwise in the arch and secured to its abutments; and to increase the span and carrying power iron bars are embedded in the arch or vault (which may be of either masonry or concrete), such bars being curved in a downward direction within the lower part of the arch's flat portion, while the portions within the upper portions of the haunches and spandril filling are bent upwards and are secured to the walls or girders forming the abutments. The arch haunches are supported upon the girder's bottom flange or upon a corbel fixed to the girder or other abutment.

23,963.—PROCESS FOR PRODUCING A PERMANENT ROOFING: *H. Christensen.*—The improvement consists in applying a heated mixture of tar and lime to the roofing, which is made of or covered with a thin layer of card or pasteboard; the lime serves to extract whatever water may be in the tar, and in acting upon its phenol-like constituents and their acids, forms phenolates and salts of lime as fixed elements of the roofing.

24,285. — FIREPROOF CEILINGS AND PARTITIONS: *United Asbestos Company & J. A. Fisher.*—To ornament ceilings or partitions (see their Specification 14,068 of 1897) the inventors contrive that the joints of the asbestos slabs shall occupy positions where they can be covered with mouldings, following the design, and to cover them they use hollow mouldings stamped up from thin asbestos mill board; where lengths of mouldings meet they support them along a short distance from the junction by blocks of wood.

### NEW APPLICATIONS.

*December 27—31.*

27,276, J. H. Dorion, Cable-suspended Electrical Lamps. 27,294, Wrights, Fluid-regulating Valves or Cocks. 27,304, R. Catterall, Oil-lamps and Apparatus. 27,326, Friebel & Näke, Acetylene Gas. 27,327, F. G. Bate and Others, Artificial Stone. 27,329, C. Monplot, Public Lighting Apparatus. 27,334-6, A. T. Nye, Telephonical Apparatus. 27,337, Soc. Anon des Fontaines à Gaz, Gas-burners. 27,339, C. von Forell, Production of Cement from Limestone and Blast-furnace Slag. 27,342, H. Blaasch, Strengthening Incandescent Gas Mantles. 27,348, G. Barnes, Hanging Window-sashes. 27,349, W. S. Cole, Sash-bars. 27,353-4, W. Duffy, Cross-cut Sawing Machines and a Turning, Shaping, and Cutting Machine. 27,358, W. Cassels, Combined Bath and Wash-basin. 27,369 H. Ovenden, Parallel Bar Folding-steps. 27,370, Soc. Sautter, Harlé, & Cie., Automatical Compounding of Monophase or Polyphase Alternators. 27,380, F. V. Phillips, Window-stile Pockets. 27,382, J. Burgess, Sprinkler for Subduing Fire. 27,387, E. A. Eason, Tracing-cloth. 27,393, J. B. F. Herreshoff, Roasting-furnaces. 27,396, J. Willard, Ball-Cocks or Valves. 27,399, T. Cooper & Others, Gas Lamps. 27,404, J. I. Richards, Pressing Bricks, Tiles, &c. 27,407, M. J. Adams, Spring and Other Taps. 27,410, C. J. Waddell, Taps and Cocks for Fluids. 27,414, J. Clark, Electrical Lamp Bracket Joints. 27,416, W. R. Clay, Incandescent Gas Burners. 27,418, H. Cohn, Embossed Wall-Hangings. 27,426, C. Gordon, Introduction of Warmed Fresh Air into Buildings or Apartments. 27,431, Hastie & Gill, Cement. 27,440, E. Cramer, Charging Apparatus for Cement Kilns and Furnaces. 27,441, C. Marty, Means for Reflecting Light. 27,454, Marshall & Hopwood, Winding Apparatus. 27,476, Line & Gosling, Working Sheer-legs and Crane-gibs In and Out on a Radius. 27,478, Hardings, Water Supply and Storage. 27,480, J. Freeman, Kilns for Burning Sanitary Pipes, Earthenware, Bricks, &c. 27,482, F. Lobnitz, Dredging Machinery. 27,489, W. R. Ladkin, Gate Fastener. 27,498, G. Zahikjanz, and 27,556, R. Bottelli, Electrical Incandescent Lamps. 27,506, J. Alda, Doors. 27,507, A. E. B. Hill, Levelling Rod. 27,516, H. A. L. Barry, Raising, Lowering, Transporting, and Discharging Materials. 27,526, J. Matthias, Thermo-Electrical Building Bricks or Blocks. 27,541, Wakelin & Weston, Detachable and Swivelling Electric Light Fittings. 27,545, F. Windham, and 27,618, L. Schmidt, Acetylene Lamps. 27,547, Kleine & Staff, Fireproof Concrete Ceilings and Floors. 27,549, C. Ettles, Roof, Roof-light, and Cupola-light Glazing. 27,557, J. Taylor, Securing Knobs to Spindles. 27,560, J. Stewart, Locking Device for Ash-pits, &c. 27,561, H. Walker, Acetylene and other Gas-burners. 27,567, J. T. Pearson, Granite, Stone, and Marble Sawing Machinery. 27,568, A. R. W. Syrett, a Drawing Instrument. 27,571, W. W. Bengough, Fastening and Securing Scaffold Poles. 27,578, G. S. Haseladn, Chimney Pots. 27,572, E. D. de Anguera, Ventilators. 27,580, Braham and Cunningham, Clamps. 27,583, F. S. Worsley and 27,606, A. M. Arter, Electrical Arc Lamps. 27,584, H. Pipe, Gas Burners. 27,591, M. J. Adams, Gas-lighting Apparatus. 27,601, R. Brigham, "Heads for Down Spouts Buildings," &c. 27,610, L. Lion, Scales or Rulers. 27,617, Robinson & Aspinall, Actuating Bolts and Similar Fastenings. 27,628, N. M. Hopkins, to Preventing the Bursting of Water-pipes by Freezing. 27,632-3, C. G. A. Streubel, Street and Similar Lamps, and Gas-cocks with Ignition Arrangements.

The last application for the year 1898 is numbered 27,639. In 1897 the applications amounted to 30,958, and in the previous year to 30,193. Of the applications made in the two years 1896-7 only 13,360 and 15,134 respectively, advanced beyond the initial nine months' provisional protection to the "completed specification" stage.

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## SOME RECENT SALES OF PROPERTY:

### ESTATE EXCHANGE REPORT.

January 4.—By WILKINSON, SON, & WELCH (at Brighton).

| | |
|---|---|
| Brighton, Sussex.—35, Providence-pl., f. | £335 |
| 31 and 32, Red Cross-st., f., r. 26*l.* | 550 |

January 5.—By SIM & RANDALL.

| | |
|---|---|
| Lewisham.—4, Springbank-rd., u.t. 996 yrs., g.r. 12*l.*, r. 70*l.* | 850 |
| 4, 5, and 6, Springbank Market, u.t. 996 yrs., g.r. 36*l.*, r. 210*l.* | 2,510 |
| Ilford.—48, Argyle-rd., u.t. 994 yrs., g.r. 7*l.* 17s., r. 42*l.* | 445 |
| Forest Gate.—539, 541, 543, and 545, Romford-rd., u.t. 90 yrs., g.r. 24*l.*, r. 120*l.* | 1,180 |

*Contractions used in these lists.*—F.g.r. for freehold ground-rent; l.g.r. for leasehold ground-rent; i.g.r. for improved ground-rent; g.r. for ground-rent; r. for rent; f. for freehold; c. for copyhold; l. for leasehold; e.r. for estimated rental; u.t. for unexpired term; p.a. for per annum; yrs. for years; st. for street; rd. for road; sq. for square; pl. for place; ter. for terrace; cres. for crescent; yd. for yard, &c.

## PRICES CURRENT OF MATERIALS.

| TIMBER. | | |
|---|---|---|
| Greenheart, B.G. ton | 8/0/0 | 0/0/0 |
| Teak, E.I. ....load | 10/10/0 | 15/10/0 |
| Sequoia, U.S. ft. cu. | 1/9/0 | 2/0/0 |
| Ash, Canada, load | 3/17/6 | 5/5/0 |
| Birch, do. | 3/0/0 | 5/0/0 |
| Elm, do. | 4/12/6 | 5/15/0 |
| Fir, Dantsic, &c. | 2/0/0 | 4/0/0 |
| Oak, do. | 3/5/0 | 3/15/0 |
| Canada | 4/0/0 | 6/0/0 |
| Pine, Canada red | 0/0/0 | 0/0/0 |
| Do. yellow | 4/7/6 | 6/5/0 |
| Lath, Dantsic, fath | 4/10/0 | 5/10/0 |
| St. Petersburg | 4/0/0 | 6/10/0 |
| Wainscot, Riga, &c., log | 3/15/0 | 5/15/0 |
| Odessa, crown | 3/15/0 | 5/15/0 |
| Deals, Finland 2nd & 1st std. 100 | 9/15/0 | 10/5/0 |
| Do. 4th & 3rd | 9/15/0 | 10/5/0 |
| Do. Riga | 8/5/0 | 9/5/0 |
| St. Petersburg, 1st yellow | 11/15/0 | 14/5/0 |
| Do. 2nd yellow | 10/15/0 | 12/5/0 |
| Do. white | 9/15/0 | 11/15/0 |
| Swedish | 9/15/0 | 16/15/0 |
| White Sea | 10/15/0 | 18/0/0 |
| Canada, Pine 1st | 18/15/0 | 25/5/0 |
| Do. do. 2nd | 13/15/0 | 17/0/0 |
| Do. do. 3rd, &c. | 6/0/0 | 10/0/0 |
| Do. Spruce, 1st | 8/10/0 | 10/10/0 |
| Do. do. 3rd and 2nd | 7/5/0 | 8/10/0 |
| New Brunswick | 7/5/0 | 8/0/0 |
| Battens all kinds | 5/0/0 | 16/0/0 |
| Flooring boards, sq., 1 in., prep. 1st | 9/6 | 16/3 |
| Do. 2nd | 8/0 | 13/3 |
| Other qualities— | 6/3 | 7/0 |
| Cedar, Cuba, ft. | /4 | /4½ |
| Honduras, &c. | /3¾ | /4½ |
| Mahogany, Cuba | /5½ | /7 |
| St. Domingo, cargo av. | /5 | 1/3 |
| Mexican, do. do. | /3½ | /4 |
| Tobasco, do. do. | /4 | /6½ |
| Honduras, do. | /4 | /6 |
| Box, Turkey, ton | 4/0/0 | 15/0/0 |
| Rose, Rio | 7/0/0 | 14/0/0 |
| Bahia | 6/0/0 | 12/0/0 |
| Satin, St. Doming. | /5 | 1/0 |

| TIMBER (*continued*). | | |
|---|---|---|
| Satin, Porto Rico | 0/0/9 | 0/2/0 |
| Walnut, Italian | 0/0/3 | 0/0/7 |
| METALS. | | |
| Iron—Pig, in Scotland ....ton | 2/10/8 | 0/0/0 |
| Bar, Welsh, in London | 6/0/0 | 6/5/0 |
| Do. do. at works in Wales | 5/15/0 | 5/17/6 |
| Do. Staffordshire, in London | 6/5/0 | 7/10/0 |
| COPPER—British cake and ingot | 64/10/0 | 65/0/0 |
| Best selected | 65/0/0 | 65/10/0 |
| Sheets, strong | 68/0/0 | 70/0/0 |
| Chili bars | 60/2/6 | 0/0/0 |
| YELLOW MTL. lb. | 5d. | 5⅝d. |
| LEAD—Pig Spanish ....ton | 13/5/0 | 0/0/0 |
| English com. Brands | 13/10/0 | 0/0/0 |
| Sheet, English 6 lbs. per sq. ft. and upwards | 14/10/0 | 0/0/0 |
| Pipe | 15/0/0 | 0/0/0 |
| ZINC—English sheet ....ton | 28/0/0 | 0/0/0 |
| Vieille Montagne | 29/0/0 | 0/0/0 |
| Spelter | 24/10/0 | 24/12/6 |
| TIN—Straits | 97/0/0 | 0/0/0 |
| Australian | 97/10/0 | 98/0/0 |
| English Ingots | 99/10/0 | 100/10/0 |
| Banca | 0/0/0 | 0/0/0 |
| Billiton | 0/0/0 | 0/0/0 |
| OILS. | | |
| Linseed ....ton | 17/0/0 | 0/0/0 |
| Cocoanut, Cochin | 27/15/0 | 0/0/0 |
| Do. Ceylon | 24/10/0 | 0/0/0 |
| Palm, Lagos | 21/15/0 | 0/0/0 |
| Rapeseed, English pale | 22/5/0 | 0/0/0 |
| Do. Brown | 20/15/0 | 0/0/0 |
| Cottonseed ref. | 15/0/0 | 16/0/0 |
| Oleine | 17/0/0 | 18/0/0 |
| Lubricating U.S. | 0/5/3 | 0/7/6 |
| Do. Black | 0/5/0 | 0/6/6 |
| TAR—Stockholm barrel | 1/5/0 | 0/0/0 |
| Archangel | 0/18/0 | 0/0/0 |
| Turpentine | 32/10/0 | 0/0/0 |

## TENDERS.

[Communications for insertion under this heading should be addressed to "The Editor," and must reach us *not later than* 10 *a.m. on Thursdays.* N.B.—We cannot publish Tenders unless authenticated by the name and address of the sender; and we cannot publish announcements of Tenders accepted unless the amount of the Tender is given, nor any list in which the lowest Tender is under £100. unless in some exceptional cases and for special reasons.]

AMWELL (Herts).—For rebuilding the "George the Fourth inn, Amwell, Herts, for Messrs. Christie & Co., brewers, Hoddesdon. Mr. James Farley, architect, Hertford:—

| | | | |
|---|---|---|---|
| F. & F. J. Wood | £1,839 | J. Bentley | £1,670 |
| T. Hunt | 1,820 | W. Laurence, Waltham Abbey (accepted) | 1,639 |
| J. A. Hunt | 1,789 | | |

BRIDLINGTON QUAY.—For alterations to No. 34, Queen-street, for Mr. J. E. Darby. Messrs. Brodrick, Lowther, & Walker, architects, Central Chambers, Bridlington Quay:—

| | | | |
|---|---|---|---|
| J. H. Hudson | £572 | W. Moody, Bridlington Quay (accepted) | £446 |

BROMHAM (Bedfordshire).—For alterations and additions, cleaning, and painting the village schools. Mr. George P. Allen, architect, 6, John-street, Adelphi:—

| | | | |
|---|---|---|---|
| Corby & Sons | £401 18 | S. Foster | £345 14 |
| P. White | 376 17 | T. H. Coleman* | 327 0 |

* Accepted subject to modification.

BROMLEY (Kent).—For the erection and completion of house and stables for Mr. J. Goodwin. Messrs. Ashley & Armstrong, architects, 50, Berners-street, London, W.:—

| | | | |
|---|---|---|---|
| Syme & Duncan | £1,477 9 6 | T. Crossley & Son | £1,391 |
| B. J. White & Son | 1,474 0 0 | T. W. Jones* | 1,382 |
| John Lonsdale | 1,454 0 0 | T. D. Graty* | 1,370 |
| Douglas Payne | 1,416 0 0 | Pryer & Co. | 1,366 |
| R. A. Lowe | 1,408 0 0 | F. P. Duthoit | 1,303 |

* Received late.

BULWELL (Nottingham).—For the erection of five houses, Scott's-street, for Mr. Geo. E. Butcher. Mr. F. C. Martin, architect, Angel-row, Nottingham. Quantities by architect:—

| | | | |
|---|---|---|---|
| F. H. & J. W. Moore | £970 | John Oscroft, Talbot-street, Notts (accepted) | £895 |
| F. Messom | 938 | Squires & Bancroft | 880 |
| H. Jordan | 900 | | |

CHICHESTER.—For the erection of a hotel, &c., Selsey, for the Selsey Hotel Company. Messrs. Rake & Cogswell, architects, Prudential Buildings, Portsmouth:—

| | | | |
|---|---|---|---|
| C. H. Roberts | £4,310 | H. Jones | £4,000 |
| Light & Son | 4,210 | W. Wallis, London and Littlehampton* | 3,813 |
| J. H. Corke | 4,100 | | |

* Accepted.

CHIPSTEAD (Surrey).—For alterations to the White Hart public-house for Messrs. Page & Overton, Limited. Mr. A. Broad, architect, 22, George-street, Croydon. Quantities by the architect:—

| | | | |
|---|---|---|---|
| E. J. Saunders | £599 | Pearson & Co. | £389 |
| A. Bullock | 594 | W. Akers & Co. | 387 |
| E. Goulder | 559 | T. Bushby | 380 |
| R. Whitaker | 418 | J. J. Carrick | 370 |
| D. W. Barker | 413 | G. Cheeseman, Whyteleafe* | 340 |
| C. Nightingale & Sons | 411 | | |

* Accepted.

DEVIZES.—For the erection of new Bacon Factory at Devizes, for the Devizes Bacon Company. Mr. Ernest C. Isborn, architect, Devizes. Quantities supplied by Mr. F. H. A. Hardcastle, 5, Old Queen-street, Westminster, S.W.:—

| | | | |
|---|---|---|---|
| Downing & Rudman | £4,877 0 0 | A. Beazley | £3,947 0 0 |
| J. Perkins | 4,495 0 0 | G. Moore | 3,882 0 0 |
| Drew Bros. | 4,309 0 0 | Douglas & Sons | 3,644 3 9½ |
| A. Krauss | 4,300 0 0 | R. B. Mullings | 3,450 0 0 |
| P. Ford | 4,163 7 6 | W. C. Chivers | 3,330 0 0 |
| Hayward & Wooster | 4,111 0 0 | Henry Ash* | 3,289 0 0 |

* Accepted.

EDMONTON.—For repairs, &c., at "King's Head" public-house, Edmonton, for New London Brewery Company. Mr. J. Hamilton, architect:—

| | | | |
|---|---|---|---|
| Neal | £400 | Scarborough | £345 |
| Connings | 358 | Snewin Bros. & Co. | 324 |
| Woodcroft | 355 | | |

ELIE, N.B.—For laying six miles of water-pipes, and other work, for the Local Authorities. Messrs. Belfrage & Carfrae, C.E., 1, Erskine-place, Edinburgh:—

| | | | |
|---|---|---|---|
| R. Skinner | £5,548 3 7 | D. Whyte | £4,970 18 4 |
| L. Kelly | 5,442 9 10 | R. C. Brebner & Co. | 4,929 1 10 |
| J. Stevens | 5,309 3 0 | G. Mackay & Son | 4,871 16 0 |
| J. Kennedy | 5,251 16 8 | Nimmo & Coupar | 4,803 11 7 |
| J. Angus | 5,209 10 3 | J. W. Bain, 2, Lauriston-place, Dundee* | 4,575 3 4 |
| J. Morris & Sons | 5,183 17 1 | | |
| T. Munro | 5,112 12 11 | | |

* Accepted.

ENFIELD and TWICKENHAM.—Accepted for the widening of Turkey-street Bridge, Enfield, and Kendal Bridge, Twickenham, for the Middlesex County Council. Mr. H. S. Wakelaw, C.E., County Surveyor, the Guildhall, Westminster, S.W. :—

Geo. Bell, Tottenham and Manchester................£2,156

FAWKHAM (Kent).—For the erection and completion of two cottages. Messrs. Ashley & Armstrong, architects, 50, Berners-street, London, W. :—

John Lonsdale, Swanley Junction ........................£484

LEAMINGTON.—Accepted for the erection of an entrance lodge, Victoria Park, for the Town Council. Mr. F. G. Cundall, architect, 41, Parade, Leamington :—

T. Pratt, Leamington ................................£510

LONDON.—For alterations at No. 146, Lewisham High-road, for Messrs. Page & Overton, Limited. Mr. A. Broad, architect, 22, George-street, Croydon. Quantities by the architect :—

| | | | |
|---|---|---|---|
| S. Roper | £505 | W. Akers & Co. | £486 |
| H. L. Holloway | 492 | T. D. Leng | 473 |
| J. Smith & Sons | 402 | S. J. Jerrard & Sons | 455 |
| S. R. Best | 487 | Hall Bros., New Cross* | 428 |

* Accepted

LONDON.—Accepted for the erection of seven villa residences at Highcroft-road, Crouch-hill, N. :—

H. Wells, 17, Crouch-hill................................£4,500

LONDON.—For alterations and new shop front at 114, Richmond-road, S.W., for Mr. E. Biucchi. Messrs. Shaw & Galetti, architects, No. 49, Finsbury-pavement, E.C. :—

| | | | |
|---|---|---|---|
| C. Speckley & Co. | £374 10 | E. Swan & Co., Fulham* | £330 0 |
| Lyle Manufacturing Co. | 337 0 | | |

* Accepted.

LONDON.—For alterations to the "Lord Nelson" public-house, Trafalgar-road, Greenwich, S.E., for Messrs. Barclay, Perkins, & Co. Mr. G. Hubbard, architect, 23, Finsbury-circus, E.C. :—

| | | | |
|---|---|---|---|
| Wallis & Son | £3,120 | H. L. Holloway | £2,533 |
| Balaam Bros. | 2,855 | W. Nash, New Cross | 2,398 |
| F. & H. F. Higgs | 2,820 | | |

LONDON.—For new school, manual training, cookery centres, and caretaker's house, at Stonebridge-park, N.W., for the Willesden School Board :—

| | | | |
|---|---|---|---|
| Dove | £22,995 | E. Lawrance & Son | £20,793 |
| Nightingale | 22,873 | Chessum & Son | 20,697 |
| Higgs & Hill | 22,200 | Yerbury | 20,589 |
| Holliday & Greenwood | 21,189 | George Neal (accepted) | 20,423 |
| Scrivener | 20,945 | | |

LOWER EDMONTON.—For the erection of new Infant School, Eldon-road, Lower Edmonton :—

| | | | |
|---|---|---|---|
| Knight & Son | £10,067 | Edwards & Medway | £8,383 |
| Snewin Bros. & Co. | 9,063 | T. E. Sharpington | 8,370 |
| A. Porter | 8,935 | P. Hart | 8,160 |
| A. Monk | 8,800 | W. Lawrence | 8,149 |
| Chessum & Son | 8,634 | | |

PENGE.—For drainage and sanitary work, &c., at the Royal Watermen's Almshouses, Penge. Mr. L. Jacob, architect, 423, New Cross-road, S.E. :—

| | | Deduct if 6 in. in lieu of 9 in. pipes. |
|---|---|---|
| Akers & Co. | £1,171 0 0 | £62 0 0 |
| J. E. Davis | 1,868 11 7 | 42 17 6 |
| Falkner & Sons | 1,230 0 0 | 33 0 0 |
| Foreman Bros. | 1,188 0 0 | 9 0 0 |
| General Builders, Limited | 1,232 0 0 | 32 0 0 |
| Gregory & Co. | 1,344 0 0 | 33 0 0 |
| H. Leney | 1,550 0 0 | 25 0 0 |
| A. P. Maers | 980 0 0 | 16 0 0 |
| W. Mills | 1,027 0 0 | 41 0 0 |
| W. J. Penfold (accepted) | 735 9 0 | 17 15 0 |
| C. R. Pledge | 1,368 0 0 | 19 0 0 |
| Wenham & Waters | 1,245 0 0 | 40 0 0 |

PUTNEY.—For the erection of stabling and coachman's cottage at Chartfield, Putney Hill. Mr. A. R. Thorn, architect, Elm Park Estate Office, 263, Fulham-road, S.W. :—

| | | | |
|---|---|---|---|
| E. Parsons & Co. | £1,300 | G. E. Selman* | £1,000 |
| H. Roffey | 1,276 | | |

* Accepted

READING.—For private street improvement, Culver-road. Mr. J. Bowen, Borough Engineer, Reading :—

| | | | |
|---|---|---|---|
| Thos. Free & Sons | £632 0 0 | W. Reeves | £529 15 0 |
| G. W. Talbot | 608 9 8 | Fred. Jones, Edmonton | 525 13 2 |

* Accepted.

READING.—For private street improvement, College-road. Mr. J. Bowen, Borough Engineer, Reading :—

| | | | |
|---|---|---|---|
| G. W. Talbot | £950 9 4 | W. Reeves, Elm Park-road* | £797 10 0 |
| Thos. Free & Sons | 875 0 0 | | |
| Fred. Jones | 808 15 2 | | |

* Accepted.

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TAUNTON.—For the execution of sewerage works, Target Field, for the Town Council. Mr. J. H. Smith, C.E., Municipal Offices, Corporation-street, Taunton :—

| | | | |
|---|---|---|---|
| Allen & Son | £9,362 9 0 | G. Bell | £7,805 0 0 |
| R. H. B. Neal | 8,470 0 0 | W. S. Meredith | 7,700 0 0 |
| W. Gibson | 8,441 16 7 | B. Cook & Co., 16, Victoria-street, Westminster* | 7,518 0 0 |
| Facey | 8,360 0 0 | | |
| H. W. Pollard | 7,998 0 0 | | |
| R. Hitchcock | 7,882 19 0 | | |

* Accepted.

TOTNES (Devon).—Accepted for the construction of sewage and outfall works, also buildings, &c., for the Totnes Corporation. Messrs. Lomax & Lomax, C.E., engineers, Deansgate, Manchester :—

Geo. Bell, contractor, Tottenham and Manchester....£8,854

TWICKENHAM.—For the supply of 500 tons Guernsey granite spalls, for the Urban District Council. Mr. F. W. Pearce, surveyor, Town Hall, Twickenham :—

| | Per ton. s. d. | | Per ton. s. d. |
|---|---|---|---|
| L. Somerfield | 12 3 | R. L. & J. Fennings, London Bridge* | 10 10 |
| W. Griffiths | 11 5 | | |
| J. Mowlem & Co. | 11 2 | | |

* Accepted.

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G. O.—S. W. (amounts should have been stated).—R. L. (next week)

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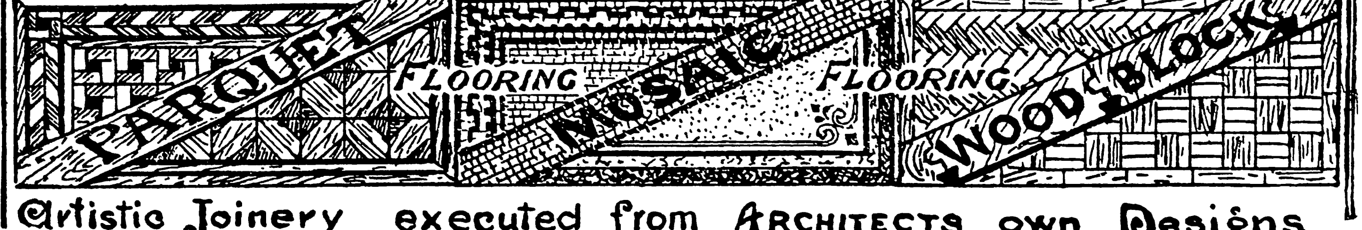

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Applications, stating salary, and enclosing not less than three recent testimonials, must be received by me not later than THURSDAY, the 19th instant.

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The appointment will be for a period of one year.

GEORGE FELL,
Clerk.

Aylesbury,
January 11th, 1899.

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Borough Surveyor.

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By order,
(Signed) E. KENWORTHY, A.M.I.C.E.
Surveyor.

Council House,
Handsworth, Staffs.
January 11th, 1899.

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INSPECTOR OF CLEANSING.

The Board proposes to APPOINT an INSPECTOR of STREET CLEANSING, at a salary of 2*l*. 10s. per week.

The appointment will be made subject to one month's notice, and printed particulars of duties may be obtained at the Clerk's Office.

Applicants of ages not exceeding 40 may send applications, in their own handwriting, stating the age and experience of the candidate.

These applications must be accompanied by copies of two recent testimonials, be marked on the outside "Inspector of Cleansing," and addressed to the Clerk of the Board, not later than TWELVE noon on TUESDAY, JANUARY 31, 1899.

Selected candidates will receive notice to attend a committee at the Board's Offices on a future day.

The successful applicant will be required to wear uniform, which will be provided at the Board's expense, and to reside in the district.

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MATTHEW H. HALE, Clerk to the Board.
Clerk's Office, Holborn Town Hall, W.C.
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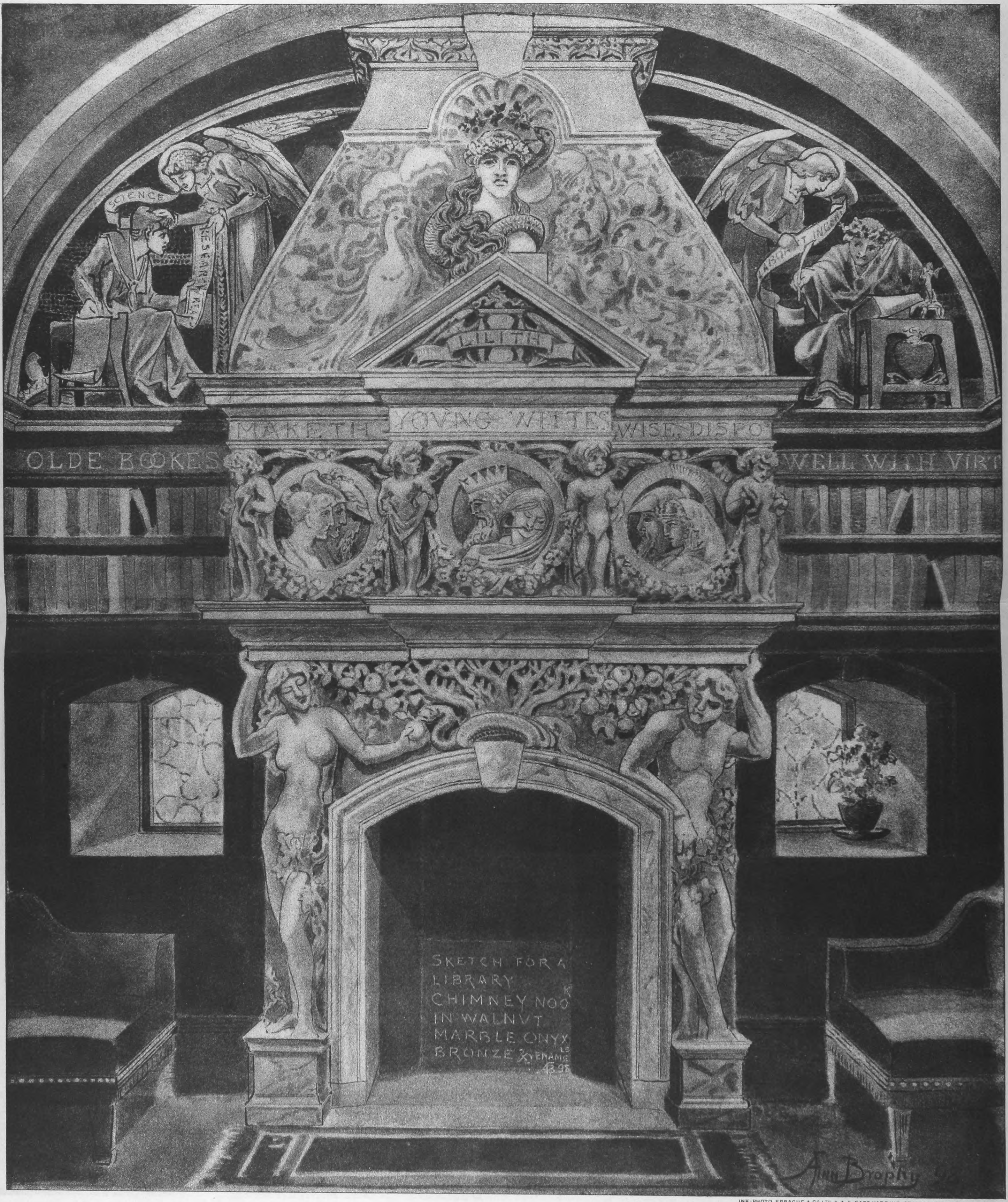
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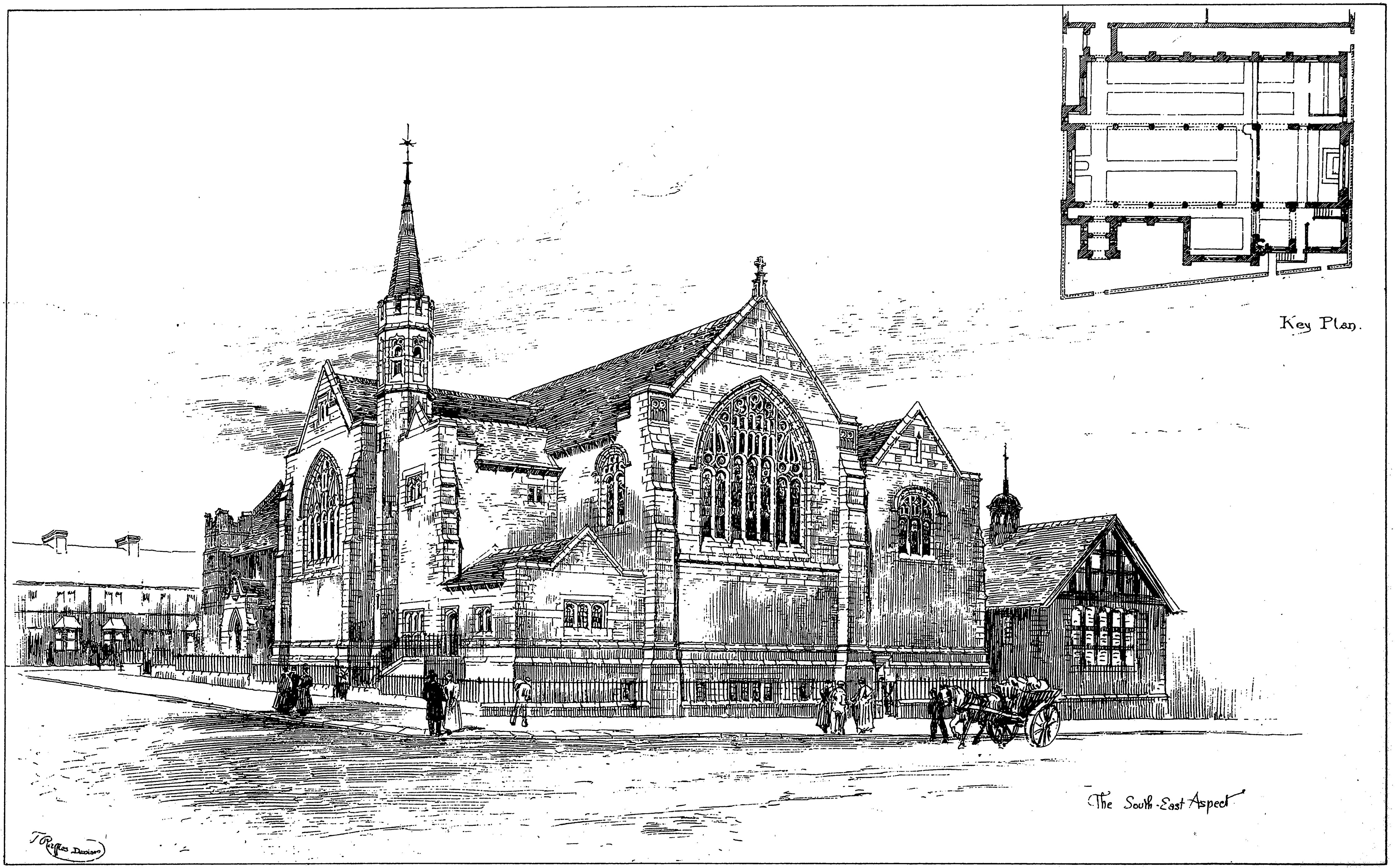
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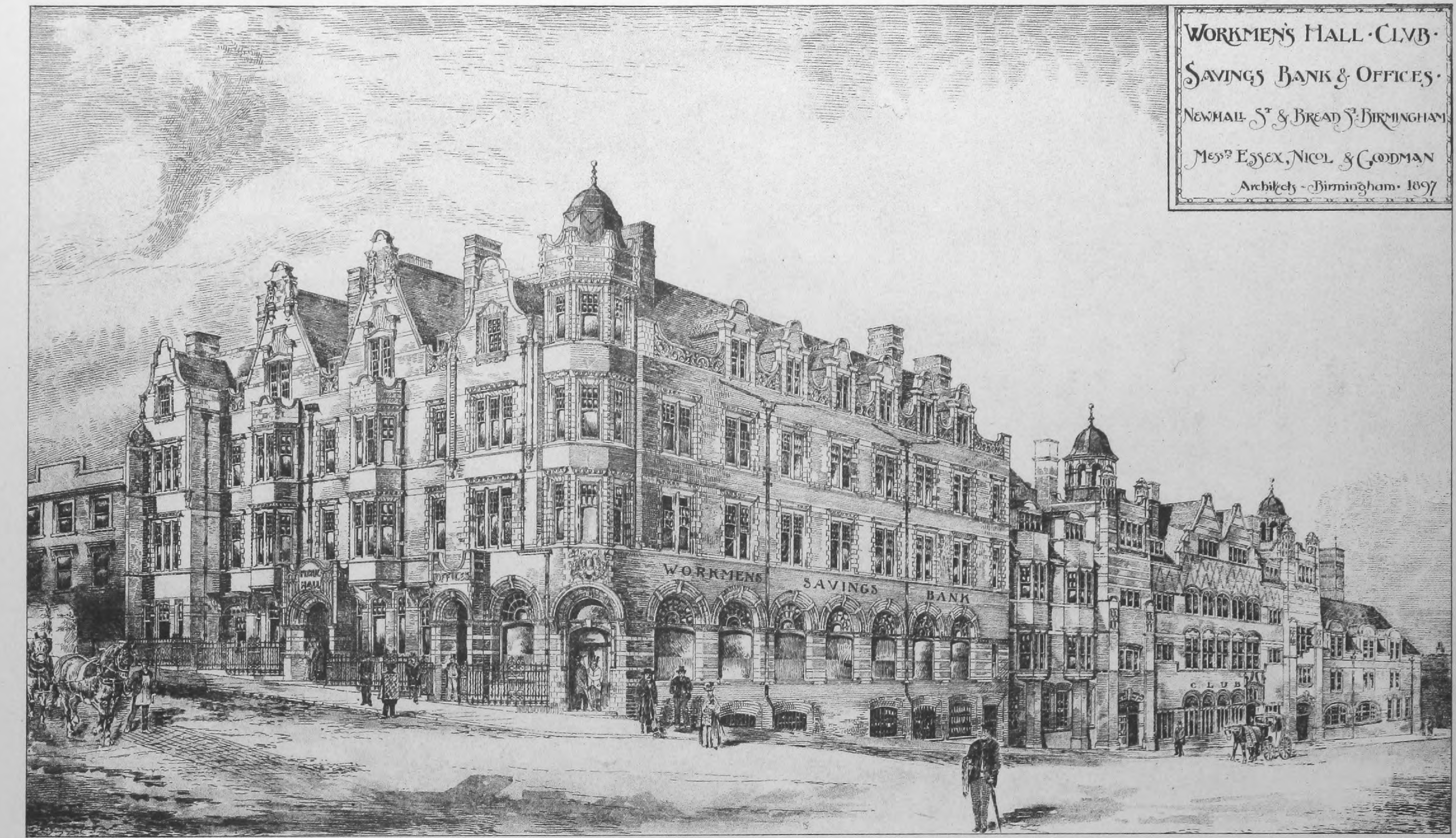
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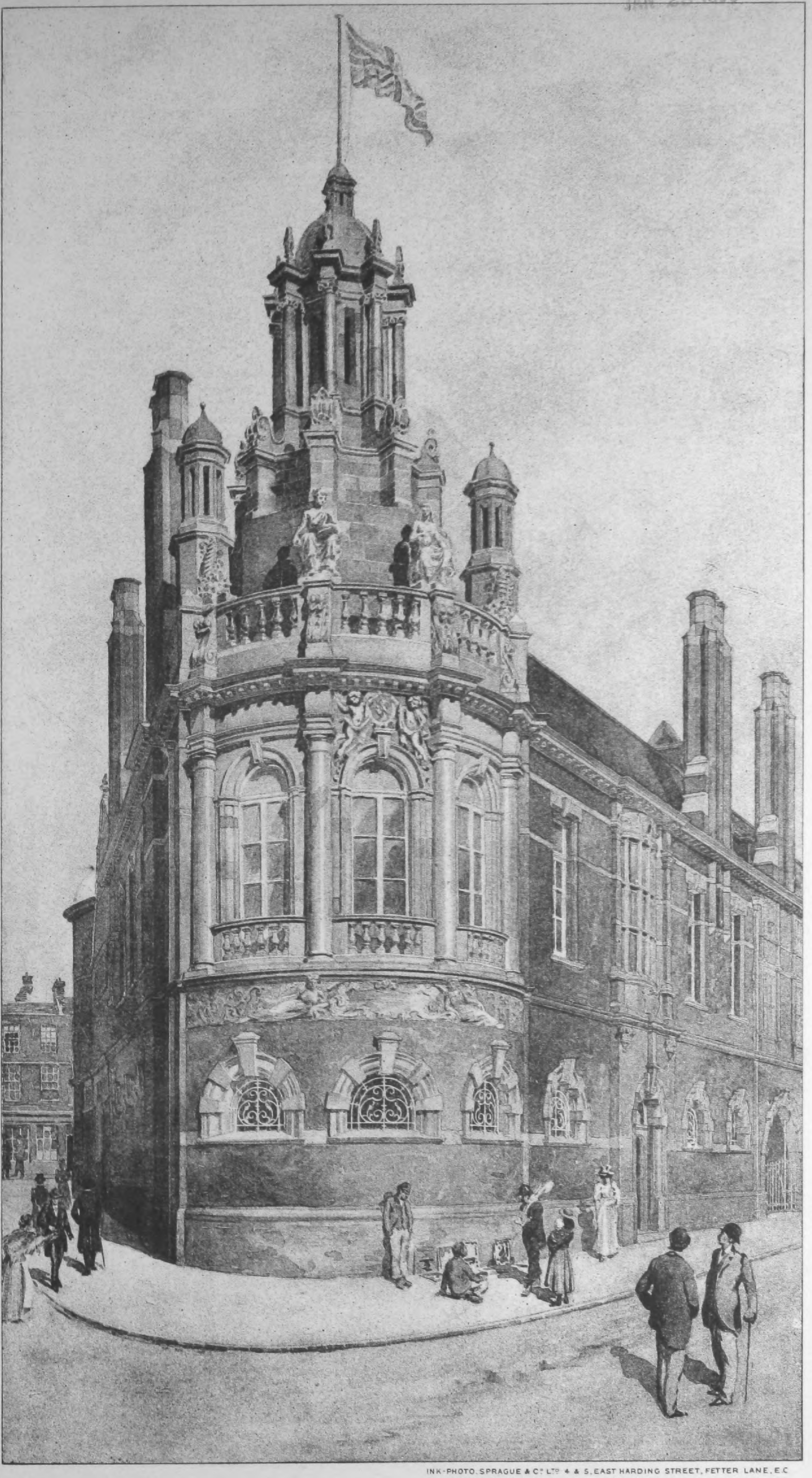

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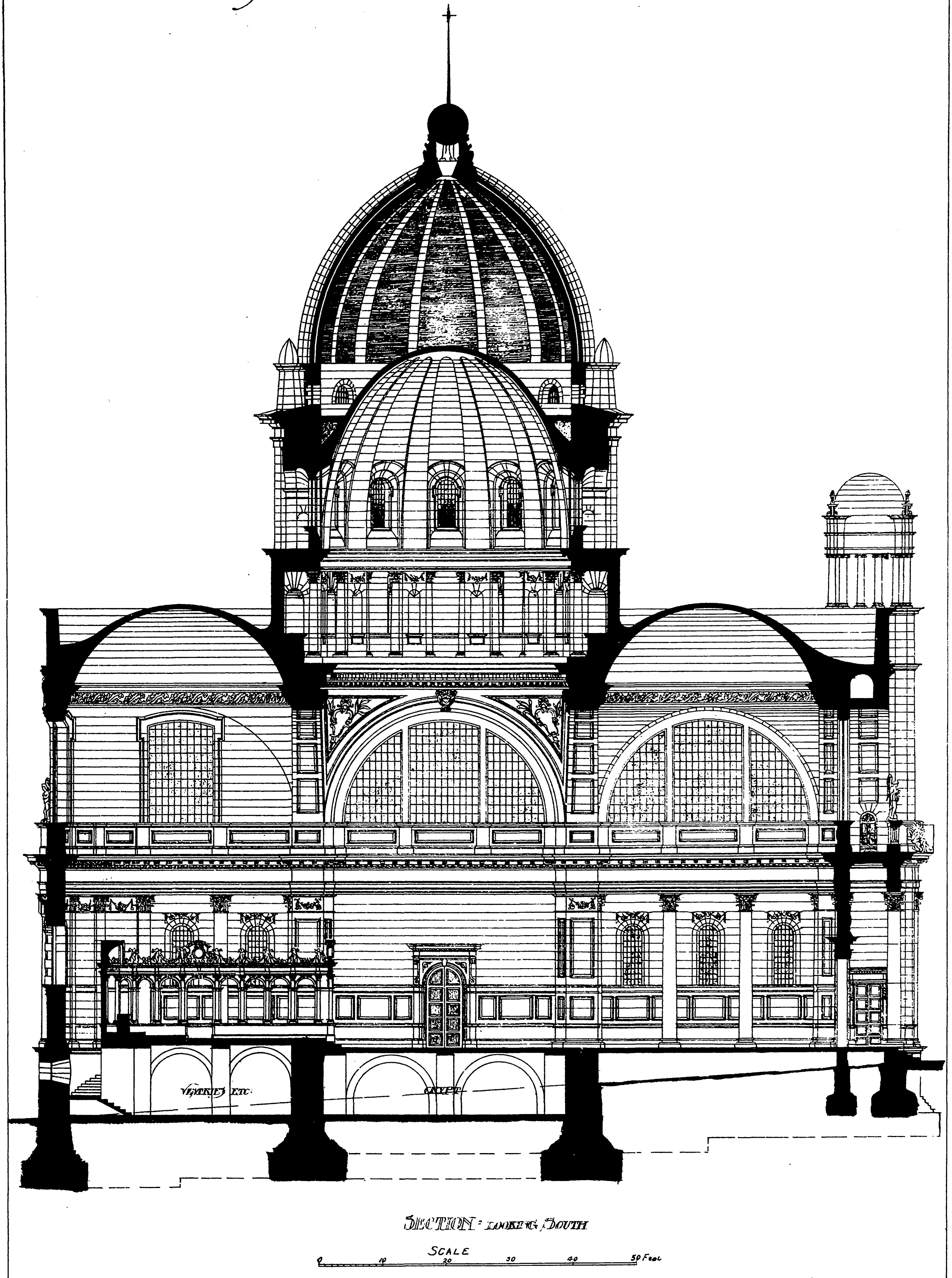
VESTRIES ETC.
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SECTION: LOOKING SOUTH
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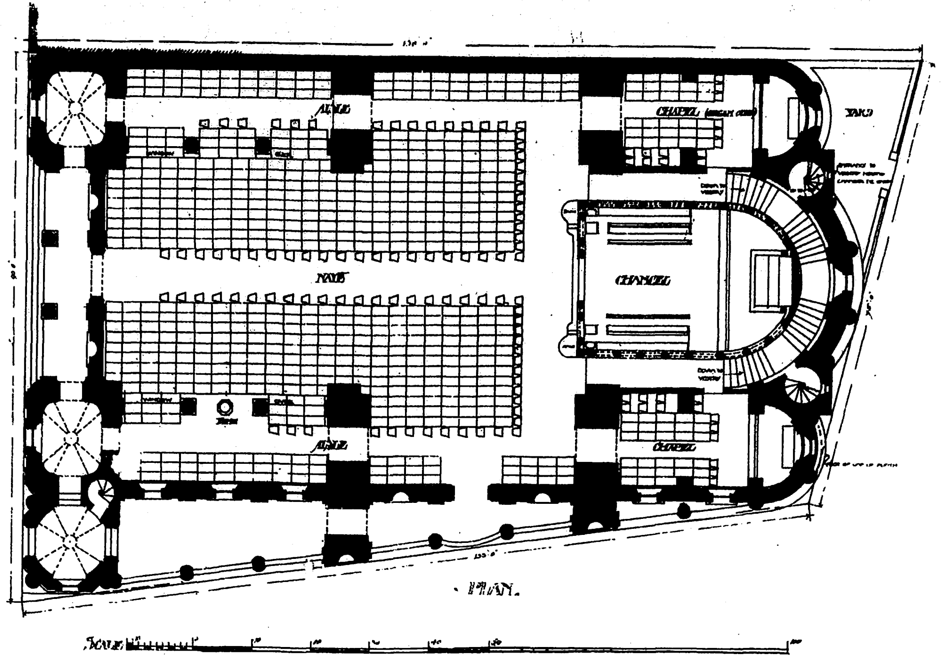
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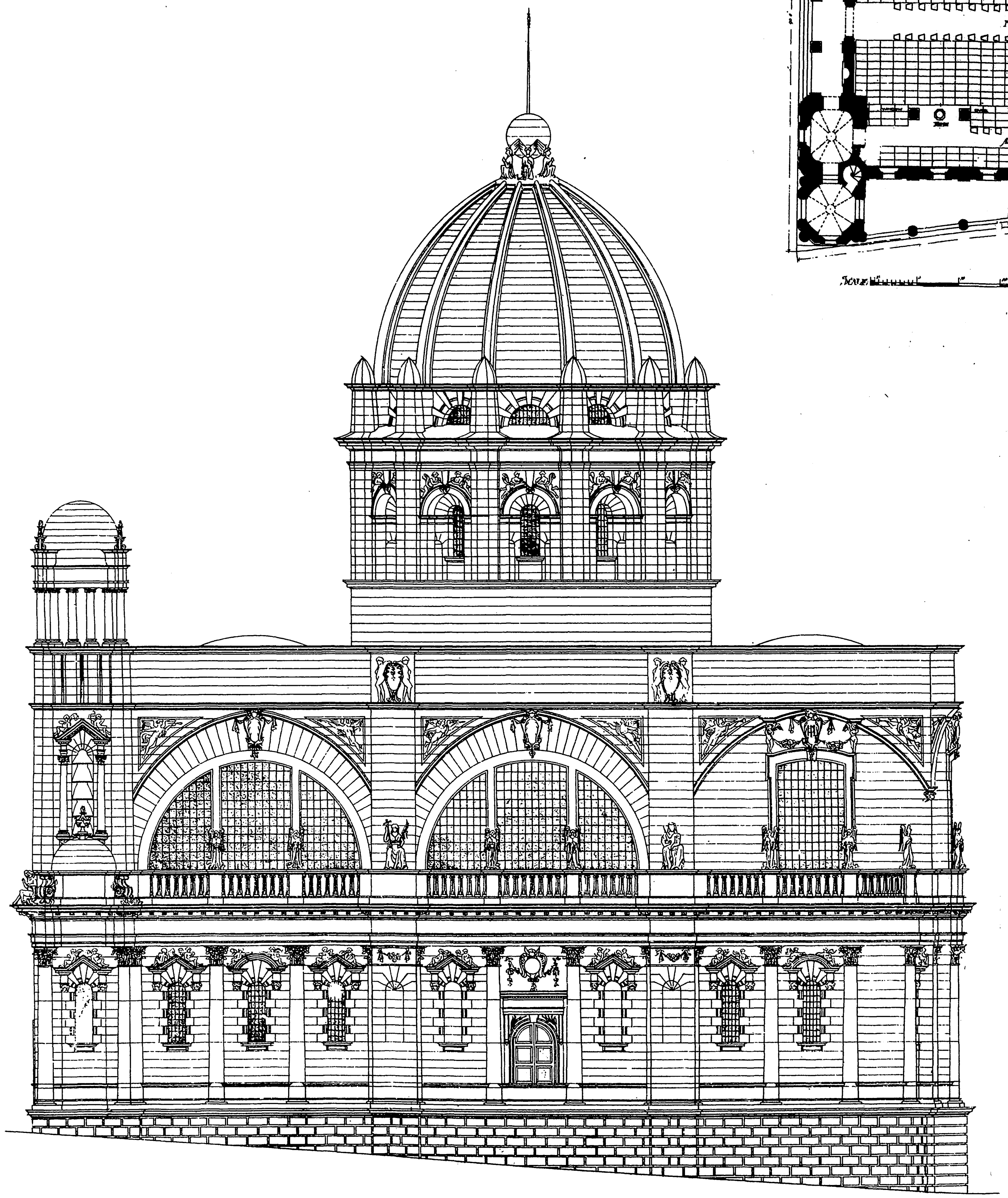
·PLAN·



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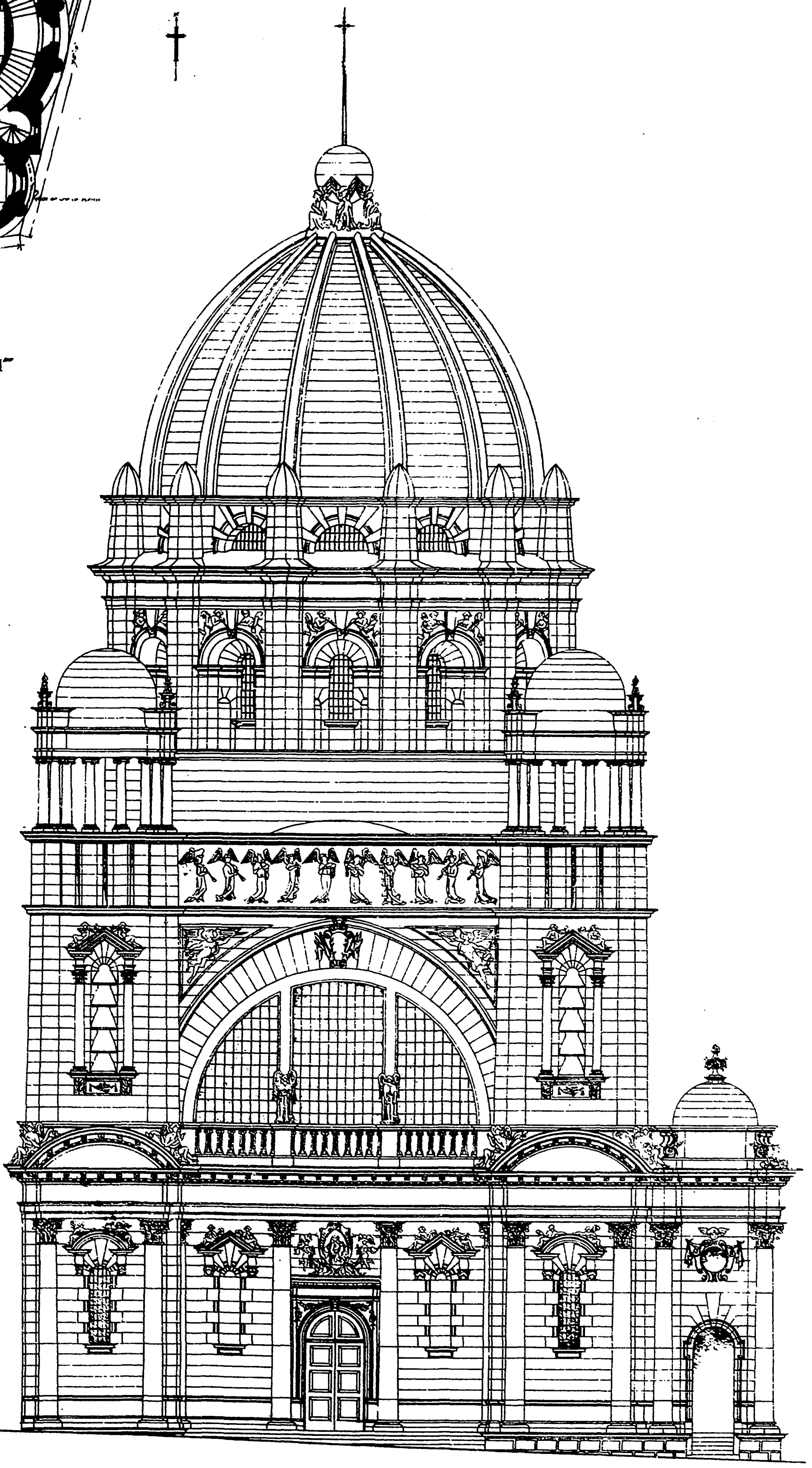

·WEST ELEVATION·

SCALE.
0 10 20 30 40 50 Feet

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# The Builder.

VOL. LXXVI. No. 2920. JANUARY 21, 1899.

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Portico, Santa Maria dei Miracoli, Brescia ........ *Single-Page Tone-Block.*
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## *Arbitration and Conciliation in Trade Disputes.*

THERE can be no doubt that the engineers' and the coal miners' strikes have deeply affected the public mind and have left a strong impression on public opinion, which now views these ruinous trade wars with the utmost disquietude. Outsiders are said to notice most of a game, and the public standing watching these strikes sees that the result of a struggle impoverishing and nearly ruining many of the combatants might well have been obtained at much less cost, if each party had been willing to have had it settled by an impartial and competent arbitrator. Of this there can be no doubt, for after months of an industrial war little more is gained than would have been equally well obtained by a judicial decision. Hence has arisen a desire that some system of compulsory arbitration may be established under which trade disputes may be quickly ended and the judgment effectually enforced.

The existence of this sentiment in the public mind will probably have some useful results, which may tend to shorten industrial contests between capital and labour, but it is not in the least likely that the present state of public feeling will cause a system of compulsory arbitration to be established. It is just as well, however, that the ultras of the two often adverse parties, capitalists and artisans, should bear the state of the public mind in view; for, after all, one may fairly say, altering somewhat a well-known legal maxim, that *judicium populi suprema lex;* in other words, in these days, if the nation as a whole makes up its mind that these trade disputes must be stopped, some means may be found to attain this end, whether employers and employed like them or not.

It is, however, abundantly clear that compulsory arbitration is not possible. Those who have recently in the public press advocated such a system seem to forget that neither employers nor employed have ever expressed any desire for such a system. Indeed, in the recent and still continuing public discussion of this question the absence of employers and employed from the controversy is remarkable. The persons most interested in the matter have, it may be said, kept silent, and the argument has been maintained almost entirely by the pens of third persons.

It is obvious that the most admirable system of compulsory arbitration may be established—on paper. But if neither side will invoke it, it remains, like a well-known French constitution—on paper. In disputes between man and man in daily life, one party, at any rate, must, as the phrase is, go to law. If neither party is willing to do so, no judge can compel them. Again, in private legal disputes, nothing is better established than that there must be definite parties concerned, either individuals or bodies incorporated by law, which are practically groups of individuals in one entity; without such definite parties litigation is impossible for any practical purposes. And for the purposes of compulsory arbitration well-defined parties to a dispute are equally necessary. But at present this definiteness does not exist. Many employers may be affected by a strike in a particular trade, large numbers of workmen belonging to a particular union; but neither masters nor men are sufficiently incorporated in a definite and fixed organisation to make it possible to establish anything in the nature of obligatory arbitrations in trade disputes.

Parliament might, perhaps, establish a system of compulsory arbitration, and from time to time it might be used, but it would be so used because each party to a strike or a struggle was willing that the authority established to decide these quarrels should settle the dispute. In other words, the compulsory system would be used as a voluntary system; it would not be a bit more effectual by being compulsory; it would be just as useful if it were a voluntary system.

It has been said that the experience of the Compulsory Arbitration Act in New Zealand, which was passed in 1894, shows that a system of compulsory arbitration is possible and feasible. The working of that Act has recently been to some extent explained by Mr. Reeves, the Agent-General of New Zealand in London, by whom the Act was passed through the Colonial Legislature, and his explanation seems to show that at present no useful lesson in regard to this country can be learned from New Zealand. There is nothing at all in Mr. Reeves' explanation to show that the disputes which were settled under the Act would not have come before the Arbitration Court if the Act had not been compulsory. Mr. Reeves wrote, "Compulsion is not used in New Zealand until the resources of conciliation have been exhausted. The local Conciliation Board before which every case must first come . . . . have no power to enforce their awards. They make a recommendation only. Out of the first thirty-one cases under the Act in New Zealand, eight were finally dealt with by the Conciliation Boards in this way, while the remaining twenty-three went on appeal to the Central Court of Arbitration." Further on it is stated that, in the Court of Arbitration, "the parties are face to face with a Judge of the Supreme Court and two assessors—one elected by employers, the other by trade unions. This Court may, but is not obliged to, give its awards the force of law. What it has done on several occasions is to give a compulsory award on some points, attaching to it certain reasonable recommendations as to other points, which it suggests that both sides should accept. As far as I can find this plan, when used, has been employed with the happiest results." Under voluntary trade arbitrations in Great Britain, recommendations of arbitrators which could not be enforced have also been acted on with "the happiest results." It is obvious that the so-called compulsory system of arbitration comes to next to nothing, and that that system, if applied at all, can only be useful in very small disputes. "The penalties the Court may inflict on a breach of the award are, first, the payment of a fine not to exceed 500*l.* in the case of a union or an individual employer." Imagine a fine of 500*l.* in the case of a struggle, say between the London and North-Western Railway and its workmen! Next, the Court has "the ordinary power of proceeding by committal or attachment of any one who defies it." Burke, in a celebrated saying, declared that you could not draw an indictment against a whole nation. Imagine, again, committing the Engineers' Union or the Board of the North-Western Railway to prison because they, having paid a fine of 500*l.*, would still not carry out an award. The whole thing, when it is carefully analysed, is little better than child's play.

Nevertheless, it is desirable to consider the so-called system, otherwise it may be said that theoretrical objections to a system of compulsory arbitration are valueless when there is experience in its favour to be gathered from the colonies. The experience, in our opinion, is all the other way.

Those also who advocate a system of compulsory arbitration forget two characteristics of the modern commercial world—its dislike of litigation and its nervousness. Men of business object, more than any other members of the community, to go into a court of law to have their affairs settled by irresponsible persons, and no class of men are more fearful—and rightly—of compulsory changes in methods of business. In a word, a system of compulsory arbitration would be contrary to the tendencies of modern business. What is needed is not compulsory arbitration, but easy means of enabling parties to trade disputes to have them settled voluntarily by an arbitrator or a conciliator, and that trade opinion should recognise that this is the best way of attaining a result when there is a difference of opinion between employers and employed.

In some respects those who have in the recent discussion so warmly advocated a system of compulsory arbitration have been forgetful of the large number of labour disputes which are settled every year in Great Britain by arbitration. The two great strikes—the engineers' and the coal miners'—have so impressed the public mind that the country generally is a little too much inclined to overlook the fact that both employers and employed now constantly have labour disputes settled by arbitration. Those who are familiar with the annual returns of the Board of Trade are well aware that the very adverse attitude taken up towards each other by masters and men in some of the large strikes does not characterise all disputes. We have on former occasions referred to these returns in detail. We have no intention of doing so again now; it is, however, well to bear in mind that voluntary arbitration and conciliation are to-day active and useful elements in trade disputes, and that they play an important part in trade differences.

When we come to consider the increase of facilities for voluntary arbitration we touch on thoroughly sound ground and get near some practical remedies. In this respect the proposals of the London Conciliation Board deserve consideration. From some information which has recently been published it appears that this body is anxious for further legislation on some definite lines. One of these is the creation of local Arbitration Boards of employers and employed, rather than direct intervention by the Board of Trade. On the whole, this would be legislation in the right direction. The intervention of a Government department is to be deprecated. Even with the fairest intentions, it will not be regarded with confidence by all classes, because in this country the head of it is a party politician, who also in many instances is not a man of business. A fussy personage at the head of the Board of Trade may bring the whole system of conciliation into ridicule. What is needed is that there should be in every district a body with a knowledge of trade, ready to be invoked at the beginning of a dispute; though no sane man will suppose that even the most competent body, fully trusted by masters and men, will in every case be able to stop a trade war.

The second main point of the policy of the Board of Conciliation is that each party shall voluntarily deposit a sum of money with the Board, which shall be forfeited if the award is disobeyed. We confess that this practice does not seem to have the value which the Board appear to attach to it. In a large strike the sum or security must be vast to be effectual. In a small dispute, however, such a stipulation may be of use. But it is not the minor trade disputes —a contest, for example, between a local builder and his plasterers—with which the public is concerned or in which public interest is aroused. It is the great strikes, those which indirectly affect many trades besides that in which the dispute has arisen, which inconvenience the public and are of national importance. With the best possible system of voluntary arbitration these, we can scarcely doubt, must from time to time occur. The interests involved are so great that neither side is willing to submit its differences to impartial judgment. The end of these contests will not be yet. We have not reached that ideal age which exists in the poetical imagination, when

> "The common sense of most shall hold a fretful realm in awe,
> And the kindly earth shall slumber, lapt in universal law."

We have, however, undoubtedly come to a time when public opinion views strikes with the greatest uneasiness, and when, fortunately, many disputes between capital and labour are adjusted by voluntary arbitration. The influence of public opinion and the giving of further practical facilities for the adjusting of trade disputes at their beginning, and before an irreconcilable stand has been taken by either side, are the means to which we must look for the prevention of strikes—some of which must, however, occur from time to time.

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## THE STUDENTS' COMPETITION DRAWINGS AT THE INSTITUTE

THE drawings sent in for the various prizes offered by the Institute, and now on view at 9, Conduit-street, form a very interesting collection, and two of the sets, those sent in for the Pugin Studentship and those for the silver medal and ten guineas for measured drawings, are of unusual excellence. We are informed also that the essays submitted for the essay prize, which has been awarded to Mr. Hubert C. Corlette, are of unusual excellence, and no less than seven have been submitted; and considering what a very poor response has been made for this prize in several recent years, it is gratifying to find that it is attracting more attention. The subject for this year, "The Use and Value of Colour in Architecture," was no doubt an unusually attractive one.

The most important of all the prizes to be contended for is however the Soane medallion, because that is the only one in which young architects are invited to make an original design for a building for a given purpose, without any restriction as to architectural style. In this instance we must regret to feel that the result is not satisfactory. The subject given was "A Concert-Room," a subject which was also given last year, when the plans sent in were considered so poor that the prize was withheld. In this year's competition there is a decided improvement, but still the plans in general do not convey the impression that the competitors have really endeavoured to understand the practical problem of planning a concert-room; and the award made by the Council is to us almost incomprehensible. In the set of drawings, "Ben Marcato," to which the prize has been awarded, the arrangement of the orchestra has almost every fault it could have. The seats for the chorus are in straight lines across the orchestra, so that the singers (those at the sides at least) would neither face the conductor nor hear each other; the band is provided for on an inadequate strip of flat floor at the foot of the chorus seats, so that they would all be on the same level (an arrangement which seems to show that the author has never even looked at a band in position); there is no place for the conductor; and the organ is divided in two recesses, on each side of the orchestra, in which it is so buried that its sound would be nearly lost, and which have not half the height necessary for a large organ. The whole of this important part of a concert-room is absolutely wrong on the plan. On the flanks of the building is a large order of Corinthian columns which appear on the two upper plans, but which, as appears from the ground plan, rest on the roof of the corridor round the concert-room area. Is it supposed that the Institute wish to encourage this kind of sham designing? The cloakrooms in connexion with the main entrance are very badly placed, opening straight in view of the grand staircase, and the ladies' and gentlemen's cloakroom doors close to each other; for a student's design this is a minor matter, perhaps, but attention has frequently been called to it in the public criticism of designs. The one thing that can be said for the selection is that the perspective view is the best in the sense of architectural effect, and shows a grandiose and well-balanced block of building, although part of its effect results from those aforesaid flanking columns which stand on the roof of the corridor. But surely a prize like the Soane is not intended only to encourage the study of architectural effect; it is intended (or ought to be) to induce students to study the whole requirements of the kind of building asked for. If this is not so, the Council might as well announce in the future that the Soane medallion will be awarded for the best perspective drawing of an imaginary building, and leave the plans and sections out of consideration. We are quite sure that the architectural school of the Ecole des Beaux-Arts would not have awarded an important prize for a design with so many practical defects.

It is rather a question whether the Soane ought not again to have been withheld, but if it were given, it should, we think, have been awarded to "Olive Green." The orchestra here is properly planned, the only mistake being that the steps for the band ought to be wider than the chorus seats; this competitor is the only one who knows what the size of a concert-hall organ ought to be—he has secured the necessary thirty-two feet in height and has given it ten feet projection; and as there are cross walls abutting on the rear of the main wall, it would be possible in this case to carry the organ bracketted out as shown. The design of the exterior, though not what the French call "monumental," is clever and has a good deal of character, and on the whole we consider this the best set. It was a mistake to plan the end of the concert-room on a segmental curve—such a curve is likely to focus an echo on its centre; it is more easy to avoid a return echo with an end wall on a straight plan, but broken up with pilasters or some other architectural device. Unbroken surfaces of wall, whether at the sides or end, are bad, and likely to produce disturbing echoes; the author of "Si je puis" seems to be aware of this, and has broken up his wall surfaces with pilasters; most of the competitors have not done so.

We do not know whether the instructions for the competition were to design a hall which might be used for other purposes than concerts; but if not, we may observe that a flat floor is bad; the floor should be slightly raised from front to back. No competitor seems to have thought of this. Among the other sets, "Cæcilia" shows everything on square lines, and the same mistake of a flat floor for the band as in "Ben Marcato"; no organ is shown. The design is a rather pretty one in free classic style of the taste of the Adam period. "Honor" makes a tremendous display of octagonal *foyer* and accessories, which would be effective, but are not conveniently planned. The auditorium is nearly a circle, a form which may be made to answer by judicious treatment of detail, but is not in the main a good one for a large music-room; it is very difficult to kill echo in a plan of that shape. The organ is only allowed 5 ft. projection, which is quite inadequate; but none of the competitors except "Olive Green" seem to have any idea of the real size of a modern concert organ; they could easily have got one; it is only writing and asking an organ-builder. The perspective of this design shows a considerable amount of spirit and effect. "Swan" shows also a circular plan; the orchestra is absurd, but there is a certain merit and originality in the exterior design. "Lion Rampant" shows a wide room with rounded corners, an ugly shape without any particular practical advantage; the divergent walls of the orchestra are a good point; there is a good deal of cleverness of idea in the perspective sketch, though it is not all quite *in* perspective. In "Si je puis" the orchestra is laid out for a chorus only, the band seems to be forgotten; the cloakrooms in this plan are better arranged than in most. The exterior, with an order of coupled columns in front, has merit, but the flank elevation with its row of single columns on high pedestals is very monotonous. "Lohengrin" seems really to have philosophised as to the requirements of a concert-room, and thinks that a room with sides spreading fan-wise from the orchestra is good; its advantage, however, would really be in seeing rather than in hearing, and it would be difficult to make such a room architecturally bearable. The exterior design is eccentric enough, but there is an idea in it; and if the author is a rather young student (as we should imagine), the attempt to work out a treatment of his own is creditable to him. "Civitali" shows a circular auditorium with a disproportionately small rectangular recess for the orchestra; his exterior perspective, though roughly executed, shows some eye for architectural character.

The Tite design is for "a Royal Mausoleum," a beautiful subject, and the competition is a good one. We quite concur in the award of the prize to "Red Rose"; his exterior perspective is not very happy in style, and the building as a whole is too high for its base (for this style of composition); but the simple circular plan, with its large internal piers, is dignified and suitable, and the interior perspective is an excellent bit of design and drawing. The Medal of Merit has been given to "Petronius," a design on a much more complicated plan, and the architectural treatment is too complicated also, too much broken up; it wants the solid grandeur proper to a mausoleum. We should have awarded the Medal of Merit to "Memoria," a more original and more monumental design, with its mass of rusticated masonry and the symbolical obelisks over the entrance façade; there is more of an idea in this design, which has however only received an Honourable Mention. "Imperial" is a very slight design, but the exterior perspective has some good points. "En Avant," an octagonal plan with arms on four sides and semi-circular bays on the other four, is a pretty design, and makes some effect with an immense double flight of external steps; but the whole has a rather too *pavillon chinois* effect. "Rex" is a clever design, a square mass with a pilaster story and a panelled story, and a low circular dome above with a wall colonnade, but it wants dignity; the detail drawing is good, however, as well as the sketch of the interior monument.

Of the drawings for the Owen Jones Scholarship, those by Mr. J. Stewart, to whom it has been awarded, are manifestly superior to all the others, and are an exceptionally fine set. The most important of them are drawings of coloured ceiling designs from Pistoia, Verona and elsewhere. Mr. Wigram has submitted chiefly coloured sketches, views of buildings, which are not exactly what the Scholarship was intended to promote; he has, however, some careful drawings of mosaics. Mr. V. J. Cummings has made some careful and powerfully executed drawings of stained glass and of some painted screens from Norfolk churches, as well as other subjects.

The drawings for which Mr. Rutherford has been awarded the Pugin Studentship are a very fine set, remarkable for their variety of subject and of style of execution. Possibly the large drawing from the porch of Chartres by Mr. Bennett, who has gained the Medal of Merit, is superior to any single one of Mr. Rutherford's, but the drawings of the latter are superior as a collection. Mr. Ramsay Traquair gains another Medal of Merit, and Mr. Herbert an Honourable Mention for a set including a great many very good small pencil sketches. Amongst the other drawings Mr. G. S. Nicol's large tinted elevation of the Hôtel Valois at Caen is worth notice; and Mr. C. B. Pearson, of Lancaster, has executed a careful though rather mechanical drawing of the oak stall work in Lancaster Church, as well as a very good set of small sketches of various subjects.

The drawings for the Silver Medal and ten guineas are also, as already observed, a very good collection; the medal has been awarded to Mr. H. E. Kirby for the set signed "Wren," consisting of drawings of the north porch of St. Paul's, very beautifully and carefully executed. The subject has been done before for this competition, and the drawings are therefore of less practical value than those of subjects that are new. We are not sure whether Mr. Heaton Comyn, with his careful and complete drawings of St. Catherine's College, had not an equal claim; he has received a Medal of Merit and five guineas, a similar prize being awarded to Mr. E. F. Knight for his careful and delicate set of Southwold Church. Among the other sets "Sulphur" shows an interesting set of drawings of Riddlesden Hall, Keighley, with its curious gallery with a square open loggia at each end. "Nomen" submits a good set of drawings of Moreton Old Hall; it is a curious point in the plan, the way in which the dining-room bay has been distorted in plan to avoid coming too close up to the similar drawing-room bay in the angle of the courtyard — an evident sign that the building was not set out very carefully on the ground. "Pitti" submits drawings of St. Michael's Church, Linlithgow, a curious mixture of Scottish and French characteristics in Gothic — corbie-step gables and flamboyant tracery windows; a heavy-looking building, but worth illustration.

The Grissell Medal has attracted fewer competitors than most of the other prizes, construction being generally less attractive than design. The prize drawings, by Mr. Gardner Wallace, show careful working out of iron construction.

On the whole, the exhibition shows much excellent and painstaking work, and is highly creditable to the ability and industry of the young architects who have furnished it.

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## NOTES.

**The London Water Supply Question.** If we may judge by the reports in the daily papers, some of the evidence given before Lord Llandaff's Commission on the Water Supply of London was of a somewhat biassed character. In an inquiry of such vast importance as this—affecting as it does a population equal to that of the whole of Ireland, and so crowded together that an epidemic of serious disease could not fail to be appalling in its results—we have a right to expect that the whole truth should be plainly and clearly stated. Sir William Crookes' statements that, "at times, when the water was low in the river, it was found that the microbes in the filtered water increased," and that "all his experience showed that there were fewer microbes in the filtered water when the water was taken in time of flood," although perhaps true in a sense, are, in our opinion, misleading. Even under cross-examination by Mr. Mellor he does not appear to have thought it necessary to have told the whole truth, and it was left to Professor Dewar to explain that the purer nature of the filtered flood-water was "probably"—note the implied doubt even here—due to the diminished rate of filtration which "necessarily" occurred when dirty flood-water was turned on to the filters. Every one knows that the rate of filtration has a most important bearing on the purity of the effluent water, and it would be more to the point if we were told the bacteriological character of the effluents obtained from flood-water and normal water *with the same rate of filtration*. It was acknowledged that there were more microbes in the river water when in flood than when not in flood, and this, of course, means that enormous quantities must have been carried into the river in flood-time by the surface-washing from cultivated lands, and he would be a bold man who dared act up to the opinion that these additional microbes are always as harmless as Sir William Crookes would have us believe. "The whole question of microbes," he said, "is sentimental rather than practical, and for my own part I would have no objection to drinking Thames water unfiltered." We venture to think that a twelve-months' course of this article of diet would alter his opinion.

**The Manchester Sewage Problem.** THANKS to the persistence of the Mersey and Irwell Joint Committee, the solution of the Manchester sewage problem seems now within measurable distance. After the ratepayers' rejection of the culvert scheme, three experts were appointed by the Corporation to consider the most likely methods of sewage disposal or purification, and to report thereon. Two of the three Commissioners were biologists, namely, Dr. Percy Frankland, of the Mason University, Birmingham, and Dr. Perkin, Professor of Organic Chemistry at Owens College, Manchester; Mr. Baldwin Latham, the well-known engineer, completed the trio. At a Local Government Board inquiry at the end of last week, these experts gave evidence, and were unanimous in recommending a system of bacteriolysis by means of two or three series of "contact-beds" or filters, composed of cinders of uniform size. It is estimated that fifty acres of these bacteria-beds will be required for the treatment of 25,000,000 gallons of sewage; no chemicals whatever will be employed, but the sewage, before being passed on to the filters, will be led through straining-pits and tanks, in order that the larger and heavier particles may be removed by straining and sedimentation. These tanks are the existing open tanks, and must not be confused with the covered tanks adopted in the septic system, against which the Commissioners urge the "enormous" cost and the opinion that they are "liable to miss fire in certain contingencies—as, for example, when there is a rush of storm-water." The inquiry has been adjourned for three months in order that the Commissioners may conclude their researches, and the complete plans of the purification works be prepared. The experience of Manchester will be of great service to smaller authorities throughout the country, and will doubtless conduce to that general purification of sewage, the result of which will be that our rivers will be truly rivers once more and not public sewers.

**Land for Urban Improvement.** THE recent case of Donaldson *v.* The Corporation of South Shields has settled an interesting and important point in regard to the taking of land for public improvements. The long and short of the decision was that the Corporation, who had obtained Parliamentary powers to widen certain streets, had no right to take land which was not required for the actual purposes of the work, but which if they took they could sell at a profit; in other words, to use the expression of the Master of the Rolls, the Corporation could not take land for financial purposes which was not required for engineering purposes. The land was partly outside the limits of deviation, and, as it seems to us, if the contention of the Corporation had been held good, there would really be no limit to the extent of land which might be taken. No doubt it is very desirable that any true surplus lands should be sold at a profit, but merely to take land in order to resell so as to lessen the cost of improvements would be a new and dangerous departure.

**Working Men's College at Oxford.** Two American gentlemen propose to establish at Oxford a Working Men's College, to be called the Ruskin Hall. A meeting of the Oxford Trades and Labour Council in regard to it was held last week. At present the objects and system seen rather nebulous. Mr. Beard, one of the founders, stated that he wished to give men who had not money an opportunity of taking the regular University course, but they were not going to teach any "isms." We take it that the long and the short of it is that there will be courses of lectures by University teachers for those who cannot afford to become members of the University. In other words, the system which is known as the "University Extension system" will have a kind of local offshoot in Oxford. It is difficult to see, however, why this institution should be called a working man's college. At present we are somewhat in doubt as to its utility, and as the two founders are members of the University of Oxford, we are afraid that there is rather too much youthful enthusiasm about it. It does not seem a particularly practical scheme; it is not for the purpose of technical education, nor apparently is it for poor youths who are unable to go through a University course.

**Municipal Theatre, Berlin.** THERE is a scheme at Berlin for a Municipal Theatre. The promoter, who is not an architect (though we presume the plans must have been drawn by an architect) lays stress on the importance of the approaches of the modern playhouse, as far as cab ranks, &c., are concerned, and extensive covered approaches are provided for putting down and taking up; special arrangements also being made for a kind of covered tramway terminus, so that members of the audience arriving by the humbler conveyances are also properly cared for. Next, the cloak-room facilities have had the promoter's special attention, and we find elaborate arrangements for decentralising this department in such a manner that practically every seat has its own cloak-room peg, and any crowding is thus avoided. This point is perhaps of more importance abroad, as it is customary to leave all wraps outside the auditorium proper. Again, the staircase arrangements and the general exits are exceedingly clear; the idea of giving a door to every two rows of seats throughout the stalls and pit being most satisfactory. The scheme being that of a layman, it would be out of place to comment on some of the technical errors or on some of the features that are not practical; but, taken altogether, there is much of interest in the plans that have just been published, and they merit our attention at a time when the question of a Municipal Opera House for London is under consideration.

**The Progress of Electricity.** IN the discussion on the "Progress of Electricity" at the monthly dinner of the London Chamber of Commerce, on Tuesday night, several interesting topics were raised. Mr. T. F. Blackwell, the Chairman, in referring to the proposal of an all-British cable to Australia, said that it was easy to imagine circumstances in which it would be of vital importance to the Government to have full and entire control of such a cable. We are glad that the question of the Pacific cable has again been raised, as it is not only a feasible undertaking, but, judging from the Eastern Extension Telegraph Company's profits, likely to be a profitable one. It is now a year and a half since the Government indicated that it was willing to co-operate with Canada and the Australian Colonies interested, but, so far, no initiative has been taken in the matter. The Chairman also hoped that the time would soon come when the Government would take over the telephone service. This hope seemed to meet the general approval of the majority of those present, but it drew a spirited protest from General Webber. The telephone industry was, in General Webber's opinion, purely a local one. The difficulties which the Post Office would have to overcome if it took over the service were purely local. He also said that in all those countries where there was a national telephone service the progress had not been so great as in those countries where the service had been managed locally. In our opinion, however, these disadvantages do not outweigh the numerous advantages that would accrue from nationalising the telephone. Mr. Garcke stated that this country was even to-day several years behind almost every other civilised country in electrical matters. This backward state was due, he thought, to the tendency towards municipalisation. Whether he is correct in his surmise or not, there can be no doubt that in electric lighting and traction we are still making very slow progress when compared with our neighbours.

**Sewage Flooding in Southwark.** AT a meeting of the St. George's Vestry last week the Medical Officer of Health (Dr. F. T. Waldo) presented a Report of a most serious state of things in parts of Southwark, where cellars were recently visited by him, in use as workrooms by bakers, cooks, butchers, as well as other trades, which had been flooded by drain overflows consisting of storm-water mingled with sewage. In a Report furnished by him to the London County Council in 1893, he had furnished particulars of twenty cellars in which he had found evidence of sewage flooding, and explained that "the special danger connected with this form of basement flooding is that this sewage is always more or less charged with the specific poison of typhoid fever, and is at any time liable to that of cholera and of other deadly diseases. It is obvious that such contaminated cellars are unfitted for the preparation of bread or other articles of food, and almost equally so for use as workshops or dwelling rooms." The London County Council suggested that it would be less costly to fill up the cellars than to enlarge the main sewer; a proposal which one can hardly suppose to have been made seriously, for even then there would be the question of sewage-charged subsoil to be met. A proposal that the Council should lay down a separate system of storm-water drainage for this district received no reply. It is evident that something ought to be done, and that the condition of some of the low-lying districts of London in the case of a heavy rainfall causing an overflow from the sewer is a very serious sanitary evil.

**"Dead Ends" in Water Mains.**

IN Dr. Orme Dudfield's monthly Report on the sanitary state of the Kensington District, attention is drawn to a case in which the Public Analyst reported unfavourably on a sample of water taken from a house in St. James's-square, which he described as "polluted, and totally unfit for public supply and drinking purposes." The Grand Junction Company took exception to the position from which the water was drawn, as not likely to afford a fair sample of the water they supplied, and it appeared that the sample was drawn from a main terminating in a "dead end," and therefore sluggish in flow and likely to favour the growth of organisms. Dr. Dudfield observes in regard to this:—"There can, I think, be no reasonable doubt that danger ot the public health is involved in circumstances which tend to slow the flow of water, whether by actual dead-ends of mains or (as in the St. James's-square case) under conditions analogous. The Engineer stated that the Company were, and for some time past had been, engaged in abolishing dead-ends; it is to be hoped that the recent stir will have the desired effect of stimulating their activity in this direction. Quite recently Sir Edward Frankland has had occasion to direct attention to the ill effects of dead ends of mains, in a report on the water supply at Paisley, where an epidemic of enteric fever was probably due to a gross defect in the apparatus for flushing dead ends."

**Percolation through Brick and Stone.**

THE results of some experiments to ascertain the most effective material for checking the percolation of water through brick or stone work are given by Mr. A. W. Hale in a recent number of the *Engineering and Mining Journal*. The investigation was mainly carried out in connexion with the new Croton aqueduct of New York, and the substances employed in the experiments were numerous and varied. It was found that Portland cement gave the best results, and that the hydrocarbons, which are commonly regarded as suitable materials for rendering brick or stone impervious to water, oxidised by exposure to air and gradually disappeared. It was also found that a brick was rendered impervious to water by cement more rapidly when the cement was applied as a wash by means of a brush than when applied with a trowel in the usual manner. A brick which had been treated with four cement washes was found at the expiration of two months to be quite impervious to water, even under a pressure of 200 lbs. per square inch.

**St. Lawrence, Reading.**

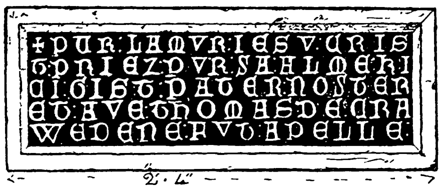
THE tale of damage wrought by the recent gale at Reading includes the destruction of a pinnacle of a turret of the church's western tower, which was blown down on to the roof, whence it fell into the street. The records of the church, beginning from the first decade of the fifteenth century, rank amongst the oldest and most interesting in England. The first church was pulled down to make way for the Benedictine abbey founded by Henry I. It was rebuilt, just beyond the precincts, in or about 1196, by Abbot Hugh, who assigned it to the newly-founded hospitium of St. John the Baptist. Hugh's work comprises the arcade between the church and the north chapel (St. John's), the south door, and the east gable with its triple lancets; some fragments of walling, capitals, and so on, were found during a restoration of the tower about twenty years ago. The great west tower and the north arcade were erected in 1458-9; sixty years later new windows were inserted in the chancel and elsewhere, and the arches of the arcade were stilted by raising the columns. In the course of subsequent alterations, some of them carried out by Billing, were destroyed the south transept, built in 1637 by Sir Francis Knollys "for the peculiar use of himself and his posteritie as well for their seates there as for their burial place underneath," together with a cloister (see the aqua-tint in C. Coates's book, 1802) therefrom to the tower, built in 1619 with the bequest of John Blagrave, the mathematician, whose quaint monument (1611), however, is preserved. Other interesting features were wantonly obliterated, amongst them being the chancel aumbries, sedilia, and piscina, the rood-loft stairs, and some beautifully-executed paintings of the Transfiguration (1528) and the Annunciation, discovered above the lancet window and behind the wooden reredos respectively. During the repairs of 1867-8 the panelled and painted ceiling of the nave's east bay, and the dormer windows were removed. In the octagonal panelled font, carved in 1522 by Cheyney, the mason, who came from Wolsey's works at Hampton Court for the purpose, was baptised Archbishop Laud, who was born in a house that stood on the north side of Broad-street—where is now Lawd-place. The church books contain many entries relating to the "Lawd" family, the sale of the altars in 1549, the relics, and the clock in respect whereof 4d. was paid in 1498 for the "settyng of Jak, with the hangyng of his bell and mendyng his hond," and the various customs and pastimes of old-world parochial life.

**The Verestchagin Exhibition.**

THE principal works by M. Verestchagin, at the Grafton Gallery, are a series illustrating Napoleon's Russian campaign. The titles of the pictures in the catalogue are accompanied by long sensational stories of the campaign, for most of the statements in which no authority is quoted. The choice of the subject seems to have been influenced by the fact that M. Verestchagin has a facility for representing effects of snow, and in the Moscow campaign he could introduce snow *ad lib.* Whatever other interest these works possess must be considered as literary rather than artistic. Their general object seems to be to express and give vent to a kind of race-hatred on the part of the Russian artist against the memory of Napoleon, and to gloat over the pourtrayal of the worst miseries of the "retreat." This may be human nature, but it is not art. In No. 12, "On the Great Road," there is a keen effect of snow under a clear air and bright sun which is striking, and there is the tragic element of the snow-covered corpses at the side of the road, with here and there a bare foot or hand protruding; a kind of crude realism which is cheap enough and easily executed. In the main these pictures represent a coarse sensational style of painting, which hardly deserves the name of art in the higher sense. We are told that the representation of Napoléon's costume on the march is correct and previous paintings are not correct—that he wore a long sable mantle and a fur cap with ear-lappets, which is likely enough (though the authority is not given); but this kind of detail does not suffice to give reality to a picture. There is more impression of reality in Meissonier's well-known picture of the retreat, in spite of costume questions, than in any of these sensational representations.

**Inscribed Stone in Fobbing Church.**

THE accompanying cut is a reduced copy of the illustration given in the *Essex Review*, and referred to under the head of "Magazines and Reviews" in our last issue, of the inscribed stone built into the wall of Fobbing Church, Essex. The writer of the notice o it, Mr. Miller Christy, gives the following translation of the inscription:—



*Inscribed Stone in Fobbing Church, Essex.*

> "For the love of Jesus Christ, say for the soul of him who lies here a Paternoster and an Ave. Thomas de Crawdene he was called."

One may notice the curious phonetic spelling, "Kici gist," for "qu'ici gît," not of course unusual in mediæval inscriptions. The writer observes that the inscription is of earlier date than the architecture of the church as it at present stands. For further particulars we refer the reader to the *Essex Review* (January).

**Exhibitions in Paris.**

AT the Ecole des Beaux-Arts an interesting exhibition has been organised of the works of the late painter, Eugéne Boudin, who died a few months ago. The five hundred paintings, pastels, water-colours, and drawings collected display in a remarkable manner the strong individuality of the artist, whose work was entirely his own in style and feeling. The son of a Honfleur fisherman, and following at first the same occupation himself, Boudin passed his life by the sea, and was never tired of endeavouring to record on canvas its effects and the character of the shipping craft which were familiar to him. He sometimes made an excursion into the regions of the fashionable watering place and its crowd of bathers, as in the work entitled "l'Inauguration du Casino de Deauville," which recalls the costumes of the society of a past generation. He appears, however, to have acquired such a sympathy with the grey skies of Normandy that he could not paint Southern effects of atmosphere, and on the Mediterranean his tone is as grey as on the Channel. The seventh annual exhition of "Femmes Peintres et Sculpteurs," at the Georges Petit Gallery, is a great improvement on its predecessors, and is of considerable interest. Among the best works are a fine portrait of M. César Franck, by Mdlle. Jeanne Rongier, landscapes in pastel by Mdlle. Heléne Maréchale, and flower paintings by Mdlles. Aurélie and Marie Dampt, and Mdlle. Madeleine Carpentier. Among the sculpture subjects the "Flutiste," by Mdlle. Charlotte Monginot, deserves special mention.

## THE ROYAL INSTITUTE OF BRITISH ARCHITECTS.

THE Fifth General Meeting (Business and Ordinary) of the Royal Institute of British Architects was held on Monday evening at No. 9, Conduit-street, Regent-street. Mr. E. A. Gruning, Vice-President, occupied the chair.

### PRIZES AND STUDENTSHIPS.

The following gentlemen having been elected: As *Fellows*—Messrs. G. Hornblower (London), and H. Hoyne Fox (London); as *Associate*—Mr. J. A. Jones, jun. (London); the Deed of Award of prizes and studentships for 1899 was read by the Chairman.

The sealed envelopes bearing the respective mottoes or devices of the successful competitors were then opened. The following is the full list of prize-winners:—

THE ROYAL INSTITUTE SILVER MEDAL (Essays).—*Spectrum.*—Hubert C. Corlette (Silver Medal and Twenty-five Guineas).

"*C'est une fée qui prodigue le bien ou le mal.*"—Frederick Charles Eden (Prize of Books value £5).

"*Aucassin.*"—Arthur Troyte Griffith, B.A. Oxon (Certificate of Honourable Mention).

*Gloire de Dijon.*—J. Humphreys Jones, B.A. London (Certificate of Honourable Mention).

*Non quo sed quo modo.*—Alexander N. Paterson, M.A. (Certificate of Honourable Mention).

THE ROYAL INSTITUTE SILVER MEDAL (Measured Drawings. St. Paul's Cathedral).—*Wren.*—Henry Ernest Kirby (Silver Medal and Ten Guineas).

"*Non vi sed sæpe.*"—Heaton Comyn (Medal of Merit and Five Guineas).

"*Nox.*"—Edward F. Knight (Medal of Merit and Five Guineas).

THE SOANE MEDALLION.—(Design for a Concert Hall).—*Ben Marcato.*—William Arthur Mellon (Medallion and, under conditions of Continental Travel, 100*l.*).

THE TITE PRIZE.—(Design for a Royal Mausoleum).—*Red Rose.*—James B. Fulton (Certificate and, under conditions of Travel in Italy, 30*l.*).

*Petronius.*—Alex. McInnes Gardner (Medal of Merit and Five Guineas).

*Memoria.*—Ernest T. Jago (Certificate of Honourable Mention).

THE GRISSELL MEDAL.—"*Simplex*" (Design for Fruit, Flower, and Vegetable Market).—G. Gardner Wallace (Gold Medal and Ten Guineas).

"*Jack.*"—Charles A. Daubney (Certificate of Honourable Mention).

*The Pugin Studentship and 40l.* — Eleven applications were received for the Pugin Studentship from the following gentlemen:—1. R. C. Austin (London). 2. E. H. Bennett (London). 3. Benjamin Bower (Birmingham). 4. Ernest H. Evans (London). 5. Albert Herbert (Leicester). 6. G. Salway Nicol (Birmingham). 7. Charles B. Pearson (Lancaster). 8. H. Raine (London). 9. J. Hervey Rutherford (London). 10. Ramsay Traquair (Edinburgh). 11. J. A. Woore (Derby).

The Council have awarded the Medal and (subject to the condition, among others, that the said candidate devote a tour of not less than eight weeks' duration in some part of the United Kingdom to the study of Mediæval Architecture) the sum of 40*l.* to Mr. J. Hervey Rutherford, a Medal of Merit and Ten Guineas to Mr. E. H. Bennett, a Medal of Merit and Five Guineas to Mr. Ramsay Traquair, and a Certificate of Honourable Mention to Mr. Albert Herbert.

*The Owen Jones Studentship and 100l.*—Three applications were received for the Owen Jones Studentship from the following gentlemen:—1. Vivian John Cummings, London; 2. John Stewart, Bridge of Allan, N.B.; 3. Edgar T. A. Wigram, London. The Council have awarded the Certificate and (subject to the conditions, among others, that the said candidate devote a tour of not less than six months' duration to the improvement and cultivation of the application of colour as a means of architectural expression, and furnish the Council with an original design in coloured decoration of a prescribed subject) 100*l.* to Mr. John Stewart.

*The Godwin Medal and 40l.*—One application was received for the Godwin Bursary from the following gentleman:—1. E. W. M. Wonnacott (London).

The Council have awarded the Medal and (subject to the condition, among others, that the said candidate spend not less than five weeks in some part of Europe, other than Great Britain and Ireland, or America, for the purpose of studying and reporting on works of modern architecture) the sum of 40*l.* to Mr. Wonnacott.

*The Ashpitel Prize.*—The Board of Examiners (Architecture) having reported that none of the successful candidates in the Final Examinations of 1898 has distinguished himself sufficiently to deserve the Ashpitel Prize, value ten guineas, the Council have awarded a prize of five guineas to Mr. Charles Riddey and Mr. John Kirkland, respectively.

*The Arthur Cates Prizes.*—Prizes of Books to the value of Ten Guineas offered by Mr. Arthur Cates, ex-Chairman of the Board of Examiners, to the students whose testimonies of study for admission to the Final Examination are considered by the Board to best merit the prizes, provided they pass the examination for which the said testimonies are submitted, have, on the recommendation of the Board of Examiners (Architecture), been awarded to Mr Albert Herbert, of Leicester, for the June Examination; and to Mr. H. Inigo Triggs, of London, for the November Examination. An extra prize of five guineas has been awarded to Mr. Henry Tanner, jun., of London, for his testimonies of study submitted for the latter examination.

THE TRAVELLING STUDENTS' WORKS IN 1898. *Pugin Student.*—The Council have approved the work of Mr. Charles de Gruchy, who was elected Pugin Student for 1898, and who travelled for three months in Cornwall.

*Tite Prizeman.*—The Council have approved the work of Mr. John Stevens Lee, who was awarded the Tite Prize in 1898, and who travelled in Italy.

*Aldwinckle Student.*—The Council have approved the work of Mr. James B. Fulton, who was awarded the Aldwinckle Studentship in 1898, and who travelled in Spain for a period of not less than eight weeks.

*Owen Jones Studentship*, 1897.—In view of the work at present being executed at Constantinople by Mr. A. E. Henderson, the Owen Jones Student of 1897, the Council have decided to grant him a sum of 50*l.* out of the Owen Jones Fund, being the value of the Studentship not awarded in 1898.

### BUILDING BY-LAWS IN RURAL DISTRICTS.

Mr. Lacy W. Ridge then moved the following series of resolutions, viz.:—

> That the administration of local building by-laws in rural districts is a matter calling for the action of the Royal Institute.
>
> That the Council be requested to communicate with the Local Government Board on the subject, and to appoint a Special Committee to consider and take action thereon.
>
> That matters of sanitation, including the preparation of the site for building, should in all cases be carried out under the supervision of the Local Authorities. That where separate tenements adjoin they should be divided by party walls of incombustible material. That the interests of the public in buildings in rural districts are not such as to justify any further interference on the part of the public authorities with the construction of buildings.

He remarked that as to the first resolution the matter was one distinctly interesting to architects and their clients, because they (the architects) were called upon to supply drawings and to submit to certain regulations in rural districts with regard to buildings which were decidedly onerous. These added to their duties and increased the expense thrown upon their clients for professional work entrusted to them. The second proposition naturally followed from the first. Now, he had confidence in suggesting that they should go direct to the Local Government Board. He advocated this because their assent was necessary to any building by-laws which might be made by a Local Authority. It was, therefore, through that Board and by their power that any by-laws were made to govern the practice of architects in country places. The larger towns were quite able to take care of themselves in matters of this sort, but country places had nothing like the same power, to adopt by-laws suited to their particular requirements. In the large towns the Boards were in a position to pay competent surveyors who were well able to take care of the interests of their districts, but in the country areas men with very small salaries were selected; and, on the whole, it could not be said that they were in the position to frame their own by-laws; they were in fact dependent on the Local Government Board for those which they put forward. Since these model by-laws were first framed the Metropolitan Building Act had been passed into law. That meant to them a matter of considerable importance. For one thing, they had greater liberty in building design than there was under the old Act. But these model by-laws, although they might be applicable to large towns, where people were crowded together, were certainly very inapplicable in country districts He would venture to declare that there was no necessity at all for a large majority of the by-laws in force over the country districts. His view was that if they could persuade the Local Government Board to draw up a series of by-laws which would apply to large towns, and others to apply to rural districts, they would be relieved of the necessity for a great deal of unnecessary legislation, of the necessity for a great deal of unpleasant supervision and of unpleasant intercourse with men who knew very little about practical building, but who knew a great deal about the by-laws, which they were bound to enforce, and which they did enforce, whether they were of any practical use or not. Among the powers they possessed was that of coming in and enforcing the taking down or altering of any work that had already been done contrary to the by-laws; and of asking for accumulative penalties. It was terrible, if they thought of it, that a piece of woodwork protruding within 4 in. from the wall, should be an infringement involving an accumulative penalty. Architects were, therefore, in a false position in this matter. In his view they should have the same means of ascertaining as under the London Act as to what they were entitled to, and what the Local Authority or Surveyor could legally enforce. Of course they could go before the magistrate to get their penalty enforced, but they did not do so because they were often afraid to. What he wanted was a committee of men who did not regard the London Building Act as if it contained everything of the eternal fitness of things designed. The third proposition he submitted to the meeting attempted to show the lines upon which these things might be arranged. He could not conceive that the public could have the slightest interest in a man's building when he erected it away from those of his fellows. A man building on his own account and for his own usuage, except so far as health was concerned, need have no fear of making himself a nuisance to his neighbours. Moreover, he saw no reasons why exemptions should be allowed—not even in the case of railway stations. But where two country houses adjoined they should certainly be divided by party walls of incombustible material. But beyond that no further interference was desirable or necessary. He asked the meeting to definitely commit itself to the two first propositions, but as to the third he would be satisfied were it made a general instruction to the committee.

Mr. Woodward seconded the resolutions. He said that those who had to put up with what Mr. Ridge described as unpleasant supervision felt keenly the necessity for some alteration. A matter which scarcely came within the purview of the present discussion was that of magisterial jurisdiction. He trusted that when anything was done towards the amendment of the law it should be provided that all matters as they arise under the Building Act should be removed from the police-court magistrate to a tribunal which would understand the subject.

Mr. Fawcett said his feeling, derived from dealings with the Local Government Board, was that they would meet the Institute in a friendly and pleasant manner. Some years ago some of them had to frame a set of by-laws for Cambridge, and he could only say that they were received by the officials of the Local Government Board with the greatest courtesy. What was more, they yielded to the reasonable suggestions made.

Mr. J. Douglass Mathews remarked that instead of the Local Government Board by-laws being regarded as models, they were taken as actual by-laws, and had been adopted in their entirety by local bodies. He remembered that at the time they were framed it was thought that the Medical Officers had had very much to do with them at Whitehall. Perhaps they saw—or thought they did—rather further than architects, but so far as matters concerning public health were affected, the Institute would do well to make it clear that they did not wish to modify anything or relax any requirements unless it was to the advantage of the country generally.

Mr. Owen Fleming supported the resolutions, believing with Mr. Ridge that there was a tendency to impose cast-iron regulations in places where they were not altogether suited. The only point that occurred to him was how far did the Institute wish to go? Would it not be well to give the Special Committee an entirely free hand in regard to resolution 3?

Mr. E. Woodthorpe said he wished to endorse Mr. Owen Fleming's suggestion, but he could not agree with Mr. Ridge that the Practice Committee was entirely a townsman's committee. It must not be forgotten that a great many architects had country practices as well as town.

The Chairman said he could not help feeling that Mr. Ridge was quite right in what he said—that the country members would be of great assistance.

Mr. Guy Dawber said it was only too true that some of the rural by-laws were vexatious, embarrassing, and unpleasant. In many small rural districts the by-laws were taken *en bloc* from those operating in London, Birmingham, or some other large town, and, what was worse, they were enforced by men who had practically no knowledge of building at all, such as farmers or small tradesmen. As a general rule, too, a man was appointed District Surveyor in these regions because he had been a good Inspector of Nuisances. These men were very fond of carrying out the by-laws to the letter.

Mr. Gordon Smith said he was very glad that Mr. Ridge had raised the question of rural by-laws, and he could only say at the outset that the Local Government Board would give any representation made by the Royal Institute the utmost consideration. So far as his experience went—and he had obtained it after discussing the question with a great many architects throughout the kingdom—he thought there was a great absence of knowledge of the circumstances under which by-laws could be made. The model by-laws were framed in 1877, having been in course of preparation for some few years prior to that. They were drawn up to assist Local Authorities under Sec. 157 of the Public Health Act, 1875, which gave to Urban Authorities only power to make by-laws on certain specified subjects. All that the rural districts could do prior to the Amendment Act of 1890 was to obtain urban powers to make by-laws; that was to say, where a Rural District Council found that its district was developing into a town, it could apply at once to the Local Government Board and obtain powers to make the same by-laws as an Urban District Council. Under that provision many Rural District Councils obtained the powers and adopted by-laws based upon the model. In many cases he had personally suggested modifications of the model by-laws to diminish stringency and there were now published a vast number of modified clauses, which went a long way to relieve the oppression—if he might use the term—caused by the original model. It was in consequence of repeated complaints that the Legislature—and all the Local Government Board could do was to act under legislative powers—had passed the Public Health Acts Amendment Act, 1890. This Act extended the power afforded by the Act of 1875 so as to give Rural District Councils power, after adopting the Act, to make by-laws on certain specific subjects, among others, with respect to the walls and foundations of new buildings for purposes of health. Rural Districts could therefore now make by-laws without any difficulty whatever, so far as foundations and walls were concerned, for the purposes of health.

Mr. Ridge said that if the by-laws stopped there he would not mind.

Mr. Gordon Smith added that the Rural District Councils could also make by-laws with regard to drainage, but not as to fire prevention. unless they were given special urban powers. It had been said that Rural District Councils were not competent to make by-laws. The Legislature had thought otherwise, and rightly or wrongly, they can now do so. Personally, he was not prepared to admit that they were less competent to make by-laws than Urban District Councils. He did not know upon what ground the assertion was made; at any rate, he was not prepared to accept it. A complaint had been made that the authorities had power to enter a partly-finished building, and pull down what was built in contravention of the by-laws. Was that a source of hardship? If by-laws were to be carried out, power must be conferred upon the body charged with enforcing them, both as regards the power of entering and of penalties. Then with regard to the tribunal for dealing with complaints, the Legislature had laid down the police-court or the bench of magistrates as the competent court in the first instance, and if the decision there obtained were not satisfactory it was competent for the parties to the case to go to the Higher Courts. He did not desire to oppose the resolutions. On the contrary, his inclination was to agitate for a very much higher committee to go into the whole question of the operation of the building laws all over the country, to ascertain how they worked, and whether they could be amended and improved with advantage.

Mr. Ridge, in replying, said he believed the evil he complained of arose from the desire of a very small place to regard itself up to the level of a growing town. As to the third resolution, which had been adversely criticised, he desired no more than that it should be an indication to the committee of the line of conduct it should go upon.

Eventually resolutions Nos. 1 and 2 were agreed to, and No. 3 dropped.

The Chairman announced that the next meeting of the Institute would be held on the 23rd inst., when the President would deliver an address to students and distribute the prizes and studentships.

The meeting then terminated.

## COMMON ERRORS IN ARCHITECTURAL DESIGN.*

On the threshold of every subject of this kind there is a guardian shape, dimly perceived but undoubtedly real, that holds up a warning finger and bids us note the ground is treacherous and infested by will-o'-the-wisps and Jack-o'-lanterns. In other words, he who ventures upon artistic criticism of any kind must remember that in such a realm tangible facts are scarce, and absolute right and wrong possibly non-existent; that rules of conduct, however useful and applicable in many, perhaps in most, cases, are occasionally ignored with good results; and even that what is disastrous in one instance may lead to a glorious victory in another. He must also feel daunted when he remembers how quickly opinion on questions of architectural design changes, and, as far as one can see, may continue to change. Those of us who have reached middle age, and still more those who have passed it, must often, if they are at all cynically inclined, reflect with a great deal of amusement upon the confidence and enthusiasm with which the ideas prevalent in their youth and at various times since have in turn been urged—and accepted—and abandoned. It does not do, however, to be daunted by difficulties and dangers, and there is some encouragement and consolation in the knowledge that science, with all its boasted accuracy and certainty, is in little better case than art. How many of the scientific theories driven into us at school, or laboriously absorbed at a technical college, have since been shown to be myths! Yet science does not shrink from the attempt to get to the root of things; it only accepts its so-called facts with ever-increasing caution, and strives to test its theories by more systematic and more carefully conducted experiments. In art we have not arrived at making systematic experiments, or, indeed, experiments in the usual sense of the term at all; perhaps we never shall, and perhaps if we did they would not help us much; but we need not abandon the semi-scientific method of trying to learn from what we see about us some rules for our own conduct because many of the conclusions our predecessors drew do not now appear to be justified.

I suppose, as architects, we do not all attach precisely the same value to the æsthetic side of our profession. It looms larger or smaller in the mind according to the natural bent and the training of individuals, and very likely also to a large extent according to the opportunities for dealing with it that practice brings. But the tradition that architecture is a fine art is alive, though sometimes very sick, in every architect's office; and there is not one, I verily believe, who does not, in most cases, try to make his works beautiful. Even those who, with something of the wisdom of the serpent, proclaim themselves "practical" men without doubt cherish this desire; though they think it pays best to keep it in the background and rest their claim to employment upon that skill in other matters which, in most cases, they do not possess in any higher degree than their fellows, but which they make a careful display of. Our employers, the public, too, undoubtedly desire that buildings shall be beautiful. They are generally careful not to put that desire too prominently forward when they come to us; because they have an idea that beauty in a building is a far more expensive matter than it really is—except to the architect; but you may always perceive that the desire is there, not only when they say they would like "something sightly," but "do not want to spend much on ornament," but even when they say regretfully that they "cannot afford to spend *anything* on ornament," and want "quite a plain building." The word ornament almost invariably occurs in such instructions, and generally in such a way as to show that the idea of architectural beauty is inseparably connected in the mind with that of ornament. The idea of beauty apart from ornament, if it has been conceived at all, is entertained as a very dim and indistinct possibility—a thing it would be unreasonable to hope for.

That is an error for which, it is true, there is just this small and slight foundation, that ornament—good ornament, that is, judiciously used—is an element in architecture not to be despised—useful at all times in its place, often interesting in itself and essential, it may be, in the noblest buildings, if only to give that completeness—that air of having spared nothing that skill and labour could do—which is appropriate. But to connect the idea of architectural beauty with ornament any more than with proportion and grouping, the distribution of solids and voids, or of lights and shadows; or, indeed, to put ornament upon the same level of importance with any of these is the vulgarest of errors. Yet it is to this error, more than to any other, that the costly ugliness of our streets is due. The idea in too many street fronts seems to have been to mould and carve everything that could be moulded or carved, to stick a lump of carved ornament wherever there was room for it, and never to mind anything else. And what is one to say of the quality of the great mass of such ornament? That it has any value whatever as art? That it is even in any real sense ornamental? It is impossible to believe that any one—I will not say who has had any artistic training, but who has any sense of form or scale—ever looks at it without a shudder. It is generally composed of formless masses, or if, in rare cases, they have any form, it is sure to be disagreeable; and it is almost always out of scale with the other features and the mouldings of the building; in carving, the depth of relief rarely seems to have been considered at all; and, worst of all, it is placed indiscriminately, not where it would add to the architectural effect or fitness, but wherever a bit of blank space offered a tempting spot to put it in. Very often, too, it is cut up into unconnected little bits and stuck in meaningless little panels.

It may be said that architects are not altogether responsible for these faults; that, even when no instructions to that effect are received, we often know a profusion of carving to be what will please our client best; that if there is to be quantity we cannot afford quality as well; and that we must find room for it where we may. But granted that this is true in the main, might we not, even if we cannot, or do not, draw our own cartoons, exercise more influence on the design of ornament by carefully choosing our carver or decorator for his skill rather than his cheapness; by insisting on seeing some full-sized drawing, if not model, and correcting it as we please; we might thus do something at least to ensure gracious contours and proper scale and relief; while in the matter of quantity a judicious representation of the value of a little blank wall as a foil would probably get us our own way in that matter. As to the demand for excessive ornament generally, though we may not be able to do much in many cases, because we feel it to be both our duty and to our interest to please our employer; yet if, in the numerous other cases in which we have a freer hand, we were to take the necessary trouble to get really good ornament and place it well, so that a persuasive contrast with the usual thing might be set up—or if we were to seize opportunities for showing how little architectural beauty really depends at all on ornament, and how much grace, dignity, and distinction may be had without it—the demand would undoubtedly gradually diminish and probably give way in time to the desire for a reasonable quantity of the best quality of ornament, for no eyes trained to see the best can tolerate what is poor.

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* A paper read before the Sheffield Society of Architects and Surveyors on January 10, by Mr. Frank Baggallay.

In making these efforts to improve the quality of—let us say—carved ornament, it must not be overlooked that if architectural carving is to be really ornamental it must be as carefully designed as, for instance, mouldings—about which we are all so particular. It must have leading and subordinate lines and masses, and lights and shadows; and the lines and forms must be beautiful in themselves; bunches or twisted sprays of foliage without leading lines or contrasts might just as well be merely roughly hacked surfaces, like certain kinds of "rusticated" quoins; they are useful at times to break up a surface, and give it what we call "colour," but no more. Again, ornament must be in scale with its surroundings, miniature or even natural size oak and bay leaves among 3 in. ovolos, and 1 in. fillets look ridiculous; and look still more ridiculous if there be other carving on the same building the scale of which is correct. In this matter of scale, the amount of relief must not be forgotten; shallow carving is as much out of keeping and scale with a heavy, massive style of architecture as minute parts—and *vice versa;* and a similar point is that delicate, refined work is also out of character with picturesque, broken outlines such as one finds in the Rococo and Early German Renaissance.

Many writers and speakers insist upon ornament being what they term "appropriate"; by which they mean that it must illustrate, or be connected in some way with the purpose of the structure it adorns. I confess that this idea does not appeal to me very seriously; there may be no harm in it so long as it is subordinated to more important artistic considerations, but it is very apt to degenerate into mere puerility, and even if it does not do so it tends to distract the aim of the artist, and the attention of the observer, like the moral in a picture or a story. Yet, all too frequently, it is the only point aimed at, and a panel enclosing a bunch of game over a poulterer's door, or a few impossible blue plaice on a fishmonger's stall board, is held to be "appropriate ornament."

As regards the position of ornament, it has often been pointed out that the Greeks, the most sensitively artistic people the earth has ever nourished, almost always put sculpture and carving in shadow; and there can be no doubt it looks best there. It breaks up the darkness with little reflected lights, and with depths of special blackness; and it is itself softened and refined by the shade. It should, I think, never be put in strong light—particularly where it will break up a broad mass of light which may be valuable—without hesitation and a full consideration of the probable effect. Carving has its minimum of effect, and is besides most difficult to design well, when divided up and scattered into small pieces: concentration should be aimed at—concentration in broad masses if possible—if not possible, at any rate concentration at a few of the most important points. I must apologise for dwelling so long on the subject of ornament: but the wholesale and indiscriminate, or injudicious, use of bad, ineffective carving and modelling in particular, and the prevalence also of bad coloured ornament, where it is used at all, seems to me by far the greatest fault in the every day architecture of the present day, and is not unknown in quite important works. It lies in wait and hits you in the eye from every suburban porch, and fires whole volleys at you from the walls in our main streets; it too often shouts at you with brazen impudence in our theatres, and is only useful in those churches where you have to concentrate your attention on your books lest you should see it.

Much might be said of the glories of good ornament rightly used; of the indebtedness of architecture to painting and sculpture, and the host of, so called, minor arts; but the task I have set myself is the ungracious one of finding fault. After the plastering of our buildings with bad ornament, our greatest error, probably, is a somewhat similar one—the tendency to heap up in one restless mass all sorts of various, and often incongruous, forms, features, and materials. We worry our buildings with stripes and dots of red and white, and black and yellow; with here a bit of glazed brick flashing the sunlight into our eyes, and there a polished granite shaft starring it in the midst of a grey stone front. We mix up a bit of red brick, a stone porch, a bit of rough-cast and a bit of half-timber work; a slated roof, a tiled roof, and a lead flat; a few round-headed windows, a few square-headed windows, and a few fancy ones; a bay (you must have a bay, of course—perhaps several of different shapes), an oriel, a turret (with an ogee roof, naturally), a cornice, a few mixed gables, and an assortment of dormers—and we call it a picturesque bit of design. I exaggerate, you say: perhaps I do, but not much. It *is* picturesque, you say: so it is sometimes—at a distance—a sufficient distance to blur the details. But come nearer, and what becomes of the composition *as* a composition? Each feature may have a beauty or interest of its own—it often has; but where is the unity, the dignity of architecture? Where, in fact, is the design? The eye wanders from one thing to another and sees each separately, but none together. If one feature irresistibly attracts the eye, it is an accident—not because it is, or ought to be, the centre of the design, but because of its superior height or its aloofness from the rest—as when a little angle turret rears its intrusive spike above the ridge and distracts attention from the main gable; or because of its incongruity—as in the case of those red granite shafts whose polished sides seem to detach them from all the rest of the sober stonework, even from their own caps and bases.

The multiplicity of our sources of inspiration; the illustrated journals, cheap travelling, and cheap photographs that make us acquainted with all the buildings of the world, old and new; the ease with which we may obtain all sorts of materials; are snares we seem unable to, or, at any rate, do not, escape. They lead us to forget that the very word design, as we understand it, implies unity, or a definite purpose, to the attainment of which an harmonious working together of all parts is as essential as it is to the attainment of any other purpose. They tempt us to abandon dignity, sobriety, and unity in order that we may be able to work in the latest fashionable quirks and twiddles, and all the quaint follies that have taken our own and our clients' fancies. Among all these our main idea—if we have one—soon gets lost. Too frequently we never start with any main idea—it is so much easier to trust that the fascination of all these charming odds and ends will cause the omission to be overlooked.

So much have these temptations led modern architecture astray that it has come to this—a school of clever men has arisen who advocate that we should abandon the study of past architecture and make a fresh start. As clever men some of them do good work, and will very likely do better. But as to the fresh start I am very sceptical. There have been so many attempts at fresh starts, and they have never come to anything. It is very certain that, try as they may, they have not yet escaped, and cannot very soon escape from the influence of the past. That has never happened in architecture—that is in any system worthy of the name; and is less likely than ever to happen now when knowledge of the past is so accessible, and a superficial acquaintance with it almost forced upon us. It is further noticeable that the chief men of this school, both its most prominent advocates and its cleverest designers, are themselves men of architectural culture who have been or are conspicuous for their acquaintance with the work of the past. *Their* originality is generally of the right sort, and, though the enthusiasm of converts sometimes leads them into extravagances which give the enemy cause to scoff, it is *their* work that is admired and that, as a whole, will live, and not that of those followers who, with the self-confidence bred of ignorance, try to evolve architecture out of their inner consciousness. All honour to those who advocate a closer acquaintance with the properties and manipulation of materials; it can do much good, and may lead to the abandonment of many stupidities and the introduction of some new and more reasonable forms in matters of detail; but I do not see how it could ever be made the basis of architectural design in a larger sense. Originality is just now the principal object of worship among us; and one very common error in present-day architectural design is the use of new forms, and new modifications of old ones, merely because they are new, and without making sure that they are either reasonable or beautiful. At the risk of being considered reactionary, I must express a very decided opinion that new forms and features require to be justified, at least to the extent that they are not practical or artistic absurdities. I know a recently erected main cornice which consists of one vast ogee moulding; and, on a wet day, I have watched the water pouring down the ogee on to the walls, owing to the absence of the throat which all the despised old-fashioned cornices have. That is an example of a new form of main external cornice, which is a practical absurdity in this very wet climate. As to what are artistic absurdities: that is, people might say, a matter of taste. Quite so; but taste is a plant that does not grow in every soil, and, in any case, requires years of cultivation before it flowers. One must take it for granted that every architect has taste, or thinks he has; otherwise he would not have become an architect. But there must be some who are conscious that they have not cultivated their natural taste very carefully; and those who have not done so run great risks, when trying to be original, of becoming ridiculous if not offensive. We have but to walk through the main streets of any prosperous place, where there is a good proportion of new work, and note which buildings strike us as good, which as passable and inoffensive, and which as vulgar or ugly, to become sadly convinced that the vast majority of those that display originality must be placed in the last category; and, as a rule, unfortunately, the greater the originality the worse they are. Those of which the details are deliberately copied from old work, though they may not be interesting, are never offensive—provided, that is, the copying be copying and not unconscious originality—and are often pleasing. The few really good works, for which one can feel some enthusiasm, usually show a good deal of originality, either in treatment or in detail, or in both; but they also show, invariably, that their author has a good, often a very intimate, acquaintance with the historical styles.

Originality is necessary in everything if there is to be progress—nothing great can be done in this world without the brains and the courage to be original. But knowledge, and, in art, what may be called a highly cultivated sensitiveness are also required before a man can be original to any purpose. Without them originality is likely to resemble the originality of the new office boy, who leaves your best clients standing on the mat and asks the travellers to take seats in the private room. It is not, I fear, possible for us all to have this highly trained sensitiveness, but neither is it necessary for us all to try to be original for the sake of the originality; there is plenty of room for those who are only able to follow the safe path of imitation. But, even for that, knowledge is necessary. So far from decrying or neglecting the study of the history of architecture—that is, of everything connected with the architecture of the past—it is necessary for each of us to studiously cultivate a thorough and discriminating acquaintance with it; so that we may alway know what we are doing, whether we follow the beaten track, or, if we leave it, in which direction we can go in safety; so that even if we have no definite object in leaving it, but are only exploring, we may not come to grief. It is, perhaps, necessary to ask that I may not be misunderstood. I have a great respect for originality of the right sort; it is not only necessary to the greatest works, but if it springs from knowledge and is guided by good taste, it is itself a source of delight at all times, and worthy of the profoundest admiration just because it is not possible to every one. But the originality that springs from ignorance, and is helped by insensibility to beauty, is ridiculous when it is unintentional, and generally grossly offensive when deliberate; offensive even when the deliberate intention stops far short of seeking grotesque or bizarre effects for the sake of attracting attention; a prostitution of architecture that one is sometimes tempted to believe is not altogether unknown; otherwise the sense of beauty must, in some people, be perverted almost past the possibility of belief.

The temptations to be greedy in the matter of gingerbread ornament; to make a hash by mixing all sorts of things together, and to risk everything to give the dish a new and original flavour, are probably the greatest of those that are apt to overcome the architectural designer of the present day. But there are many other faults we all of us sometimes fall into, generally from not being sufficiently on our guard ; and among some of the most difficult to avoid are faults of scale. A very large proportion—possibly more than half—of the bad architectural detail that annoys the critical eye is due to mistakes in this matter. The way in which engineers have sometimes used common architectural mouldings and ornaments magnified to many times their proper size has, from time to time, been made the subject of not very flattering remark by architects. But architects themselves commit similar errors, if not quite such glaring ones, rather frequently.

It is true that, within certain not very narrow limits, some kinds of details may be executed to various scales, and always look well. Most of the well-known mouldings and features of the strictly Classic styles, for instance, so long as the usual proportions between the parts are fairly maintained, allow us a great deal of liberty in this respect. But in the Gothic styles the limits are much narrower ; a fact which, when revived Gothic first became popular, few architects, accustomed as they then were to the comparative elasticity of the Renaissance details, recognised ; with the result that they executed mouldings with great cavernous hollows and bloated rolls and fillets wide enough to ride a bicycle on.

This fault has become more rare, but it has not quite disappeared. Fillets seem still especially liable to get too wide, and crockets and finials, even in work that is fairly detailed in other respects, too often look like good-sized shrubs or big cuttle-fishes ; and some gable crosses might serve for cart-wheels, with a little trimming. In Gothic and in the Transition styles, such as Elizabethan and François Premier—indeed, in nearly all except the Classical Roman and the later Renaissance founded on it, the scale of the details varied very little ; and if the modern architect chooses to work in these styles, unless he keeps as carefully to the sizes as to the shapes and contours of the mouldings and ornaments, his work will look either coarse or trivial.

In architecture which is not imitative bad scale is even commoner. In some cases tiny windows, baby squares of glass and mouldings that look like bundles of stair-rods, give a building the appearance of a toy or model. In others the opposite fault suggests that the structure is for the use of such giants as only live in fairy-tales—but the worst, as well as the commonest, fault is the failure to keep the same scale throughout a composition. It is an error easily avoided if the matter is considered, and one can only believe it rarely is considered. It is said, I do not know with what truth, that the late William Burges insisted that all the crockets on a building ought to be of the same size ; all the window lights the same width ; all those roll mouldings of which he was so fond, the same diameter, and so on. That is carrying the matter to an extreme which is not only difficult of attainment, but is unnecessary, and, carried out in its integrity, would generally lead to the destruction of all interest. It is, however, only the exaggeration of a right principle ; similar features of different sizes cannot be used together in the same composition without striking a discordant note, unless the contrast is several times repeated in such a way as to emphasise it itself as a feature of the composition ; or unless the position of the two features is so different that they can hardly be said to be contrasted. A small order, for instance, used for window dressings and repeated on a larger scale between the windows is not really disagreeable, though so often condemned ; neither can you blame an architect for putting a large finial on a main gable and a small one on his niche canopies, though it might be better in both cases if the one feature were not merely an enlargement of the other. A more familiar example still is that of mouldings ; in which it is necessary for effect to mingle large and small members that may often be of similar section with perfectly good effect, the repetition of the mouldings in different parts of the building obviating any sense of discord.

A commoner error than that of using the same feature to different scales is the failure to keep the same scale in the different features. Large, heavy mouldings round small windows and fine, delicate ones round large ones are quite the usual thing ; small scale carving next large mouldings, and large crockets and finials on modern Gothic buildings otherwise normal in scale, have already been referred to ; and similar cases will readily occur to you. In larger matters, towers, turrets, and porches are not unfrequently designed on quite different scales to the main building, and more often still ridiculously small cornices are seen crowning high walls. It is difficult to exaggerate the importance of such errors or of watching closely to avoid them at a time when we are trying to strike out a fresh line, and decline to be kept in order by past precedents. In connexion with the question of scale, one can hardly avoid referring to that perpetual nightmare of the æsthetically sensitive architect, the large sheets of plate glass that we are obliged to use, because the public demands them, and because, however much our taste revolts, it would be a futile absurdity in many cases to ignore their practical utility. Their ugliness is not, as a matter of fact, always a question of scale only ; you can make the most charming open arcade or colonnade ugly by filling the openings with plate glass, which does not alter the scale in the least. But the scale is the chief fault, as any one may see at once who will take a pot of white paint and draw sash bars on any plate glass window. The difficulty with these large sheets of glass is so great that the failure to get over it can hardly be classed with other errors. In the case of very large openings I do not think it has ever yet been satisfactorily solved ; but there are a few buildings here and there where it seems to have been to a great extent overcome, in domestic or office windows by grouping them close together and treating the piers between them more as mullions, thus converting the whole group into one large window in effect, with the size of which the sheets of glass seem more in scale than they do with a number of small windows. These buildings are generally small, and in the François I. or some other phase of the Early Renaissance style, in which the architectural features are more in the nature of surface ornament than structural ; but I do not see why the idea should not be carried further, and applied especially where large sheets of glass are really needed ; that is, in narrow streets, where every inch of light is valuable, and where the reduction of piers to mullions, and perhaps even of lintols to transoms, would help matters very much. Solid piers on either flank, and some blank wall at the top, would be worth trying for in such a case, no doubt ; and if they could not be had, perhaps the spaces between heads and sills of the windows had better be left plain and of a good depth, but the ways in which the idea could be carried out are fairly numerous. I do not think the device of dividing up the upper sash and leaving the lower one in one square is at all satisfactory—it seems to me rather to emphasise the unpleasantness than to get over it.

There is another class of common errors which may be grouped together under the head of sins against common sense. One of these is the erection of arches that would not stand for an hour if they had to carry the load which appears to rest upon them but which is really carried by a concealed girder. There is no harm in the girder, and no harm in concealing it ; architectural realism is out of date, and we think it only decent in most cases to hide the nakedness of girders and give them some protection against fire. But most of us do not like the effect of, say, a front wall carried on a girder over a shop front, and not infrequently some one makes a futile attempt to improve matters by concealing the girder with an arch. The proprietor of the shop will not, however, consent to lose much light or window space, and the arch has to do almost without abutments and with only a few inches of rise ; with the result that the common sense of the observer feels quite as much insulted as if the shop front had been treated in the usual way ; indeed, in the latter case it would probably have passed unnoticed. Arches to the porches and loggias of villas, too, are often built with ridiculously little abutment ; I frequently wonder how some of them are made to stand at all. Good cement and a little hoop iron bond will, I believe, do wonders in that way, but one should not be called on to solve puzzles of such a kind. Another sort of arch which insults common sense, and is a poor, wretched, maimed, distorted creature besides, is the arch in a curved wall ; it has been preached against for several generations, but people still put it up pretty frequently at street corners. Piercing, or panelling, or otherwise frittering the spandrels over the haunches of an arch is another common device to make it look weak. It is possible the arch is destined to disappear in the architecture of the near future ; as a constructive feature it is already fast retreating before the steel girder and concrete lintel. But so long as we retain it, it is desirable it should remain outwardly respectable, and not become an obviously feeble and useless member, that any one can see is only pretending to do its work. Piers, and especially corbels, are liable to err in both directions, sometimes being absurdly large and heavy for what they have to do, and at others being evidently too weak. In modern church Gothic, in particular, the stone corbels which it is common to put under the ends of roof principals, and on responds to spring arches from, are often great clumsy masses, more than twice or thrice the size necessary, and that our ancestors would have made them ; while the cut brackets that pretend to carry the wooden oriels of villas even more frequently look like cardboard toys. The top corners of windows are often worried in a way that is opposed to common sense. Sometimes they are rounded, involving getting the lintels out of much larger stones with a great deal more labour than would be required for square corners ; at other times the corners are cut off either by straight, or more often by convex, lines. In all these cases the window frames and sashes have to be made in a weakened form, at greatly increased trouble and expense, for no advantage whatever, the queer-shaped corners being almost invariably unpleasant in appearance. Another sin against common sense is to put windows near an angle on both sides of it. The second one is not in a position ever to be of more than the very smallest use for light ; in most cases it is not in the least wanted ; it makes the lightest corner of the room liable to be draughty ; and it weakens the angle from the outside, where you can see across through the two windows in a most disagreeable way. Fine art in general is not, perhaps, to any great extent dependent on reason ; it is free within broad limits to do as fancy suggests. But the art of architectural design is in a rather different position — it is restricted by the condition of its being not to traverse the dictates of common sense. It must not only provide for the stability of a structure, but must satisfy the ordinary observer it has done so, and without suggesting to him that the supports would easily carry ten times as much as is put upon them. On the other hand, it must satisfy its æsthetic object without sacrificing the primary utilitarian one by inconvenient arrangements or such little lapses as I have mentioned, or as putting transoms or meeting rails at the eye level, or window-sills at the floor level, or omitting to make provision for blinds, shutters, and so on. Such errors are bad art, as much as the equally senseless fault of putting small mouldings or ornament far from the eye where they cannot be seen, and the big, coarse work under one's nose.

Under the same head, of sins against common sense, may be placed the errors that arise from not considering the nature of the material in which a piece of work is to be carried out. One might have supposed that by this time every one had given up designing or using cast-iron railings composed of intricate scrolls and twisted foliage, as nearly resembling wrought ironwork as possible ; but we know it is not so. Surely nothing could be less sensible ; the railing does not look like wrought iron in the least, and the free ends and delicate work are certain to be broken off in a short time, surely a design more fitted for casting and for a brittle material would be better sense as well as better art. Again, one often sees examples of carpentry or joinery in soft wood—such things as open timber roofs, and doors, dados, and other framings—the design of which is imitated from hard wood originals. That is bad art, chiefly because it is bad sense ; in a few months the framings will warp and split, and in a few years at most the joints of the roof timbers will have to be strengthened with iron straps and bolts. Terra-cotta is another material that is very frequently wrongly treated. Men build plain walling of terra-cotta, though it is quite unsuited for such a purpose ; the blocks have to be cast hollow and filled up, and do not produce nearly as good a surface as brick. And they use it too for cornices, architraves, and so on, consisting of plain mouldings which show every irregularity in the burning by their broken lines. The old terra-cotta buildings in North Italy were more sensibly treated. It is very little more trouble to cast a number of blocks from an ornamented model than from a plain one, and the ornament hides bad joints; accordingly, almost all members of their mouldings were freely ornamented with some repeating pattern; friezes, voussoirs of arches, and so on, being treated in the same way. A few important ornaments, say for key stones or to break a freize at regular intervals, were specially modelled; and all the plain walling was done in brick. That was good sense, and in many cases the art was good too, and there is no reason why a similar treatment should not succeed now and remove the stigma from a useful material that some architects, who have a good deal of excuse for not liking it, contemptuously call crockery.

There is one class of errors which I approach with very great diffidence, namely, those of bad proportion. Good proportion is traditionally at the very foundation of good architecture, and it is unquestionable that the trained eye is very critical in the matter. Yet if you consider it, except in the case of the Classic orders, no particular ratio between parts or between height and breadth has ever, so far as we know, been generally accepted or adhered to. In other features, almost every conceivable ratio has, at one time or another, been used with good effect; and even the traditional proportions of the orders have been disregard both in ancient and modern times, in many cases with advantage, certainly often without any perceptibly bad result. It seems to me probable that the usual ratios between the height, breadth, and thickness of individual architectural features having in most cases been established originally by utilitarian considerations of various kinds, the eyes of observers have, from time to time, become accustomed to these ratios and ready to be offended by any very serious departure from them until new ones have, in spite of them, become established. It is certain that if you do it judiciously you can depart from the customary proportions of any feature a little way without offence and even with the best results in the direction of giving character to a building, only you must guard yourself carefully from going too far, and must do it systematically. It seems fairly obvious that if the eye is accustomed to seeing, say, piers or columns, the thickness of which bears a certain proportion to their height, and you make the proportionate thickness a little greater, or the height a little less in a certain case, they will merely appear unusually sturdy; if you do the opposite they will seem unusually slight; but if you go too far in either direction they will become absurd. I think, however, that the great point to note is that if you make one feature sturdier or more slender than people are accustomed to, you give it a character which you are, as a rule, bound to carry out in the other features of the composition, under the penalty, if you do not do so, that its marked proportions, in the absence of any special circumstances to justify them, will seem out of place. Bad proportion in this sense is one of the commonest of faults and arises either from want of observation of what the usual proportions are, or want of consideration of the effect of varying them.

Bad form—that is, an unpleasant outline or contour—even where it does not arise from these errors in proportion, may sometimes be referred to a similar cause. For while a moderate variation on a familiar theme is readily accepted as a pleasant play of fancy, if it is appropriate and in keeping with the general character of the building, a greater divergence from the normal becomes grotesque. That is possibly one of the sources of unpleasantness in the outline of some brick gables. A large number of other forms are unpleasant because they clash with those about them, the character of curve or length of line is different, or the scale is wrong. They might, in fact, be good enough elsewhere, but are out of place. Whether some of the outlines one sees could be pleasant anywhere I should not like to say. It is at times hard to believe; but there probably is a reason of some sort for their ugliness if one could hit upon it.

Errors in planning, so far as its object is utilitarian, hardly come within the scope of this paper: the subject wants a whole cycle of papers to itself; but the frequent—one might almost say general—neglect of opportunities to provide for architectural effects in planning, especially for interior effects, certainly does so. The art of planning to make the most of a site, and to provide the most convenient and healthy arrangements, has arrived at far greater perfection in these days than at any previous period; but the art of planning for architectural effect appears very often to exhaust itself in the effort to provide ingles (or ingle nooks, as the ladies' papers call them). Ingles are all very well, but neither alone nor even in combination with "cosy corners" are they the only possible effect even in domestic planning, and the architect who had to trust to them as his sheet anchor would be rather lost if he came to dealing with a public building. There never were, and I hope there never will be, builders who took less trouble than we—*i.c.*, English architects as a whole—have done for many years to get a little effect by, say, such little things as shaping up rooms or centring doorways, not to mention subtle lighting or the charms of cunningly-devised staircases, galleries, and corridors. Many of our public civil buildings in particular have suffered from the purely utilitarian lines on which they have too often been planned, and the introduction of a sort of easy, domestic feeling which is inappropriate and undignified. On the Continent, as in England up to well into the present century, even small houses and flats have something in the shape of an architectural entrance-hall. If it be but a little lobby it has a regular plan—a square, an octagon, a circle, or some other. The doors are centred, if necessary, by some contrivance of piers or arched recesses or niches; and there is very likely a shallow domed or vaulted ceiling. In the rooms some trouble is taken to avoid such contrivances as the single rounded corner, the door and window opposite to nothing, and in the centre of nothing in particular—in fact, where they chance to come—which are the characteristics of most of our rooms now. We are getting better in such respects, no doubt, but we have much lee-way to make up, even in our domestic work, which is our strongest point as against other countries; and in particular we must get rid, as quickly as we can, of our long, narrow, entrance passage and the uninteresting straight staircase at the end of it. In our public buildings our greatest fault of plan is a mean cramping of halls, corridors, courtyards, and staircases, a general absence of spaciousness and graciousness, and frequently a tendency to a rabbit warren intricacy of passages and rooms, very convenient sometimes for officials who know all their ins and outs, but very undignified, and very inconvenient for the public who have business inthe building. A simple straightforward system of plan should be a *sinc quâ non* in a public building, and spacious and dignified courts, halls, and staircases are as much a necessity as a fine exterior before a building can be considered a successful architectural work. Planning often has less influence on external effect than on internal; and the possibilities in that direction are less often overlooked, the only common fault being, I think, the failure to suggest the depth or solidity of buildings by allowing the external walls to hide everything. If there can be a higher structure visible behind them or even part of the building higher than the rest and showing a flank wall, it is an enormous advantage.

To return to interior effects. Nothing has more influence upon their success than the position and size of the windows. Our ideal seems to be a flood of light everywhere, and with this object in view the general tendency is to put a window wherever one is possible, and, subject only to the exigencies of the external elevation, as large as possible. This is a serious error. It comes partly from our cramped plans, which often make lighting a serious difficulty; but it comes, too, partly from not sufficiently considering that equal light is not required, and is not possible everywhere; that light means shadows, and that it is our opportunity as well as our business to regulate the position and size of the lights and shadows, and not leave the matter to chance. In offices and workshops and elsewhere where light is all-important, not much, perhaps, can be done; but neither do we want to do very much there: it is in the public parts of buildings and public rooms where we both can and desire to get our effects. End lights in corridors, though often necessary, are never effective: they make the ceiling and both walls dark throughout by the long shadows they cast from every projection, while the floor, on the contrary, is all light; add to this, that in walking down the corridor the light is directly in your eyes, and the proof is more than complete. Side windows that throw the shadows of their mullions and transoms on the floor and walls, or even that merely alternate broad gleams of light with patches of shadow, are, on the contrary, charming. If these occasional windows can be put in deep recesses, so that from a short distance you do not see them, but only the light from them, the effect is still better. Æsthetically it is almost always better to light the upper part of an apartment more strongly than the lower; if you can get clear-story windows, or otherwise throw the light on the ceiling or vaulting, and leave the floor comparatively in shadow, you can be nearly sure of a pleasant effect, and the windows being so far above the eye-level, they do not dazzle the spectator. On the other hand, a top light which throws the chief light on the floor, leaving the ceiling in shadow, is also often successful. But the great point is to have shadow and light contrasted, and, if possible, broken up each by the other; and not to allow all interest to be lost in one broad flood of light or cloud of shade.

I have made these scattered remarks with a great deal of hesitation as merely the result of my own reflections. I am not so foolish as to suppose that they are a very valuable guide to the art of architectural design; but I hope there is something in them, and that they may induce some of my colleagues to ask whether there is not, at any rate, something to study and think about in the several matters referred to. I think students especially should beware of despising such questions as beside the main point, whatever be the lines of practice they expect to take up. Design may be largely a matter of common sense; but it is also largely a matter (for which there is time in our student days) of training the eye and the understanding through a series of years; besides, a bad habit of carelessness in designing, once acquired, is as difficult as any other bad habit to drop. It is an error, though not now, I hope, a very common one, to suppose that the design of manufacturing and commercial buildings is of no importance. A mill, perhaps, does not as a rule afford a man much opportunity, though I have seen some very fine architectural effects produced in mills. But the beauty of our streets is mainly dependent on the office and shop fronts. From the point of view of general effect, and if such a thing were conceivable, one might almost forgive bad architecture in the few public buildings of a town if all the ordinary work were good. But it is a similar case to that of taking care of the pence; if you take care of the individual effect of the ordinary street fronts the effect of more important erections and of the whole will take care of themselves.

There is just one more thing to consider which may influence some. Architecture, at any rate the external architecture of buildings, cannot be hidden like pictures or statues, it is always there to be seen by every one who passes, every time he passes; and this gives architects an enormous power to influence public taste. It is not too much to say that, more than any other body of men, we are guardians of the public taste in the fine arts. Let us remember our responsibility and be worthy of it.

## ARCHITECTURAL ASSOCIATION DISCUSSION SECTION.

AT the sixth meeting of the session held on the 13th inst. Mr. H. V. Crawfurth Smith opened a debate on "Recent Works on Specifications," with special reference to the books on that subject by Mr. F. R. Farrow, Mr. F. W. Macey, and the *Builder's Journal*.

Mr. Smith said he was not in a position to speak of the three works mentioned, but was able to bear testimony to the value of the little book by Mr. Leaning. He then went on to describe the necessary qualities of a good specification. He said the architect, in his double connexion with client and builder, must, if he wish to ensure the respect and confidence of both, stand or fall by his specification. The fundamental idea of a specification was supplying what the drawings could not show, and to this idea they could not attach too much importance. Dimensions shown on the drawings need not be repeated in the specification. Certain clauses liable to be ignored, such as the flushing of joints in brickwork and timber holding up the full sizes specified, should be written in red ink.

Mr. G. H. Smith continued the discussion, saying that any paper or book brought out with a view of minimising the drudgery of writing a specification demanded careful consideration. It did not follow that because a man understood design and construction of buildings he was competent to write a specification. As with building construction, a man used a text book at first to learn the theory. A text book on specification would give a man a skeleton, and merely suggest the variable covering. From this point of view Mr. Macey's book was too bulky; for instance, to hunt through all the mass of clauses for the description of the joinery of a window would take too much time. On the other hand, he thought Mr. Macey's book most useful for reference on construction. The periodical "Specification" aimed at being a desk-book of reference of all kinds, and as such might be very useful. The "practice notes" and description of materials were easily referred to, and might be increased with advantage. He felt sure the books under discussion would be of service to many, and a judicious use of them would tend to lighten our labours considerably.

Mr. W. E. Johnson doubted whether works of specification were of much value except as guides to students in learning how to write a specification, on the ground that ready-made clothes seldom fit. He dealt in some detail with Mr. Farrow's book, which he spoke of as a most useful work, but which contained a few points requiring correction.

Mr. Max Clarke spoke of the danger of sacrificing lucidity to brevity. It was all very well to say "be brief," but people who wrote briefly did so either because they did not know what they were writing about, or because they had not time.

Mr. C. H. Strange said that the present craze for writing books on specifications was sure evidence that a need existed amongst architects for some reliable work of reference on this important subject. The new books under discussion might be divided into three classes: (1) the works of Mr. Leaning and Mr. Farrow intended to guide students in right methods of specification writing; (2) the work of Mr. Macey, which was a much larger and more important work, intended to supply an architect with every detail he could possibly require; and (3) the work entitled "Specification," which set itself out to be a work of reference. He thought that with its numerous careful sketches and descriptions and its copious index, Mr. Macey's book would prove a most valuable one. Speaking of "Specification," he thought its low price would ensure its entrance into every architect's office in the country; but its arrangement and scope were open to considerable criticism. Mr. C. H. Brodie and Mr. A. S. Tayler also contributed some remarks; and Mr. Leaning, the chairman, summed up the discussion by comparing the three books as to their treatment of various subjects, and pointed out many discrepancies.

⁂ We may point out to the members of the Discussion Section that Mr. Farrow's book, which first appeared in our columns, was not intended to give examples of every kind of possible clause in a specification, to copy from without thought (which seems to be what some of the members prefer), but was intended to put the student in the right path and encourage him to think for himself. Those who do not like the trouble of thinking for themselves will, no doubt, prefer another kind of book. It was not for them that our publication was produced.—ED.

## *COMPETITIONS.*

REBUILDING OF THE SESSIONS-HOUSE, OLD BAILEY.—The City Lands Committee of the Corporation are making arrangements for the re-building of the Sessions-house in the Old Bailey. They have consulted Professor Aitchison, R.A., the President of the Royal Institute of British Architects, who has suggested a competition among a limited number of architects to be nominated by the Council of the Institute. The committee, adopting this suggestion, have approved of six architects being nominated by the Council on the understanding that the acceptance of any of the designs submitted should not be binding upon the Corporation.

ARDROSSAN AND SALTCOAT HOSPITAL.—Mr. Guest Luckett, one of the three architects whose plans were specially considered in this competition, writes to say that he is of Aylesbury, not "of Glasgow," as stated in our issue of January 7.

## ARTISTIC DECORATIONS FOR THE PARIS EXHIBITION.

THE following is the list of the principal artists who will be employed by the French Government in designing and executing decorations for the buildings for the Paris exhibition of next year.

At the large art-palace on the Champs Elysées the sculpture which is to form the termination to the pylons will be executed by MM. Verlet, Lombard, Allar, and Tony Noël. The figures flanking the entrances will be by M. Peynot and M. Gasc; those between the columns, which are to symbolise the Arts, are entrusted to MM. Cordonnier, Carlès, Puech, and Ferrari. The wings and colonnade of the principal façade will be decorated with statues by MM. Labatut, Boutry, Clausade, Lefèvre, Enderlin, Suchetet, and Hugues. M. Recipon is to execute two quadrigas in bronze. Above the side entrances will be groups executed by M. Carly and M. Theunissen, and two seated statues by M. Convers and M. Greber. In the intermediate portion of the façade M. Sicard and M. Theunissen are to execute two seated figures to be placed above the coupled columns. M. Barrias is commissioned to execute a large seated figure to be placed above the main entrance. The attic will be decorated by four groups by MM. Larche, Allar, Coutan, and Marqueste. At each end of the façade will be a group consisting of a seated figure and two children, one group to be executed by M. Mercié and the other by M. Tony Noël. MM. Sicard, Baralis, and Fagelle are to model a frieze in Sèvres ware after a cartoon by M. Joseph Blanc, symbolising the History of Art. Another frieze, in mosaic, will be placed within the front colonnade, executed by specially selected mosaic workers, from the designs of M. Fournier.

At the entry to the new bridge, "Pont Alexandre III.," will be pylons surmounted by a Pegasus and a figure of Fame, in gilt bronze. At the side next the Cours la Reine, on the right bank, there will be two groups entitled "Vox Pacis," by M. Fremiet. In corresponding positions at the Quai d'Orsay, on the left bank, will be two groups by M. Steiner and M. Granet, under the title "Vox Gloriæ." At the feet of the pylons are to be four seated figures in stone symbolising France at different epochs; on the right bank "Mediæval France" and "Modern France," by M. Lenoir and M. Gustave Michel; on the left bank "France of the Renaissance" and "France of Louis XIV.," by M. Coutan and M. Marqueste. In front of the bridge, to right and left, will be two groups of lions and genii, to be executed by M. Dalou and M. Gardet. On the balustrade of the bridge will be figures representing river deities, to be executed by M. Morice and M. Massoule. M. Gauquié is to design the large lamp-standards for the bridge. On the pedestals at the foot of the steps to the bridge will be large vases surrounded by groups of children designed by M. Dagonet; and the cartouche which will form the central decoration of the bridge itself will be designed by M. Recipon. The general design of the bridge is due to M. Cassien-Bernard, architect, and M. Victor Cousin, engineer, working in conjunction; so that the whole is the joint product of engineer, architect, and sculptors.

It will be observed that on these two structures above-named the French Government have contrived to find work for nearly all the most eminent French sculptors of the day. What an example to our own Government, from which the best English sculptors can hardly hope for a commission!

## METROPOLITAN ASYLUMS BOARD.

MR. R. M. HENSLEY presided on Saturday at the fortnightly meeting of the Metropolitan Asylums Board, at the County Hall, Spring Gardens.

*Proposed Permanent Architect.*—The Board proceeded to discuss the motion of Mr. J. Brass, adjourned from June 18 last:—"That it be referred to the Works Committee to consider and report if it would not be advisable to appoint an architect to the Board." Mr. Edward White, L.C.C., now moved an amendment that the question should be referred to the Works Committee "with power to consider and report whether it is desirable for the managers to appoint an architect or surveyor, or architect and surveyor, and, if so, under what terms and conditions and for the performance of what definite duties." He did not think that a permanent architect, if appointed, ought to deal with all questions coming before him, because with so many large interests as they had, it would be unwise to debar themselves of the services of outside architects. But there was a large quantity of work for which, in his opinion, it was advisable that they should have a permanent architect. —Mr. Brass, the mover of the resolution, and Mr. Purchese, the seconder, accepted the amendment proposed, which was then seconded by Mr. W. Crooks, L.C.C., who said that it might be well for the committee to consider, in addition to the question raised in the motion, whether the Board ought to have a superintending architect. In addition to having an architect to advise and to plan small work, some one ought to be in possession of the various plans and specifications which were drawn up. At present there was no one of whom members could ask a question; there were not even copies of the documents, only the originals. A member desiring information was not helped in the least. The motion, as amended, was carried.

*The Singular Claim by Contractors.*—The Works Committee reported with regard to the claim of Messrs. Kirk & Randall, contractors, for damages to the amount of about 34,000*l.* for alleged delay in delivery and non-delivery of plans on the part of the architect of the Grove Hospital. The committee had had before them the architect's observations, and also further claims on the part of the contractors. As the result of their consideration of the question, they failed to find any ground for assuming any liability on the part of the managers, and were not prepared to advise the Board to accept the suggestion of the contractors for a reference to arbitration. They had instructed the solicitors accordingly.

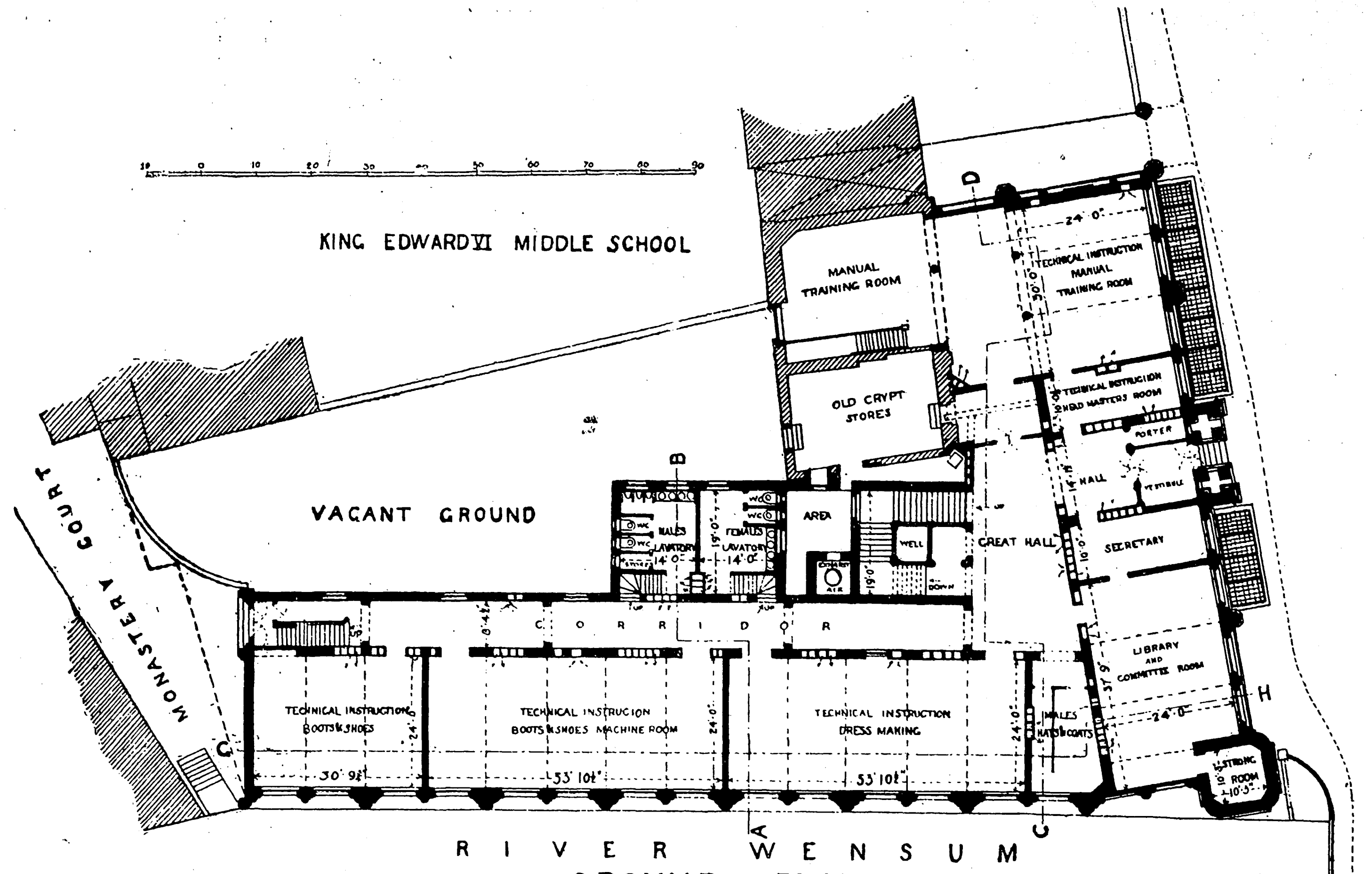
*Appointment.*—Messrs. Treadwell & Martin, architects, were appointed to prepare detailed plans and specification and to superintend the execution of boundary fences and gates at the Southern Hospital, at a fee of 100 guineas. The estimated cost of the fencing was 2,100*l.*

## Illustrations.

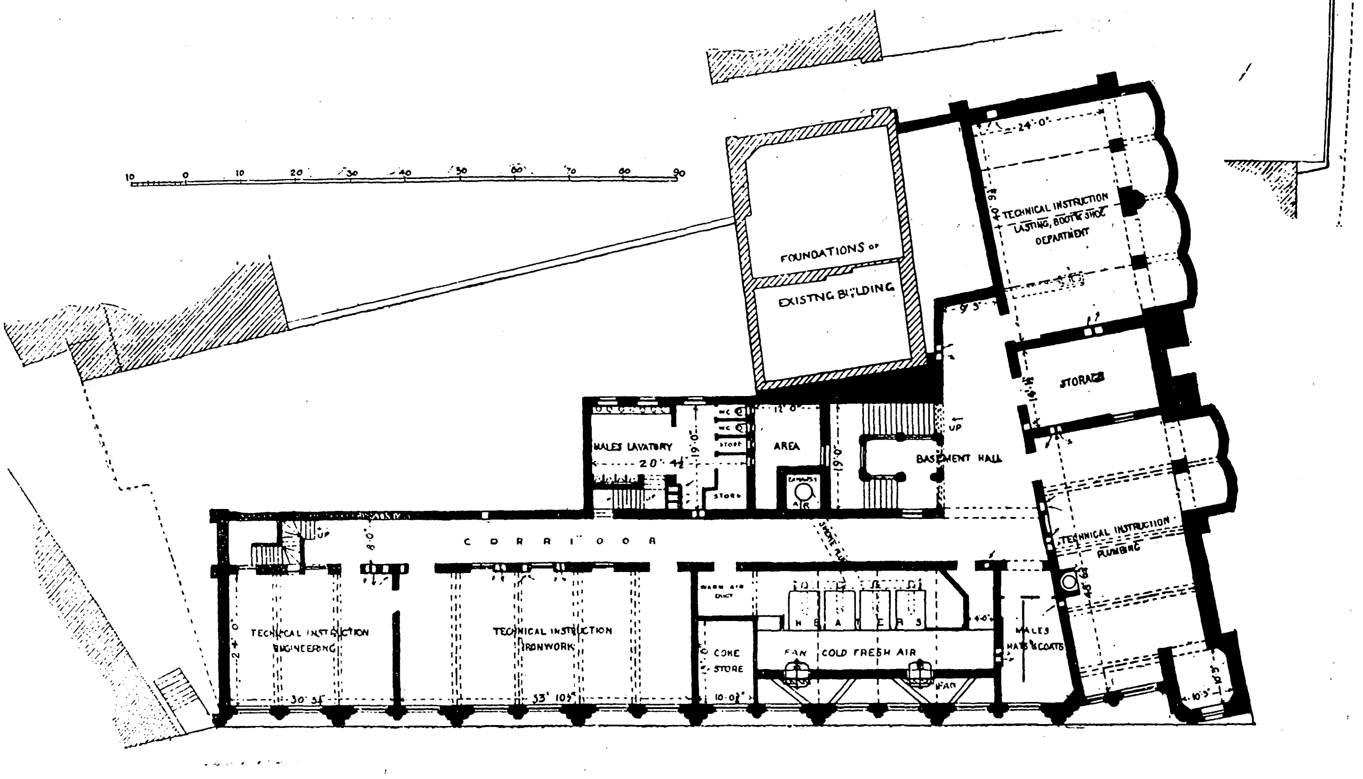
### PALAZZO DELLA RAGIONE, VICENZA.

THIS magnificent building was the result of a limited competition held at Vicenza in 1549; a fact which might well be borne in mind by those who see in the system of selecting designs by competition nothing but inevitable iniquity. It is one of Palladio's noblest, as it is one of his earliest designs. It belongs artistically to the Early rather than to the Later Italian Renaissance; it may be described as Early Renaissance less the exuberant and minute detail of such a work as the portico of the Church of Santa Maria dei Miracoli, Brescia. The orders are superposed; later on Palladio delighted more and more in one gigantic order sprawling through several stories, as in the Casa del Diavolo; and it was this, his later and inferior manner, which found most favour with his English imitators, and not the simple purity of his earlier work.

The design may be regarded as in some measure a Classical version of the neighbouring town-hall of Padua, which is a vast central hall surrounded by Gothic arcades of pointed arches, for which Palladio substituted two loggias of semi-circular arches, employing the Doric order in the lower and the Ionic in the upper loggia. Though nothing can have been further from his mind than to introduce Gothic principles into his work, yet there can be no doubt that the success of the design is largely due to the application of two leading principles of Gothic architecture, which he introduced not because he liked them, but because he was constrained to do so. One is the retention of the sky-line of the roof of the old hall—a roof so vast in scale that it might well have overwhelmed and overpowered the whole design. The other principle is the multiplicity and repetition of parts. Not only is the number of bays large, but each bay, instead of consisting of one opening, is subdivided into three—thus magnifying the apparent length of the building, quite in Gothic fashion. The triple opening of the bay—a central arch flanked by two lintelled openings—had been previously employed by Peruzzi; and may be regarded as a development of the design of the entrance of Diocletian's palace at Spalatro. Its


KING EDWARD VI MIDDLE SCHOOL
VACANT GROUND
MONASTERY COURT
MANUAL TRAINING ROOM
OLD CRYPT STORES
TECHNICAL INSTRUCTION MANUAL TRAINING ROOM
TECHNICAL INSTRUCTION HEAD MASTERS ROOM
PORTER
HALL
SECRETARY
LIBRARY AND COMMITTEE ROOM
GREAT HALL
AREA
WELL
MALES LAVATORY
FEMALES LAVATORY
CORRIDOR
TECHNICAL INSTRUCTION BOOTS & SHOES
TECHNICAL INSTRUCTION BOOTS & SHOES MACHINE ROOM
TECHNICAL INSTRUCTION DRESS MAKING
MALES HATS & COATS
WAITING ROOM
30' 9½"
53' 10½"
24' 0"
RIVER WENSUM
A
B
C
D
G
H

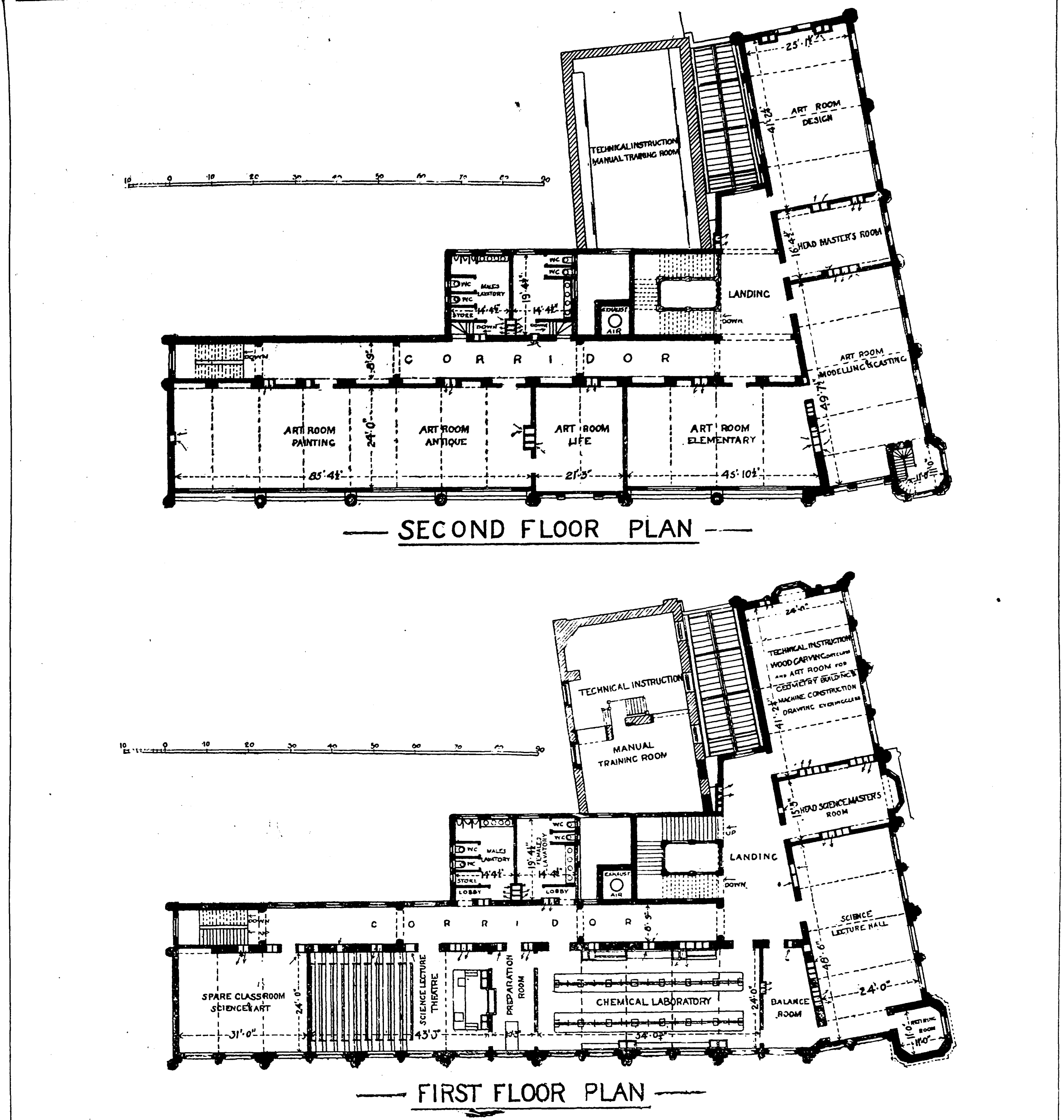
## GROUND PLAN


FOUNDATIONS OF EXISTING BUILDING
TECHNICAL INSTRUCTION LASTING, BOOT & SHOE DEPARTMENT
STORAGE
BASEMENT HALL
AREA
MALES LAVATORY
STORE
CORRIDOR
TECHNICAL INSTRUCTION ENGINEERING
TECHNICAL INSTRUCTION IRONWORK
WARM AIR DUCT
COKE STORE
HEATERS
FAN
COLD FRESH AIR
MALES HATS & COATS
TECHNICAL INSTRUCTION PLUMBING
30' 5½"
53' 10½"
24' 0"

## BASEMENT PLAN

*Norwich Technical School. Plans. (See also pages 67, 68.)*

adoption was forced on Palladio by the fact that each bay of his loggia had to correspond with the openings into the hall behind. These openings are narrow. Palladio, therefore, wishing to employ semi-circular arches, made one bay of the loggia correspond to two of the openings behind. To fill in the whole broad bay of the loggia with one great arch would have resulted in an unsatisfactory excess of the voids; to build the piers solid up to the present arches would have darkened the loggia and would have made the whole design heavy and clumsy. The triple opening gives precisely the right balance of voids and solids, of strength and grace. Equally admirable is the treatment of the corner bays. These project beyond the hall, and are not restricted in dimensions by the openings of the hall. Palladio has therefore built them narrower and more solid; emphasising and strengthening the angles of the loggias in the most successful manner. Palladio was also very proud of the fact that his Basilica was in hewn stone; most of the Palladian architecture of Vicenza is in a most forlorn condition; the rusticated walls, columns and pilasters are usually of brick, and some columns of wood; and the stucco, which covers them all, is peeling off. He may well have taken the idea of his loggias from Vitruvius' description of the Roman Basilicas; or the Basilica may be regarded as a development or criticism of Sansovino's Library at Venice, which was completed about ten years earlier. Both buildings have been the object of universal admiration; the Vicenza monument, however, is architect's architecture, that at Venice sculptor's architecture; it may fairly be contended that the Basilica is superior to the Library in the same way that Beverley


SECOND FLOOR PLAN
TECHNICAL INSTRUCTION MANUAL TRAINING ROOM
ART ROOM DESIGN
25'-1½"
41'-2½"
HEAD MASTER'S ROOM
16'-4½"
LANDING
DOWN
AIR
EXHAUST
MALES LAVATORY
WC
STORE
14'-4½"
19'-4½"
C O R R I D O R
ART ROOM MODELLING & CASTING
49'-7½"
ART ROOM PAINTING
ART ROOM ANTIQUE
ART ROOM LIFE
ART ROOM ELEMENTARY
24'-0"
85'-4½"
21'-3"
45'-10½"
FIRST FLOOR PLAN
TECHNICAL INSTRUCTION
MANUAL TRAINING ROOM
TECHNICAL INSTRUCTION WOOD CARVING AND ART ROOM FOR GEOMETRY BUILDING & MACHINE CONSTRUCTION DRAWING
24'-0"
41'-2½"
HEAD SCIENCE MASTER'S ROOM
15'-3"
LANDING
UP
DOWN
MALES LAVATORY
FEMALES LAVATORY
LOBBY
STORE
SCIENCE LECTURE HALL
48'-6"
24'-0"
SPARE CLASSROOM SCIENCE & ART
31'-0"
SCIENCE LECTURE THEATRE
43'-3"
PREPARATION ROOM
CHEMICAL LABORATORY
54'-0"
BALANCE ROOM
10 0 10 20 30 40 50 60 70 80 90

*Norwich Technical School. Plans.*

choir has the better of Ely presbytery. "It is," says Mr. Fergusson, "the happiest adaptation of classical art to modern purposes which has yet been executed in Europe, and less open to animadversion than any design of modern times"—a verdict which no one who has seen the building will be inclined to dispute. Palladio himself had no false modesty about its merits. "I do not question," he says, "that this fabric may be compared to the ancient edifices, and be looked upon as one of the most noble and beautiful buildings erected since the time of the ancients."

## S. MARIA DEI MIRACOLI, BRESCIA.

THIS church was built, pursuant to a decree of the city in 1487, in honour of the supposed miraculous painting of the Virgin which it contains. This was originally upon the wall of the house of Frederick de' Pelabroschi, and was bought, house and all, for the benefit of the city. The porch of the church is one of the masterpieces of the Early Italian Renaissance: its detail so precious in design and execution that it seems a desecration ever to have exposed it to the vicissitudes of wind and weather. It is unsurpassed by any of the work of the quattrocentists, though it has its rival in the interior of Lombardi's church of the same name at Venice. In these and in similar examples—and there are many—architectural ornament reaches the level not merely of the best Roman, but of the best Greek art. The porch consists of four columns bearing an entablature, which carries a lofty attic. On this is set a semi-circular pediment broken to admit a niche with a figure of the Virgin. The whole is covered with minute ornament of the utmost delicacy and refinement, executed with consummate skill and grace. The plan of the church also is of the utmost interest; never more so than nowadays, when the world is weary of the monotony of the basilican type of church. It may be described shortly as a cruciform inscribed in an oblong church, the short arms of the cross being covered with tunnel vaults; the foot of the cross and the crossing with large domes, the apse with a semidome; while smaller domes with lanterns roof the square corners of the oblong. If Wren had ever seen it, it might well have been thought that in S. Maria dei Miracoli, Brescia, we have the prototype of the beautiful plan of the churches which he erected, simplified however in type, at St. Stephen's, Walbrook, and St. Mary-at-Hill; and which appears again in Hawksmoor's fine church of St. Mary Woolnoth.

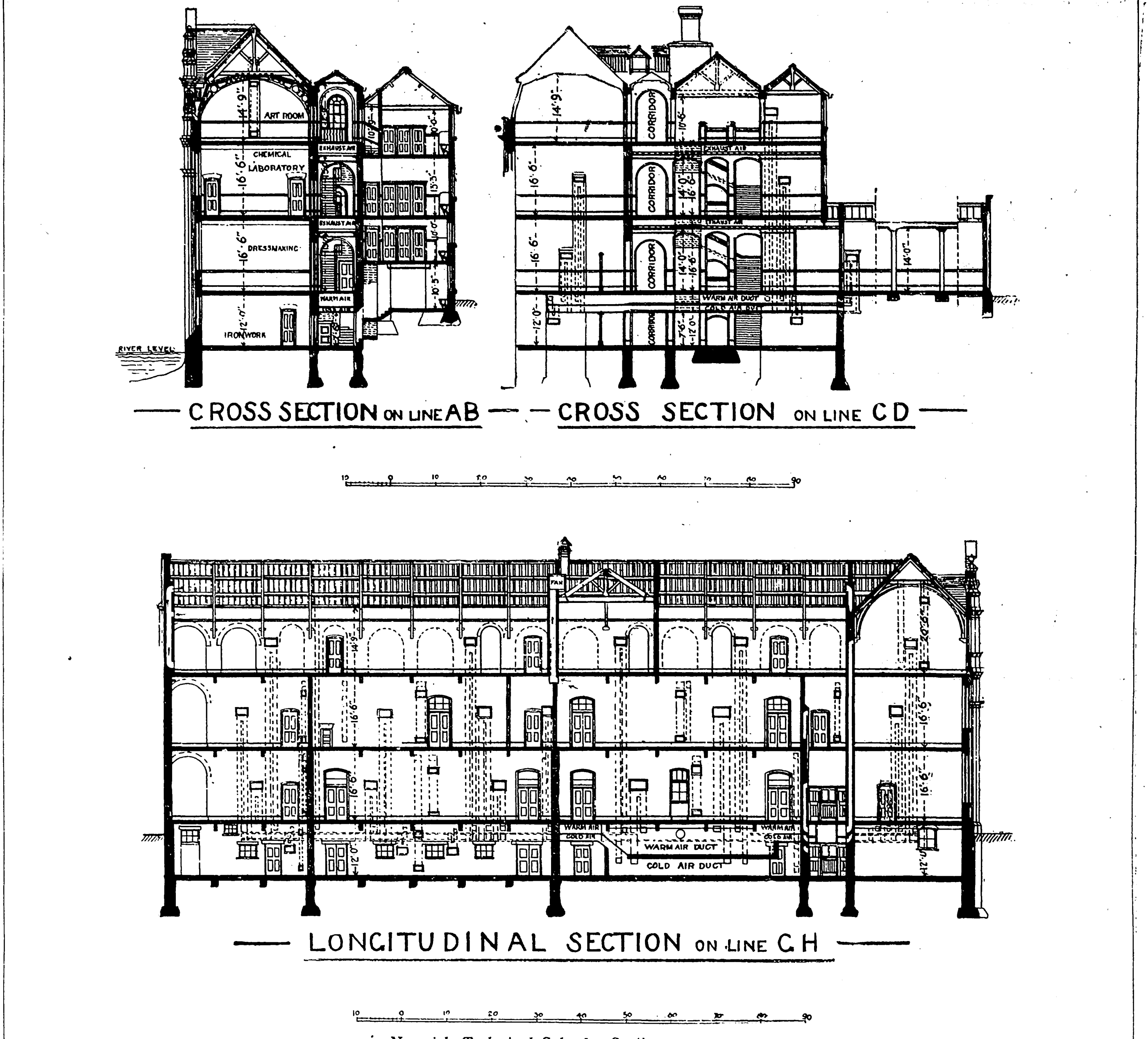
## CITY OF NORWICH TECHNICAL INSTITUTE.

THIS Institute is now in course of erection by the Corporation.

The facings of the building will be of bright red brick, the panels of kiln bottom bricks, all built in black mortar. The mouldings, &c., are to be of Cosseyware, supplied by Messrs. Gunton, of Costessey, Norwich. The portico will be built with stone supplied by Messrs. Groves, Guiting Quarries, Oxfordshire. The steps will be of Penhryn granite. The warming and ventilation will be on the Blackman plenum and exhaust system.

The whole of the floors and stairs will be of breeze concrete filled in between H-iron floor-joists, and finished with cement concrete, wood, or Val-de-Travers asphalte, as the case may be. All the windows throughout the building will be fitted on the N.A.P. Company's system. A 3-in. water main will be taken into the building and will be fitted with hydrants and hose on each floor. Compressed air for power and laboratory purposes will be supplied from the Corporation's main. Electricity, gas, and water will also be supplied.

Portions of existing buildings now on the



*Norwich Technical School. Sections.*

site at the rear are being retained, and will be utilised for manual training purposes.

The estimated total cost of the building when completed will be about 22,000*l.*, exclusive of the site which is Corporation property. The Science and Art Department have lately granted a sum of 1,000*l.* towards the cost of the erection of the Institute which will necessitate alterations in the art-rooms; windows being required not less than 12 ft. wide by 11 ft. high.

The river-wall foundation was put in by Mr. Blyth, of Foulsham, some eighteen months ago at a cost of 565*l.* 11s. 6d.

The contractor for the buildings is Mr. Samuel Warburton, of Miles Platting, Manchester, the contract amount being 16,939*l.*

The whole of the work is under the supervision of Mr. Arthur E. Collins, the City Architect, assisted by Mr. W. Douglas Wiles.

We give the complete plans and sections, as they have been carefully worked out and may be of practical value to our younger readers.

## NEW PARISH OFFICES, ORMSKIRK.

THE building illustrated under the above title was the subject of a competition in the end of 1897, when this design was placed first. It is designed as an addition to a workhouse already in existence, and provides accommodation for all the committee and board work of the Guardians.

It is built of Accrington brick with Rainhill stone dressings. The roofs are covered with green Westmoreland slates. The work, exclusive of fittings, has been completed at a cost of 2,500*l.*

The contractor for the work is Mr. James Spencer, of Liverpool, and the architects are Messrs. Willink & Thicknesse, of Liverpool.

## VILLAGE HALL AND CLUB, BYFLEET.

THIS building, which has been recently opened, has been presented to the village by Mr. F. C. Stoop, of West Hall, Byfleet, in commemoration of the sixtieth year of her Majesty's reign.

The alterations from the competitive design have been slight, consisting chiefly of the enlargement of the stage and reversing the positions of the billiard and committee rooms. The hall, seated for 300 persons, is intended to be used for concerts, dramatic entertainments, and dancing.

The materials used in the elevations are red bricks, with half timber-work and rough-cast, the roof of the front portion being covered with tiles, and that over the hall with green slates.

The cost of the building is 2,155*l.*, and the builder is Mr. R. J. Hunt, of Chertsey; Messrs. Edwards & Son are executing the hot-water heating, Messrs. De Grelle, Houdret & Co., the wood block flooring, and Messrs. Kite & Co. the ventilation.

The architects are Messrs. Ashley & Armstrong, of London; the illustrations being taken from the competition drawings.

## DESIGN FOR A GOLF CLUB HOUSE.

THIS design for a golf club house, which obtained the Architectural Association Silver Medal in 1897, was intended for links on a sloping site near the sea. Accommodation is provided for a membership of about 150 gentlemen and 50 ladies, there being a common dining-room approached from both ladies' and gentlemen's club rooms. A separate entrance on the north-east is also provided.

The material proposed to be used was local stone, the roof being covered with stone slates.

The design, which is by Mr. H. Inigo Triggs, was exhibited at the Royal Academy last year.

## LONDON SCOTTISH GOLF CLUB HOUSE.

THIS building has been recently erected on Wimbledon Common, to take the place of the old "iron house" which had been used by the Club for many years.

Externally the walls are covered with white rough-cast, and the roof is slated with rough green Westmoreland slates in gauged sizes. Internally the principal rooms are lined with Cowrie pine oiled and left plain, and the boxes round the dressing-rooms are of Oregon pine. On the upper floor, rooms are provided for the caretaker, and at the back are workshops for the professional, caddies' shelter, &c.

The builders were Messrs. Bugler & Co., of Putney; the ornamental plaster-work being carried out by the Veronese Plaster Company. Mr. H. O. Cresswell is the architect.

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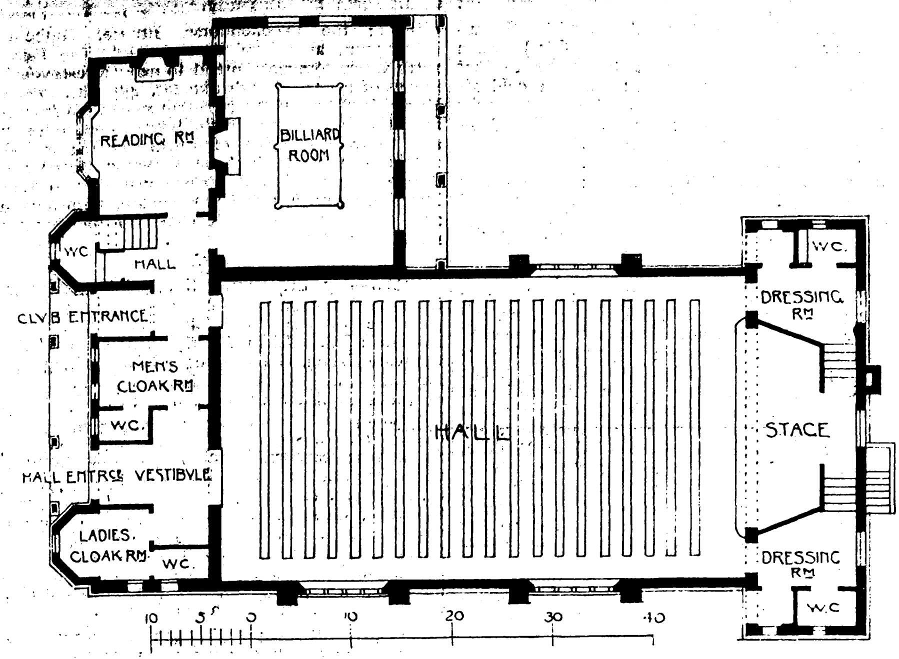
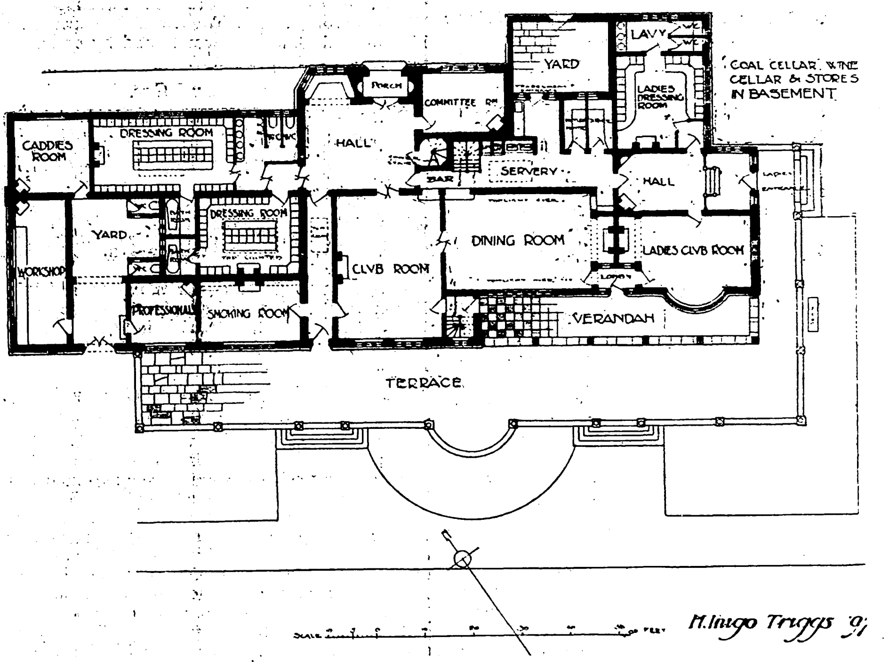
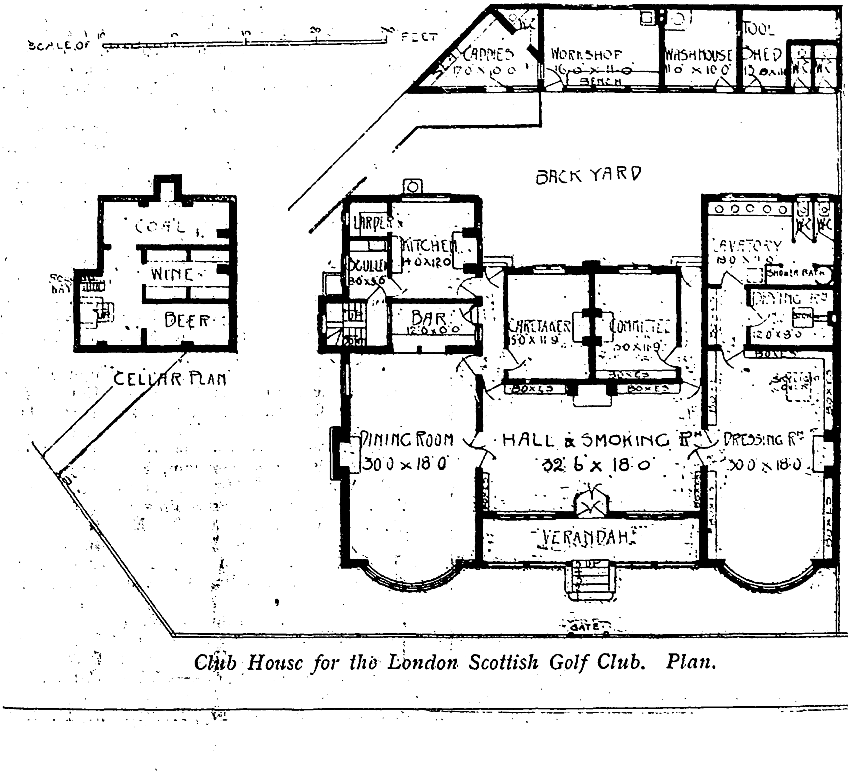
DRAWINGS OF NEW VAUXHALL BRIDGE.—In the longitudinal section of the design for the new Vauxhall Bridge, published in our issue of January 7, there was a draughtsman's error in figuring, whereby both the side and the centre spans are figured as 32·50 ft. above the datum. The figures are correct for the centre span; for the side span they should be 27·71 ft. The error, of course, was not ours.


READING RM
BILLIARD ROOM
WC
HALL
CLUB ENTRANCE
MEN'S CLOAK RM
WC
HALL
HALL ENTRCE VESTIBULE
LADIES CLOAK RM
WC
WC
DRESSING RM
STAGE
DRESSING RM
WC
10 5 0 10 20 30 40

*Byfleet Village Hall. Plan.*


CADDIES ROOM
DRESSING ROOM
PORCH
COMMITTEE RM
YARD
LAVY
LADIES DRESSING ROOM
COAL CELLAR, WINE CELLAR & STORES IN BASEMENT
HALL
SERVERY
BAR
HALL
YARD
DRESSING ROOM
WORKSHOP
CLUB ROOM
DINING ROOM
LADIES CLUB ROOM
PROFESSIONALS
SMOKING ROOM
VERANDAH
TERRACE
H. Inigo Triggs '9'

*Design for a Golf Club. Plan.*


SCALE OF FEET
CADDIES
WORKSHOP
WASHHOUSE
TOOL SHED
BENCH
BACK YARD
COAL
WINE
BEER
CELLAR PLAN
LARDER
KITCHEN
SCULLERY
BAR
CARETAKER
COMMITTEE
LAVATORY
DRYING RM
BOXES
DINING ROOM 30 0 × 18 0
HALL & SMOKING RM 32 6 × 18 0
DRESSING RM 30 0 × 18 0
VERANDAH
GATE

*Club House for the London Scottish Golf Club. Plan.*

## ARCHITECTURAL SOCIETIES.

EDINBURGH ARCHITECTURAL ASSOCIATION.—At a meeting of this Association, held in the Royal Institution, Edinburgh, on the 11th inst.—Mr. Thomas Ross, the President, in the chair—a lecture on "Explorations in Palestine and Jerusalem" was delivered by Mr. A. C. Dickie, of the Dundee Institute of Architecture. The paper dealt with the recent excavation at Jerusalem carried out by the Palestine Exploration Fund, under the direction of Dr. Bliss and Mr. Dickie. Their principal work was the recovery of the southern limits of ancient Jerusalem, and the recent explorations showed, he said, that the city once extended very much further south than the present southern boundary, the addition and the area of the city amounting to over 100 acres. Almost the whole of this area is now cultivated in tiny terraces and plots, the soil having accumulated over the ancient ruins to an average depth of from 25 ft. to 30 ft., and in some places as much as 70 ft. The ancient wall encloses the whole of the western hill down to the verge of the Kedron valley across the Tyropeon, under the Pool of Siloam, on to Ophel, where it joins the wall traced by Sir Charles Warren from the south-east angle of the Temple area. Towers occur at short intervals along the wall, and three gates (two of which show three periods) were found between the Protestant cemetery and the Pool of Siloam. The discoveries illustrated in a remarkable manner the description given in the 2nd and 3rd chapter of Nehemiah of his night ride and survey of the ruined walls and subsequent apportionment of sections of the work of restoration to the different Jewish families from the "Valley Gate" to the "stairs that go down from the city of David" (3rd chap., 13-15). The lecturer also referred to the discovery of a church, baths, mosaics, and tombs, and concluded with a few notes on the mode of excavation and the difficulties to be encountered. The lecture was illustrated by drawings and lantern slides, lent by the Palestine Exploration Fund.—*Scotsman.*

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## THE LONDON BUILDING TRADE.

A PLASTERERS' strike which may have far-reaching consequences occurred a few days ago among the workmen employed by Messrs. Higgs & Hill, of South Lambeth-road, and Messrs. Bywater & Co., of Regent-street. The men, it appears, struck work in consequence of the refusal of the foremen in the yards to become members of the Plasterers' Union, and though the men have since found employment elsewhere, it remains to be seen whether the matter will rest there. A widespread belief appears to exist that there will be much labour trouble in the building trade in the near future, though the masters deny that they are acting in any way aggressively. They consider that a fight is being thrust upon them by the plasterers, and while they are reluctant to declare a lock-out of their members, their attitude in the matter will depend upon the men. The masters not only complain of the demand of the plasterers that foremen should join the society: they assert that the plasterers regularly "black-list" certain firms, and absolutely prohibit their members from working for those firms, though they pay the full wage. This is entirely outside the spirit of the 1896 agreement. Then, with a view to restricting the number of their competitors, they insist upon limiting the number of apprentices to one for every seven journeymen. These restrictive conditions, the masters assert, have simply become intolerable. The plasterers in 1896 agreed to give the masters notice of all strikes, but the masters complain that such notices are not received; they not unreasonably think, also, that if the men have any complaints to make they should communicate with the Master Builders' Association instead of striking—especially without notice. A meeting of the Master Builders' Association is to be held shortly, when the future policy of the masters will be decided upon. So far as the masters are concerned, the trouble has reference to the plasterers only, whose conduct they consider outrageous and intolerable.

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ASSOCIATION OF MUNICIPAL AND COUNTY ENGINEERS.—The Twenty-seventh Voluntary Pass Examination for candidates for Surveyorships under Municipal Corporations and District Councils will be held at the Institution of Civil Engineers on Friday and Saturday, April 14 and 15.

## PRIVATE BILLS FOR THE COMING SESSION; AND PROVISIONAL ORDERS (BOARD OF TRADE, AND LIGHT RAILWAYS COMMISSION).

THE private and other local measures for which the prescribed plans and documents have been formally deposited, after publication in the *London Gazette* of the statutory "notices," amount to 363, as compared with 332 last year. The total comprises: railways, 58; tramways, 14; provisional orders, 75; electrical lighting, &c., 114; and miscellaneous, 102. The number of schemes for water supply is noteworthy, and for three of them an ultimate expenditure of 14,000,000*l.* is contemplated by the Corporations of Leicester, Derby, and Sheffield. We give our customary summary of the principal projects other than those which have already been described in our columns.

### *Municipal and Other District Local Improvements with Sanitary, Building, and Similar Regulations.*

BILLS.—By the Corporations of: *Blackpool,* For a carriage-drive along the promenade, and to lengthen the latter by 220 yds.; a tramway along the Queen's Drive to Gynn-road; a new street, 492 yds., from the north end of Devonshire-road to the new road; *Bootle:* To add to the number of wards, and of members of the Borough Council; by-laws to regulate electrical fittings, and the exhibition of advertisements, to produce and supply electrical energy, with further provisions in respect of streets, buildings, drains, police, sanitation, and parks and recreation grounds. *Bradford:* For tramways in North Bierley and Calverley, and adjoining districts; to supply electrical energy; improve certain streets; and acquire Baildon Moor (770 acres), setting apart about 670 acres as recreation grounds. *Bridgewater:* To improve the river Parrett navigation, construct a landing-stage and quay on its left bank between Chandos-street and the G.W. Railway bridge, cut or set back its banks, and make new cuts. *Bristol:* For works to prevent floods in the Cutlers Mill brook and its tributaries, and to make a culvert therefrom into the Back-ditch at Stratton-street. *Bury:* For tramways, an art gallery and public museum, infectious diseases hospitals, and to take over the Florence Nightingale Hospital. *Darwen:* To construct new tramways; make new streets and widen others; and to open a public park. *Leeds:* To extend and improve Kirkgate market; to erect in North-street recreation ground a building for agricultural, horticultural, and cattle-show purposes, exhibitions, and concerts; lay down tramways in the district, and purchase the Bradford and Leeds Light Railway; and regulate the traffic and public health. *Liverpool:* To widen Vauxhall, Park, and Scotland-roads; and amend the Local Act, 6 and 7 Vic., cap. 109, for the better protection of property from fire. *Loughborough:* To acquire the Loughborough Gas Company's undertaking, and to supply the borough and vicinity with gas and electricity; regulations as to buildings and streets. *Manchester:* To widen three bridges across Rochdale Canal; to acquire a site in High-street, South Manchester, for public baths and a hall; and to light all *culs-de-sac.* *Newcastle-on-Tyne:* For new tramways; a telephone service and station; and to widen certain streets. *Nottingham:* For tramways; to widen Upper Parliament-street; to establish waterworks, with a reservoir at Greasley, and an enlargement of Red Hill reservoir. *Oldham:* For tramways and to take a site for a generating station at Gas-street; a new street from Wallshaw-street to the Mumps. *Scarborough:* For an approach road to the new Marine Drive, and deviations of the sea-wall of the Drive, between the north-east end of Foreshore-road, in the South Bay, and the shore end of the harbour east pier. *Sheffield:* To purchase for 530,000*l.* from the Duke of Norfolk "the markets and fairs, and market and fair rights, in the town or parish of Sheffield." *Stockport:* To take over the tramway lines, supply electricity, provide and equip reading and refreshment rooms, &c. *Sunderland:* New tramways with a generating-station at the Dock-street site; to widen Villette and other roads; and extend the limits of their electrical lighting order, 1891, to include the urban district of Southwick. *Wakefield:* For the inclusion of Alverthorpe with parts of Outwood and Crigglestone within the city limits; further provisions as to parks and recreation-grounds; and the prohibition of the discharge of trade refuse into sewers. *Warrington:* New waterworks with reservoirs at Daresbury and Denmow by damming the Daresbury and Denmow brooks at Appleton and at Winwick; for street widenings and improvements; extension of the sanitary depot at Longford; to dedicate to the public use part of St. James's graveyard and St. James's old burial-ground; to appoint inspectors of nuisances; to make regulations as to buildings, sky-signs, and projections over streets, sanitary matters, gas-pipes, and fittings; and the provision of new waterworks. *Whitehaven:* Inclusion of parts of Moresby, Preston Quarter, Hensingham, and St. Bees within the borough; revival of powers of the Whitehaven Town and Harbour Improvement Act, 1885, for a weir across the river Ehen; and the impounding of the Ennerdale lake, and purchase of about 6 acres of Caswell Holme commonable lands. *Wolverhampton:* For new tramways (3 ft. 6 in.) and a reconstruction of the present tramways to that gauge; to widen many streets; establish cold air stores; &c. By the Urban District Councils of: *Barking,* To purchase the Barking Gas Company's undertaking; to widen and improve North-street, Broadway, Back-lane, Longbridge-road, and Heath and East streets; to raise and widen the wall 174 yds. of its length, and rebuild and raise the concrete wall along the Roding's east bank; to raise and rebuild the existing timber camp sheeting, or other river defence, of the wharves on the east bank of Barking Creek, between the Town Wharf and Sutton's Wharf; abolish any existing market rights within the urban district, and provide markets, fairs, and slaughter-houses, market places, and market houses; appoint building inspectors; improve the navigation of Barking Creek adjoining the L.C.C. sewerage outfall works at Gascoigne-road, and make various local regulations as to drainage, sewers, sanitary conveniences, &c. *Wallasey:* For tramways (4 ft. 8 in.) in Poulton, Liscard, and Wallasey townships; the supply of electrical energy and fittings; to construct two promenades (1), 1,050 yds. long, along the Mersey's west side from Seacombe Ferry Station to the present promenade; and (2) 610 yds. long, along the foreshore of the Irish Sea in Liscard between Rowson-street and New Brighton Pier; to widen many streets, and to lay out such part of the lands to be acquired as may not be wanted for the promenades and street improvements as ornamental or recreation grounds.

### *Docks, Harbours, Piers, Navigation, Ferries, and Similar Works.*

BILLS.—*Cromer Protection Commissioners* (1845): To construct a sea wall, or embankment, and promenade along almost the whole sea boundary of the parish, and a pier, 183 yds. long, at a point on the existing promenade in front of the Hotel de Paris, with approaches, &c.; to contribute towards bands of music, and otherwise provide for the public enjoyment of the pier and promenade. *North-Eastern and Hull and Barnsley Railways:* For a river-wall and embankment along the Humber's north shore, 2,520 yds. eastwards from Alexandra Dock, and a dock with lock and entrance through that river wall, 150 yds. by 320 yds., between the Holderness and Old Fleet drains. *Aire and Calder Navigation:* To widen the Knottingley and Goole canal in various sections, and make a canal entrance, with lock between the Dutch river and the canal at Goole. *Maryport Harbour:* Transfer of the undertaking to a new company; to make a dock, 7¾ acres, at Elizabeth Dock, and a pier, 600 yds. long, from the sea-wall at King-street; to remove the present North and Tongue piers, to construct some railways, and to deepen, widen, and improve the channel and harbour, with extension of the port and harbour limits. *Yarmouth Britannia Pier:* For the purchase by another company of the present undertaking and to build on the site a new pier, of open work, to extend sea-wards 270 yds. from the existing pier gates.—For a ferry for vehicles and passengers, to be worked by electricity or other power, on submerged rails, between the "Ship" hotel, at Brewhouse-lane, Greenwich, and the west boundary of Island-gardens, Poplar, and to take for a generating station 1 acre of land at Wharf-road, Poplar.—To set up a conservancy for Milton Creek, Kent, and part of the Swale, between Milton Creek and King's Ferry Bridge, with powers to provide for maintaining the purity and freedom from pollution of the waters. *Fishguard and Rosslare Railways and Harbours:* For harbour works at Fishguard, and a wharf wall or embankment for reclaiming portions of the fore-shore.

PROVISIONAL ORDERS. — *Blackpool Pier:* To lengthen the pier, westwards, by about 250 yds. *Coast Development:* A pier at Felixstowe, with approaches, pavilions, concert-rooms, &c.; a pier at Southwold, 270 yds., with constitution of the promoters as the Pier and Harbour Authority. *Devonport Corporation:* A landing pier and works from Saltash Passage and terminating in the Tamar. A pier at Fleetwood, from the Fielden Esplanade, with saloons, pavilions, &c. A promenade pier, with pier-head, &c., at Lynmouth.

### *Water Supply.*

The number of Bills is unusually large: of those that relate to the provinces the most extensive undertakings are the great rival schemes proposed by the Corporations of Leicester, Sheffield, and Derby, for which, taken together, powers are asked to borrow fourteen millions sterling, to construct nineteen large reservoirs by damming the rivers Derwent and Ashop, and, in the case of Sheffield, to supply Doncaster and Rotherham Corporations with water in bulk. New waterworks are projected by the Corporations of Bury, Falmouth, Glastonbury, Godalming, Maidstone, Rawtenstall, Southampton, Stockport, and Workington. By the Urban District Councils of Bognor, Burley-in-Wharfedale, Clay Cross, Goole, Horsforth, New Mills (Derby), Newhaven and Seaford, Nuneaton and Chilvers Coton and Otley (Yorks.); and by various companies to supply (with other districts) Wetherby (Yorks.), Herne Bay, Yarmouth, the Nene Valley, the Mayfield, Rotherfield, Wadhurst, and Frant districts; the Bedford, Sandy, and Biggleswade district; the Brockenhurst, Boldre, Highcliffe' Lymington, and Lyndhurst district. The Horseforth water company intend to make a reservoir by means of a curved embankment, 455 yds. long, in Burley-in-Wharfedale, extending westwards 167 yds. from the embankment of the Lower Lansham dam, and to take 41 acres of Burley Moor; and the Stockton and Middlesbrough Water Board have drawn up plans for a service reservoir in Long Newton, measuring 390 yds. square, with a water area of 30 acres, and a capacity of one hundred million gallons.

### *Gas.*

BILLS.—By the Corporations of *Dorchester* and *Reigate,* with extension of the area of supply, and purchase of the local undertakings, in each instance: The Urban District Councils of Brigg, Coalville (Leic.), Gainsborough, Ilford (taking 11 a. for works), Leigh-on-Sea, and Skipton, with purchase of the several local undertakings; and by various local companies to supply Cobham, Ockham, Stoke d'Abernon, Walton-on-Thames, and Byfleet; Ilford; St. Albans; Pleasley, Scarcliff, Warsop, and around, taking 12 a. at Shirebrook for works; Hastings and St. Leonards, taking 14 a. at Glyne Gap, Bexhill; Stretford, Carrington, and Partington (Cheshire); Crowborough, Rotherfield, Mayfield, Buxtead, Frant, Speldhurst, &c.; and Sutton Valence, Headcorn, Aylesford, Staplehurst, Pembury, Wrotham, Ightham, Malling, Meopham, and the neighbourhood, with works at Snodland on the Medway.

PROVISIONAL ORDERS.—By the Corporations of *Wokingham* and *Wallingford:* These two applications will be made to the Local Government Board; the Urban District Councils of Ashburton and Kirkby Lonsdale; and by the local gas companies of Bedworth, Elstree and Boreham, Farnham, Brigg, Wellingborough, York Town and Blackwater, and Harlow and Sawbridgeworth, and by certain promoters in Freshwater, I.W.

### *Water and Gas.*

BILLS. — *Woking Gas and Water:* Additional works, comprising a pumping-station with intake from the Thames, a subsidiary reservoir, and filter beds, at Chertsey, and wells and pumping-stations in Shere, Albury, and Stoke. By new companies for Fishguard, Manorowen, and Llanwnda, county Pembroke; and for St. Davids, the Cathedral Close, and Whitchurch, taking 2½ acres of Morfa Common.

PROVISIONAL ORDER.—*Laindon Gas and Water:* For extension of area of supply to include Laindon Hills, Lee Chapel, Great Burstead, Billericay, Basildon, Ramsden, Crays, and Wickford, county Essex.

### *Electrical Light, Power, and Energy Supply.*

BILLS.—*Central E. Supply:* A tunnel or waterway from Regent's Canal at Grove-road, N.W., to Northbank; a dock or basin on lands bounded by Northbank, Grove-road, and Lodge-place; to take Northbank for generating stations; and to stop up the south portion of Oaktree-road. *St. Marylebone Vestry:* To acquire part of the Metropolitan E. S. undertaking, and to supply the parish and the parts of Edgware-road and Oxford-street adjoining. *Metropolitan E. S.:* In the City of London. *St. James's and Pall Mall E. L.:* To buy lands and erect stations on the Marshall-street and Carnaby-street sites, about 3 roods, stopping up Marlborough-row and passage. *Kensington and Knightsbridge E. L., and Notting Hill E. L.:* To acquire lands for stations in Hammersmith, Brompton-road (Chapel-place site), and Bulmer-place, High-street, Victoria-gardens and Lancaster and St. Mark's roads, Notting Hill. *Corporation of Birmingham:* To acquire the Birmingham E. S. Ld. for 420,000*l.*, borrowing 500,000*l.*, and allotting all profit above 5 per cent. towards a reduction of rates. *Lancashire E. P.:* In Liverpool, Manchester, Preston, Burnley, Bolton, Blackburn, Oldham, Ashton, Staleybridge, Rochdale, Wigan, Salford, Darwen, Warrington, &c. *S. Lancashire and Cheshire E.:* In St. Helens, Widnes, Warrington, Wigan, Liverpool, Birkenhead, Runcorn, Eccles, Bolton, Horwich, Chorley, Prescot, Altrincham, &c. *Walker and Wallsend Gas:* To supply electricity in Wallsend, Walker, and Withington Quay, with station at Wallsend. A company to supply Leicester, Coventry, Rugby, Leamington, Warwick, Tamworth, Coleshill, Nuneaton, Lutterworth, Derby, Lichfield, &c., taking 35½ acres in Hinckley for a station; and by the Urban District Council of Gorton, in the district.

PROVISIONAL ORDERS. — The Vestries of St. Luke's, Chelsea, in Kensal Town; Kensington, Bermondsey, Bethnal Green, and Plumstead; and the Lewisham Board of Works in their several parishes. The Corporations of Bournemouth, Burslem, Cheltenham, Durham, Eastbourne, Glossop, Hartlepool, Haslingden, Heywood, Hythe, Ilkeston, Keighley, Kidderminster, Leamington, Longton, Ludlow, Mansfield, Newcastle-under-Lyme, Rawtenstall, East Retford, Sutton Coldfield, and Wednesbury. By a large number of Urban District Councils, including those of East Barnet, Horsham, Ashford; Runcorn, Stourbridge, Brentford, Teignmouth, Erith, Mirfield (Yorks.), Romford, Castleford, Dukinfield, Cromer, Farnborough, Rhyl, Rugby, Bognor, Knutsford, and Aylesbury. By the following companies.—*Metropolitan:* In the City of London. *County of London and Brush Provincial;* In Bermondsey, Rotherhithe, Deptford, Lambeth, Lewisham and Lee, Battersea, Fulham, Stoke Newington, Hackney, Bethnal Green, Poplar, and Whitechapel. *Charing Cross and Strand:* In the City of London. *Smithfield Markets:* In the City, St. Luke's, and the district of the Holborn District Board of Works. *Blackheath and Greenwich:* In Lee, Charlton, Eltham, and Kidbrook; and by numerous other companies in the suburbs and provinces.*

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# Correspondence.

*To the Editor of* THE BUILDER.

## THE NEW VAUXHALL BRIDGE.

Sir,—After examining the design published in your issue of the 7th inst., I wonder at the mildness of your "Note" of the 14th inst. relative to the artistic qualities, or rather the violation of all artistic sense, displayed in that design.

It is nothing less than a public scandal that any river should be disfigured by such an erection, and it is all the more grievous that this river should be one of which the people may justly be proud.

Granted that it is desirable or necessary to cover a concrete bridge with a skin of granite, there is hardly an architectural feature in this design but is inserted in such a way as traverses all ideas of proportion, fitness, or beauty, and such a combination of misapplied features is probably inconceivable to any one but—an engineer. Some months ago I noticed in the daily papers that on this important work (for from the public point of view it is important in the sense that it is costly) the County Council determined to spend a small sum, about 200*l*. I think, in obtaining the service of an architectural draughtsman to make a perspective view and assist with the details, and this is the result. During this week the students' work is on view at the Institute, and I am confident there is a higher level of ability to detail structures exhibited in the work there than is to be found in any part of this bridge design, composed of details that may be found in any second-rate text-book, applied without regard to scale, suitability of purpose, or any adequate sense of what bridge design should be. The main cornice of the bridge (and such a section of a cornice) forms the capital to the short column which performs the colossal duty of supporting a lamp-post of the proportions of the funnel of one of the river steamboats. What can be said for or to a public body whose idea of adequately dealing with the design for a great bridge is to employ an architectural draughtsman to help with the details and draw a perspective?

That act was in itself a confession of failure in design; evidently the engineer had not risen to the occasion in such a trifling matter as putting respectable garments on this bridge, and so he was to be helped by one who put in such cornices, caps and bases, and balustrades as we now see.

I venture to hazard the opinion that in no other European country would such an attitude be taken up by a public body, or could cultured men hoodwink themselves into believing that they had done their duty in the business entrusted to them.

You state in your note "that some protest should be made while there is time," and I agree with you, although I am more than doubtful of the effect of any protest.

The facts are all against us; here we have a public body with authority to build this bridge, we *only* pay for it, and their idea of bridge designing consists in handing it over to an engineer whose time is, no doubt, fully occupied by main drains and tunnels, and such like engineering works quite proper to his sphere. He does his best, and then the "trimmings" are put on by the artist who does the perspective. How I wish we had got the engineer's first hard matter-of-fact design; anything would have been preferable to this.

Perhaps, some day the County Council will realise that "if this bridge is allowed to be carried out as designed it will be a laughing-stock to foreign visitors who know anything of architecture," and I may add it will be a laughing-stock to many who are neither foreign nor visitors. J. S. Gibson.

## PREMIATED DESIGN FOR A TOWN CHURCH.

Sir,—As a layman who has had over thirty years' practice in securing the seating to its fullest capacity of a domed building with nave and aisles, please allow me to offer some remarks on the plan of a town church in your issue of the 14th inst.

You may place people in seats which do not command a view of the choir, but they will not remain in them even when the service is musical and consists of choruses, much less will they in any case sit with their faces "dead on" to a pier or wall. In this church it would be found that the dome-area and nave alone could be counted on for seating; a large proportion of seats, the eastward view from which is obstructed by the dome-piers, would have to be excluded. It must be accepted by any one requiring a church with large-domed area that the aisle area is useful only as an ambulatory and as affording relief in case of panic.

In the plan before me this possibility of panic is seemingly ignored—the seating is carried from chancel-crossing to west wall without a break, so that in filling in the seats any excess from the centre would have to leave the nave and go through the vestibule in order to reach the aisles. I think the south-west corner of the plan shows that a western gangway has been absorbed, and its aid with that of loose chairs in the nave and aisles called in to obtain an approximation to the stipulated 800 seats.

All honour to the architect for his design, but this church (unless pew-rented) should count as one for 600 seats—the extra area required is the price of the luxury of features which Wren protested against while providing them at St. Paul's.

C. H. H.

⁂ Our correspondent's criticism is quite correct, and we would recommend it to the attention of the author of the design, if he ever has the opportunity of putting his idea into practical form.—Ed.

## THE BAR-GATE, SOUTHAMPTON.

Sir,—My attention has been called to your issue of the 7th inst., where you say:—

"If, as is reported, the Mayor of Southampton wishes to remove the old Bar-Gate," &c.

I should be obliged if you would correct the impression your paragraph is likely to convey.

Personally I should throw every obstacle in the way of removing a single stone of the Bar, and consider its demolition would be a gross act of vandalism. G. W. E. Hussey, Mayor.

⁂ It was a daily newspaper which threw the blame on the Mayor; we are not responsible for the statement, and are very glad to see it contradicted.—Ed.

## CLEANING OLD BRICKWORK.

Sir,—Will any of your readers give me their experience as to the best means of removing paint and whitewash from the face of exterior red brickwork to restore it to its original colour?

H. W.

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## BOOKS RECEIVED.

The Year's Art: 1899. Compiled by A. C. R. Carter (Virtue & Co.).

The Temple of Mut in Asher. By Margaret Benson and Janet Gourlay (John Murray).

Scottish Woodwork of the Sixteenth and Seventeenth Centuries. Measured and Drawn by J. W. Small (Bernard Quaritch).

The Testing of Materials of Construction.—By W. Cawthorne Unwin. Second edition (Longmans & Co.).

Journal of the Sanitary Institute (published quarterly). Vol. XIX. Part 4. (E. Stanford).

Records of Blanchminster's Charity in the Parish of Stratton, Cornwall. Compiled by R. W. Goulding (Louth: J. W. Goulding).

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City of London College.—We are informed that during the ten years, 1889-98, over 1,200 students have attended the Building Construction Classes at the City of London College under Professor Henry Adams, and nearly one half have sat for the Science and Art Department Examination, with a resulting success averaging 50·28 per cent. in the Elementary Stage, 91·32 per cent. in the Advanced Stage, and 28·57 per cent. in the Honours Stage. This is certainly a remarkable testimony to the efficiency of the instruction given.

Public Works, St. Annes, Lancashire.—On the 11th inst., Colonel Luard, R.E., held an inquiry at St. Annes into the application of the Urban Council to borrow the following sums:—4,000*l*. for the erection of a fire station, slaughter-houses, mortuary, and town's depot; 3,500*l*. for the erection of a refuse destructor; 1,530*l*. for a sewer in Clifton-drive South; and 359*l*. for the purchase of a fire station. The town's depot was first taken, and the Surveyor (Mr. G. Hodgkinson) explained the plans. The Clerk stated that the slaughter-houses were supplemental to the private ones, but it was hoped the butchers would take advantage of the new abattoirs. In regard to the refuse destructor, Mr. Warner, of Messrs. Goddard, Massey, & Warner, the makers, stated that it would be a high temperature destructor, equal to 2,000 deg. Mr. Bancroft, C.E., explained the plans.

# The Student's Column.

## III.—THE SITE.

THE importance of a site which possesses healthy conditions is, of course, apparent, for no amount of care in the construction of a building will avail if the situation of the house itself is unhealthy. In many cases, of course, the architect is not consulted, for it is obvious that in towns and many other places the building must be placed in some particular spot, whether it be at the top or bottom of a hill, &c. Selection is not possible in such cases, but the best must be made of the unavoidable circumstances of each case.

However, in the country, with an unlimited number of positions available, it is one of the first duties of the architect to select a site which shall be healthy.

This selection must depend on the variety of known circumstances, each of which should be carefully weighed. One of the greatest factors is the climate, which includes the consideration of temperature, rainfall, moisture of soil, and the nature and prevalence of winds. The healthiness of the external air depends largely on the openness of the site, the condition and nature of subsoil, including the vegetation and sources of contamination in the immediate vicinity.

Now, as has been pointed out, while the architect cannot alter those general climatic conditions of a country which are due to its position on the globe, and the vicinity of seas or continents, yet he may modify the conditions and temperature of the soil and diminish the atmospheric damp by drainage, and he may alter the moisture and temperature of the air by planting or removing trees. He may thus produce changes in the immediate surroundings of a locality.

All authorities agree that the condition which principally governs the healthiness of a soil is the relation which the *ground air* (*i.e.*, air in the soil) bears to the ground water.

The moisture in the soil (*i.e.*, ground water) depends mainly upon the amount of rainfall, which varies in different parts of the country.

The principal evil to guard against is the damp caused by the evaporation of the moisture in the soil, and this is bound to arise unless the level of the ground water is kept sufficiently below the surface of the ground, for the lower the water is in the soil, the less the evaporation and the warmer the adjacent air.

Now this evaporation lowers the temperature of the air surrounding the building and is therefore injurious. To remedy this, what is known as subsoil or underdraining is resorted to; which, by facilitating the passage of the water from the surface into the ground beneath, reduces the amount of the evaporation. Many diseases appear to be derived from dampness, amongst which may be mentioned phthisis (consumption); so that it is evident great care must be taken to keep down the ground damp by under-draining. Dampness of soil is also favourable to all affections of the respiratory system such as bronchitis and pneumonia (including measles and whooping-cough), while it is generally admitted that damp and cold soils are conducive to rheumatism, neuralgia, and catarrhs.

This under-draining is effected by means of unglazed agricultural drain-pipes, butted against each other, and placed about 3 ft. 6 in. below the ground with a fall to a stream or river, so that the ground water cannot rise higher than 3 ft. 6 in. below the surface of the ground. Some authorities hold that ground water should not be allowed higher than 5 ft., but this appears excessive. The lines of pipes are placed from 3 ft. to 6 ft. apart, according to the nature of the soil, and are not jointed in any way. In free open soils, such as sand, a single drain will lower the ground water for a large area, whereas, in a stiff clay soil numerous drains are necessary. These drains, it need hardly be said, should be entirely independent of any drains used for carrying sewage. Drained and undrained sites have been tested by various authorities, and Sir Douglas Galton found that a drained field would have a temperature as much as 6 deg. or 7 deg. Fahr. higher than an adjacent undrained field, for the following reason, viz., that to convert water into vapour 960 deg. (Fahr.) of heat is absorbed from its vicinity—thus, each cubic foot of water evaporated lowers the temperature of about 3,000,000 cubic feet of air 1 deg.

Dr. Parkes has prepared tables giving his opinion of the various soils used for building purposes in their order of fitness, to which the student is referred. We must here content ourselves with a few notes on the more ordinary soils :—

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* We will give the railway tramway, &c., bills and provisional orders next week.

1. *Clay Soils* are generally regarded as bad, because they are impervious, hold the surface water, and are, unless carefully drained, damp, and give off unwholesome vapours in dry weather. However, houses have to be built on clay soils, and, provided they are properly drained, they can be made at least unobjectionable, although clay, being a good conductor, is always comparatively cold.

Porous soils are, however, often objectionable, because there may be an impervious stratum beneath which holds the water as in a basin, hence the term "London basin."

2. *Gravel*, free from loam and with a pervious subsoil, is generally considered the best for building purposes, as it permits of the surface water rapidly draining away, and also of a good circulation of ground air varying with the atmospheric pressure.

3. *Marshy Soils*, including muddy sea-beaches or river banks, are unhealthy and hazardous to health, and statistics show that they are often responsible for malarial and other affections.

4. *Made Ground*, *i.e.*, ground which has been used as a dust and refuse shoot, and frequently found on the outskirts of towns and in the suburbs is, of course, bad and unhealthy to build upon.

5. *Chalk* is generally considered to be healthy if permeable and free from clay, but many chalks are impermeable and therefore damp and cold.

Having touched on the various soils, it remains just to treat of the *position* of the site, having regard to health. Sir Douglas Galton states that :—

1. Ground at the foot of a slope or in deep valleys which receives drainage from higher levels should be avoided, as it predisposes its occupants, even in temperate climates, to epidemic diseases.

2. High positions exposed to winds blowing over low marshy ground, although some distance away, are in certain climates unsafe, because of the liability to fevers. Indeed, Galton states that a site near a marsh, especially if protected by a screen of wood, is often safer than an elevated position to leeward and some distance off.

In advising a client as to the *suitability of a site for building purposes*, the architect should bear in mind the following points, which have been put in tabulated form for ease of reference :—

1. The local climate should be healthy.
2. The soil should be dry and porous.
3. The ground should fall in all directions to facilitate drainage. If possible a position on a steep slope should be avoided, as high ground near a building stagnates the air. This was proved very conclusively in the soldiers' huts at Balaclava. In those which were placed near a steep slope of earth, a much higher mortality occurred, compared with huts standing free.
4. There should be a free circulation of air in the district, and muddy creeks and ditches, undrained or marshy ground, should not be close to the house, or so that prevailing winds would blow the damp exhalations over the site.
5. The site, if exposed, should be protected from the north and east by the shelter of trees, &c., at a sufficient distance however, not to cause stagnation of air or dampness. A general rule is that trees should not be nearer to a house than their own height.
6. The healthiness may be further tested by the rate of mortality of the district ; although, if a health-resort, notice should be taken of its disease-curing properties.
7. The architect would be also careful to avoid the proximity of such unpleasant places as a sewage farm or soap works, brick kilns, cement works, and lime kilns (which emit carbonic acid, &c.), slaughter houses, refuse depôts, and stagnant ponds, all of which are unpleasant and unhealthy, and a cemetery also has a very depressing effect on many people, and according to Dr. Whitelegge there is evidence of increased sickness and mortality among persons residing close to crowded graveyards, the air of which contains an excess of carbonic acid.

Public houses and schools are noisy, and often have a bad effect on the nerves of delicate people.

8. Lastly, the architect should ascertain the condition of the drainage in the district, whether it is on modern principles, with good fall, properly ventilated ; with no back flow from high tides ; and also obtain particulars of the outflow and the treatment of the sewage. If in the country, and there is no main drainage, a cesspool must be used ; note if there is a convenient position for this, sufficiently far from the water supply.

The site being selected, it must, further, be properly drained, if necessary, by agricultural drain-pipes, as indicated previously, so as to keep the sub-soil water below 3 ft. 6 in. from the surface. In the majority of cases, the site occupied by the building should also be covered with 6 in. of Portland cement concrete, with 1 in. cement-floated surface ; this is necessary in order to keep down the ground air which is charged with carbonic acid and other impurities which the water tends to force up. The model By-Laws of the Local Government Board provide for this, and it has been demonstrated that families have often been more or less poisoned by vapours drawn through the ground by the warm air into the interiors of houses and cottages.

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## *GENERAL BUILDING NEWS*

THE PROPOSED ENLARGEMENT OF WAKEFIELD CATHEDRAL.—On the 13th inst., Dr. Tristram, Q.C., Chancellor for the diocese of Wakefield, held an inquiry at Wakefield Cathedral, with reference to a petition from the vicar and churchwardens for a faculty to alter and enlarge the Cathedral, as a memorial to the late Rev. Dr. Walsham How, first Bishop of the diocese. It was stated that the proposed alterations and additions are estimated to cost from 20,700*l.* to 25,000*l.* The alterations will include new vestries, chapter house, &c., and will increase the sitting accommodation from 1,400 to 1,800. The plans were prepared by the late Mr. Pearson, R.A., of London, an estimate of the first section of the work has been obtained, and when a faculty has been secured building operations will be commenced. Mr. Frank L. Pearson, architect, London, produced the plans prepared by his late father, and fully explained the work it is intended to carry out ; Mr. Harold Watson, architect and surveyor, Wakefield, submitted a plan of the graves which will be interfered with by the enlargement of the sacred edifice ; and the Ven. Archdeacon Donne, the Vicar, said the Cathedral was not at present convenient for ordinations and other episcopal functions, and it was therefore proposed to make it more efficient as a diocesan centre. The Chancellor decreed, subject to the insertion in faculty of clauses protecting the rights of certain interested parties.

PRESBYTERIAN CHURCH AND HALL FOR LEEDS.—The Trinity Presbyterian Church of England, with school hall, Leeds, is to be placed at the junction of Harehills-avenue and Avenue-hill. The hall has already been built, and it was opened on the 8th inst. The dimensions of the hall are 43 ft. by 26 ft. 6 in., and there is seating accommodation for about 250 people. Wood blocks are used for the floor, and there is a marble mosaic work in the entrance. The church will front to Harehills-avenue, but there will be an additional entrance from Avenue-hill. The building will have a tower and spire at the junction of the two roads. The church will be about 67 ft. long by 37 ft. wide, and there will be seats for about 500 people. It is proposed to place the session-house and other rooms between the church and school. These will have a separate entrance. The carrying out of the whole scheme will cost about 7,000*l.* The following were the contractors for the school-hall, viz. :—Masons' work, Mr. A. W. Hargreaves ; joiner, Mr. B. Mawson ; slaters, Messrs. Watson & Worsnop ; plumber, Mr. T. Barrand ; leaded lights, Messrs. Talbot & Co. ; plasterer, Mr. S. Macfarlane ; painters, Messrs. Wales & Son ; wood-block floors and mosaic, Messrs. Geary, Walker, & Co. ; ventilation and roof work, Messrs. Ewart & Son and Messrs. D. Crossley & Son ; and Messrs. Alf. Dougill & Co. fitted up the heating apparatus. The architect is Mr. W. H. Beever.

METHODIST CHURCH, BALLYNAFEIGH, NEAR BELFAST.—The new Methodist church at Ballynafeigh was dedicated on the 12th inst. The new church occupies a position on the Ormeau-road, opposite St. Jude's. The seating has been arranged on the circular system, the pulpit forming the centre. The builders are Messrs. Young & Dickson, and the architects Messrs. Foreman & Aston, Belfast.

SCHOOL FOR BLIND, WAVERTREE, LIVERPOOL.—The new School for Blind Children, which has been erected at Church-road, Wavertree, was opened on the 12th inst. The architects were Messrs. H. & A. P. Fry, of Liverpool, and the work was carried out by the following tradesmen, Messrs. Morrison & Sons, of Wavertree, being the general contractors, and Mr. William Hughes, clerk of works :—Ironfounders, Guy & Hunter ; plumbers, A. C. Wilby & Son ; glazing, Williams & Watson ; heating and hot-water service, Killick & Cochran ; gas service and fittings, the Liverpool Gas-fittings Company ; electric bells, telephones, and lightning conductor, H. G. Riddell ; roof ventilators, Braby & Co. ; service lifts, Waygood & Co. ; locks, College & Bridgen ; grates and chimney-pieces, Yates, Heywood, & Co. ; wrought-iron work, Cunliffe & Dean ; trough closets, Doulton & Co. Some particulars of the new building were given in our issue for December 3.

BOARD SCHOOL, HASTINGS.—On the 9th inst. the new girls and infants' department, erected in Priory-road, Hastings, was opened by the Chairman of the Board. The Boys' Department was opened in 1891, and the building opened on the 9th inst. provides for 216 girls and 208 infants. The infants are accommodated on the ground floor, which consists of a marching hall, school-room for 110, with senior class-room and babies'-room, having a south aspect, with cloak-room, &c. The girls' rooms are on the first-floor, reached by a stone staircase, and consist of a central hall, and four class-rooms opening out of the hall, with cloak-room, &c. The total cost was about 6,500*l.* The architect was Mr. F. H. Humphreys.

ST. PETER'S NATIONAL SCHOOLS, IPSWICH.—The new class-rooms, built in connexion with the St. Peter's National Schools, in commemoration of the Queen's Diamond Jubilee, were opened recently. One end of the long (boys') room has been cut, and a girls' class-room, about 20 ft. square, constructed. An old lean-to building has been removed, and a class-room for boys, 24 ft. by 12 ft., provided, the old room used by the boys being converted into a cloak-room and lavatory. A new boys' entrance has been provided, and on the left of this is a room which can be divided by a screen. This is also about 20 ft. square. The architect was Mr. Frank Brown. The contractor was Mr. William Grayston.

ADDITIONS TO CARDIFF WORKHOUSE.—A new infants' block has been erected in connexion with Cardiff workhouse. The new premises will provide accommodation for thirty-eight infants. They were erected at a cost of 1,870*l.*, the contractor being Mr. Joseph Thomas, and the architect Mr. Seward.

CWMBRAN POLICE STATION.—A new police station and Court-house at Cwmbran have just been opened. The building has been erected from the designs of Mr. Tanner, Surveyor to the Monmouthshire County Council. It is of red brick, with white stone dressings.

A BRANCH SCHOOL OF ART, BIRMINGHAM.—An inquiry was held at the Council House, Birmingham, on the 11th inst., by Mr. H. P. Boulnois, one of the Inspectors of the Local Government Board, into an application made to the Board by the City Council for sanction to borrow 10,000*l.* for the provision of a branch school of art. The architect of the proposed building is Mr. W. H. Bidlake.

BUSINESS PREMISES, LINCOLN.—New bakery premises for Messrs. Whitton & Son have been erected in Lincoln. The architect of the premises is Mr. J. T. Drury, the contractor Mr. C. Robinson, both of Lincoln.

NEW BUILDINGS, DEANSGATE, MANCHESTER.—In Deansgate a plot of land, having streets on three sides, has recently been purchased for the erection of new buildings, partly by the City Missions Board and partly by the Manchester and Salford District Provident Society. The architect for the former and larger building is Mr. Lord, and for the latter Mr. Charles Heathcote. The architects have arranged, as far as rights of light will allow, to erect the two buildings in harmony, and intend using for each building granite base, stone ground floor and upper portions in terra-cotta.

HOTEL, OLD KENT-ROAD, S.E.—The new Thomas à Becket Hotel, in the Old Kent-road, is situated at the corner of Albany-road. The architect was Mr. Richard Willock, of Finsbury-pavement, and the builders were Messrs. Patman & Fotheringham, of Islington.

PRESBYTERIAN MANSE, MINTERBURN, BELFAST.—On the 12th inst. the foundation-stones were laid at Minterburn, County Tyrone, in connexion with the erection of a new Presbyterian manse. The contractor is Mr. Andrew M'Master, Belfast, and the architects are Messrs. Young & M'Kenzie, of Belfast.

BUILDING TRADE, PLYMOUTH.—The rapid growth in the number of houses in Plymouth during 1898 is again, says the *Western Morning News*, one of the most striking features in the year's history of the borough. The spread of bricks and mortar has gone on in every possible direction, and, taking a prospective view, the increase of dwellings during the ensuing twelve months, and for some time after that, seems likely to continue at the same high rate. Thus old landmarks and "country residences" are in all directions being swept away, and in a few years' time those who take an interest in the history of the borough will be reproaching the Municipal Authorities for not having, by the use of photography preserved some of the more interesting pictures of old Plymouth. With an estimated population of 99,883, against 98,349 at the end of December, 1897, the marvel still is—where are the people to come from to occupy all the houses which have been erected during 1898 and which are in course of erection ? The number built has averaged more than one house per day (excluding Sundays), or a total of about 330. This is a considerable advance on the numbers for previous years. Plans have been deposited in the Borough Surveyor's department for the development of a number of estates, and most of these have yet to be carried out. The majority of houses built during the year have been those whose rentals vary from 20*l.* to 30*l.* These are said to be the best-paying class of property in Plymouth. It is to be hoped that as these increase the number of instances in which houses built to accommodate only one family are occupied by two or more families will become less.

**BUILDING IN DEVONPORT.** — At no previous period in the history of Devonport has there been so much activity in the building trade as during the last twelve months. With better facilities than formerly prevailed for acquiring land from the manor authorities, houses have sprung up rapidly on the north-eastern frontier of the borough, as the boundary was defined before Devonport extended its borders by taking in portions of St. Budeaux and Pennycross, whilst in the added area building operations are equally in evidence. Within the borough as it existed prior to the Extension Order the number of houses erected and certified as fit for occupation during last year was 316, whilst within the same period plans were submitted for nearly 2,000 houses, mostly on the Keyham Barton estate, and in close proximity to the Royal Naval Barracks. Within the last few months the slopes of Ford Hill have commenced to wear an altered aspect by the formation of streets containing four and six-roomed houses which overlook the colony at Rocky Hill—known as the Dockyard Workmen's Dwellings. To the many private enterprises will shortly be added the municipal housing scheme in James-street, the back of Morice-square, and on a portion of the fifty acres just purchased at Weston Mill for a cemetery.

**EXTENSION OF THE CENTRAL HOTEL, DUBLIN.**—Quite recently some extensions have been carried out at the Central Hotel, Exchequer-street, Dublin. These additional buildings have become necessary owing to the demands on the hotel for commercial-travellers' stock show-rooms, and the new additions will be devoted to this purpose. The building occupies a situation at the junction of Exchequer-street and Dame-court, and has 117 ft. frontage along Dame-court. Both fronts are faced with Portmarnock red brick, having cut stone dressings. It is intended to connect it with the present hotel building by a subway under the road. It contains thirty stock-rooms, large and small. The upper floors are approached by wide, open stairs, having an electric lift fitted up in the central well space. The lift is a combined passenger and luggage lift, and has been erected by Messrs. R. Waygood & Co., of London. A telephone office and waiting-room are provided off the entrance hall. The basement story contains receiving rooms for goods, together with the machinery generating the power necessary for lighting the building and for hoisting goods and passengers. The electrical work has been carried out by Messrs. Egan & Tatlow. The contractors for the building work are Messrs. M. Meade & Son. The building was designed and its erection superintended by the Hotel Company's architect, Mr. W. M. Mitchell, R.H.A.

**NURSING HOME, ROMSEY, HANTS.**—H.R.H. Princess Beatrice formally opened, on the 11th inst., the Romsey Nursing Home, erected by means of public subscription as a memorial of her Majesty's Diamond Jubilee. The building has been erected in accordance with plans prepared by Mr. J. Jenvey, architect and surveyor, of Romsey, and the contract has been carried out by Messrs. Wheeler & Son, also of Romsey.

**EXTENSION OF THE LONGMORE HOSPITAL FOR INCURABLES, EDINBURGH.**—The extensive alterations and additions which have been in progress at the Longmore Hospital for Incurables, Edinburgh, are now completed, and the new wing has just been opened. The additions consist of a new wing, and, detached from the main building, a laundry and washing-house, mortuary, post-mortem room, and chapel. In connexion with these additions considerable alterations and rearrangement of the existing structure have been made. The new wing is of L-shape, with a frontage to Salisbury-place of 56 ft., in prolongation of that of the original building, and a frontage to the west of 130 ft. The new wing, two stories in height with a basement, is attached to the original building by a corridor of iron and glass, thereby placing it in close connexion with the kitchen and administrative department of the hospital. The ground floor is set apart for the reception of phthisical cases, there being a large ward for female patients to the south, and, at the west extremity, a corresponding ward for men. Each ward has, in a detached building, bath and lavatory accommodation, and the walls and floors are tiled. The entire capacity for beds is from 1,500 to 1,800 ft. On this floor there are also a ward kitchen and staff nurses' room. The connecting corridor separates the male and female wards, and passing across the building terminates in a covered porch, giving access to the garden. The basement floor, which is used for storage, is reached by a stair placed below a broad staircase to the upper story. The upper floor is laid out for the accommodation of cancer cases. There are two wards facing Salisbury-place for three and nine beds respectively, two wards for single beds, one ward for two beds, and one for six beds with bath-room and lavatory accommodation placed so as to be easily accessible. There are also a ward kitchen and staff nurse's room on this floor. The building is of fireproof construction, and the ward floors are laid with specially prepared teak wood. The wards are heated by steam radiators and open fireplaces. The considerable extension of the hospital involved a reconstruction of the kitchen department and the provision of additional rooms for the staff. The kitchen now measures 25 by 24 ft., and is ventilated and lighted from two sides. The kitchen store-room and larder walls are all tiled to the ceilings. Additional nurses' and servants' rooms are placed over the kitchen in rooms formerly occupied by patients, a bed-room and sitting-room being specially provided for any case of sickness in the nursing staff. The new washing-house and laundry are in a separate building, to which the boiler and engine house are attached. The whole building is constructed internally of white glazed brick, and in addition to the general washing-house and laundry, there is a separate washing-house and laundry for the staff. The whole building is now fitted with electric light, and an electrically-driven elevator has been installed for the conveyance of infirm patients to and from the upper floors. The drainage system has also been remodelled, iron pipes being everywhere substituted for fire-clay, formerly in use; and the main drains and connexions are placed in subways. The drainage subway has been utilised to give access to the mortuary buildings. These are placed at the Causewayside entrance to the hospital grounds, and consist of a post-mortem room, mortuary, chapel, and specimen room, with a dark-room for photographic purposes attached. The post-mortem room is equipped in the most modern fashion, and its walls, like those of the mortuary, are lined to the ceiling with glazed tiles. The alterations have been designed and carried out by Mr. J. M. Dick-Peddie, architect.—*Scotsman.*

**MORTUARY BUILDINGS, HAMMERSMITH.**—A new mortuary and coroner's offices for the parish of Hammersmith were opened recently. The site selected for the new buildings is about 100 ft. from the Fulham Palace-road, and faces a new road, 25 ft. wide, running along the west side of the land; the depth is 78 ft. 9 in., with a frontage to the new road of 70 ft. 6 in. The accommodation in the front block provides for the court, lobby and entrance, waiting-room, coroner's room, lavatories and closet accommodation on the ground floor, with caretaker's rooms above the waiting and coroner's room; there is a 10 ft. passage entrance and exit at each end, leading to the open yard 20 ft. wide. The mortuaries are on the east side of the open yard and consist of No. 1 ordinary mortuary, and No. 2 mortuary for infectious cases, separated by a lobby. Adjoining the No. 1 mortuary is the post-mortem room, and close by is the laboratory. A washhouse is situated at the north end of the block, and a shell-house and disinfecting-house at the other end. The buildings are constructed in stock bricks, with red bricks and Portland stone dressings. The general plan has been arranged to keep the various buildings separate, with sufficient air space between each. The coroner, jury, and witnesses, and other persons wishing to see the bodies, can do so from the viewing lobby. Mr. T. W. Thomas was the contractor for the whole of the work, except for the electric lighting and fittings, which was executed by Mr. T. L. Hellyar, of King-street. The contract, which included the fittings in the court, amounted to 3,743*l.* Mr. Alfred England has acted a clerk of works. Mr. Hugh Mair, the Vestry's Surveyor, was the architect of the buildings.

## *SANITARY AND ENGINEERING NEWS.*

**UPPER STOUR VALLEY DRAINAGE.**—A Local Government Board inquiry was held on the 10th inst. at the District Council Offices, Old Hill, Rowley Regis, into an application made by the Upper Stour Valley Drainage Board to obtain a loan of 16,785*l.* to defray the estimated cost of extending the main sewers and making increased provision for sewage disposal. The inquiry was conducted by Mr. H. P. Boulnois, and among those present were Messrs. Martin and Fiddian, joint engineers. It was explained that the Board were constructing drainage works in the parishes of Rowley Regis, Halesowen, Quarry Bank, and a portion of the Borough of Dudley, and in September, 1893, the Board applied to the Local Government Board for sanction to borrow 110,000*l.* to carry out an entire system of drainage, but sanction was granted to borrow 108,215*l.* only, a balance of 1,785*l.* being held over. The Board now found it necessary to extend the main sewers from Typsiford Bridge in the direction of Netherton, and also to erect suitable farm buildings at Whittington, and also cottages at Whittington, Tividale, and Cradley Pool. The engineers gave details of the entire scheme.

**STREET IMPROVEMENTS AT BLACKPOOL.**—At the Blackpool Town Hall, on the 10th inst., Colonel Luard, representing the Local Government Board, held an inquiry respecting an application made by the Corporation for power to borrow 6,132*l.* for works of street improvement. Mr. Wolstenholme is the Surveyor to the Corporation.

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**APPOINTMENT.**—Mr. G. Topham Forrest, architect, of the City Engineer's office, Leeds, has been appointed Assistant Architect under the County Surveyor, at the County Hall at Wakefield.

## *FOREIGN.*

**FRANCE.**—M. Morin Goustiaux has been appointed architect to the American section for the 1900 exhibition.——M. Chaplain has just completed the engraving of a medal in commemoration of the election of M. Faure as President of the Republic ——M. Formigé has completed his design for the monument to be erected in Père Lachaise Cemetery in memory of the victims of the Charity Bazaar fire. It will consist of a very simple pedestal surmounted by an architectural *motif* and bearing an inscription. ——A committee has been formed at Clermont for the erection of a statue to Vercingetorix.——The Municipal Council of Paris has decided that a portion of the Bois de Vincennes is to be occupied for various annexes to the 1900 Exhibition. Exhibitions of railway materials and of auto-cars will, among others, find place there.——M. Couturand has been appointed architect-in-chief of the Department of Pas-de-Calais.——The architects of the Department of Seine Inférieure have opened a subscription for the restoration of Rouen Cathedral.—— M. E. Humblot, who was one of the principal collaborators of Alphand and Belgrand, has died suddenly at the age of sixty-eight. He was Inspecteur-Général of the Department of "Ponts et Chaussées," and Director of the "Service des Eaux" of Paris. The ability which he showed when entrusted by Belgrand with the hydraulic survey of the Yonne Valley, pointed him out especially for the management of important city works in Paris; and since 1867 he directed all the operations of the derivation of water from the Dhuys, the Vanne, and the Avre, and also designed the large reservoirs and pumping stations and the system of supply mains for bringing the water to Paris. He also conducted the operations for procuring water from the Vigne and the Verneuil, which were to have been finished in 1900. M. Humblot's name will remain connected with the large operations undertaken during the last three years for the improved sanitation of Paris.——M. J. A. Walker, who had a reputation as a military painter, has died at the age of seventy. He was the author of some well-known pictures, such as the "Billet de Logement," "La Brèche," the "Lendemain de Bataille," and "En Batterie."

**THE MOORISH PALACE, MADRID.**—This interesting house, which stands on the Paseo del Prado, opposite the National Art Museum, is offered for sale. It was designed and planned by Viollet-le-Duc, as a copy, on a reduced scale, of the Alhambra. The house is surrounded by a garden; the whole property covers an area of about 41,000 ft. superficial.

## *MISCELLANEOUS.*

**PROFESSIONAL AND BUSINESS ANNOUNCEMENTS.**—Mr. S. A. Gillespie, land and estate agent and surveyor, has removed his offices (during rebuilding) from 45, Great Tower-street to 36, Great Tower-street, E.C.——Mr. J. H. Burton, architect, has removed from 2, Guide-lane to 150A, Stamford-street, Ashton-under-Lyne, and has taken into partnership his former manager and draughtsman, Mr. J. A. Percival. The style of the firm will be "J. H. Burton & J. A. Percival."—— Messrs. Vivian, Younger, & Bond, of 117, Leadenhall-street, have been appointed sole agents in London for the Warren Foundry and Machine Company, of Phillipsburg and New York.

**HEREFORD AND DISTRICT MASTER BUILDERS' ASSOCIATION.**—The second annual dinner in connexion with the Hereford and District Master Builders' Association took place at the Mitre Hotel, Hereford, on the 10th inst. Mr. W. P. Lewis (President) occupied the chair, and Councillor James Davies the vice-chair. Mr. John Davies, in proposing "The Mayor and Corporation of Hereford," suggested that the Artisans' Dwellings Act should be put into operation in the city. The Mayor (Councillor James) replying, said the Council hesitated from entering into any expenditure which was not absolutely necessary. They could not go into a speculation such as had been suggested at the expense of the ratepayers. It must be made to pay; and if it were possible for the Corporation to make it pay, it struck him that the builders themselves could make it pay better still as a private enterprise. Mr. Symonds (Cardiff) said that in reference to the relations between architects and builders, their relations in the past had not been altogether satisfactory; but in most cases now, he was glad to say, architects were guaranteeing their quantities. Mr. A. Krauss (Bristol) drew particular attention to the scarcity of plasterers. These men kept raising their terms, and the matter would have to be dealt with promptly. Among the other speakers were Mr. A. J. Corner, Mr. E. H. Lingen Barker, Mr. G. H. Goodsell, Mr. H. Easton, Mr. W. Bowers, Mr. J. Mitchell, Mr. L. Hodges, and Mr. L. D. Lewis.

**"THE LOCAL GOVERNMENT ANNUAL."**—This annual, "an official directory for 1899," is the eighth issue of an excellent and handy little work. It contains a great deal of useful and—as far as we have tested it—accurate information relating to Local Government in London and the country. The section dealing with statistics and points in relation to Local Government has been considerably enlarged, and it now forms an admirable encyclopædia of Local Government. The work is published at No. 2, Dorset-street, Fleet-street, E.C.

The Whitehall Improvements. — On the 12th inst., Mr. Robert Vigers, President of the Surveyors' Institution, sitting as sole arbitrator, heard the claim of Messrs. Meynell & Pemberton, solicitors, against her Majesty's Board of Works for compensation for their premises, 20, Whitehall-place, acquired under the Whitehall Sites Act, 1897. Mr. Freeman, Q.C., and Mr. W. Cope appeared for the claimants, and the Attorney-General (Sir Richard Webster, Q.C., M.P.) and Mr. Danckwerts represented the Crown. The premises proposed to be taken consist of No. 20, with a modern erection in the rear, formerly occupied as mews. In 1871 the late Mr. Meynell purchased the Crown lease of the premises for the remainder of a ninety-nine years' lease from 1820; and notice of the intention of the Board to take the house having been served in 1896, Mr. Meynell let the whole to his firm, at a rental of 1,000*l.* per annum for the remainder of his lease. The claimants now claimed 20,005*l.*, for the value of the lease and for compensation for damage and disturbance to their business. This claim included 14,000*l.* for disturbance, being two years' profits of the business. The connexion of the firm was entirely a family one, and, having been unable to get adequate offices in the neighbourhood, they had been compelled to take offices at 30, Old Queen-street, at 461*l.* per annum, on which they had expended in improvements 4,296*l.* Mr. G. H. B. Glasier, surveyor, gave evidence. For the disturbance and damage by removal he did not consider two years' profits excessive. Mr. Daniel Watney, surveyor, estimated the profit rental at 350*l.* per annum, Mr. E. H. Tewson at 400*l.*, and Mr. H. C. Trollope at 450*l.* On the part of the Crown, Mr. James Green, Mr. W. E. Horne, and Mr. W. H. Elwell, surveyors, stated that, in their opinion, the rack rental of the premises was 1,000*l.* per annum. In their view the only compensation due to the claimants was for removal, and fittings as might be agreed. The Arbitrator reserved his award.

The City Diary and Almanack for 1899.—This is the thirty-sixth year of publication of a well-known and useful little diary and almanack. Like previous issues it contains reliable information of special service to City men. It is published by Messrs. W. H. & L. Collingridge, Aldersgate-street, E.C.

Public Improvements, Handsworth. — The Urban District Council of Handsworth, requiring 41,862*l.* for necessary improvements in the district, have applied in the usual course to the Local Government Board for sanction to borrow the amount. Mr. Boulnois, M.Inst.C.E., from the Board, attended at the Council House, Handsworth, on the 12th inst., to receive evidence in the matter. The sum is required for the following purposes:—Sewerage, 17,500*l.*; destructor depot in Queen's Head-lane, 15,030*l.*; street improvements, 4,000*l.*; improvement of Victoria Park, 2,362*l.*; erection of a fire-station, 2,200*l.*; refuse destructor, 770*l.* Among those present were Messrs. E. Kenworthy (Surveyor) and H. Ward (Clerk to the Council). The Clerk explained that during the year ending December 31, 269 building plans and thirty-five street plans were submitted, of which 189 building plans and twenty-nine street plans were approved. These represented 933 houses and shops, one set of schools, seventy-one alterations and additions, and twenty-nine new streets.

Eel Pie Island, Twickenham.—The greater part of this property, together with the hotel and goodwill, was recently sold at auction for 4,700*l.* The island, which of late years has formed a highly popular place of resort, is about 6 acres in extent; the sale affected nearly 4 acres, freehold, whilst one of the remaining 2 acres is leased, at a ground rent of 5*l.* per annum, for a term that will expire in 1903. At the dispersal in last November, at Sotheby's, of the second portion of the late J. Holbert Wilson's "Old London" collection, was sold, for 23*l.* 10s., a view, with figures (ascribed to Rowlandson), of the "Old Eel-Pie House at Twickenham."

St. John's Hospital, High Wycombe.—We read that as fears are entertained lest the ruined walls of the hospital will speedily fall to pieces, the school governors are about to take steps for their preservation. The hospital, founded in 1175 for a master and poor brethren and sisters, was granted to the Corporation, who, by an agreement made on April 1, 1548, acquired the buildings, comprising the twelfth-century chapel and hall, for 30*l.*, on the condition that they would, within two years, establish the present school, which received letters patent dated July 21, 1562, from Queen Elizabeth. In 1869 the Charity Commissioners made a scheme for the future management of the school (wherein Waller had his education) and its endowments, with the almshouses on the Bowden bequest. In 1883 the school migrated to the adjacent buildings, erected after Mr. Arthur Vernon's plans and designs.

Trade Dinner.—On Wednesday evening last the staff of Jos. F. Ebner's, 150, Old-street, London, E.C., held their annual dinner at the Holborn Restaurant. The chair was taken by Mr. Jos. F. Ebner, and the evening was occupied with toasts, speeches, and music by the various members of the staff.

Exhibition of American Manufactures, &c., Philadelphia.—The Department of Science and Art has received, through the Foreign Office, a copy of an Act providing for a national exhibition of American products and manufactures, to be held at the city of Philadelphia this year, for the encouragement of the export trade.

Covent Garden Theatre.—On Wednesday the lease of the Covent Garden Opera House changed hands, inasmuch as the Grand Opera Syndicate, which has so far had a sub-tenancy, has taken over some fifty years remainder of the lease held direct from the Duke of Bedford. Ever since the presentation of "Niebelungen Ring" there have been complaints as to the lack of modern appliances at Covent Garden as far as the stage is concerned, and it is stated that the new owners are contemplating certain improvements, which should add much to the smooth working of the performances. If such improvements are taken in hand in such a practical manner as to distinctly meet the somewhat peculiar requirements of this establishment, they will no doubt be serviceable. If, on the other hand, the general transfer of a Continental stage to London is contemplated, the results may be unsatisfactory, for though some of the modern Continental stages may be ideally constructed pieces of intricate mechanism, they are not always sufficiently suitable to practical requirements. There have been cases, indeed, where whole installations have been thrown out by the management as being too complicated to meet specific requirements. As far as the front of the house at Covent Garden is concerned, little is to be said, though there is, of course, room for improvement in the accommodation for the stall-holders and the sighting from the boxes. As to the safety of the house, too, though considerable improvements have been made of late, there is still ample scope for more, and we have no doubt that now the syndicate has a free hand, the more modern requirements in these respects will be fully considered.

Society for the Encouragement of the Fine Arts.—The lecture on "Some Goldsmiths and their work" announced for April 13, will be by Mrs. P. H. Newman, not "Mr. P. H. Newman," as given in a former paragraph.

## *CAPITAL AND LABOUR.*

Newport Building Trades.—The federated building trades of Newport have notified the masters of their requirements on and after May 1 next. In October last the Newport Master Builders' Association gave the workmen six months' notice as to certain alterations in the agreement subsisting between them; and now the men, having federated all workers engaged in the building trades, have replied. The federation asks for an increased wage as follows:—Carpenters, plasterers, masons, and plumbers, 9d. per hour; mason fixers, 9¼d.; bricklayers, 8½d.; painters, 8d.; general labourers, 6d.; and scaffolders, drainers, and engine tenters, 6½d. per hour. The federation also demur to working with non-Unionists; hitherto society men and non-society men have worked amicably side by side. The masters require several alterations, some of which are the outcome of the prolonged strike of last spring and summer. The masters demur to the federation being able to call out their members by giving two hours' notice, and wish to obtain an extension of the conciliation idea, by which there shall be no suspension of labour pending the decision of the Conciliation Committee, which is composed jointly of masters and men. They also wish to enforce a schedule that the wages of the average skilled workman shall be 8d. per hour.—*South Wales Daily News.*

Bricklayers' Strike at Leigh, Lancashire.—The fifty bricklayers of Mr. Cowburn, contractor, Leigh, have gone on strike on a novel point. The rules state that walking time shall be paid whenever men are sent from one town to another to work. Two bricklayers living at Tyldesley were employed at Tyldesley, and were naturally not paid walking time from Leigh like the other bricklayers. Consequently, all Mr. Cowburn's bricklayers have struck, and thrown forty labourers out of employment.—*Liverpool Mercury.*

## *LEGAL.*

### ANCIENT LIGHT DISPUTE AT KNIGHTSBRIDGE.

In the Chancery Division of the High Court on Friday, the 13th inst., Mr. Neville, Q.C., moved before Mr. Justice Romer in the case of Austin *v.* Kellett. The plaintiff, Mr. Ambrose John Austin, sought an injunction restraining the defendant, Mr. Abraham Kellet, or his agents, from erecting on the site of the old premises called Middle Row, at the junction of Brompton-road with Knightsbridge (recently taken down), any building so as to darken or obstruct the ancient lights and windows of his premises, 35, Albert Gate.

Mr. Neville said the motion had been standing over for a considerable time upon the defendant undertaking not to raise his building in front of plaintiff's premises, and there had been a hope that the matter would be settled. Negotiations had been spun out, but nothing had resulted from them, and he was now instructed that the undertaking had not been observed, which, of course, was a very serious matter. He was asked particularly to press for an injunction that morning, but, inasmuch as the matter had been standing over so long he did not think that would be right, as his learned friend, who represented the defendant, ought to have time to put in his evidence, but he warned him that he should move for an injunction next motion day, and he should now ask that the undertaking should be continued.

Mr. Justice Romer: Oh, certainly.

Mr. Neville added that if the undertaking were broken he should move in respect of the breach as under the circumstances he thought the defendant should have been scrupulously careful to observe the undertaking.

Counsel for the defendant said this was the first he had heard of this breach of the undertaking.

The motion stood over until next motion day, the undertaking being continued.

### "BUILDINGS" AND THE WORKMEN'S COMPENSATION ACT, 1898.

The case of T. Mellor *v.* J. Tompkinson & Co. came before the Court of Appeal on the 14th inst., it being an appeal under the Workmen's Compensation Act of 1898 from a decision of the Liverpool County Court Judge.

Mr. Clavell Salter, who appeared for the defendants (the appellants), said that the plaintiff, on August 6, was at work at a wall in Vauxhall-road, Liverpool, when a piece of brick went into his eye, and subsequently the eye had to be removed. Four other men were at work on a derrick hauling a beam into position, and this hauling was the cause of the accident. The County Court Judge found that this was a "building" within the section, and that machinery was being used within the meaning of the Act, and these findings, the learned counsel submitted, were on the evidence wrong. Mechanical power did not comprise manual power, and the derrick was being worked by means of manual power at the time. The building was not 30 ft. high, and the use of a derrick, he submitted, was not an introduction of machinery such as made the section applicable to buildings of less height.

Without calling upon counsel for the plaintiff, their lordships dismissed the appeal with costs.

### A CORPORATION AND ITS PRIVATE ACT:

#### IMPORTANT CASE IN THE COURT OF APPEAL.

The case of Donaldson *v.* The Corporation of South Shields came before the Court of Appeal on the 12th inst., on the appeal of the defendants from an order of Mr. Justice North in the Chancery Division granting the plaintiff, upon motion, an interlocutory injunction restraining the defendants from further proceeding under a notice to treat which they had served to take, under their compulsory powers, property abutting upon the intended frontage of a street, called Fowler-street, which they were widening under their private Act of 1896. The question between the parties was whether the defendants were entitled to take, in addition to the land actually required for widening a street, land adjoining, and to resell it at a profit, and so recoup themselves part of the expense of carrying out the authorised street works. The defendants had given the plaintiff notice to take premises belonging to her which were delineated in the Parliamentary plans and described in the books of reference deposited in accordance with Standing Orders previously to bringing in the Bill which afterwards ripened into the Act of 1896. The property in question abutted on the line of frontage of Fowler-street as intended to be widened under the powers of the Act, but was in part outside the limits of deviation allowed for the widening of the street itself. Section 41 of the Act of 1896 ran as follows:—"The Corporation may enter upon, take, and use all or any part of the lands following shown on the deposited plans, and described in the deposited book of reference—that is to say (1) for the purpose of street works, the lands shown on the deposited plans in connexion therewith, and which they may require for the purposes thereof respectively."

The Corporation (the defendants) contended that under the words of this Section they were, on the authority of the case of Galloway *v.* the Corporation of London, entitled to take land outside the limits of deviation allowed for the actual widening of the street itself. Mr. Justice North, however, held upon the construction of Section 41 that the defendants were not entitled to take land outside the limits of deviation, or any land not required for the actual widened street. Hence the present appeal. By mutual consent it was agreed to treat the appeal as if it had been brought from a perpetual injunction granted at the trial of the action.

At the conclusion of the arguments of counsel, the Master of the Rolls, in giving judgment, said that the case was a very important one for the Corporation. The point their lordships had to decide was simply whether the Corporation had under their Act power to take land admittedly not required for the construction of a street, or what he might call engineering works, but simply for the purpose of reselling at a profit or otherwise dealing with it so as to reduce the cost of widening a street. The learned judge in the Court below held that the Corporation had no such power, and he (the Master of the Rolls) was unable to take a different view. A power to take land for what might be called financial purposes was certainly not to be found in that part of the Act which related to finance. He could not see how the language of Section 21 of the Act could be construed into meaning that land could be taken for a financial purpose, or that any inference to a similar effect could be drawn from the Act.

Lords Justices Rigby and Vaughan Williams concurred, and the appeal was dismissed, the injunction being made perpetual, and the costs of the action, including the costs of the appeal, given to the plaintiff.

Mr. Cripps, Q.C., and Mr. O. Leigh Clare were counsel for the Corporation; and Mr. Rawlins, Q.C., and Mr. Waggett for the plaintiff.

## ACTION BY GRANITE, CONCRETE PAVING, AND WOOD - BLOCK FLOORING SPECIALISTS.

THE case of Ward & Co. *v.* the *Western Mail*, Limited, came before Mr. Justice Wright, sitting without a jury in the Queen's Bench Division, on the 13th inst., the action being brought by the plaintiffs, specialists in granite, concrete paving, and wood-block flooring, of 15, Great George-street, Westminster, against the defendants, the proprietors of the *Western Mail*, for 113*l.* for work done and materials supplied at the defendants' premises in Cardiff.

It appeared that in 1896 the plaintiffs laid down some granite concrete paving and wood block flooring for the defendants, under a written contract which stipulated that they should do the work in a good and workmanlike manner, to the satisfaction of the defendants. The defendants, however, said that cracks and holes had appeared in the paving, and that many of the blocks in the flooring had come loose, and, so, being dissatisfied with the work, refused to pay. The plaintiffs, on the other hand, said that the defects which had, or might have appeared, were due to special circumstances in the premises, and not to bad workmanship, and denied that the defendants had any reasonable grounds for rescinding the contract.

Mr. Justice Wright, after hearing the evidence, in giving judgment, said that the plaintiffs must have known what the words "to the satisfaction of the defendants" in the contract implied, and that the defendants had acted reasonably in rejecting the flooring and paving altogether.

Judgment was therefore entered for the defendants with costs.

Mr. Witt, Q.C., and Mr. H. A. Forman, appeared for the plaintiffs; and Mr. A. T. Lawrence, Q.C., and Mr. W. E. Lloyd for the defendants.

## THE NEW BUILDINGS IN CLEMENT'S INN:

### ACTION BY THE OWNERS OF DANES INN —IMPORTANT CASE.

THE case of Lord Battersea and others *v.* the owners of Clement's Inn came before Mr. Justice Kekewich in the Chancery Division on the 13th inst. on a motion by the plaintiffs for an interim injunction to restrain the defendants until the trial of the action from building a wall on their property at the eastern side of Danes Inn, Strand, in such a manner as to interfere with the access of light to the plaintiffs' property in Danes Inn.

Mr. Renshaw, Q.C., who appeared with Mr. Wood for the plaintiffs, stated that the defendants had for some time past been erecting a very high block of buildings on their property overlooking Danes Inn, and this block of buildings was the subject of the present action. Negotiations between the owners of Clement's Inn and Danes Inn took place in 1887 and 1888, which resulted in an agreement dated July 30, 1888. Under that agreement it was stipulated that the defendants might pull down certain buildings on their ground which backed upon Danes Inn and also that the plaintiffs, the proprietors of Danes Inn, might increase the height of their buildings, there being certain reservations as to the heights to which the buildings should be carried, and the angles of building so as to facilitate access of light. The plaintiffs had not increased the heights of their buildings, but their case was that the defendants had exceeded the heights allowed under the agreement and had interfered with the plaintiffs' ancient lights. One ground of complaint was that after allowing the slope back of defendants' building for a certain height, it then rose abruptly instead of the sloping being continued. The defendants' contention, he (Counsel) understood, was that the agreement of 1888 only settled the height of the front wall. Trouble began early in the autumn, when the plaintiffs' solicitor wrote that the building of the north-western end of the Clement's Inn block greatly interfered with their clients' property, and diminished their light. The writ in the action was issued on October 29.

His Lordship: They had liberty to go up to a certain point, and if they have gone above that point your claim is not for breach of agreement, but for interference with access of light without sanction.

Mr. Renshaw: Just so, my lord. My rights at common law remain, qualified wherever it may be by the agreement.

Mr. Renshaw then read the plaintiffs' filed evidence, amongst which was the affidavit of Mr. Jas. Smith Cooper, an architect and surveyor, who said that he occupied offices in Danes Inn, and had been engaged respecting the plaintiffs' property since 1888. The block of buildings on the west side of the courtyard of Danes Inn, containing ground floor and three floors above, enjoyed uninterrupted access of light over the buildings in Clement's Inn, now pulled down, except so far as the ground floor and the first floor were partially obstructed. In his opinion, if the defendants' building was continued the plaintiffs' light would be obstructed and the value of their premises seriously diminished.

His Lordship (to Mr. Renshaw): What are you asking for?

Mr. Renshaw: I am only asking on this occasion to keep affairs *in statu quo* until the trial.

Mr. Bramwell Davies, Q.C. (appearing with Mr. Stewart Smith for the defendants), read the defendants' filed evidence. Mr. Chas. Bull, the contractor, said that he had known both the plaintiffs' and defendants' premises since 1883, and since 1883 had occupied premises in Clement's Inn. Before the new building was put up, the old buildings in Clement's Inn, now pulled down, were higher than those of Danes Inn. The agreement of 1888 did not refer to roofs or chimneys, and he understood it fixed the height of the wall, but not of the roof In his opinion the plaintiffs at no time prior to the pulling down of the old building had uninterrupted access of light, but a lesser angle than they now obtained, and he denied that they would be deprived of light previously enjoyed.

Mr. Slade, the defendants' architect, said that he had, when making the designs, most carefully considered the height and position of the surrounding property. He denied that there was any material diminution of light to plaintiffs' windows as they now existed. The agreement of 1888 did not provide for slopes to roofs.

His Lordship: My view of this agreement is that it gives the defendants liberty to move their old building and to erect a new building under the conditions agreed—nothing more nor less.

Mr. Davies said he agreed that, as far as anything else was concerned, the parties were governed by their ordinary rights, but his contention was that there was a deduction to be drawn from the agreement. The owners of Danes Inn obtained power to increase the height of their building under this agreement. Was he (counsel) not then entitled to say that his lordship should, in deciding on what the defendants had done, take into consideration the fact that if Danes Inn were carried up, as the plaintiffs had power to do, there would be no question of the Clement's Inn building obstructing the lights as now complained of?

His Lordship: You want to treat an option as an obligation?

Mr. Davies: I want to treat as done that which they have power to do. I say that is the intention of the parties. They complain of several things at the present time. First, about their skylight windows. There is no obstruction whatever to these, except at a point on the north. The skylights were formerly in a well, and we have now given them a larger well. They have still their angle of 45 deg. which they had before. I understand your lordship does not take into consideration any windows they might put in if they chose under the agreement?

His Lordship: Those would not be ancient lights, but new lights.

Mr. Davies, continuing, said that the graver portion of the plaintiff's case was that affecting the windows on the west side of Danes Inn. They had their angle of 45 deg., and the defendants must, he submitted, be entitled to put some chimneys on their roofs. In conclusion he submitted that in view of the distance at which the Clement's Inn and Danes Inn property stood apart, there was not sufficient evidence to show that there was material interference with the plaintiffs' light, or that there would be such interference when the building was completed.

His lordship, in giving judgment, said that the ingenuity of surveyors, and, perhaps, their legal advisers, had been largely expended in confusing a perfectly plain issue. That was this: Had the defendants, by such part of their new building as went beyond the lines sanctioned by the agreement of July 30, 1888, interfered, or would they interfere when their building was completed, substantially with the access of light to the plaintiffs' building? The defendants had introduced a practically idle contention, which was that something else might or would happen if the plaintiffs hereafter exercised their option given to them by the agreement to raise their building. The plaintiffs had not exercised that option, and there was not a word in this case to show that the relative rights of the parties were in any way changed by the option. The construction of the agreement was plain. It provided for a new building under certain conditions, but there was no prohibition one way or the other. It was perfectly plain that the defendants were to be at liberty to build as provided by the agreement without justifying any complaint on the part of the present plaintiffs; leaving them otherwise free as to their actions subject to an interference by the law if they chose to overstep it. It was said that the parties must have contemplated that a certain number of chimneys were bound to be erected, but he was not bound to say that they contemplated chimneys being erected so as to interferfere with the access of light or otherwise create a nuisance. Now as to what the defendants had done by this particular wall: would it affect the light of Danes Inn when the defendants' buildings were completed? Here was a new building of enormous height in the place of a dwarf building, and it was quite impossible, to his lordship's mind, to say that that enormous building would not interfere with the access of light to houses on the other side of Danes Inn. Therefore he thought that an injunction must necessarily go to restrain, not a breach of the agreement, because he did not think that the agreement had been broken, but an interference with the light under the ordinary law.

Mr. Renshaw suggested that the form of the injunction had better be to restrain the defendants from building, or erecting any building or erection, so as to darken or obstruct the light to windows of Nos. 2, 3, 4 and 5, Danes Inn, and which such windows enjoyed prior to the pulling down of the tenements in Clement's Inn, upon which the present building was being erected, except so far as the defendants were authorised to build to the heights and angles shown in the plans under the agreement of 1888.

His Lordship: Very well. I do not think we need refer to the models. The agreement is sufficient.

## UNFASTENED PUTLOGS.

AT Marylebone County Court last Friday, before His Honour, Judge Stonor and jury, Henry Cissell, a bricklayer's labourer, of Notting Hill, sought to recover from Messrs. George Godson & Sons, builders and contractors, of Pembroke Works, Kilburn-lane, London, W., damages, under the Employers' Liability Act, for personal injuries sustained, by reason of a defect in the condition of the plant connected with the defendants' business.

The plaintiff's case was as follows. He commenced to work for the defendants in May last, and on June 8 was engaged in attaching pails of mortar to a pulley at the Temple of Varieties, Hammersmith. Immediately after one of the pails had been hauled up, a heavy weight fell upon his head, knocking him to the ground. He next found himself in the West London Hospital. He received his orders from the general foreman on the job. As the pail went up he did not notice that it oscillated.

The Judge: When did you start work again after the accident?

The Plaintiff: About November 11, but I feel the effects of the accident still.

Richard Steedy, another labourer, stated that he saw the pail which was being hauled up catch against a putlog which was not properly fastened, and it fell, striking the plaintiff on the head.

The Judge: I do not think that there can be any defence to this action. The only question seems to be that concerning the damages.

No witnesses were called for the defence.

The jury returned a verdict in favour of the plaintiff, assessing the damages at 65*l.* Costs were allowed.

## MEETINGS.

### FRIDAY, JANUARY 20.

*Architectural Association.*—Illustrated lantern lecture by Mr. Beresford Pite, "Ancient and Modern Buildings in Palestine." 7.30 p.m.

*Incorporated Association of Municipal and County Engineers.*—Metropolitan meeting (to be held at the Institution of Civil Engineers' premises). Mr. E. P. Hooley will read a paper entitled "Notes on the Locomotives Act, 1898," and Mr. George Livingstone one entitled "An English Municipal Engineer's Visit to America." 7.30 p.m.

*Royal Institution.* — Professor Dewar on "Liquid Hydrogen." 9 p.m.

*Glasgow and West of Scotland Technical College (Architectural Craftsman's Society).*—Mr. Peter Fyfe on "The Housing of the Labouring Classes." 8 p.m.

### SATURDAY, JANUARY 21.

*Institution of Junior Engineers.*—Visit to Streatham Hill Depot of the Brixton Cable Tramway. 3.30 p.m.

### MONDAY, JANUARY 23.

*Royal Institute of British Architects.*—(1) Address to Students by the President, Professor Aitchison, R.A.; (2) Presentation of Prizes. 8 p.m.

*Surveyors' Institution.*—Mr. Edward Boyle, Q.C., on "The Rating of Collieries." 8 p.m.

*Society of Arts (Cantor Lectures).*—Dr. Samuel Rideal on "Bacterial Purification of Sewage." II. 8 p.m.

*Liverpool Architectural Society.*—Mr. Robert Hilton on "Enamels," with demonstration. 6 p.m.

*Leeds and Yorkshire Architectural Society.*—Mr. H. M. Fletcher, M.A., on "A Summer in Umbria." Illustrated. 6.30 p.m.

### TUESDAY, JANUARY 24.

*Institution of Civil Engineers.*—Papers to be further discussed:—1. "The Effects of Wear upon Steel Rails," by Mr. William G. Kirkaldy, A.M.Inst.C.E. 2. "On the Microphotography of Steel Rails," by Sir William Roberts-Austen. 8 p.m.

# COMPETITIONS, CONTRACTS, AND PUBLIC APPOINTMENTS.

## COMPETITIONS.

| Nature of Work. | By whom Advertised. | Premiums. | Designs to be delivered. |
|---|---|---|---|
| *Refuse Destructor | Tottenham U.D.C. | 25l.; 15l.; 10l. | Feb. 7 |
| *School Buildings | Beverley GrammarSch. | 25l. and 10l. | Mar. 4 |
| *Memorial Hall and Art Gallery | Bradford Corp. | 150l.: 100l.; 50l. | April 14 |

## CONTRACTS.

| Nature of Work or Materials. | By whom Required. | Forms of Tender, &c. Supplied by | Tenders to be delivered. |
|---|---|---|---|
| *Widening Road, &c | Beckenham U.D.C. | J.A. Angell, Council Offices, Beckenham | Jan. 23 |
| *Thames Ballast and Sand | Hackney Vestry | J. Lovegrove, Town Hall, Hackney, N.E. | Jan. 25 |
| *Hospital | ........ | A. Waterhouse&Son, 20, New Cavendish-st. W. | do. |
| Station, Wingate, Durham | N. E. Ry. Co. | W. Bell, Archt. Central Station, Newcastle-on-Tyne | do. |
| Cottages, Manstone | Isle of Thanet Union | L. Grant, Archt. High-st. Sittingbourne | do. |
| Boiler House, &c. | Cranbrook (Kent) Union | T. H. Crampton, Cranbrook | do. |
| Additions, Persie Manse, Blairgowrie, N.B. | | L. & J. Falconer, Archt. Blairgowrie | do. |
| Boundary Walls, &c. Upper Witton | Aston Manor U.D.C. | H. Richardson, C E. Council Offices | do |
| *Road Making and Paving Works | Fulham Vestry | C. Botterill, Town Hall, Walham Green | do. |
| *Asphalting Carriageways | do. | do. | do. |
| Public Baths | Glasgow Corp. | J. Lindsay, City-chambers, Glasgow | Jan. 26 |
| Additions to Farm, Garvock, N.B. | ........ | Scott & Gardner, Stonehaven, N.B | do. |
| Road Works | Withington (Lancs.) U.D.C. | A. H. Mountain, C.E. Town Hall | do. |
| Science Buildings, North Eastern Counties School, Barnard Castle | ... | Clark & Moscrop, Archt. Darlington | do. |
| Street Works | Middlesbrough Corp. | F. Baker, C.E. Municipal-bldgs. Middlesbrough | do. |
| *Carting-away Slop and Sweepings | St. Marylebone Vestry | The Clerk, Court House, St. Marylebone, W. | do. |
| *Street Watering | do. | do. | do. |
| Infirmary and Workhouse Additions | Bakewell Union | E. M. Longsdon, Archt. Town Hall | Jan. 28 |
| Four Houses, Richmond-place, Ilkley | ........ | E. B. Johnson, Archt. Ilkley | do. |
| Technical Institute, Old Trafford, Manchester | Stretford U.D.C. | J. Bowden, 14, Ridgefield, Manchester | do. |
| Sewer, Minnie Dale | Surbiton U.D.C. | S. Mather, C.E. Victoria-road, Surbiton | do. |
| *Sewering and Road Making | Hornsey U.D.C. | E. J. Lovegrove, Offices, Southwood-lane, Highgate, N. | Jan. 30 |
| Sewer, Asylum-lane, Dunston | Whickham U.D.C. | J. P. Spencer, C E. 13, Grainger-street West, Newcastle | do. |
| Pair Villas, Manor Heath-road, Halifax | .. | A. G Dalzell, Archt. 15, Commercial-st. Halifax | do |
| Building Work, &c. | Granton (N.B.) Gas Commrs. | W. R. Herring, Engr. Gas Works, Edinburgh | do. |
| Additions to Workhouse | Northallerton Union | Fairbank & Son, C.E. 13, Lendal, York | Jan. 31 |
| Extension of Electric Lighting Station, Eldon-road | Cardiff Corp. | W. Harpur, C.E. Town Hall | do. |
| *Road Making and Paving Works, Ellerdale-street | Lewisham B. of W. | Surveyor's Dept. Town Hall, Catford | do. |
| *Road Making and Paving Works Aitken and Barmeston-roads | do. | do. | do. |
| Road Materials | St. Thomas (Exeter) R.D.C. | J. Bray, Surv. Alphington | Feb. 1 |
| Street Works, Helena-street | Mexborough (Yorks.) U.D.C. | G. F. Carter, C.E. Council Offices | do. |
| School, Balliol-road | Bootle (Lancs.) Corp. | E. Reid, Surv. 7, Westminster-chmbrs. Liverpool | do. |

## CONTRACTS—*Continued.*

| Nature of Work or Materials. | By whom Required. | Forms of Tender, &c. Supplied by | Tenders to be delivered. |
|---|---|---|---|
| Stores Extension, Hammerton-street, Burnley | Equitable Indus. & Co-op. Soc. Ltd. | T. Bell, Archt. 14, Grimshawe-st. Burnley | Feb. 1 |
| *Technical School | Bootle Corp. | J. H. Farmer, Town Clerk, Bootle | do. |
| *Paving Dinsdale-road and Glenforth-street | Greenwich B. of W. | Board's Offices, 141, Greenwich-rd. Greenwich | do. |
| *Yorkshire Stone | do. | do. | do. |
| *Jarrah Wood Paving | Hampstead Vestry | Surveyor, Vestry Hall | Feb. 2 |
| Sewers | Llandudno U.D.C. | E. P. Stephenson, Engr. Church Walks, Llandudno | do. |
| Stabling, &c. Grove Brewery, Luddenden Foot, Yorks | ........ | J. F. Walsh, Archt. L. & Y. Bank-chambers, Halifax | Feb. 3 |
| Two Bridges, Hope Beck, Brackenthwaite | Cockermouth R.D.C. | J. B. Wilson, C.E. Court-buildings, Cockermouth | do. |
| Rebuilding Allen's Arms Inn, Mountain Ash, Glam. | G. Kenshole | G. Kenshole, Duffryn House, Ystrad Mynach | do. |
| *Broken Granite | Norfolk C.C. | The Clerk, Shirehall, Norwich | Feb. 4 |
| *Works and Materials (various) | St. Marylebone Vestry | The Clerk, Court House, St. Marylebone, W. | do. |
| *Broken Stone, Footway Kerb, and Yorkshire and Other Footway Paving | do. | do. | do. |
| Additions to Spital Tongues School | Newcastle-on-Tyne Sch. Bd. | W. L. Newcombe, C.E. 89, Pilgrim-st. Newcastle | Feb. 6 |
| Additions to Schools | Normanton (Derby) Sch Bd. | Naylor & Sale, Archt. Irongate, Derby | do. |
| Additions to Public Baths, Cookridge-street | Leeds Corp. | Hanstock & Son, Archt. Branch-rd. Batley | do. |
| Extensions to Chapel, Benllech, Anglesey | .. .. | J. Owen, Archt. Menai Bridge | do. |
| *Various Materials | Newington Vestry | L. J. Denham, Vestry Hall Walworth, S.E. | do. |
| *Services and Materials (various) | Lambeth Vestry | H. Edwards, Vestry Hall, Kennington, S E. | Feb. 9 |
| *5½ miles of Aqueduct | Birmingham Corp. | J. Mansergh, 5, Victoria-st. S.W. | Feb. 10 |
| Drainage Works | Cirencester U.D.C. | T. Hibbert, Sur. Cirencester | Feb. 14 |
| Church Works, St. George's Church, Leeds | ........ | H. Walker, Archt. 8, Upper Fountaine-st. Leeds | do. |
| *School, West Hampstead | Asker Haberdashers' Sch. | H. Stock, 9, Denham-st. London Bridge, S.E. | No date |
| *Alterations to School | Stone Sch. Bd. | F. W. Kirby, Galley Hill, Greenhithe | do. |
| School, Burton-rd. Hunslet | Leeds Sch. Bd. | J. M. Bottomley, Archt. Bank-chambers, Park-row, Leeds | do. |
| Institute, Sleeton, Yorks | ........ | Judson & Moore, Archt. Keighley | do. |
| Bank Premises, Witham, Hull | ........ | Brodrick & Co. Archt. 77, Lowgate, Hull | do. |
| Additions to Institute, Albion-st. Hull | ...... | do. | do. |
| Business Premises, Chapel-lane, Hull | Todd & Wardell | do. | do. |
| Alterations to Shops, Middlesbrough | W. Martin | R. Moore, 27, Albert-road, Middlesbrough | do. |
| Warehouse, &c. Curzon-rd. Morecambe | ........ | Rayner & Sager, Alfred-st. Blackpool | do. |
| Pair Villas, Ashton-under-Lyne | ........ | George & Son, Archt. Old-sq. Ashton-under-Lyne | do. |
| Extension of Lowther Arcade, Harrogate | ........ | G. E. Bolshaw, Archt. 189, Lord-street, Southport | do. |

## PUBLIC APPOINTMENTS.

| Nature of Appointment. | By whom Advertised. | Salary. | Application to be in. |
|---|---|---|---|
| *Architectural Assistant | Norwich Corp. | ........ | Jan. 25 |
| *Surveyor of Highways | East Stow R.D.C. | 120l. per annum | do. |
| *General Foreman | Battersea Vestry | 5l. per week | do. |
| *Clerk of Works | Bristol Docks | 3l. to 3l. 10s. per week | Jan. 26 |

*Those marked with an asterisk (*) are advertised in this Number. Competitions, p.* iv. *Contracts, pp.* iv. vi. viii. & x. *Public Appointments, pp.* xviii. xix. & xxi.

*Northampton Institute, Clerkenwell.*—Lectures on Mediæval Architecture, by Mr. Francis Bond, M.A. III.—"Architecture and Ritual." 7.45 p.m.

WEDNESDAY, JANUARY 25.

*Liverpool Engineering Society.*—Mr. Oswald W. Young on "Observations on the Rating of Machinery." 8 p.m.

*Northern Architectural Association.*—Mr. Frank Baker on "Monumental Brasses." 7.30 p.m.

THURSDAY, JANUARY 26.

*Society of Antiquaries.*—8.30 p.m.

*Institution of Electrical Engineers.*—(1). "Rules for the Regulation of the Wiring of Premises for Connexion to Public Supply Mains," by Mr. J. Figg. (2). "The Regulation of Wiring Rules," by Mr. C. H. Wordingham. (3). "The Institution Wiring Rules," by Mr. R. E. Crompton, Past President. 8 p.m.

FRIDAY, JANUARY 27.

*Institution of Junior Engineers.* — Professor J. A. Ewing, F.R.S., on "Measurements of Elasticity" (at the Westminster Palace Hotel). 8 p.m.

*Institution of Civil Engineers (Students Meeting).*—Mr. F. C. Grimley on "King's Lynn Water Works." 8 p.m.

SATURDAY, JANUARY 28.

*St. Paul's Ecclesiological Society.* — The Annual Meeting (at the Chapter House). 2.30 p.m.

*Institution of Junior Engineers.*—Anniversary Dinner (at the Westminster Palace Hotel). 7 p.m.

◆

## RECENT PATENTS:

### ABSTRACTS OF ACCEPTED SPECIFICATIONS.

### *Open to Opposition until February 28.*

[1897]. 30,798.—PAVEMENTS, FLOORS, STAIRS, &C.: *W. A. Dellagana and Major W. H. Hand.*—A retaining plate or layer, resting on the bed or floor, engages blocks or sections that project above the plate, the blocks being fashioned so that they can be readily withdrawn. In order that the pavement or tread may be practically noiseless, indiarubber or other cushioning material may be placed between the bed and the blocks, or between adjacent blocks and contiguous portions of the retaining plate.

[1898]. 399.—GULLY TRAPS OR CESSPOOLS: *J. Hutchison.*—The invention is designed mainly to so construct the cesspool with its combined trapping arrangement that nearly the whole of the cesspool's interior is utilised for collecting sedimentary matter. To that end the box, or other cesspool, is made with a round or square section, and with a water trapping or sealing device on its outside. The trap's inlet end is formed under the channel on the lip of the cesspool, and the outlet has a spigot end for the faucet end of an adjoining drain-pipe, the combined device, its hoods and cover excepted, being made as one solid piece. The cover has a small aperture over the syphon inlet fitted with a removable metal plate, and a larger aperture fitted with a grating, through which the surface water flows over the hood and into the cesspool. The overflow from the cesspool passes over the projecting lip or tongue of the outflow channel, and thence into the syphon and drain.

891.—GENERATORS AND LAMPS FOR ACETYLENE GAS: *S. T. Richardson and R. Price.*—The claims comprise the combination of a water-vessel and a generating-vessel connected at their lower parts by a pipe, fitted with a stop-cock, and at their upper parts by another pipe also fitted with a stop-cock and having a gas outlet pipe to the burner, the parts being so arranged that the act of closing the stop-cocks simultaneously shuts off the supply of water to the generating vessel and the supply of gas from the generating vessel to the burner.

2,085.—CONTRIVANCE TO RENDER WINDOWS DRAUGHT-PROOF: *H. M. Hufeland.*—The device consists of a small wheel or roller, having an elastic periphery, which is fixed on the stop-bead of the window frame by means of a screw, the periphery presses against the sash stile, and keeps it firmly against the parting bead.

2,153.—VENTILATORS FOR DRAIN TRAPS, &C.: *J. Hutchison.*—In order to dispense with a separate ventilating branch, and to provide a ventilator which can be fitted in or on the ordinary access branch of the trap, the inventor forms the ventilator in the shape of a round box enclosing a second box or pipe, at the bottom of the outer box is an outer flange to form a sole or base, and at the bottom of the inner box is an inner fillet to support the seal or stopper; the two shells are united at the bottom by ribs and at the top by a flat flange on whose upper surface a raised rim serves as a socket for the perforated cover plate; around the socket are apertures for cleaning purposes, and a little below the socket, in the inner shell, are ventilating apertures; when fixing the ventilator in position the workman has simply to adjust the pipe or pipes that form the trap's air-shaft so that the ventilator shall be at the proper elevation for receiving the perforated surface-cover, when the ventilator is fitted in position the air current from the surface is made to pass through the outer annular cavity and into the shaft below the stopper.

2,485.—IMPROVEMENT IN ELECTRICAL ARC LAMPS: *C. Oliver.*—To a movable part of the regulating mechanism, for example, towards one end of a transverse bar pivotted between a shunt and a series solenoid and carrying cores working therein, is attached a cord, or chain, whose other end is attached to the carbon or carbon holder or carbon holder rod, so as not to limit the full run thereof, and so that the weight of the cord or chain may be borne gradually from the carbon to the regulating mechanism, or *vice versa*, and also so that the increased or diminished weight upon the mechanism shall compensate for the different positions of the cores in their solenoids, and thus keep the arc burning uniformly throughout the length of the carbons.

2,896.—MANUFACTURE OF PORTLAND CEMENT: *E. H. Hurry and H. J. Seaman.*—The invention includes the feeding and preparation of the material, its feed to the furnace, the roasting of the material to form the clinker, the crushing, feeding, and cooling of the clinker, its final grinding and packing for shipment, all the processes being adapted for an automatical and continuous operation without the necessity of handling by attendants.

3,237.—TIPPING TANKS FOR WATER-CLOSETS: *W. J. Duckett & Son, A. Duckett, F. S. Button, C.E., and J. W. Bullock.*—The invention relates to the construction of rubber buffers placed at the back of the tipper-box, and is devised to make the fittings more durable and less expensive; instead of being fixed on their rods or axles, the buffers are loosely mounted thereon in such a manner that, as the tipper tilts, a small projection thereon bears slightly against the rubber buffer and causes it to revolve somewhat before the tipper is finally stopped by the lip near the bottom, whereby the sudden rebound and shock of the tipper is lessened, noise is diminished, and the parts are exposed to less wear and tear.

3,582.—CHURNING WHITE LEAD AND OIL INTO A PASTY CONDITION: *Professor G. Bischof.*—The apparatus consists of a vat, through whose cover passes a rod on which are fixed two or more beaters, whose upper sides are bevelled; a crank or eccentric on an overhead revolving shaft effects the vertical reciprocation of the rod and its beaters, whilst oil is gradually introduced into the vat. After a time the oil and white lead become compounded into a paste that settles at the bottom, leaving the separated liquor clear above. The liquid is drawn off, the paste is removed through a lateral hole near the bottom of the vat, and can be freed from liquid or water by pressure or otherwise.

4,234.—SEWER VENTILATION AND AËRATION: *F. G. S. Ham.*—To the cover in general use having ventilation openings is fitted a dirt box, suspended from the frame of the cover and made to fit on the flange on the frame, so that no sewer gas can pass. One end of a vertical pipe carried through the bottom of the box extends to a point near the cover's underside, a check-valve, hinged to the underside of the bottom of the box, has a lever and balance-weight. When the box is fitted under a sewer ventilating cover it will allow fresh air to enter the sewer and will prevent the escape of sewer air from the fact (according to the claim) that the check-valve opens only when the down-draught is sufficient to press open the valve.

4,709.—IMPREGNATION OF WOOD WITH FIRE-PROOFING, WATER-PROOFING, PRESERVING, AND COLOURING MATERIALS: *Lieutenant H. V. Simpson, R.N.*—The wood is enclosed in an air-tight receiver and submitted to the action of steam, then the receiver is exhausted by means of an air-pump and the impregnating solution is run into the receiver; for non-hygroscopical and anti-corrosive solutions the claim extends to the adoption of sulphate and phosphate of ammonia and zinc with or without liquid ammonia, and with or without lime, whilst, to guard against undue absorption of moisture, the zinc may be replaced with copper or with a combination of zinc and copper with enough ammonia to dissolve it so as to form a hydroxide of cupra-ammonia or of cupra-zinc ammonia.

5,660.—DRAIN HOLES AND GRATINGS OF SINKS, DRAINS, &c.: *G. Hyde.*—For making a water-tight joint, and to provide for the joint being cleaned from the inside, and for the locking of the grating in its recess, the inventor prolongs the drain hole to form a dependent ring below the bottom of the vessel, around that ring he forms another dependent ring, the two supplying a concentrical cavity for receiving the end of the soil or other pipe, and the outer ring acting as a collar for the cement of the joint; at the top of the drain hole are cut downward slots to communicate with semi-circular grooves around the hole, through the slots and into the grooves engage L-shaped lugs on the grating's underside, which when the grating is turned, say, through 45 deg., lock it in position in its recess formed around the top of the drain hole, after the type of the well-known bayonet joint.

6,452.—BRICKS, TILES, SLABS, OR BLOCKS, FOR USE IN THE CONSTRUCTION OF FLOORS, ROOFS, VAULTS, &c.: *C. Weyler.*—Instead of using metal insertions of new materials in varying forms, and comparatively expensive, are adopted stamped waste sheet metal such, for instance, as is formed in stamping out discs for making electrical or other signal bells; for the use of these is claimed the additional advantage of allowing the substance of the brick or slab, when it is being cast or moulded, to pass freely through the holes stamped in the metal insertion, and of acting (when cast standing up on edge in blocks) as though they were latticed girders connected, the one with another, by ties, &c.

7,418.—TREATING LEVIGATED SLATE FOR THE MANUFACTURE OF CHIMNEY PIECES AND OTHER SLATE GOODS: *H. Miller.*—The ground slate is mixed with a resinous compound and then heated and pressed into moulds, hardened, and fired.

20,005.—DIES FOR MANUFACTURING SANITARY PIPES WITH TAPER ENDS: *J. Staley & J. Parker.*—The claim is for the employment of a taper bottom centre and taper mould-box or outside die in segments which are hinged to the table in conjunction with a clamp fixed to the underside of the die plate.

21,860.—FIREPROOF FLOORS, CEILINGS, OR SIMILAR SURFACES: *P. Vanhauten, L. Plumen, & M. Noppeney.*—The floor, or similar surface, is composed of hollow tile-shaped plates, or has several hollow spaces of any cross-section, placed between the joists, the upper snrfaces of the plates being arched or sloped downwards from the centre towards the sides and the lower surface flat, whilst the upper surfaces are, preferably, provided with grooves lengthwise.

23,049.—MEANS FOR ATTACHING SASH-LINES TO WINDOW-SASHES: *E. Beckton.*—A casting or stamping is let into the sash, and fixed by ordinary wood-screws, and a knot is tied on the end of the sash-line which can be slipped in, and out of, the casting, which is ⊔-shaped in section.

### NEW APPLICATIONS.

*January 1—7.*

2, J. S. Highfield, Connecting Electrical Mains. 8, Vaughan & Foster, Electrical Reversing Switch with Liquid Resistance. 12-3, Dorothy M. Crawford-Moore, Dust and Refuse-cart Coverings, and Sliding Window-sashes and Frames. 14, J. Anderson, Control of Ball-taps in cisterns. 15, S. J. Woodhouse, Paving-blocks. 18, T. G. Aitken, Open and Close Ranges. 42, E. Forbes, Gas-check. 49, M. Wolff, Drying Bricks, Earthenware, &c. 51, T. H. White, Cowls. 52, Gundrys, Weighing-machine Register and Totalling Apparatus. 56, C. A. Richardson, Sanitary Paints, Varnishes, Enamels, &c. 63, A. M. Plaissetty, Incandescent Mantles, Filaments, &c. 71, H. Schuppmann, and 194, J. A. Schädlich, Stoves. 73, W. J. Williams, Blow-pipes. 76, Erie Safety Window Co., Window Frames and Sashes. 85, M. J. Adams, Fireplaces. 86, W. Bobbett, Tool Handles. 89, J. E. Preston, Ball-tap for Cisterns, &c. 92, J. Weeks, Hydraulic Jacks. 96, Andersens, Supports for Electrical Conductors. 97, W. F. Goreham, Flushing-tanks. 103, Dussourt & Légé, Saws for Cutting Marble, Slate, Stone, &c. 107, F. Kirk, "Artificial Stone in situ." 108, J. H. Noad, Electricity Meters. 118, G. Wise, Lamps or Stoves for Plumbers, &c. 137, M. Rothenbücher, Paper Adjuster and Guard for use by Draughtsmen and others. 140, J. Rockefeller, Adjustable Saw-tables. 141, Marie L. Guerrier-Morel, and 203, F. H. Smith, Acetylene gas generators. 143, F. Prestidge, and 205, F. H. Smith, Acetylene Lamps. 155 and 293, A. E. Baines, Sealing Enclosed Arc Lamps, and Electrical Re-action Coils. 157, Cordes & Daniel, Water-Meter. 159, J. Wade, Domestic Fire-ranges. 164, W. Parker & Co., Circular Saw-Guard. 165, Briscoe & Jones, Electrical Cord Grip Lamp Holder. 166, F. Ryley, Fire Grates with Hot-air Chamber or Pipes. 172, T. C. Fawcett, Presses for Sand Faced and other Bricks. 176, W. W. J. Nicol, Cutting Mitre and other Angle Joints. 186, Madeleine Robert, Composition for Cleaning Marble, Statuary, &c. 196, G. Ree, Fettling and Ornamenting Ridge Tiles. 200, G. Thomas-Davies, Arc Lamps. 215, R. Bryson, Paint and Varnish Remover. 218, J. Mülenthaler, Safety Plugs for Electrical Installations. 227, J Taylor, Knob and Spindle Attachments. 242, Pettit & Rettich, Glue-pots, &c. 245, Williams & Walford, Radiator for Hospitals, Infirmaries, &c. 252, J. T. Lister, Means for Uniting the Filament and Leading-in Wires of an Incandescent Electrical Lamp. 253, E. J. Dolan, Gas-burners, 264, R. L. Doran, Incandescence Vapour Lamps. 274, W. P. Thompson, Articles of Pressed Wood, &c. 315, Oxley & Howe, Venetian and Similar Blind Foldings. 324, Guillaume J. C. M., Baron de Liebhaber, Removal of Rust from Iron. 325, W. English, Outdoor Seats. 331, J. Tourtel, Seal Locks. 334, Rigby & Taylor, Automatically Closing, Opening, and Fastening the Doors of Hoists, Lifts, &c. 341, Elizabeth Rowland, Combined Heating, Cooking, and Ventilating Stove or Fire-place. 345, H. V. Simpson and Others, Fireproof Compositions for Painting or Covering Surfaces. 349, S. Tuttle, Air Registers or Ventilators. 356, L. W. Gans, Incandescent Materials for Electrical Lighting. 361, E. Day, Casting Leaden Bends, Elbows, Pipes, &c. 379, Proctor & Butterfield, Nail Extractor. 380, C. A. Lee, Switches, Wall Sockets, Contact Makers, &c. 381, R. Heginbotham, Draught Excluder for Doors. 387, F. Unterberg, Iron Wall Carriers for Insulators, &c. 393, W. Godsell, Glass Cup Protector for Incandescent Gas Mantles. 401, H. O. Strong, Atmospherical Burners for Gas Heating. 406, Temperleys, Wood Paving and Flooring. 410, T. W. Barber, Lathe Face Plate Jaws. 415, S. Broadbear, Oil and Similar Cans. 416, A. Barman, Electrical Heaters. 417, C. N. Nielsen, Preservative Paint or Coating for Pasteboard Roofing Material, &c. 422, C. E. Campbell, Electrical Light Switches. 423, C. T. Kingzett, Testing or Disinfecting Drains. 425, O. Scharlach, Attaching the Covers or Gas Collectors to Carbide Containers or Acetylene Lamps. 434, C. Nuber, Flushing Apparatus. 447, Merritt & Weeds, Combined Adjustable Trammels, &c.

## SOME RECENT SALES OF PROPERTY:

### ESTATE EXCHANGE REPORT.

January 10.—By COCKETT & HENDERSON.

| | |
|---|---|
| South Woodford.—Cleveland-rd., Southwold Lodge, f. | £1,850 |

By J. J. HILL & WEAVER (at Masons' Hall Tavern).

| | |
|---|---|
| City of London.—Cullum-st., "The Rose and Crown" p.-h., u.t. 20 yrs., r. 180*l.*, with goodwill | 3,800 |

January 12.—By FURBER, PRICE, & FURBER.

| | |
|---|---|
| St. John's Wood.—3, Upper Hamilton-ter., u.t. 40½ yrs., g.r. 20*l.* | 2,500 |
| Forest Gate.—9 and 11, Haslemere-rd., u.t. 92 yrs., g.r. 10*l.* 10s. | 355 |

By W. B. MASON.

| | |
|---|---|
| Twickenham, Middlesex.—"Eel Pie Island Hotel" and 3 a. 3 r. 15 p., f., with goodwill | 4,700 |

By NEWBON, EDWARDS, & SHEPHARD.

| | |
|---|---|
| Barnsbury.—10 and 11, Cumberland-st., u.t. 57½ yrs., g.r. 14*l.*, r. 81*l.* | 960 |
| Highbury.—172 and 195, Blackstock-rd., u.t. 72 yrs., g.r. 22*l.* 10s., r. 105*l.* | 855 |
| 205, Blackstock-rd., u.t. 72 yrs., g.r. 10*l.*, r. 40*l.* | 400 |
| Holloway.—126, Holloway-rd., u.t. 8 yrs., g.r. 33*l.*, r. 65*l.* | 100 |

*Contractions used in these lists.*—F.g.r. for freehold ground-rent; l.g.r. for leasehold ground-rent; i.g.r. for improved ground-rent; g.r. for ground-rent; r. for rent; f. for freehold; c. for copyhold; l. for leasehold; e.r. for estimated rental; u.t. for unexpired term; p.a. for per annum; yrs. for years; st. for street; rd. for road; sq. for square; pl. for place; ter. for terrace; cres. for crescent; yd. for yard, &c.

## PRICES CURRENT OF MATERIALS.

### TIMBER.

| | | |
|---|---|---|
| Greenheart, B.G. ton | 8/0/0 | 0/0/0 |
| Teak, E.I. ....load | 10/10/0 | 15/10/0 |
| Sequoia, U.S. ft. cu. | 1/9/0 | 2/0/0 |
| Ash, Canada, load | 3/17/6 | 5/5/0 |
| Birch, do. | 3/0/0 | 5/0/0 |
| Elm, do. | 4/12/6 | 5/15/0 |
| Fir, Dantsic, &c. | 2/0/0 | 4/0/0 |
| Oak, do. | 3/5/0 | 3/15/0 |
| Canada | 4/0/0 | 6/0/0 |
| Pine, Canada red | 0/0/0 | 0/0/0 |
| Do. yellow | 4/7/6 | 6/5/0 |
| Lath, Dantsic, fath | 4/10/0 | 5/10/0 |
| St. Petersburg | 4/0/0 | 6/10/0 |
| Wainscot, Riga, &c., log | 3/15/0 | 5/15/0 |
| Odessa, crown | 3/15/0 | 5/15/0 |
| Deals, Finland 2nd & 1st std. 100 | 9/15/0 | 10/5/0 |
| Do. 4th & 3rd | 9/15/0 | 10/5/0 |
| Do. Riga | 8/5/0 | 9/5/0 |
| St. Petersburg, 1st yellow | 11/15/0 | 14/5/0 |
| Do. 2nd yellow | 10/15/0 | 12/5/0 |
| Do. white | 9/15/0 | 11/15/0 |
| Swedish | 9/15/0 | 16/15/0 |
| White Sea | 10/15/0 | 18/0/0 |
| Canada, Pine 1st | 18/15/0 | 25/5/0 |
| Do. do. 2nd | 13/15/0 | 17/0/0 |
| Do. do. 3rd, &c. | 6/0/0 | 10/0/0 |
| Do. Spruce, 1st | 8/10/0 | 10/10/0 |
| Do. do. 3rd and 2nd | 7/5/0 | 8/10/0 |
| New Brunswick | 7/5/0 | 8/0/0 |
| Battens all kinds | 5/0/0 | 16/0/0 |
| Flooring boards, sq., 1 in., prep. 1st | 9/6 | 16/3 |
| Do. 2nd | 8/0 | 13/3 |
| Other qualities— | 6/3 | 7/0 |
| Cedar, Cuba, ft. | /4 | /4½ |
| Honduras, &c. | /3¾ | /4½ |
| Mahogany, Cuba | /5½ | /7 |
| St. Domingo, cargo av. | /5 | 1/3 |
| Mexican, do. do. | /3½ | /4 |
| Tobasco, do. do. | /4 | /5½ |
| Honduras, do. | /4 | /6 |
| Box, Turkey, ton. | 4/0/0 | 15/0/0 |
| Rose, Rio | 7/0/0 | 14/0/0 |
| Bahia | 6/0/0 | 12/0/0 |
| Satin, St. Doming. | /5 | 1/0 |

### TIMBER (*continued*).

| | | |
|---|---|---|
| Satin, Porto Rico | 0/0/9 | 0/2/0 |
| Walnut, Italian | 0/0/3 | 0/0/7 |

### METALS.

| | | |
|---|---|---|
| Iron—Pig, in Scotland ....ton | 2/11/10½ | 0/0/0 |
| Bar, Welsh, in London | 6/0/0 | 6/5/0 |
| Do. do. at works in Wales | 5/15/0 | 5/17/6 |
| Do. Staffordshire, in London | 6/5/0 | 7/10/0 |
| COPPER—British cake and ingot | 66/10/0 | 67/0/0 |
| Best selected | 67/0/0 | 67/10/0 |
| Sheets, strong | 72/0/0 | 72/0/0 |
| Chili bars | 62/15/0 | 0/0/0 |
| YELLOW MTL. lb. | 5¾d. | 6d. |
| LEAD—Pig Spanish ....ton | 13/10/0 | 0/0/0 |
| English com. Brands | 13/15/0 | 0/0/0 |
| Sheet, English 6 lbs. per sq. ft. and upwards | 14/15/0 | 0/0/0 |
| Pipe | 15/5/0 | 0/0/0 |
| ZINC—English sheet ....ton | 28/0/0 | 0/0/0 |
| Vieille Montagne | 29/0/0 | 0/0/0 |
| Spelter | 24/10/0 | 24/12/6 |
| TIN—Straits | 98/17/6 | 0/0/0 |
| Australian | 99/5/0 | 99/15/0 |
| English Ingots | 102/0/0 | 103/0/0 |
| Banca | 0/0/0 | 0/0/0 |
| Billiton | 0/0/0 | 0/0/0 |

### OILS.

| | | |
|---|---|---|
| Linseed ....ton | 17/0/0 | 0/0/0 |
| Cocoanut, Cochin | 27/15/0 | 0/0/0 |
| Do. Ceylon | 24/10/0 | 0/0/0 |
| Palm, Lagos | 21/15/0 | 0/0/0 |
| Rapeseed, English pale | 22/5/0 | 0/0/0 |
| Do. Brown | 20/15/0 | 0/0/0 |
| Cottonseed ref. | 15/0/0 | 16/0/0 |
| Oleine | 17/0/0 | 18/0/0 |
| Lubricating U.S. | 0/5/3 | 0/7/6 |
| Do. Black | 0/5/0 | 0/6/6 |
| TAR—Stockholm barrel | 1/5/0 | 0/0/0 |
| Archangel | 0/18/0 | 0/0/0 |
| Turpentine | 31/0/0 | 31/2/6 |

## TO CORRESPONDENTS.

W. H. & Son.—(Amounts should have been stated).

NOTE.—The responsibility of signed articles, and papers read at public meetings, rests, of course, with the authors.

*We cannot undertake to return rejected communications.*

Letters or communications (beyond mere news items) which have been duplicated for other journals are NOT DESIRED.

We are compelled to decline pointing out books and giving addresses.

Any commission to a contributor to write an article is given subject to the approval of the article, when written, by the Editor, who retains the right to reject it if unsatisfactory. The receipt by the author of a proof of an article in type does not necessarily imply its acceptance.

All communications regarding literary and artistic matters should be addressed to THE EDITOR; those relating to advertisements and other exclusively business matters should be addressed to THE PUBLISHER, and *not* to the Editor.

## TENDERS.

[Communications for insertion under this heading should be addressed to "The Editor," and must reach us *not later than* 10 *a.m. on Thursdays.* N.B.—We cannot publish Tenders unless authenticated by the name and address of the sender; and we cannot publish announcements of Tenders accepted unless the amount of the Tender is given, nor any list in which the lowest Tender is under £100, unless in some exceptional cases and for special reasons.]

BASINGSTOKE.—For widening Victoria-street, for the Town Council. Mr. G. Fitton, Borough Surveyor, Town Hall, Basingstoke:—

| | |
|---|---|
| John Ball | £1,093 15 |
| Musselwhite & Son | 956 0 |
| S. Kavanagh | 799 0 |
| J. Thumwood, Basingstoke* | £689 |

* Accepted.

BECKENHAM.—For the execution of paving works, Trinity-street, &c., for the Urban District Council. Mr. J. A. Angell, Surveyor, Council Offices, Beckenham:—

| | |
|---|---|
| T. Adams | £361 12 6 |
| G. Wilson | 335 0 0 |
| E. Iles | £284 17 0 |
| Mowlem & Co. | 260 0 0 |

BECKENHAM.—For making up Border-crescent, for the Urban District Council. Mr. J. A. Angell, Surveyor, District Council Offices, Beckenham:—

| | |
|---|---|
| T. Adams | £1,612 5 6 |
| G. Wilson | 1,363 0 0 |
| E. Iles | £1,271 8 0 |
| Mowlem & Co. | 1,250 0 0 |

BRIDLINGTON.—For the erection of four houses, Horsforth-avenue, for Mr. Slater. Mr. J. Earnshaw, architect, Wellington-road, Bridlington Quay:—

| | |
|---|---|
| E. Corner | £1,950 |
| T. Blackburn | 1,850 |
| Spink | 1,665 |
| W. Barnes, Bridlington Quay* | £1,650 |
| S. Booth | 1,522 |

* Accepted after alterations.

BRIDLINGTON QUAY.—For additions to No. 5, Burlington-terrace, for Mr. L. Noblet. Mr. J. Earnshaw, architect, Wellington-road, Bridlington Quay:—

| | |
|---|---|
| T. Blackburn | £225 0 |
| E. Corner | 185 10 |
| W. Barnes, Brid. Quay* | £155 0 |

* Accepted.

BROADSTAIRS.—For the erection of a house, to be called St. Peter's Lodge, at Broadstairs, Kent. Mr. John Borrowman, architect:—

| | |
|---|---|
| Norman & Burt | £2,036 |
| F. T. Chinchen | £1,900 |
| R. A. Lowe | £1,855 |
| W. W. Martin | 1,600 |

CANTERBURY.—For the erection of a new wing, hall, &c., and sanatorium at the Kent Wesleyan School, Canterbury, for the Kent Schools Association, Limited. Mr. Charles Bell, architect, 3, Salters' Hall-court, Cannon-street, London, E.C. Quantities supplied by Messrs. C. Stanger & Son, surveyors, 21, Finsbury-pavement, E.C.:—

| | |
|---|---|
| G. Castle & Son | £8,781 17 6 |
| T. T. Denne | 7,592 0 0 |
| Jackson & Co. | 7,559 0 0 |
| G. Witshire | 7,060 0 0 |
| Coulson & Lofts | 7,037 0 0 |
| W. & H. Castle | 7,015 0 0 |
| J. Barker & Co., Ltd. | 6,999 0 0 |
| E. Houghton & Son | 6,756 0 0 |
| H. B. Milson | 6 755 5 10 |
| T. H. Kingerlee & Son | 6,704 0 0 |
| F T. Gentry | 6,690 0 0 |
| General Builders, Ltd. | 6,540 0 0 |
| Gann & Co. | 6,450 0 0 |
| W. J. Adcock | 6,319 4 10 |
| T. L. Fearon | 6,278 0 0 |
| Hayward & Paramor | 6,274 0 0 |
| W. Judges, Boughton, Faversham* | 5,973 0 0 |

* Accepted.

CHURCH (Lancs).—For the supply of 550 tons granite setts, for the Urban District Council. Mr. W. E. Wood, C.E., Surveyor, District Council Offices, Church:—

W. Chandley & Co., Newry, Ireland*

* Accepted at a schedule of prices.

CRAWLEY (Sussex).—For extension of sewer at West Green, Crawley, for the Horsham Rural District Council. Mr. C. H. Burstow, Surveyor, 6, West-street, Horsham:—

| | |
|---|---|
| H. Lindfield & Son | £145 10 |
| J. G. Pickard | 139 16 |
| R. Easton, Crawley* | £98 10 |

* Accepted.

CREWE.—For sewering, forming, &c., Lawton-street and others, for the Town Council. Mr. G. Eaton-Shore, Borough Surveyor, Earle-street, Crewe:—

| | | |
|---|---|---|
| *Richmond-road*— | F. T. Bennie, Warrington | £996 9 1 |
| *Lawton-street, &c.*— | F. T. Bennie* ,, | 1,689 17 1 |
| *Lawton-street, &c.*— | F. Lunt, Crewe | 1,821 14 6 |
| *Richmond-road.*— | Meicklewright & Sons, Crewe | 1,090 13 9 |
| *Lawton-street, &c.*— | ,, ,, | 2,050 7 10 |
| *Richmond-road*— | B. Rowlands, Northwich | 1,643 1 6 |
| *Lawton-street, &c.*— | ,, ,, | 2,706 4 2 |
| *Richmond-road.*— | C. H. Holmes, Crewe* | 926 1 8 |

* Accepted.

DORCHESTER.—Accepted for building the new Victoria Hotel, Victoria Park, for Messrs. Eldridge, Pope, & Co., The Dorchester Brewery. Mr. A. L. T. Tilley, architect, 26, South-street, Dorchester:—

| | |
|---|---|
| W. J. Hutchings, Dorchester | £2,275 |

DOVER.—For completing Beconsfield-road, for the Town Council. Mr. H. E. Stilgoe, C.E., Town Hall, Dover. Quantities by the Borough Engineer:—

| | |
|---|---|
| Austen & Lewis | £616 1 2 |
| H. Richardson | £598 6 4 |

[Engineer's estimate, £547.]

Work to be carried out by the Corporation.

FARNHAM ROYAL.—For alterations and additions to "The Lodge," Farnham Royal, for Mr. W. Humphrey Ransford. Mr. Walter Emden, architect:—

| | |
|---|---|
| H. Roffey | £2,080 |
| Beer & Gash | 1,867 |
| Lancaster & Vaughan | 1,856 |
| John Deverill | £1,771 |
| Cox & Sons* | 1,710 |

* Accepted.

FEATHERSTONE (Yorks).—For laying and jointing c.i. sewer-pipes, for the Urban District Council. Mr. W. A. Palliser, Engineer, Council Offices, Featherstone:—

| | |
|---|---|
| W. Doleman | £429 13 6 |
| John Keightley | 383 4 3 |
| Thos. Rowlands | 376 9 9 |
| R. W. Ibbotson | £364 0 9 |
| John Bentley, 68, Hampton-road, Southport* | 364 0 0 |

Engineer's estimate, £365 2s. 7d.

Tenders with cost of pipes £195 added.

* Accepted.

HAMPTON-ON-THAMES.—For additions to station schools, Hampton-on-Thames. Mr. F. G. Hughes, architect:—

| | | | |
|---|---|---|---|
| A. G. Pimbell | £729 0 0 | W. Bishop | £465 0 0 |
| A. Gimson | 639 16 0 | J. C. Snell | 455 15 0 |
| J. Pavey | 599 0 0 | J. Hebblethwaite, of Pimlico & Twickenham* | 425 0 0 |
| L. Wake | 550 9 6 | | |
| J. Write | 550 0 0 | | |
| J. Singleton & Sons | 486 0 0 | | |

* Accepted.

HEYSHAM (Lancs).—For the erection of an arcade, Heysham. Mr. A. L. Lang, architect, Pedder-street, Morecambe:—

*Through Tender.*

John Edmondson £919

*Excavating, Masonry, and Brickwork.*

| | | | |
|---|---|---|---|
| Edward Turner | £589 0 0 | Parkinson & Siddle, Morecambe* | £448 0 |
| D. Hinchcliffe & Co. | 519 9 6 | | |
| J. H. Dodgson | 514 0 0 | | |

*Plumbing and Glazing.*

| | | | |
|---|---|---|---|
| J. P. McNair | £176 0 0 | R. B. Abbott | £159 0 0 |
| W. B. Hodgson | 170 0 0 | J. H. Cross, Heysham* | 136 12 9½ |
| Wm. Watson | 161 0 8½ | | |

*Carpentry and Joinery.*

| | | | |
|---|---|---|---|
| Schofield Bros. | £230 0 | Roberts & Ogden | £160 0 |
| J. Greenwood | 189 10 | Hainsworth & Bland, Morecambe* | 157 10 |
| R. D. Parkinson | 178 0 | | |

*Slating and Plastering.*

W. J. Cross £91 18
Hill & Nelson, Morecambe and Bradford* 73 19

*Plastering.*

B. Sugden & Son, Manningham (Yorks) £61

* Accepted.

HORSHAM.—For additions to workhouse, for the Union Guardians. Mr. C. H. Burstow, architect, 6, West-street, Horsham. Quantities by architect:—

| | | | |
|---|---|---|---|
| J. Ockenden & Son | £7,685 | Rowland Bros. | £6,999 |
| R. Cook & Sons | 7,628 | Potter Bros., Horsham* | 6,730 |

* Accepted.

LEAMINGTON.—Accepted for the erection of a lodge, Victoria Park, for the Town Council. Mr. F. G. Cundall, architect, 41, Parade, Leamington:—

Mr. T. Prath, Leamington £510

LEEDS.—Accepted for the erection of ten houses, Tunstall-road. Mr. Fred. Mitchell, architect, 71, Albion-street, Leeds:—

| | |
|---|---|
| *Brick and Stone.*—W. H. Jones & Co., 10, Leighton-lane | £2,007 5 7 |
| *Joinery.*—G. H. Nettleton, Tenter-lane | |
| *Plumbing.*—John Watson, Butts-court | |
| *Plastering.*—W. H. Branton, Lovell-road | |
| *Slating.*—J. Atkinson & Son, Whitehall-road | |
| *Painting.*—A. Hoyle, Burley Village | |

[All of Leeds.]

LONDON.—For proposed addition to premises, Bond-street, Vauxhall, for Barrett's Brewery and Bottling Company, Limited. Mr. J. A. J. Woodward, architect:—

| | | | |
|---|---|---|---|
| Holloway Bros. | £765 | T. Hooper & Son | £650 |
| H. Hall | 737 | | |

LONDON.—For the erection o granary, offices, stables, and store, at Wheatsheaf Wharf, Holyport, near Fulham, for Hard & Mones Stores, Limited. Mr. J. A. J. Woodward, architect:—

| | | | |
|---|---|---|---|
| Holloway Bros. | £8,400 | Parker | £7,508 |
| J. Parsons | 7,669 | T. Hooper & Son | 7,327 |
| Wimpey | 7,600 | J. Marsland | 7,225 |

LONDON.—For an extension of the British Home for Incurables at Crown-lane, Streatham, S.W. Mr. Edwin T. Hall, architect, 57, Moorgate-street, E.C.:—

| | | | |
|---|---|---|---|
| Foster & Dicksee | £8,270 | Bulled & Co. | £7,594 |
| Woodward & Co. | 7,983 | Johnson & Co. | 7,585 |
| Cubitt & Co. | 7,917 | Higgs & Hill | 7,584 |
| Lawrence & Son | 7,800 | Marriage & Co. (accepted) | 6,950 |
| Lovatt | 7,782 | | |

LONDON.—For alterations and decorations of No. 42, Kensington Park-gardens, Bayswater, W. Mr. J. S. Brown, surveyor, 15, Finsbury-circus, E.C.:—

| | Generally. | Bay Window. |
|---|---|---|
| R. S. Buckeridge | £373 | £31 |
| Spier & Son | 369 | 30 |
| Nigrett | 275 | 25 |
| Cannon | 255 | 25 |

NEW BARNET.—For the erection of school buildings, Victoria-road, for the East Barnet School Board. Mr. W. Pywell, architect, 40, Great James-street, Bedford-row, W.C.:—

| | | | |
|---|---|---|---|
| Willmott & Sons | £12,232 | General Builders, Ltd. | £10,000 |
| Goddard & Sons | 10,763 | Merredew & Wort | 9,965 |
| A. Porter | 10,559 | Coulson & Lofts, Cambridge* | 9,597 |
| F. Britton | 10,500 | | |
| W. M. Butcher | 10,464 | | |

* Provisionally accepted.

SEATON (Devon).—For erection of new bank and premises, for the Wilts and Dorset Banking Company. Mr. G. M. Selley, architect, 17, Craven-street, Strand, London:—

| | | | |
|---|---|---|---|
| Stephens, Bastow & Co | £2,998 0 | A. Richards | £2,340 16 |
| J. W. & H. Childs | 2,595 0 | A. Poole | 2,298 0 |
| Chas. Turner | 2,366 3 | Lye & Sons | 1,882 15 |

STANMORE.—For the erection of a dwelling house, at Stanmore, for the Canons Park Estate Company, Limited. Mr. John Waterson, architect, No. 4, College-chambers, 249½, High Holborn:—

| | | | |
|---|---|---|---|
| T. C. Bowden | £2,100 | T. Turner, Ltd. | £1,760 |
| Hayworth & Sons | 1,878 | H. Wall & Co. | 1,751 |
| F. Dupont | 1,840 | T. Britten | 1,699 |
| Yerbury & Sons | 1,819 | T. W. Dixon | 1,685 |
| R. L. Tonge | 1,790 | W. & H. Jones | 1,650 |
| W. Smith | 1,787 | General Builders, Ltd. | 1,620 |
| C. Eames | 1,786 | W. Pearce | 1,572 |

STANMORE.—For the erection of a dwelling-house, at Stanmore, for the Canons Park Estate Company, Limited. Mr. John Waterson, architect, No. 4, College Chambers, 249½, High Holborn:—

| | | | |
|---|---|---|---|
| T. Bowden | £1,983 | T. Turner, Ltd, | £1,854 |
| Hayworth & Sons | 1,977 | Yerbury & Sons | 1,843 |
| R. L. Tonge | 1,950 | F. Britten | 1,790 |
| F. Dupont | 1,950 | H. Wall & Co., | 1,788 |
| T. W. Dixon | 1,898 | W. & H. Jones | 1,780 |
| W. Smith | 1,895 | General Builders, Ltd. | 1,730 |
| C. Eames | 1,889 | W. Pearce | 1,695 |

TAUNTON.—For the construction of a sewer, Target Field, for the Town Council. Mr. J. H. Smith, C.E., Municipal Offices, Corporation-street, Taunton:—

| | | | |
|---|---|---|---|
| Allen & Son | £9,362 9 0 | R. Hitchcock | £7,882 19 |
| R. H. B. Neal | 8,470 0 0 | G. Bell | 7,805 0 |
| W. Gibson | 8,441 16 7 | W. L. Meredith | 7,700 0 |
| Facey | 8,360 0 0 | B. Cook & Co., Victoria-street* | 7,518 0 |
| H. W. Pollard | 7,998 0 0 | | |

* Accepted.

WELLINGTON (Somerset).—For erecting a chapel, &c., Wellington, Somerset. Mr. F. W. Roberts, architect, 2, Hammet-street, Taunton:—

| | Chapel. | | School. | | Total. | |
|---|---|---|---|---|---|---|
| | £ | s. | £ | s. | £ | s. |
| A. J. Spiller | 1,780 | 0 | 516 | 0 | 2,296 | 0 |
| H. J. Spiller | 1,707 | 0 | 482 | 0 | 2,189 | 0 |
| F. W. Rowsell | 1,694 | 10 | 487 | 10 | 2,182 | 0 |
| J. Morse | 1,658 | 0 | 470 | 0 | 2,128 | 8 |
| T. Manning | 1,630 | 0 | 454 | 0 | 2,084 | 0 |
| H. W. Pollard | 1,600 | 0 | 440 | 0 | 2,040 | 0 |
| T. W. Sweet | 1,597 | 0 | 430 | 0 | 2,027 | 0 |
| W. Follett, Wellington* | 1,586 | 0 | 422 | 0 | 2,008 | 0 |

* Accepted.

WOLVERHAMPTON.—For additions to the "Prince Albert Inn," Railway-street. Mr. George Wormal, architect, Stafford:—

| | | | |
|---|---|---|---|
| John Gethin | £3,177 | Thomas Skett, Castle-st., Wolverhampton* | £2,778 |
| R. Speake & Sons | 2,992 | F. Lindsay Jones | 2,695 |
| John Stringer | 2,940 | | |
| James Herbert | 2,790 | | |

* Accepted.

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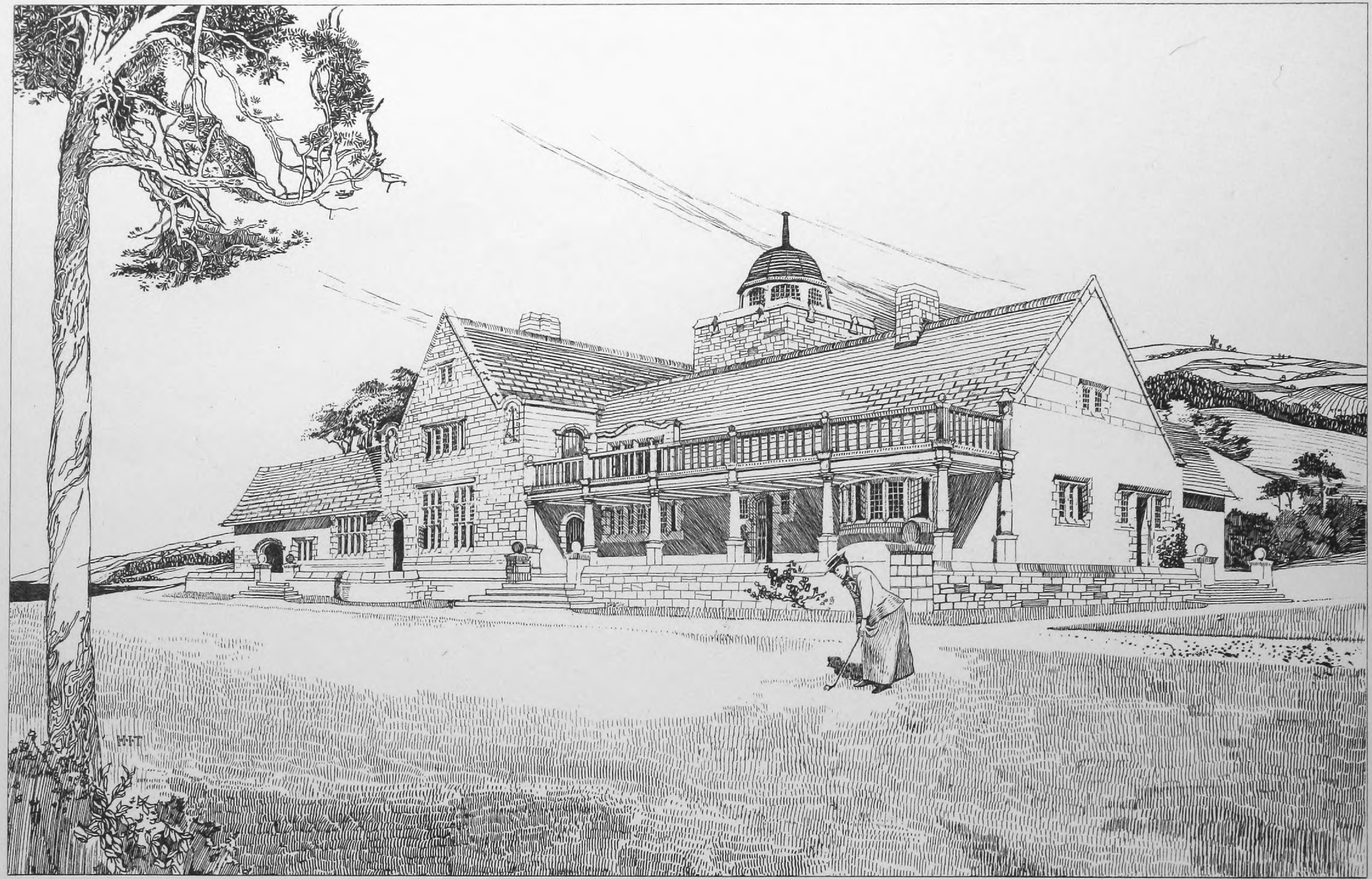

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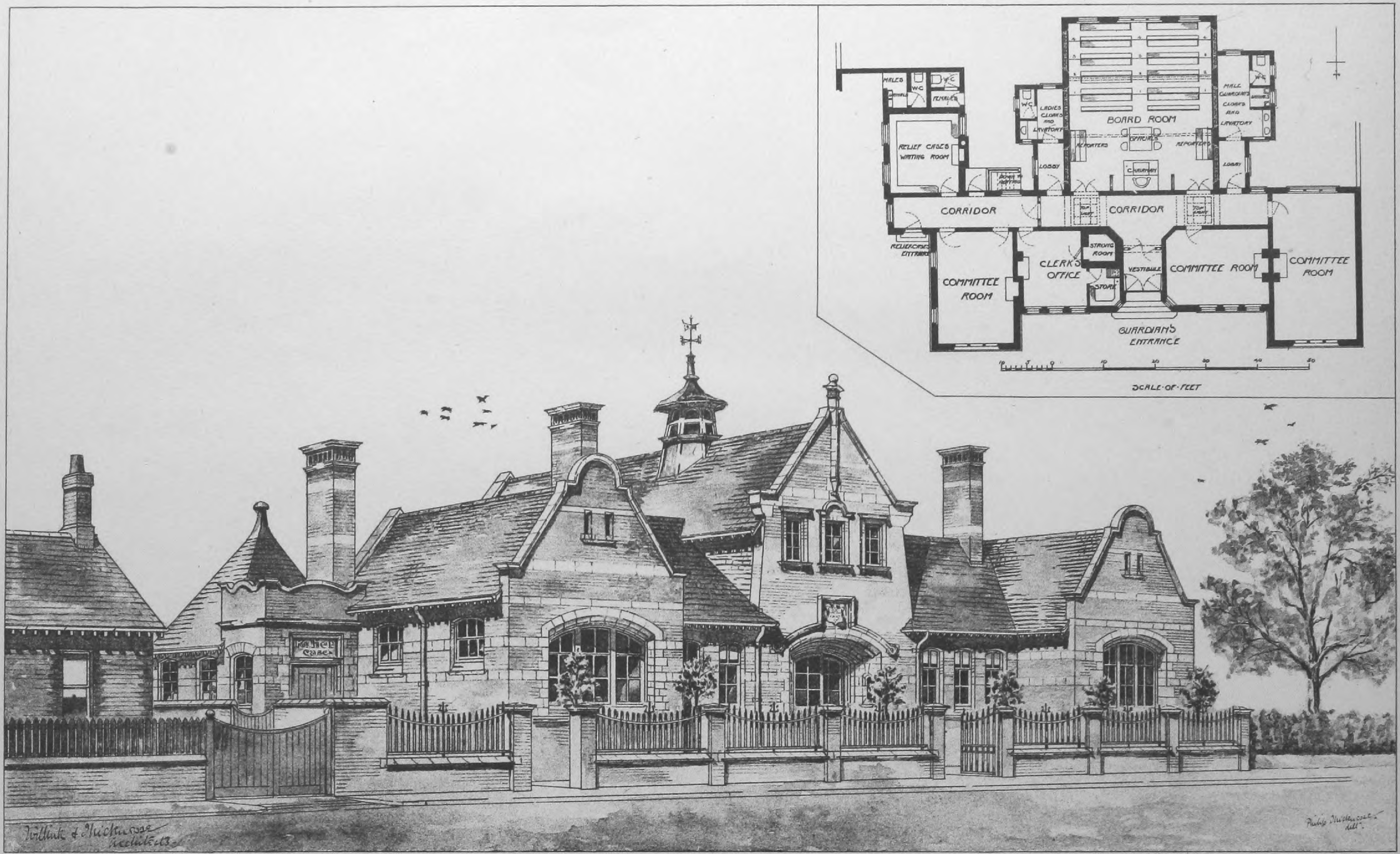
DESIGN FOR A GOLF CLUB-HOUSE.—By Mr. H. Inigo Triggs.

*Architectural Association Silver Medal, 1897.*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COMMITTEE ROOM
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STRONG ROOM
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VESTIBULE
COMMITTEE ROOM
COMMITTEE ROOM
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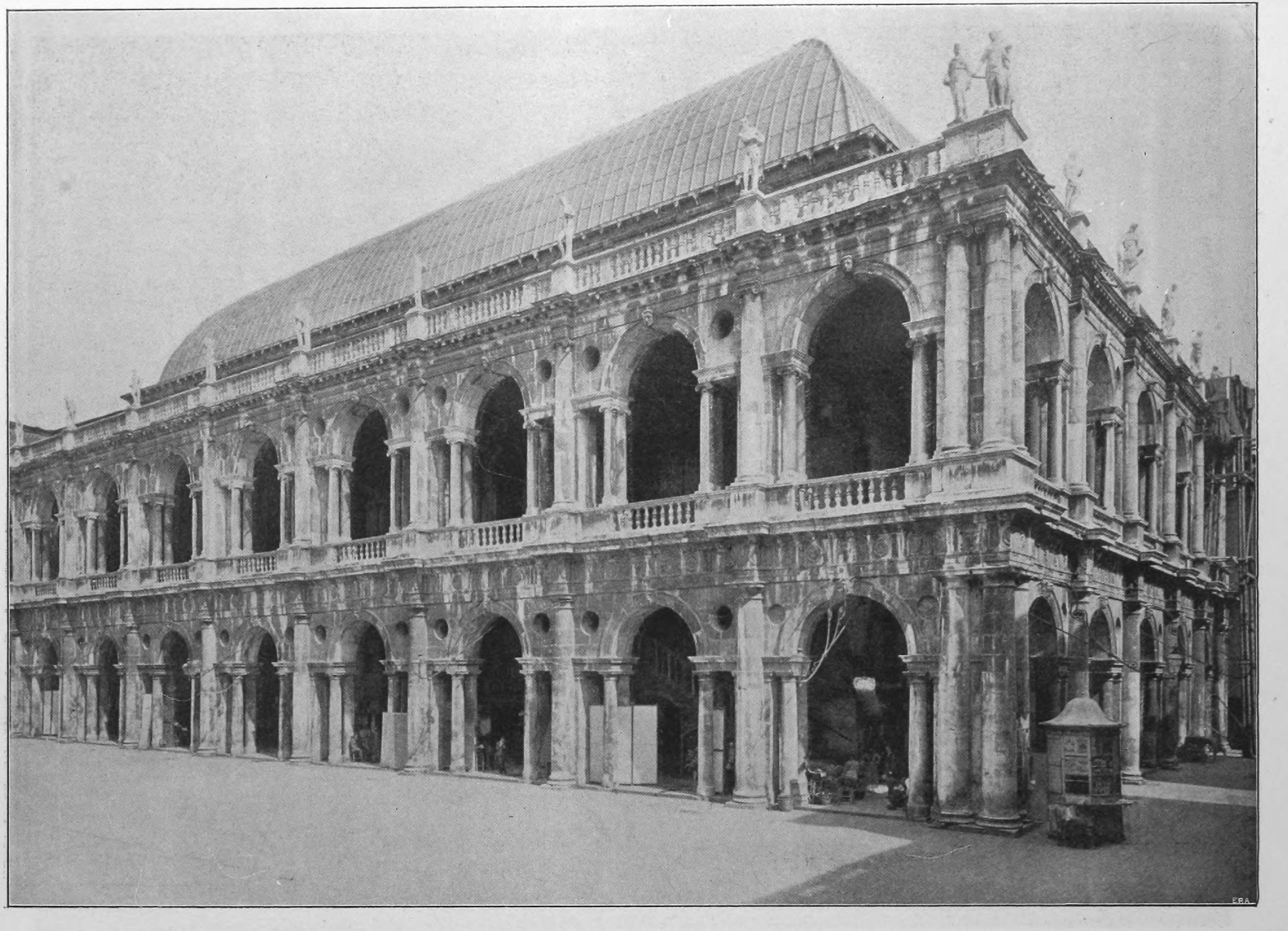

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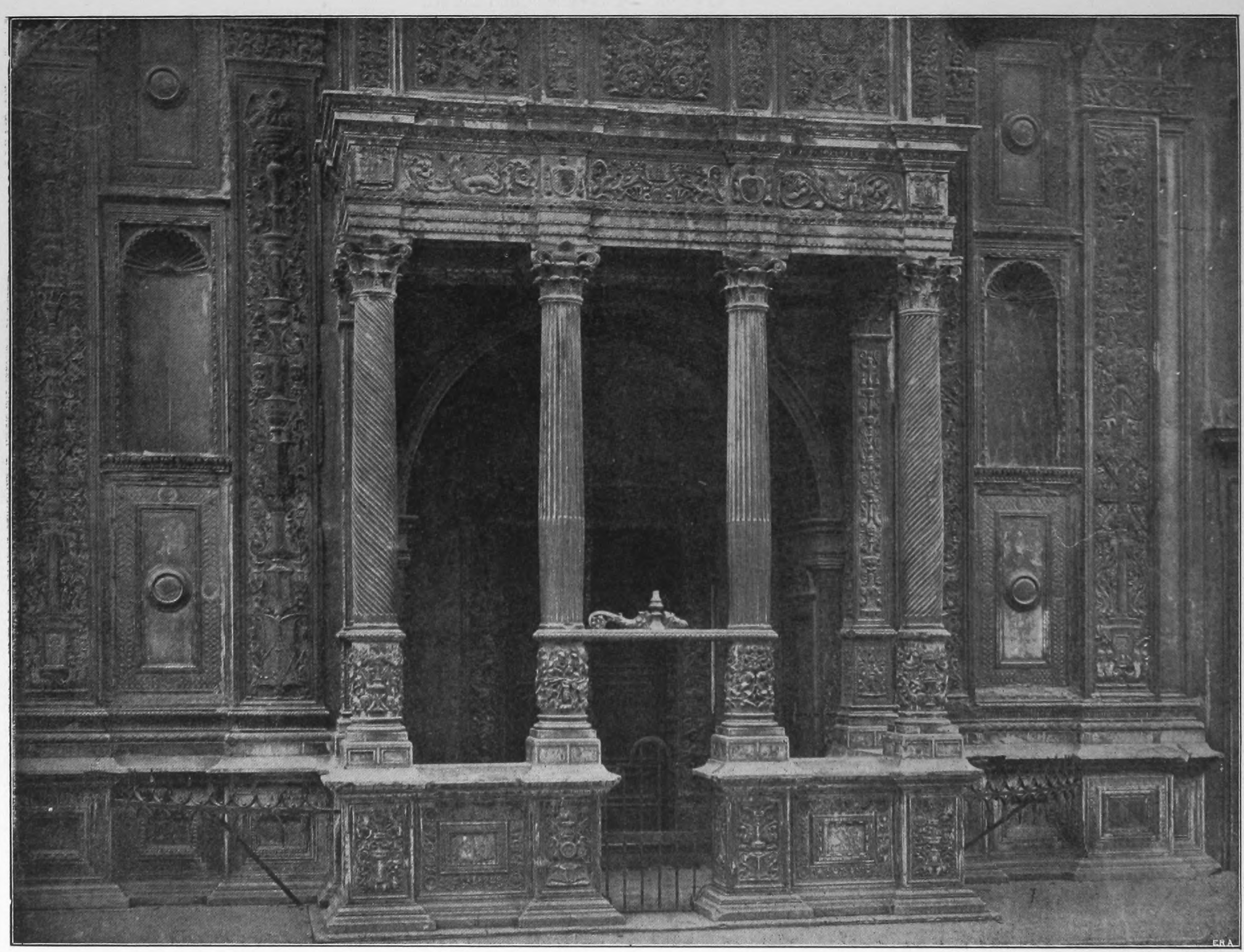

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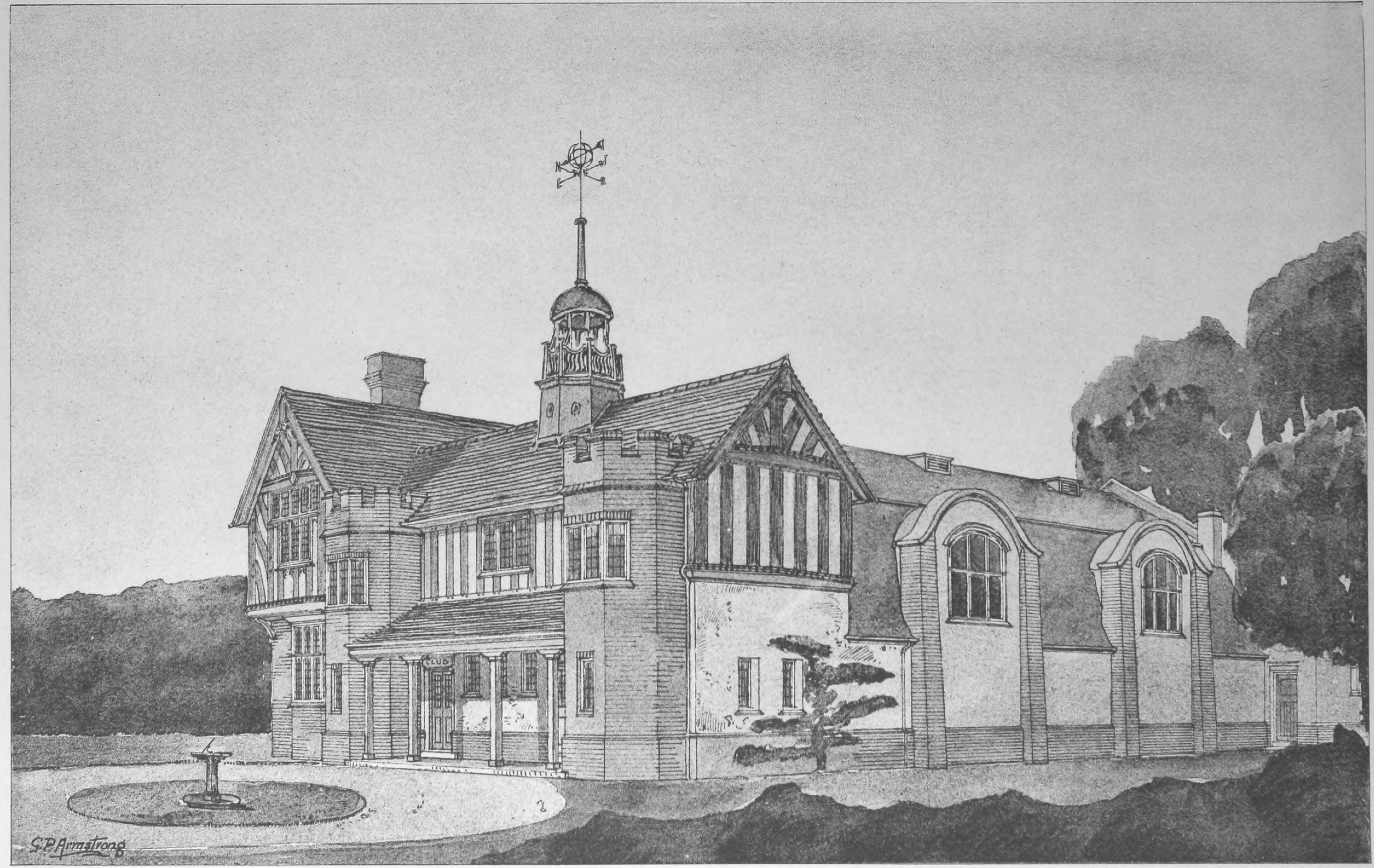
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G.P. Armstrong

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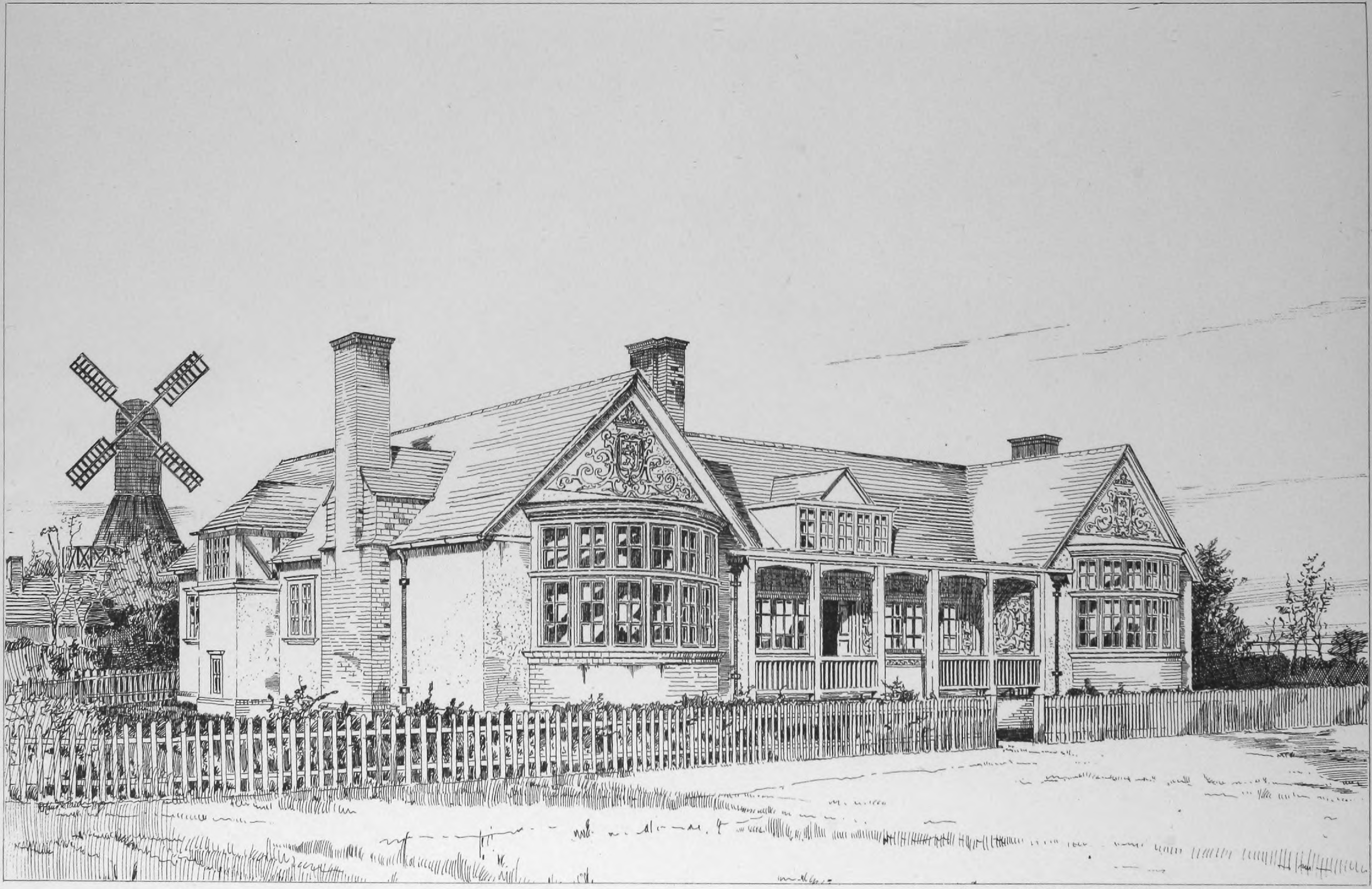

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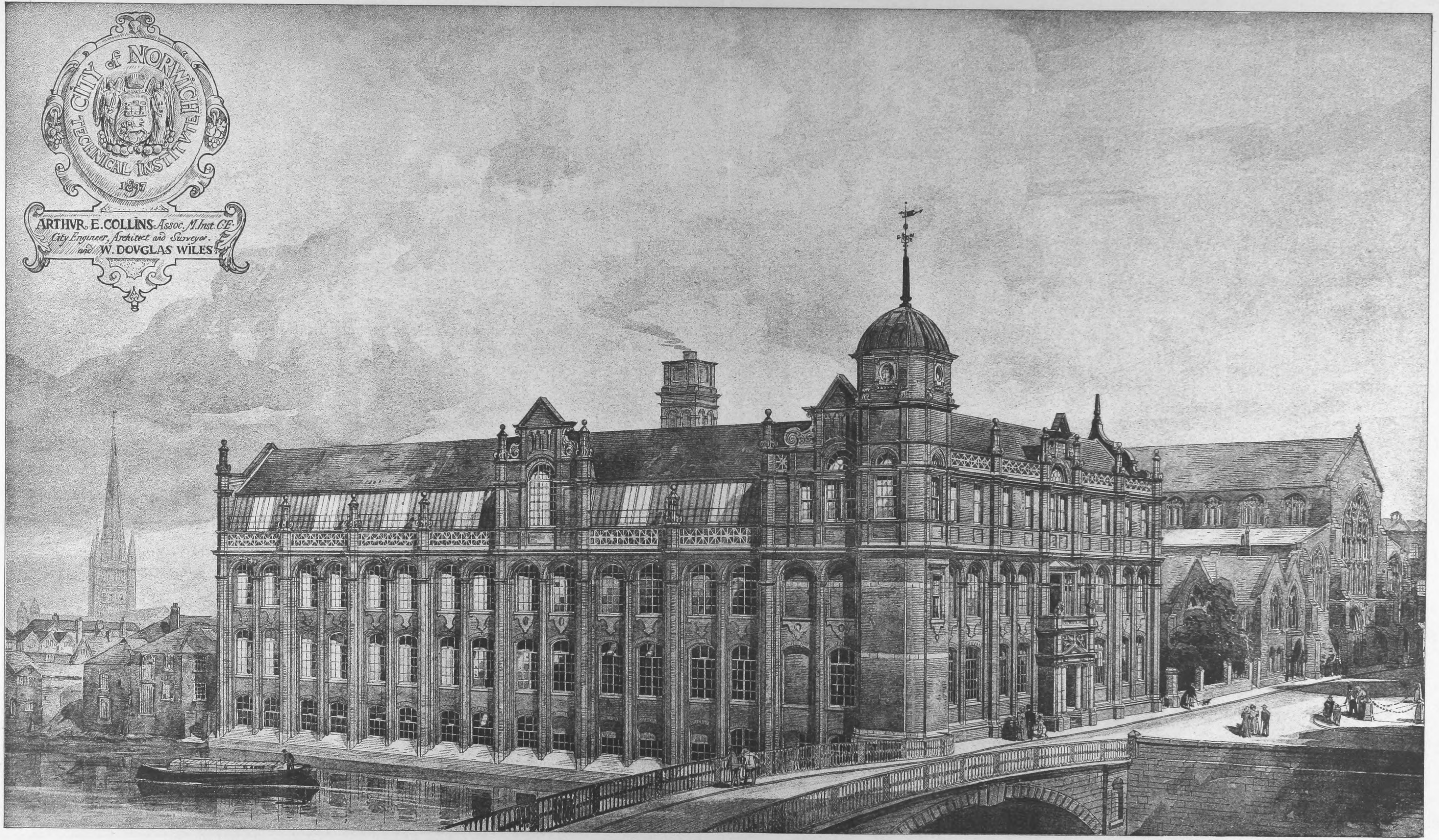
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# The Builder.

VOL. LXXVI. No. 2921. JANUARY 28, 1899.

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Design for Fine Art Gallery and Public Library for the County Borough of Bury.—By Messrs. Jas. D. and S. J. Mould ........ *Single-Page Ink-Photo.*
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## *The Erection of Artisans' Dwellings by Municipal Corporations.*

THE question of the housing of the working classes by Municipal Corporations is both an interesting and an important one. That such housing is to be undertaken has long ago passed beyond the regions of discussion. The passing of the Artisans' Dwellings Act in 1875 gave legislative sanction to this principle, and all that remains now to be considered is the basis on which this action is to be taken. By far the most important of the questions which are now constantly raised in regard to this matter, in London at any rate, is whether or not any charge in respect of artisans' dwellings should fall on the rates; in other words, whether inhabitants of a town other than those who do not live in artisans' dwellings should help to pay for them. If they are to do so, it is socialism pure and simple; because, if A has to pay £1 towards a loss on a dwelling inhabited by B, he is putting the money into B's pocket as plainly as if he put it into his hand. For, if he did not do so, B would have to pay a higher rent.

It is certain, however, that the question requires to be looked at broadly and carefully, and not in too piecemeal a manner. For example, in a recent discussion at the London County Council it became pretty clear that a certain block of artisans' dwellings could not be let except at a loss, but it was urged that taken with another block the two would not show a loss. It appears to be perfectly justifiable to group various blocks together and to take the aggregate return. A landowner or a merchant takes the aggregate of his rents or returns and he looks to see what is the total result. Then again, in regard to the cost of an acre of land, there may be indirect returns, such as result from the general advantage to the community of land thrown into streets or made into open spaces. In other words, the mere actual return on the building is not always the only thing to be regarded; the affair must be looked at as a whole. But the sound general principle is that the ratepayers of a town ought not to have to bear the cost of housing other members of the same community because they happen to fall within the class popularly known as artisans or labourers. At the present time there seems to be a considerable need to lay emphasis on this principle, for there is a curious tendency in some public bodies to erect workmen's dwellings which will not give any return, and, at the same time, to take up other undertakings, such as tramways, very much on the ground that they will return a profit to the municipality, that is to say, to the ratepayers. The question is one of so much importance that it is worth while to endeavour to note briefly what has been done in regard to this matter by some of the great provincial towns.

Let us, in the first instance, take Glasgow. In that city all the work in regard to re-housing the working classes appears to have been done under the Glasgow City Improvement Trust, which was established by Act of Parliament in 1866. We are only now concerned with the financial aspects of the subject, and the net result of this working of the trust for thirty years has been a cost to the ratepayers of 593,079*l.* 16s. 6d. These figures do not bring us up to the present hour, but are the latest which we have been able to obtain. Against this sum—we quote from a paper by Baillie Chisholm, convener of the Improvement Committee—"have to be set the Alexandra Park, 100,000 square yards of ground thrown into streets and squares, and the sum of more than 100,000*l.* expended on forming the streets, and in covering the Molendinar and Camlachie Burns. The charge against the ratepayers may now be said practically to have ceased." The lodging-houses have from the very beginning yielded a revenue over the yearly cost. The gross cost of the seven lodging-houses has been, including the price of the ground, 103,258*l.*, and on this amount, in addition to writing off in depreciation the sum of 11,232*l.*, there has been a yearly return averaging from 3*l.* 14s. 9d. to 6*l.* 11s. per cent." As regards the building operations generally, this authority says, "it may be broadly stated that in every case we have received full interest for all our outlay, that is to say, larger interest than we have paid, and at the same time we have received in addition a larger return for the ground than we could have obtained by selling it, while in many cases we have made a revenue out of ground which was yielding no return at all." It appears, therefore, that the citizens of Glasgow have carried out the work of providing accommodation for artisans on sound business principles.

We will now take Birmingham. We have before us an interesting report of the Improvement Committee presented to the Council last July upon the erection of five artisans' dwellings. The report in regard to the financial part of the matter is as follows: "The rent suggested to be charged is 1s. 6d. per week per living room, or for the first type of dwelling described, 3s. per week, for the second 4s. 6d., and for the through houses 5s. per week. These rents, after paying interest and sinking fund on the outlay now proposed, will leave a margin sufficient to pay a ground rent on the land." The report then gives the estimated cost of building, road making, contingencies, and land at 5s. per yard, making a total of 11,025*l.* The estimated annual statement then comes out on the Dr. side, interest and sinking fund 441*l.*, and on the Cr. side, estimated rental 659*l.* 2s., and outgoings 219*l.* 14s., making a total of 439*l.* 8s. We do not quite see where the margin for ground rent comes in. The report states that the cost of the Milk-street site, on which these dwellings are to be built, was 6,000*l.*, and that deducting 1,007*l.* charged to the houses, leaves 4,993*l.* to be provided for. From this statement we gather that the whole site is not to be built over. "The interest and sinking fund will amount to 199*l.*, and the annual payment from the rates must be considered as the city's payment for the sanitary improvement thus made. It must be recollected against this that at the end of the period for which the money is borrowed, the property kept in good repair will fall in unencumbered, and at present rents will yield a clear income of 400*l.* for ever." The latter statement appears to be somewhat high flown, and would hardly, we think, be endorsed by a surveyor or valuer. For houses are not supposed to last for ever, and their value must be capitalised. On the other hand, it is right to point out that if we put on one side the land other than the 4,030 yards on which the dwellings are erected, the receipts from the buildings appear to cover interest and sinking fund. So that as far as regards the artisans' dwellings they are no charge on the rates; that is to say, the inhabitants of Birmingham who do not live in them have not to put their hands in their pockets to help the inmates of these dwellings. The actual results of earlier artisans' buildings in Birmingham we are unable to give, and must, therefore, now turn to Liverpool.

Without beating about the bush, we may give an extract which will show the result of the Victoria Dwellings opened in 1885, and the Juvenal Dwellings opened in 1888 and 1890:—"The whole accommodation consists of 371 dwellings, of which sixty-six are single rooms, letting at from 2s. to 2s. 9d. per week; 217 are of two rooms, letting at from 3s. 9d. to 5s. per week; and eighty-eight are of three rooms, letting at 5s. to 5s. 6d. per week. For the year 1894 the Victoria Dwellings returned an income at the rate of 2*l.* 8s. 4d. per cent. upon the cost, including the value of the land, estimated at 22s. 6d. per yard. The Juvenal Dwellings returned an income for that year of 3*l.* 8s. 2d. per cent., upon the cost, the value of the land being estimated at 24s. per yard. In a report of the City Engineer, dated February, 1896, on the erection of labourers' dwellings, that is, for the class of persons who occupy "court-houses," and who would not pay more than 1s. per room per week, we find the following estimate: "eighty-eight tenements, containing 185 rooms, cost land and buildings 7,665*l.* 7s., net rental, after deducting 40 per cent. for leakages, 324*l.* Estimated net return, 4*l.* 4s. 1d. per cent." So far as we are able to form a conclusion from the materials before us the Corporation of Liverpool are doing a good business financially in those instances where, instead of letting the land to builders for the purpose of erecting workmen's dwellings, they have done it themselves. The idea of putting up a building of this kind, which would not give an adequate return on the outlay, appears, indeed, not to have even been considered.

In every estimate prepared by the City Engineer a substantial return on the capital outlay is shown. There seems, indeed, to be a definite line of policy in this respect laid down, and from this no deviation is made.

The conclusion at which we have arrived is that the provincial results of the work done by Municipalities in regard to housing the working classes appear to show that the London County Council is not justified in erecting artisans' dwellings at a cost at which profitable results are not obtained. The subject is a most important one—increasing every year, indeed, in importance, and we are bound to say that the size of London and the magnitude of the interests involved seem to demand that the action of the London County Council in carrying out of the legislation in regard to the housing of the working classes should form the subject of a careful Parliamentary inquiry. We are certain that Parliament in giving municipal bodies power to erect artisans' dwellings as they are called never intended that one class of inhabitants should have to pay for the houses of another class. The clerk struggling along in life on 25s. a week has as much right to relief of this nature as the artisan who is earning the same sum by manual labour, and certainly should not be called on to assist another inhabitant of the Metropolis who has to work with his hands instead of his head. If Birmingham, Glasgow, and Liverpool can erect artisans' dwellings which do not bring a charge upon the rates, London can do the same, and if the body intrusted with power for this purpose in the Metropolis misuses it, then the Legislature must step in and pass such a measure as will oblige it to carry out the Acts of Parliament on sound business lines.

## FIRST REPORT OF THE COMMISSION ON LONDON WATER SUPPLY.

THE First or *interim* Report of the Royal Commission on the London Water Supply question, just issued, is obviously an emergency Report, intended to deal at once with that portion of the Reference which concerns the practicability of interconnexion supply between the various companies, with the view of removing or [greatly reducing the danger of the recurrence of such an event as the recent water famine, or rather deficiency of supply (for water famine is too large an expression) in East London. The Reference to the Commission was divided into three heads: 1st Whether it was desirable that the undertakings of the London water companies should be acquired and managed (*a*) by one Authority or (*b*) by several Authorities, and what they should be; 2nd Whether additional powers of control should be exercised by Local or other Authorities; and the third head runs thus:—

> "Whether it is practicable to connect any two or more of the different systems of supply now administered by the eight Metropolitan Companies; and, if so, by whom, and in what proportion, should the cost of connecting them be borne, and what are the legal powers necessary to give effect to any such arrangement."

It is with this latter portion of the reference that the present Report deals. Obviously the weight of the Report will be in regard to the first clause, which cannot be disposed of in a hurry; and the Commission has acted wisely in at all events reporting promptly on the means for preventing temporary and local failure of supply.

We learn from the Report that the "Associated Metropolitan Water Companies"—so they are styled—are of opinion that "intercommunication would be a convenience," and that they were prepared to promote a Bill in Parliament which would obviate the difficulties placed in the way of intercommunication by any of the existing statutory obligations of the companies. Of course the companies are really "associated" in what they regard as a movement of self-defence, as showing that they among them can supply all that is required if allowed freedom of intercommunication.

Three schemes were described in the evidence given before the Commission. Scheme I. was drawn up by the engineers of the eight companies collectively, and was stated to have been framed not for providing for the failure of a source of supply, but for an interchange of water for temporary objects only, such as the failure of a pumping engine or the fracture of a main; and the essence of the scheme was the utilisation of the surplus water of the Chelsea Company, the only one which was considered at the time to have any material quantity of water to spare. The engineers of the companies, however, did not themselves recommend Scheme I. as of much value, and it is briefly dismissed in the Report. Scheme II. was prepared with special reference to the circumstances of last year. The Southwark and Vauxhall Company having nearly completed new works at Hampton, had proposed to abandon and dismantle their old works at Battersea, and it was proposed that the Associated Companies should instead take over this site for the formation of a distributing centre, with connecting mains by which certain reservoirs of the Grand Junction, the New River, and the Lambeth Companies could be supplied from Battersea, and further connexions are proposed with the other companies' mains.

In considering this proposal as a means of preventing local water famine, the Commission made careful inquiries as to the capability of each company to give any extra supply beyond the requirements of its own district, and the result is not very promising. The Grand Junction could not deliver at present to other companies more than 1½ million gallons a day; to do more they would have to get their right of abstraction from the Thames increased, and to have additional pumping power and mains. The Kent is not in a position to supply much to other companies, because it relies so much on its chalk wells that it keeps little reserve supply; the very abundance of its natural supply having led to this result. The Lambeth Company can at present spare nothing to other companies during its own period of maximum supply, extending throughout July and August each year. The West Middlesex could not spare more the one and a half million gallons, and the demands of its own district are increasing by about 300,000 gallons per day annually; and in this case too any increase of supply would entail further powers for abstracting from the Thames, a suggestion which in fact occurs several times in the course of the Report, and which is not a little alarming.

> "The conclusion which must be drawn from the foregoing summary of the evidence laid before us with respect to the present condition of the means of supply of the five companies dealt with above is that the mere connexion of their systems with each other and directly or indirectly with those of the Southwark and Vauxhall, the New River and the East London Companies would not enable any one of them to be of very material assistance to others in case of an emergency arising during the summer months.
>
> The combination could not be rendered fully effective unless the Grand Junction, the Lambeth, and the West Middlesex Companies obtained additional powers of drawing water from the Thames and of constructing works for the treatment, pumping, and conveyance of the additional water to the points of connexion."

As far as East London is concerned, however, the Commission are of opinion that the New River Company is in a position to give all the assistance that is required, and summarises the position thus:—

> "The New River Company derives its supply from the River Lea and from wells. From the Lea at Ware the company is entitled to take daily 22½ million gallons in priority to the East London Company, whose intake is at Chingford, fifteen miles lower down.
>
> On July 26 last the New River Company commenced to reduce its daily abstraction of water at Ware, thus placing at the disposal of the East London Company the quantity dispensed with, which flowed down the river channel to Chingford, and thence by the East London intake conduit into the storage reservoirs of that company at Walthamstow. The total quantity of unfiltered water thus delivered to the East London Company from July 26 to October 31, 1898, was 569,882,000 gallons. The

New River Company, by increasing the rate of pumping from its wells, of which there are thirteen in the valley of the Lea, was enabled to maintain a full supply to its own district. The average daily supply from the New River Company to the East London Company during the period above referred to was 5,815,000 gallons.

It is evident that the New River Company possesses the means of giving the East London Company effective assistance in a very simple and direct manner, and as it is unfiltered water which is transferred, there is no additional tax on the filtering plant of the New River Company."

In summing up the objects to be gained by connexion of the systems of supply, the Commission came to the conclusion that the scheme of intercommunication is sound in itself, as applied to companies worked as separate organisations and each with statutory obligations of its own; and that in the event of the companies' undertakings being amalgamated or purchased by one authority, the interconnexions would probably be in continuous use, and would be available for the equitable distribution of water and the occasional regulation of pressures throughout the entire area concerned. Reference is made on another page to the suggestion of the London County Council, that the effect of an intercommunication scheme might be to increase the value an arbitrator would put on the undertakings of the companies, in the event of purchase by one authority. The Commissioners doubt whether this would be the case, and urge that "no company should in the event of purchase be allowed to enhance the value of its undertaking by reason of an intercommunication scheme." This sounds rather arbitrary, and it may well be argued that though no one company's valuation for such a purpose may be increased by intercommunication, the united value of the eight undertakings would certainly be increased by a complete system of intercommunication; the several systems would, it is assumed, be bought to be treated and worked as a whole, and the fact that they were all intercommunicating already would save a great deal of cost and inconvenience to the purchasers; so that on this head the Commissioners do not seem to be quite logical. They seem to contemplate some kind of enactment by which the companies shall be prohibited from claiming a higher value under the circumstances indicated; but inasmuch as these circumstances would really create a higher value, obtained at a considerable cost on the part of the vendors, to disallow it would be rather like an act of confiscation.

Having in view the idea of the companies, or some of them, having to take more water from the Thames if they are to be in a position to contribute on any large scale to other companies, the Commission touches on the dangerous idea that the Local Government Board might have power in any emergency to authorise a company to exceed its statutory limits of extract from the Thames. As it is almost certain that such "emergencies" would occur at the time of year when the Thames is at its lowest, one can hardly be surprised that the Commissioners recoil at all events from this proposal; and they suggest that the case would be better met by conferring on all the companies the principle contained in the Staines Reservoirs Act, viz.: to allow the companies to draw varying quantities of water from day to day, providing that they do not exceed a given average per day over six months. This of course means that they may draw freely in flood periods, for storage. The merit of this suggestion depends entirely on our acceptance of the new doctrine that flood water is no more clogged with unwholesome elements than other water—a doctrine in regard to which we feel a healthy scepticism.

If the Report in general does not prove very much, it however seems to show that there need be no danger of another scarcity of water in East London if the matter is taken in time, and that the auxilary resources of the New River Company are sufficient for the occasion.

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## NOTES.

**The Soane Medallion Competition.**

WE have received a copy of a memorial which was forwarded to the Council of the Institute last week, signed by a number of architectural students and others interested in the subject, requesting a re-consideration of the award of the Soane Medallion, on the ground that it was a condition of the competition that the requirements of the London County Council should be observed, and that these are ignored in many instances in the plans to which the prize was awarded. The instances are given. Some of them refer to regulations (for instance, as to the isolation of dressing-rooms in a separate block) which can only refer to theatres; and some others are rather trivial. Some, on the other hand, are important, especially those as to closets not against external walls, of which there are many in the plan; an arrangement which is very bad even apart from the County Council regulations, and the avoidance of which would have affected the exterior design. We do not see that the Council could have been expected to alter the award of the prize after it had been announced, but the memorialists were right in calling attention to the matter, and their action may have a wholesome effect on future competitions. In our opinion both the competitors for the Soane, and the Prizes Committee, have taken the subject in rather too light-hearted a manner; the designs as a whole are not up to what might have been expected, and the decision on them seems to have been too hastily made. We were rather surprised also that no mention was made of the memorial when the prizes were delivered on Monday.

**The L.C.C. Works Department.**

THE London County Council resumed its weekly sittings on Tuesday last, when it devoted two hours to the consideration of the Report of the Finance Committee in regard to the Works Department. The Report was six weeks' old, and it contained nothing that our readers are not acquainted with, but it served as the ground for a debate in which the friends of the Department offered the usual apologies for the acknowleged loss of over 30,000*l.* on the workings of the Department since its inception, viz.: the excellence of the work, excessive supervision, high establishment charges, and the antagonism of the Moderate party generally—apologies which one is tired of hearing and which are not altogether justified by the facts. Indeed, as to the excellence of the work, Mr. E. A. Gruning, the assessor in the recent inquiry on the workings of the Department, is reported to have said, as the result of an examination of some of the work carried out by both the Works Department and contractors, that there was nothing to choose between the two as to brickwork, and that in joinery work the Works Department work was inferior to that of the contractor; and, in regard to certain works carried out by the Works Department at Colney Hatch Asylum, on which there was a loss, it was the worst work he had ever seen done, while at Banstead Asylum the work done by the contractor was very good. Though losses have been made by the new management (principally over the Lewisham sewer, which was an exceptionally difficult work), there has been an undoubted improvement in the Department, and there is yet time for it to make a success of an experiment which so far has not answered to the expectations of its promoters.

**The L.C.C and the Chamber of Commerce.**

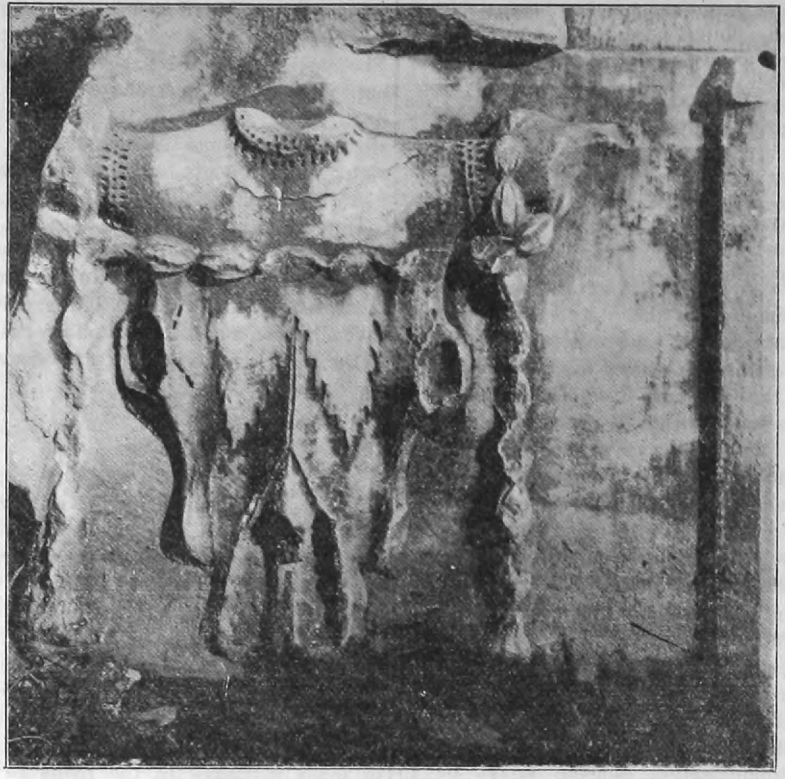
THERE has been considerable dissatisfaction of late among City merchants and warehousemen as to the requisitions of the London County Council in respect to workshops and factories, the Council in this case having to act as the Sanitary Authority. A deputation from the Manufacturers' section of the London Chamber of Commerce has now lodged a formal petition, and we are glad to see that the Council has now undertaken to give full consideration to any alternative proposals submitted to them, to take the place of works to be carried out to meet its requirements. There is, of course, no doubt that many of our factories are death-traps as far as fire is concerned; but, on the other hand, the requisitions of the Council have at times been so drastic, and have had the appearance of being so absolute, that property owners have been put to very considerable and sometimes unnecessary expense or inconvenience. As long as it is clearly understood that every effort will be made to comply with the Council's requirements of safety, with due consideration to the existing circumstances and the purposes of an establishment, the public authorities should have little reason to complain; but the technical advisers of those served with requisitions must treat the matter in a spirit of give-and-take, and not simply look upon the official requisitions as unjustifiable interference—a point of view too often taken up by the clients.

**New Streets in Urban Districts.**

THE recently-decided case of the Urban District Council of Stourbridge *v.* Rufford & Co. is one of much import to growing districts, though it does not seem to be, so to speak, new law. Briefly, it decided that the Towns Improvement Act, Section 63, applied to country lanes which were in process of becoming parts of a town The Section enacts that it shall not be lawful to lay out or make any new street unless the same be either of a prescribed width or 30 ft. wide. So far as the facts of the case appear, the highway in question was a lane gradually forming into a street. The defendants proposed to erect a row of buildings which would give the highway less than 30 ft. of width. If this was not a new street, then the District Council would not have power to oblige the defendants to set back their building. The point seems one of some legal difficulty, but there is no doubt that Mr. Justice North's decision to the effect that this was a new street is one in the public interest. It is most desirable that streets in their beginning should be of a proper width, and this decision, coupled with a previous judgment on the provisions of the Public Health Act, 1875, seems to make it clear that the public interest can now be safeguarded. Whether all Urban Councils are as watchful as that of Stourbridge may, however, be doubted.

**The Telephone Service.** THE articles appearing in the *Times* on "The Telephone Service," professedly written from the company's point of view, are an indictment of the action of the Government in the past with respect to the telephone, and prove that there has been a certain amount of "Government ineptitude and blundering." At first the Government would have nothing to do with the telephone; then, after private enterprise had shown that telephony was a practical science, the Postmaster-General sought to prevent its development on the ground that it was practically the same as telegraphy, and therefore came under the Government monopoly. The action being decided in his favour, instead of undertaking the development of telephony, he merely imposed a heavy royalty on the telephone companies. In 1892 the attitude of the Post Office completely changed; instead of doing their utmost to restrict the areas and harass the work of the telephone companies (with the audable if mistaken motive of protecting the revenue from the telegraphs), they announced their intention of purchasing the trunk lines, and declared that they would co-operate in developing the business of the companies. The report of the Select Committee last summer has, however, stopped this co-operation. The Committee were firm in their recommendation that concessions to the National Telephone Company not required by their agreements should cease, and that a Government department should begin a real and active opposition to it. No wonder that the Company feels aggrieved. The near prospect of municipal telephony at Glasgow is also causing them alarm, and makes them anxious to be bought out by the State before their plant becomes antiquated. It is obvious that if the telephone is ever to be a success in this country we must have, as well as central management and administration, uniformity of system and method, and complete intercommunication between all subscribers.

**Paris Exhibition.** THE Austria and Hungary pavilion for the Paris Exhibition has been designed by M. Baumann, who has adopted a pompous style savouring of recollections of Versailles. Before the pavilion will be a terrace on arcades, and the main building will present four façades of monumental aspect, decorated with engaged columns, flanked at the angles by projecting pavilions with small domes, which will be adorned with fountains with figures of children and dolphins. The Russian pavilion, which will occupy an important site in the Trocadéro garden, is designed by M. Meltzer, a Russian architect, in collaberation with a French architect, M. Lucien Leblanc; it will consist of a series of large buildings, of which we may give a description later.



*Part of Entablature found in the Forum, Rome.*

**A Fragment from the Roman Forum.** BY order of Signor Baccelli, Minister of Public Instruction at Rome, a systematic classification has been commenced, under the direction of Signor Boni, of the fragments belonging to various ancient edifices which have till now lain scattered and neglected about the Forum. In the course of this work Signor Boni discovered some fragments of a Doric entablature, one of which is represented in the cut, from a photograph sent to us from Rome. The building to which these belonged, and of which considerable remains existed up to the fifteenth or sixteenth centuries, was one which seems to have attracted great admiration from the Renaissance architects, and drawings of it by Giorgio Martini and Guiliano Sangallo are preserved in the Uffizii Gallery at Florence. As the building stood near the Curia (now St. Adrian's Church), Professor Lanciani considers it to have been the temple of Janus; other archæologists put it down as one of the lateral faces of the Basilica Æmilia. The number of fragments already collected and obviously forming part of this building seem to show that it was a larger and more important one than the temple of Janus would probably be; but further exploration may lead to the discovery of other remains which will assist in settling the question.

**The Star Chamber, Westminster.** To mark the site of the Star Chamber, a tablet has been prepared by Sir Reginald Palgrave, and will be affixed on the wall—facing westwards—of his residence midway between the two archways leading into the Speaker's Courtyard. The Exchequer Buildings, as apart from the Exchequer Court, and the Star Chamber stood between the river stairs and New Palace-yard, as depicted in Aggas's map and in Mr. W. H. Brewer's "Westminster in the time of Henry VIII.," published in the *Builder*, November 15, 1884. That part of the Palace was rebuilt *temp.* Edward IV., and, having been altered meanwhile, was gradually pulled down in 1807-36, the last to remain being the Star Chamber and the offices for printing Exchequer Bills and for the trials of the Pyx. The Star Chamber Court Room, with a frontage of about 30 ft., was on the first floor, where is now the drawing-room of the official residence. The elevation, with its line of oriel windows, and gables above, appears in Capon's water-colour drawing (1793) in the Walmisley Collection. The Court, established by Henry VIII., derived its name, according to one—and the more probable—account, from the "Shtaroth," being the contracts or agreements, for the most part of the twelfth and thirteenth centuries, made between Jews and Christians, which the several parties were required to deposit in the Court of Exchequer; of each set of instruments executed in triplicate one copy was lodged there, and a silver besant (about 2s.) was paid to the king for each pound of every sum that passed under the deeds. About twenty years ago a doorway was made at the north end of the east wall of "Up School," Westminster (the monks' dormitory), to communicate with the present "Shell" form-room, and fitted with an oaken Tudor door-case, which is believed to be a relic of the Chamber. Over a doorway were carved "E. R." and date "1602," with a Tudor rose on a star; behind the panelling were found three Tudor-arched doorways, and beneath the staircase an arched opening with roses in the spandrels. The carved oak ceiling with other details are delineated in Smith's book; some of the ornamental fittings were obtained by General Sir Edward Cust, for the dining-room of his country seat, Leasowe Castle, in Cheshire.

**Landscape Exhibition Dudley Gallery.** AMID the number of important exhibitions open at present we have rather neglected the very charming little exhibition of the works of a few landscape-painters at the Dudley Gallery, which will close in a few days. The exhibitors are Mr. Aumonier (eight works), Mr. Leslie Thomson (seven), Mr. E. A. Waterlow (eleven), Mr. Peppercorn (nine), Mr. James S. Hill (nine), and Mr. R. W. Allan (eight). Among the finest is Mr. Aumonier's "Sussex Broadlands," a landscape in a very broad style; Mr. Leslie Thomson's "On the East Coast" and "The Bathing Place," with a winding river indenting the brightly-lighted pastures :—

> "Rura quæ Liris quietâ
> Mordet aquâ, taciturnis amnis;"

Mr. E. A. Waterlow's "Green Pastures," looking rather like an inspiration from Corot, but in a more sentimental vein; Mr. Hall's "Bosham" and "A Village Road," works in which nearly the same composition appears reversed; and Mr. Allan's "Through Wind and Rain" (Morecambe Sands?) and "Autumn Winds"—the latter a beautiful little composition.

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**Exhibition of the Cercle Volney.** THE annual exhibition of the "Cercle Volney" at Paris (open till February 15) is a very good one. The portraits, less numerous than last year, are among the best exhibits, especially that of M. Chaplain, the medallist, by M. Benjamin-Constant; the works of Messrs. Bonnat, Henner, and Weerts are also remarkable. Landscapes are more numerous than usual; among the best are M. Lami's "Triste Automme" and M. Garaud's "La Baie de Douarnenez." M. Carolus Duran, who is at present in America, has sent only a flower-study and a view of the interior of St. Mark's Venice. M. Bouguereau exhibits a figure of a young girl in his usual style, or (as we may say) rather more so; it somewhat reminds one of a coloured photograph. M. Jules Lefebvre sends a beautiful profile head of a woman, and M. Raphaël Collin exhibits a poetic figure entitled "Solitude." In the section of sculpture the best things are a "Faun" by M. Boucher and a fine bust by M. Denys Puech. The exhibition also includes some interesting studies by M. Albert Maignan for the *foyer* of the new Opéra Comique.

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**A Knutsford Architectural Competition.** UNDER the above title, Mr. Willoughby, of the firm of Woodhouse & Willoughby, gives an interesting description in the *Manchester Courier* of the terms of competition issued by an Urban District Council for designs for a proposed cemetery chapel, &c. These seem certainly to out-do all we have ever seen in the way of competition conditions. No assessor is to be appointed, and the Council "reserve the right to exclude all or any of the designs from the competition if its *probable* cost will exceed the intended outlay," or they may reject them all "if they consider them unsuitable." In such event "they will hold a further competition." When any selection is at last made, the architect is to take out the quantities at his own cost. Finally, "all plans are to be sent in with the author's name attached." The naïveté of this last requirement seems almost too good to be true; but we think it is probable that the absurdity of the proposals is due to sheer ignorance rather than to any definite intention of acting unfairly. At all events, they will get no competitors worth having until these conditions are altered.

## THE ROYAL INSTITUTE OF BRITISH ARCHITECTS:

### PRESIDENT'S ADDRESS TO STUDENTS.

A MEETING of the Royal Institute of British Architects was held at No. 9, Conduit-street, Regent-street, on Monday, when Professor Aitchison, R.A., President, took the chair.

The minutes of last meeting having been taken as read, the President announced that the family of the late Professor T. Hayter Lewis had presented to the Institute a number of books, and had lent, for the inspection of the members, some sketch books containing sketches by the late Professor made sixty years ago. A vote of thanks was passed to the donors.

The President then delivered the following address to students:—

"It is customary in this month to give an address to students, and it is one of the pleasantest duties the President has to perform.

The world consists of the past, the present, and the future. The past is hopeless; it cannot be altered or improved; it can only be studied. The present, of which the practising architects are representatives, is too well known to dilate on: and the immediate future consists of the students, and they allow us to conjure up all sorts of visions, and to delight ourselves with fancying that their works will be stamped with the perfection that ours have missed.

Aristotle tells us that most things can be equally well or better done by youth than by age; but there is one thing that age alone can give—that is, experience. I think it is a pleasure to all men of some years to convey as much of the results of their experience as they can to the young who are following in their footsteps, or are about to follow. In an art like ours it is very difficult to know what useful experience we have to impart—I mean æsthetic experience—because our views and those of the rising generation are probably different, if not opposed. I give you some remarks of Professor Cockerell to the R.A. students of my day. 'That they should study all styles, for they can never tell how fashion will change, and that the style they have chosen may not be abandoned.' This was said when imitation Gothic was all the rage.

I hope for the advancement of architecture which will take every one, and that when it does come it will not be an imitation of some dead style.

At present, at least, we have no means of evoking genius, and the only means that has yet occurred to me to improve our art is by learning principles and by striving. It is true that I was found fault with by one of my hearers on a former occasion for not invoking the aid of the Almighty; but it seemed to me then, as it does now, that my business is to say as far as I can what earthly methods, and what earthly methods alone, have the chance of improving us.

There is one thing I have remarked—that all the sciences and arts seem to go in cycles, or, as we should say, are mounted on Fortune's wheel, and, as it turns, one art or science is the top of the wheel while the other is in the mud, and as it goes round the positions are reversed. It is not very easy to trace the cause of these epochs, but we can safely say that, at the present moment, the epoch is that of the application of science, and is on the top of the wheel, while architecture is very low down. When these epochs occur, the whole atmosphere, as it were, is full of the desire for excellence in the particular art or science then coming into vogue, as a knowledge of Roman architecture was at the time of the Italian Renaissance; and at such times men of the most transcendent abilities have an ambition to succeed in the new fashion, even though it promise but little wealth, and very often nothing but the escape from starvation, even if it offer that. Milton's was in England a poetic age, though he got for his 'Paradise Lost' little more than the price of waste paper; but he at least got an immortality of more than 200 years, and we know not how many more centuries he will last and be studied; while poor Otway, the author of the once admired 'Venice Preserved,' who lived in the same century, is said to have died of starvation, and though he was popular in his time, I am afraid there are few but professed students of dramatic literature who have ever read a line of his. A great incentive to any kind of study or achievement is that of being thought highly of by your contemporaries, though there is a higher stimulus in the hope of that sort of immortality which mortals can attain

One of these inducements at the present time is impossible to be looked for—I mean the admiration of your fellow men; for who knows or cares whether your work is good, bad, or indifferent, except perhaps a brother architect? I do not know if the sort of limited immortality any one can get has ever been obtained by those who have not been admired by their contemporaries; at any rate, it has not commonly been the case. Yet we hear all the unsuccessful votaries of the fine arts saying that though their works may not be appreciated now, they will be appreciated by posterity. I have admired architecture I have casually seen, without knowing the name of the architect, or whether he was alive, and thought this was by a good man, which I hope, if he is dead, may be some satisfaction to his manes. Architecture, at least in good times, does not so much represent the proclivities of the artist, as the general aspirations of the people; for, though the great artist seems only to portray his own ideas, he must, if popular, do admirably what every one desires to do himself, in spite of Dr. Johnson's attempted refutation of Boswell's remark that 'the poet only says what every man thinks and would say': 'Then, sir, according to you, the poet is only the tailor of other men's thoughts.' At any rate, architecture must have conveyed to the minds of the people when it was built the sort of effect that they desired, for models were mostly made for approval before the building was done, while to future generations it clearly speaks of the taste and inclination of the age in which it was produced: it shows the genius and knowledge of the architect and the skill and care of the workmen, so that if a ruin is seen, or a considerable architectural fragment is found, we cannot help forming a strong opinion of the taste, skill, and proclivities of that age.

I think I have pretty well expressed the indifference of the present age to architecture, so that you cannot expect much honour or reverence on account of your work, or that it will cause much pleasure or delight to the living beholders. It becomes questionable whether there is enough stimulant to attract men who possess the intellectual faculties necessary for producing fine architecture, I mean such architecture as will be admired for two or three thousand years. I hope that my observation has been wrong as to the chances of immortality for those whose works are disregarded by their contemporaries, for if the architect is really before his time, he should be recognised by those that come afterwards. I cannot even give that sort of encouragement to the students that used to be given me when I was a boy—that all men had equal abilities, and the great man was merely distinguished by greater perseverance and industry, although it is quite clear that extraordinary industry and perseverance are the concomitants of genius. I think I understate the case if I say that one considerable architectural genius is to be found among 100,000 of the inhabitants of any highly civilised country. To be a great architect involves a capacity for acquiring the higher branches of mathematics and to be able to use them; to comprehend at least that branch of natural philosophy that is called statics, and even to advance beyond the point at which it has then arrived; to so arrange a building as not only to fit it for its purpose, but to put it in a shape that will command the admiration of skilled and cultivated beholders, and to invest the finished structure with a capability of exciting emotions that are proper to its use. Architecturally this is brought about by simplicity, perfection of proportion, by outline, by the proper disposition of light and shade, and by size and mass. To the former qualifications of the architect must be added the capacity of knowing what additional interest can be given to important parts by sculpture, and how colour can be properly applied to the whole structure. Of course it would be infinitely better for the architect to possess the whole of these qualifications; I do not know whether this was ever the case, though Sir Christopher Wren very closely approached it. We know that in whatever excellent qualities the Renaissance architects were deficient, they were mostly sculptors or painters. Where they were deficient was in construction, in invention, and in the proper expression of their buildings. According to Mr. Ruskin, all the architects of the world since the early Greek times were sculptors, and the sculptors thought, like Mr. Ruskin, that pure architecture was ridiculously easy, or came naturally to all men. I think that he was conversant with the history of the Renaissance architects, who were undoubtedly sculptors or painters, and applied these qualifications to the Greek and Mediæval architects ; but, as far as I can find out, there is not the slightest ground for believing it true of the Mediævals. His Excellency Monsieur Jusserand tells us of a monk who was allowed to have a nude model to make studies from for a crucifix, but we have not the slightest hint that he was an architect as well, and the notebook of Wilars de Honecort, whom we know to have been an able architect, does not impress us by his sketches with the idea of his being a competent sculptor or painter. Some profound students of Greek literature would probably be able to confirm or deny the hypothesis that all the Greek architects were sculptors ; but considering that we do not know that Phidias was an architect, it seems unlikely that the great architects were sculptors or that the great sculptors were architects. Aristotle was a great admirer of architectural art, and any one bent on knowing whether the architects were sculptors as well might find indications of it by reading through his voluminous works to that end. Plato was evidently conversant with the craftsmen of his time, but I do not recollect any suggestion of his that the Greek architects were sculptors. We know from Trajan's letter to the younger Pliny that the Roman architects were mostly got from Greece, but we do not know whether they were sculptors as well.

Most of you probably know that Pascal considered architecture a progressive art, and we all know that it did progress most rapidly in constructive skill, from the end of Romanesque days through Gothic times almost to the very end, and it also changed its æsthetic expression several times.

I think all of us desire to see architecture progress more especially in æsthetic expression.

Since the application to building of cast iron, wrought iron, and steel, the engineers have surpassed even the wildest imagination of sixty years ago. The Britannia Tubular Bridge is, as far as I recollect, 500-ft. span, but Sir Benjamin Baker has made a span of the Forth Bridge over 1,700 ft. It is very unlikely that any architectural work would require a span of more than a tenth of that bearing, and that supposes an extension of more than double the span of the largest groined vault of the Romans, which was only about 80 ft. Still we must to a certain extent look for the advancement of architecture in a nicer adjustment of the mass to its height and to the weight to be carried, and to the form to be given to the supports for the weights and strains that come on each particular piece. In the use of iron and steel architects are very much handicapped, first on account of the slenderness of proportion which, as a rule, renders them unfit to compose with the weaker material, but mainly on account of the little resistance these materials offer to the action of fire, unless they are protected by fireclay and terra-cotta ; and when they are so protected they very nearly assimilate in size to the supports of old-world structures. Still, as I have so often said before, I think if the Mediæval architects had possessed these materials and been able to work them as we can, they certainly would not have abstained from using them, as architects of the present day have mostly done. What visions does the use of cast-iron raise in our minds as to the possible size and height of buildings! What new forms and shapes does not cast-iron suggest when we know that it will take any form we please and any ornaments that can be cast! What visions of colour does it not evoke when it may be made resplendent with enamel!

No one can say that convenience in planning is not greatly studied in the present day, but this convenience has mostly been of the purest utilitarian sort : it has been a question of how the accommodation wanted can be packed anyhow, which should not be the aim of architectural planning, which now, alas! is hardly thought of. The other thing to be aimed at is to give expression to the thoughts, cultivation, and aspirations of the present day, a subject that requires the deepest study and a perspicacity that is rare ; for, though we are quite certain that many buildings have not got the proper expression, it is not so easy to say how the proper expression should be got. We have ransacked all the civilised architecture of the past and made collections of it for use, but we have certainly not applied the examples with discretion. The delicate ornaments and suggestive sculpture that were applied to the embellishment of the boudoirs and pleasure-houses of Renaissance beauties is now lavished on oyster-shops, public-houses, and clothiers' warehouses, on which fluttering cupids are out of place, and the magnificence and stateliness of the palaces of great nobles now deck stores or hotels. We can at once pronounce these to be absurd, but we can hardly lay down a rule for the right expression which should be applied to the immense variety of buildings that are erected ; for although we are familiar with the term 'playful' applied to some buildings by the architecas of two generations ago, we hardly know in what that playfulness consisted.

We must not forget the effects of association. Pediments were only found on temples during the Roman Republic, and Cicero expected to see them in heaven. Gothic with us is mostly associated with cathedrals and churches, and is therefore looked on by the public as a holy style. This, of course, is absurd, for the style in vogue was always used indifferently for all sorts of structures, when there was a style ; but the architects did not bestow the same character on a coal-store or a tinker's shop as they did on a cathedral, and when the outside of a building shows what is wanted in the inside, the cathedral and the tinker's shop will not be quite alike, nor should it be decked with the same enrichments.

You know that architecture is the most difficult of the visual fine arts, yet there is much more labour spent on learning painting and sculpture than there is on learning architecture, and the votaries of these fine arts commonly have more natural aptitude to start with. We know the painful years students of painting and sculpture devote to getting the groundwork of their art, while from three to five years spent in an office, mostly in tracing, is thought enough for an architect.

Although I do not think that the test of examination is a very complete one, it is better than nothing ; but yet the profession generally think even this too much, and utterly declines to start a more complete one for Fellows, being afraid that a knowledge of the elements of architecture may damp the ardour of Genius or clip its wings ; while almost all the other professions have examinations for the two classes, and have consequently advanced at a much more rapid rate.

There are two points to which I beg to draw your particular attention—first, that architecture is a structural art, and that all an architect can do, as an architect, is to build ; in his structures he has to show his knowledge, taste and skill, his learning, morals, cultivation, and aspirations. The Mediæval architects in their ecclesiastical buildings showed their hopes and adoration by lanterns, towers, and spires, by lofty naves, daring construction, and intricate patterns. When we have arrived at their pitch of knowledge and skill we must show our parts, inventions, and aspirations in similar ways, not as they did with almost pure geometrical figures, but in more graceful, refined, and daring work. Secondly, to point out the comparative scarcity of the use of coloured and glazed materials for external facings where the greatest beauty of colour and form may be used. It is refreshing even to think of London and other manufacturing towns presenting to us beautifully coloured fronts, that do not want painting every year, and would render such towns cheerful, if not delightful, to look on, in the place of the dingy, sooty, and depressing houses faced with stone, brick, or plaster ; and this would not only raise our spirits under our leaden skies and perpetual drizzling rain, but be more healthful, for glazed pottery absorbs but little moisture, and is easily cleansed from dust and soot.

I am glad to see that we have admitted ladies to the Associateship, for that allows us to avail ourselves of the abilities of at least another half of the population, and, if you will pardon the bull, the larger half, as well as to offer a small meed of justice to the fair sex."

Mr. Beresford Pite then made the following remarks on the students' drawings :—

"The students' competitions of the Royal Institute in Design have some importance and general value beyond the interest of the subjects dealt with or of the individuality of their authors. When the subjects are of general interest, as is the case this year, and (as we are also glad to note) when the number of competitors is ample and sufficient to afford a comparative exhibition, a review is presented of the development, not only of the results of architectural education, but of the operation of those elements which are moulding the progress of the art of design in building. In the competitions for the Soane Medallion and the Tite Prize nineteen designs have been submitted, all without much qualification, the work of students having adequate training in preparing sets of drawings for such competitions. There are among so many designs evidences of stray influences and of some enthusiasms, but owing probably to the generally monumental character of the two subjects, a concert-hall and a royal mausoleum, the works as a whole enable a fair estimate to be formed of the paths which the study of design in England is taking.

There is a manifest desire to return to Classic tradition in both these subjects, that is, to the standards of design in mass and detail that were current before the Romanticism of the Gothic and Queen Anne revivals coloured the dreams of young and old architects alike. But the return to the once discarded pathway is neither direct nor comfortable, and the halting recognition of the force of traditions which have been transgressed with impunity, suggests a confession of failure almost of the nature of a penance, certainly a pilgrimage without the joy of a sketching excursion and without much hope or energy in imaginative effort.

The designs for the concert-hall that seem to indicate this somewhat pessimistic attitude, and can be classed as unwilling if not unhappy designs, are, mentioning them alphabetically, "Ben Marcato," "Cecilia," "Civitali," "Honor," "Lion-Rampant," "Si je puis," and "Sol-fa." "Ben Marcato" accepts the inevitable with the best *sangfroid*, and therefore seems to obtain the award ; the external dignity, the single, great, and fairly-proportioned order, supported by wings of subsidiary scale, make the design what it is ; while the disregard of constructional expression, the building up of such enormous features as the attached columns of the peristyle, and the return entablatures, as without any basis in the plan or constructive scheme, are symptoms of that road to architectural ruin which once led from Regent-street to Regent's Park. These columns should be hollow, as they stand on cross girders and thin walls, and the entablature should, for the same reason, be a shell in length of about 40 ft. Stucco is the inevitable outcome of taking up the Victorian Classic tradition where it was dropped a generation ago. The pursuit of architectural study abroad, and especially with regard to plan and arrangements of concert-rooms, can safely be recommended to the successful student.

Other designs return to the traditional Classic style, with traces of a freer influence as to detail and composition, but in almost every case without a sufficient sense of symmetrical propriety or of dignity of proportion. "Si je puis" is wrong where he is free—the licence which cuts a semicircular arch into two parts with a pier under its keystone ; and to divide the colonnades below a pediment similarly in the centre is a similar weakness. This design has care in its plan and some dignity of arrangement in the elevations, but has no architectural character worthily developed. "Lion-Rampant" has more evidences of life, perhaps some excess of it (which was the complaint of which Dr. John Brown's little dog died). The breadth of treatment internally and externally, and the beautiful draughtmanship of the detail drawing, should be commended, and the tendency to originality a little chastened. "Cecilia" carefully brings somewhat of the Georgian feeling into the Classic treatment of her design, and has a too severely square plan and very large rounded pediments to express it in elevation ; the general scale of detail is rather small, but the use of large freely-drawn swag ornament may be commended. "Honor's" domical antechamber will illustrate to students the truth that an architectural imaginative idea needs embodiment in the facts of the building, that Pegasus must be ridden by the poet, not harnessed in front of his vehicle or he may kick it into insignificance. "Sol-fa" needs connexion both of idea and of parts. A boldly corbelled gallery as the attic of his front is supported over a deeply-recessed arcade from which projects a porte cochère, an arrangement of ideas which is contradictory.

Though grouped with the traditional classicists, "Civitali" occupies a position nearer satisfactory originality and acceptance of traditional proportions, but in common with the foregoing authors is suffering from the almost complete lack during the past era of the systematic study of Classic proportion. The design is broad, and the concentration of interest satisfactory, but the composition of the parts is ignorant. Students of Classic architecture, if they would achieve success apart from mere archæologic reproduction, must undertake the groundwork of the orders otherwise than as mere "testimonies of study" which have not been studied. Sir William Chambers's text-book and system should be assimilated and studied, beauty of parts sought after rather than originality.

There is another group of designs for the Soane competition that merit attention as a whole. They are neither Gothic nor Queen Anne, but are certainly Romantic. The avoidance of architectural traditional forms is now earnestly advocated as essential to the regeneration of current building art. The doctrine shows a healthy reaction against the deadness of reproduced detail; it has a field of its own in whitened country homes; and perfectly simple restrained design can be cultivated without much difficulty in such cases. Room is being made for this teaching in ecclesiastical work, but there it threatens an affectation of crudeness and barbarism that tends to defeat its first principles.

For *beauty* as an element in a building, detail from such craftsmen as the figure-carver and metal-worker is requisitioned, the architect merely modelling his walls suitably to his abstract ideas of mass and scale—if he has any. In the illustration of such work even architectural draughtsmanship is discounted, and the most sketchy method is deemed the best, for the purpose of emphasising that the building is more than the drawing. Texture of surface, beauty of material, and what may be called personal detail, is essential to success, and it is hoped that with these qualities architecture, as she is taught, can be dispensed with. The application of these principles to a student's design is, of course, an anomaly; a student's design should not exist. The building only is architecture in its material and craftsmanship.

The appearance of a group of four designs in this competition more or less based upon these general ideas is a matter of some importance; they are by "The Itinerant Architect," "Lohengrin," "Olive Green," and, with some partial qualification, "Swan."

Of these, the first named is the most important, and expresses with considerable ability the principles of the new school. The drawings are sketchy, but evidence reserve of power, and have directness of line. Detail is abnegated architecturally; beauty of form is confined to figure panels combining between the windows to band the design together; a primitive colonnade is formed of shafts dividing upper windows; shallow projections give vertical emphasis and some sense of surface; while the whole outline is kept in subdued masses without cornice or change of line. The roof is flat, as is also the ceiling; the interior is well thought out, and the organ frontage and internal scheme for decoration would make the hall one of the best in the series. The success of this design as a building is rightly intended to depend upon its mass, but material would be nearly as important an element in its success. What could this be in London? Stock brick is beautiful where it is appropriate; here it would not be. I can only imagine a suggestion and offer it seriously to the talented author of this design, that the whole should be banded in black and white glazed brick in about the proportions of the use of black and white marble in Florentine buildings, and that the panels of ornament should be of coloured ceramic ware.

"Lohengrin" attempts to follow the same doctrine, but with less success and comprehension of its purport. St. Mark's, Venice, the interior of which is a Mecca for architects, unfortunately possesses external dome roofs of wonderful quaintness, but of no architectural or doctrinal connexion with the purity of its interior. Mr. Ruskin had to shut his eyes to them when contemplating the façade. But they have inconsiderably invaded the imagination of "Lohengrin," and his ogee roof cases are really contrary to his faith. This set of drawings is characterised by other affectations, as the eevations are inked in freehand, and that without gain of feeling or correctness. "Olive Green" employs some current forms for mouldings and cornices, but has originality and success in his groupings; the decorative details, however, are bad, and in a case where it is the more essential that they should be good. The student should prefer to leave out carved ornament rather than put it in badly. "Swan" is broad and original, and with a proper consideration of the case employs definite Renaissance detail which is good of its sort for the portico annexe; the central group of columns is, however, a mistake. The general proportions, which are not practically illustrated by the perspective from too high a point of sight, are free from architectural connexion, and the portico has a too detached appearance. It might have afforded a good foil if the building had been in the same key, but that would have committed the author to architecture which generally was to be avoided.

The Tite prize is won by "Red Rose" with a design modest in size—perhaps even small—but illustrated in powerful drawings. It is, perhaps, a question whether lofty proportions are not lost in so small an interior, and whether the emphasis of vertical lines is valuable below a dome. Free Classic, later Renaissance, restrained Spanish, and similar terms will convey the position that the author holds as to style. It is doubtful Italian. But Italian travel to Mr. Fulton will be fruitful of reward.

"Memoria" has a largeness of feeling, spaciousness of proportion, and completeness of plan that make the design notable. The obelisks have an altogether appropriate suggestiveness, and are truly original. Attention should be given to the details of this design—I think the best submitted this year. "Petronius," "Memento mori," "Imperial," and "En Avant," all show more or less original dome treatments, and worthily compete with each other in partial developments of the fascinating study of dome design. "Rex" has drawn pleasant inspiration from the early Italian Renaissance masters, as from Bramante's Sta. Maria della Grazie, at Milan (of which an interesting sketch by the late Professor Hayter Lewis hangs in this room), and from Brunelleschi's chapel in the cloisters of Santa Croce at Florence. "Endeavour" has restored the early classical tradition, derived from the mausoleum at Halicarnassus, and has treated it in a modern and somewhat economical way, shown in successful drawings.

The Grissell Medal competition is adequate to its interesting subject of a fruit market for a small town. The successful design by "Simplex" possesses in addition to its constructional faces, some architectural appropriateness. It is to be regretted that the design by "Artichoke," which has a very pleasant and English idea of the subject, should be without sufficient constructive quality.

The Silver Medal has been awarded in a way that will indicate to students the vast importance of having a fine subject. The north porch of St. Paul's lends itself admirably to fine draughtmanship. Fine draughtsmanship with fine design are irresistible at this Institute. St. Catharine's, Cambridge, is a very fine survey soundly worked out, carefully shown, and a most interesting building which places the whole profession under a debt of gratitude to the surveyor. Southwold Church has been beautifully illustrated in fine line Gothic drawings. St. Michael's, Linlithgow, is a work of the same class, while Moreton and Riddlesdon Halls are interesting surveys.

For the Pugin Studentship there has been a remarkably fine competition this year; it is awarded to an omnibus collection of Gothic studies, mostly English: glass, decorated screens, inked-in sketches and measured drawings. A second award has been given to a magnificent set of drawings of the north and west porches of Chartres Cathedral; while a well-known name marks an interesting set of drawings of the church at Nicol, St. Ouen, the Hôtel de Valois, Caen.

For the Owen-Jones competition a fine set of archæological studies has been sent in, comprising mosaics of the Capella Palatina, drawings of S. Maria dei Miracoli, S. Anastasia, Verona, and of some screen work at Southwold. The colour is archaic, the mosaic and pavement design is interesting, the fresco hangings are faded, the stained glass colour needs the light, the heraldic colour has other meanings. The Owen-Jones Studentship is for the study of colour as colour, not merely for the accidentals of a pavement and stained glass competition.

The sketches hanging in the room exhibited by the Aldwinckle student of last year, Mr. Fulton, deserve careful attention—there is a singular decorative quality in his work; there is a peculiar force of line and of grouping with a view to pictorial effect which should be noted. Whether this is an altogether satisfactory method of architectural study one cannot well say; but there can be little doubt as to the eventual success of a student who has produced these studies.

Mr. De Gruchy's Pugin drawings are worthy of attention, as they indicate a strong development in the direction of freedom by a student whose work has been marked by closeness and accuracy of study heretofore.

Mr. Lee's Tite studies are also to be commended."

Mr. H. H. Statham then made some remarks on the planning of concert halls, with reference to the Soane medallion designs. In regard to the general design of the room, he said that whenever a room was to be used only for concerts, and not for other forms of entertainment, the floor seating should not be on the flat, but with a rise from front to back, as was the case with the old Exeter Hall, which was an excellent room for hearing. Touching more especially on the arrangement of orchestra and organ, he observed that the chorus seats ought to be on a curve and not straight across, for practical reasons; in order that the singers might face the conductor and that those on one side might hear those on the other side. He exhibited a sketch-plan for an orchestra, arranged for a band of 100 and a chorus of 400. Some of the Soane competitors had left merely a flat floor for the band, at the base of the chorus steps, but that would not do at all; they would not all see the conductor properly, nor would he have sufficient control over them. They must be on rising steps but broader than those for the chorus; say about 3 ft. 2 in. He indicated on the plan where the different instruments where usually placed, the stringed instruments being grouped on the lower portion of the orchestra, and the wind instruments seated round on the upper tier. The wind instrument players required less room than the string players, since they had not to move their arms about; they only required ordinary (though not cramped) sitting room, whereas the string players required a certain free space round them. The centre portion of the top tier, for a width of about 6 ft., should be projected outward to form a platform for the kettledrums, which were always required and were always placed in that position. Coming to the question of the organ, he said that most of the competitors seemed to have no idea of the size of a modern concert-organ, of which an average specimen would require about 300 square feet of area, and the pipes and soundboards would weigh over twenty tons. An organ was not, therefore, a thing that could be hung up on the wall where they pleased. The recently fashionable system of carrying the organ on girders over the heads of the chorus got it out of the way, no doubt, but it was a very bad position for the effect of the instrument; it was much better built up from the floor. It must be remembered also that for a first-class concert-organ height was required for a 32-ft. pipe, which meant three or four feet in addition to the thirty-two. If the organ were built on the floor so as to project into the chorus seats, that was a good position for the instrument itself, but bad for the chorus, as a certain proportion of them were isolated in a bay on each side of the organ. He considered the best position for the organ was at the back of the chorus, utilising the space not required at each side for the chorus stairs. Above the ceiling of the staircase the sides of the organ would stand free. The position of the organist was shown on the plan, where it always ought to be now that electric or pneumatic action could be used, viz., near the front of the orchestra and facing the conductor. The player could then hear the effect of the organ in combination with band and chorus, which he could not do when sitting close under it. On the plan a dividing rail was shown between the chorus and band; this was seldom done (he had never seen it except at the Albert Hall), but it was a great deal better to divide them up than to let instrumentalists get mixed up with the chorus singers.*

The Chairman then distributed the prizes and studentships to the successful students, whose names were given in our last issue, page 60. He remarked, in reference to the Soane Medallion, that the prize had been awarded to the best design sent in, notwithstanding the fact that it contravenes certain provisions of the London Building Act.

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* We have not thought it necessary to report these remarks in full, as much of the substance of them has been said in our columns from time to time; but they will be found in full, with the plan, in the Institute *Journal*.

A member asked if, in the circumstances, competitors might, in future, depart from the conditions ?

The Chairman said that no doubt the next programme for the competitions would give all the information required.

The meeting then terminated.

The next meeting will be held on February 6, when Mr. A. Hessell Tiltman will read a paper on " Public Baths and Washhouses."

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## THE ARCHITECTURAL ASSOCIATION:

### ANCIENT AND MODERN BUILDINGS IN PALESTINE.

AN ordinary fortnightly meeting of this Association was held on Friday last week in the Meeting-room of the Royal Institute of British Architects, No. 9, Conduit-street, Regent-street, Mr. G. H. Fellowes Prynne, President, in the chair.

The minutes of the last meeting having been read and confirmed, the following gentlemen were elected members of the Association :—Messrs. B. E. Crockett, L. U. Grace, E. B. S. Shepherd, E. E. Shrewsbury, Montagu White, R. E. Peach, A. Potter, and C. C. Thompson.

Mr. E. Howley Sim, Senior Hon. Sec., announced that the first Spring visit of the year would be made on Saturday, February 4, to the Carlton Hotel, in the Haymarket, by permission of the architect Mr. H. L. Florence.

The Chairman then called on Mr. Beresford Pite to deliver an illustrated lantern lecture entitled " Ancient and Modern Buildings in Palestine." The lecturer said it would not be possible for him to deal with the subject fully, but he proposed to make a few remarks at the outset on the conditions of modern building in Palestine, then to show a series of views to illustrate those conditions, and to conclude by showing some views of ancient buildings. As to the ancient buildings of Palestine, a paper, entitled " Some Early Christian Churches in Palestine," was shortly to be read before the Royal Institute of British Architects by Mr. A. C. Dickie, and any sense of disappointment they might feel at the inadequacy of his (the lecturer's) treatment of that part of his subject would, he hoped, therefore be avoided. As to the architectural interest of Palestine, it began with caves, followed by rock tombs, cisterns, oil and wine presses, and sculptured and carved sarcophagi. The architectural influences began with the Egyptian ; then Phœnician and Assyrian influence could be traced ; then followed a Greco-Roman period, then a period more exclusively Roman, and, passing to the dark ages, the Arab period was reached — the Arab busying himself with dismantling the Roman buildings, and using the materials in his own erections—very often in an absurd way. Following the Arab time came the Crusading period, which covered Palestine with the most interesting examples of Mediæval art, similar to what could be found in France, and England, and even Germany, Then there followed the long period of Turkish darkness, which was succeeded by the modern era, out of which was growing a definite modern style in the European buildings, and, sad to say, our own local Gothic revival had some rather *outré* examples in the Holy Land. Apart from these historic interests there was the interest of the materials. The building material of Palestine was a hard limestone of coarse grain, and consequently there had not been carried out in Palestine any ornament worth the name. There was nothing in the whole country to correspond with the marbles at the disposal of the Greeks, or the granites at the disposal of the Egyptians. The country, too, had been the seat of unending wars and troubles, having a most disastrous effect on the buildings ; but on the east of the Jordan, where the natives, from the time of Mahomet, had not used buildings, but had lived in tents, there were still some extensive and interesting remains to be seen. He hoped that students of the subject had discovered in the Institute Library, the most interesting series of books, some of which, by the Marquis de Vogüé, a former Gold Medallist of the Institute, dealing with the buildings of Syria, particularly deserved attention.

One of the most important considerations affecting modern building in Palestine was that of aspect ; as to which there seemed to be a consensus of opinion among authorities on the spot that an eastern aspect was not desirable—the strong, hot, eastern winds were the winds to be most avoided and excluded from a building, though on the coast—that was to say, on the littoral of the Levant—that did not apply. In building in Jerusalem, it was advisable to turn the building as far as possible away from the road on account of the dust. They could realise what nine months of dry hot weather would do in the manufacture of dust on limestone roads which had never been " made." Dust in Jerusalem was most urgent matter, and was really the most important consideration connected with aspect. Another important question in the East was that of water supply. There were a couple of wells in Jerusalem—the well at Siloam and one other, both of them outside the city and down in the valley. The city was without a water supply, as we understood it, and was dependent upon the storage of rain; and cistern building, consequently, was of the greatest importance. In the absence of a " living " water supply, the cost of water in building had to be considered, for it was a very important item. The water was bought at so much a large skin—a skin being a few gallons—and the cost of mortar and plastering was increased in consequence. In erecting a building, the best plan was to build the cistern first, catch the autumn rains in it, and commence building operations in the early spring, using the store of water for the works. The cisterns were either excavated out of the solid rock, or constructed of solid stone and cement in the courtyards of houses, and in all cases carefully vaulted over. Another matter of importance was that there was no system of drainage worthy of the name. There was what was known as the " canalisation " of Jerusalem, to which there was no chance of connecting buildings. Outside the city, where modern buildings were being erected, no system of cesspit could be properly carried out because of the hardness of the rock, which everywhere was near the surface ; and for the same reason no system of earth closet, deodorisation was practicable because there was no depth of earth. Whatever earth there was near the city was in small pockets in the rock, which in the wet season got very moist and in the dry season became like dust. There could be no system, therefore, of spreading on the earth as we have in England. As to warming, fireplaces generally were not necessary, or they were not used—that was, what we understood by fireplaces, but flues were built in rooms, and small close stoves were put in as so much furniture, being used in winter for three or four months. In some of the Russian buildings, erected for cold-blooded people, there were regular stoves of the Dutch-oven type. Another matter was the difficulty of the carriage of materials in Palestine, though at the coast the difficulty did not exist to any very great extent ; but in Jerusalem everything had to be conveyed by camel-back. The railway was a narrow-gauge steam tram, which made the ascent of some 3,000 ft., in a distance of about twenty-five miles ; and having consequently some steep gradients and a rather difficult country to deal with, it would be impossible to send up large quantities of heavy material. Heavy building material was brought up by camels, and girders up to, say, 30 ft. long, were brought up in that way.

The next point he would deal with was as to local regulations and the authorities. He would not say anything on the subject of land transfer, though they must not think the Turk was behind the age in that respect : it was quite open to any one to go and ascertain what his neighbour's title was at the cost of a very few pence. Mortgages were registered, and the exact position of affairs could be ascertained with very little trouble, and in that respect the Turks were far ahead of us. When foreigners desired to erect buildings of any size in Jerusalem, an Imperial firman had to be got from Constantinople, and as a rule the agents at the Foreign Office there had to assist in obtaining it. The circumstances in connexion with getting the firman for the erection of the hospital which he had recently built at Jerusalem were rather interesting. He was informed that it was impossible to grant a firman in the matter, for across the road, a few yards from the site of the proposed hospital, was a mosque, and in the mosque was a tomb of a saint. It was Moslem law that no beer shop or wine shop could come anywhere near the tomb of a Moslem saint—a principle excellent in itself, but it was rather hard when the law as to a " wine shop " included a dispenser's department in which there might be spirits. Permission was refused, but the matter was pressed and the law in question was investigated by asking the question : At what distance may the hospital be built from so sacred a spot ? The answer was that there was no stated distance at law, as it depended on the sanctity of the particular saint in each case. Inquiries were then made to know how far the sanctity of the saint extended, and after the payment of what in London would be called fees, but what in Constantinople was known as backsheesh, the amount of sanctity of the saint was arrived at, and the " wine shop " was put back 250 ft. It was interesting to have a case of personal sanctity reduced to a metrical scale. The firman having been obtained, it was handed over to the Local Authorities, who were well organised. The system was good ; there was a municipal architect, a municipal doctor, &c., but it was a little difficult to get these officials on to the spot—though he must say that, and he said it with some amount of diffidence—from the beginning to the end of the erection of this hospital they had not had so much difficulty with the authorities in Palestine and Constantinople as they might have had with the London County Council.

There were no contractors in Palestine, and this presented at the outset a serious problem. A good many buildings were erected in Jerusalem, but it was the general opinion that it was very difficult to get a scheme carried out without departing widely from the estimates. However, the hospital plans he made in London had been carried out with great accuracy and the estimates formed at the outset had been closely adhered to—more closely than home estimates often were, and the building was completed in an extremely satisfactory manner. His thanks for much of this were due to a local German architect, Mr. Theodore Sandel, who, in other cases, as in this, had carried out buildings in Jerusalem as a sort of clerk of works to European architects. He (the lecturer) worked out an estimate with, and entrusted the drawings to, him, and his conscientious care and skill had resulted in the successful carrying out of the building. The Jerusalem workman would take orders from nobody but the man who paid him. The architect or the clerk of the works might be on the building, but they had no authority unless they visibly paid the men, and though Mr. Sandel did not enter into any contract, he provided the lecturer with accurate estimates and carried them out.

In regard to materials, one of the most important matters was the entire absence of sand for building purposes. On the other hand, there was a magnificent supply of lime. Excellent lime was burnt from the local stone, and after harvest time, when the natives had not much to do, they were engaged in the manufacture of it, a large supply of which could be had at the close of the harvest before the wet season commenced. In the absence of sand, dirt had to be used. Black earth was mixed with lime in the proportion of about half and half. The result was not at all unsatisfactory. The walls were much thicker than one was accustomed to in Europe—in fact, they were mediæval in thickness and construction, and if the external draughting and jointing was carefully done, and the wall pointed with putty or something corresponding to it, it would stand as well as if it had been done with European mortar. The internal surface of the wall was covered with earth and lime ; it was a little rough, but it was a perfectly practical form of plastering. Of course, for cement and the finer accurate jointing of masonry in special parts, something corresponding to sand was required—and then pottery dust was used. The potsherd used for carrying water often got broken and was cast aside as so much earthenware. The pieces were collected and ground together into dust, and this dust was used as sand in the pointing of the stone roofs. In some buildings—in his hospital, for instance—it was found necessary to use some sort of weather-proofing for the walls, for the rains were torrential in winter, and the wet got through two or three feet of masonry—the mortar, of which such a large quantity was used in the walls, being naturally very porous. He had used on the two weather sides (the south and east) of his building a brick lining, which had answered satisfactorily. The best method in walling was to build a wall of two wrought faces of stone and to fill in with rubble. The close setting-together of the stone rendered the use of mortar unnecessary. The thickness of walls averaged 2 ft. The bricks used were mostly foreign, the native bricks not being worth much. Very good bricks were imported from Marseilles, as well as roof-tiles and flue-pipes.

As to prices: the cost of lime was about one-twelfth of the whole building and about one-fifth of the cost of the wall, which included, probably, the plastering. A girls' school recently built at Jerusalem was not plastered, and the cost of the lime in that case was about one-seventh to one-eighth.

In a square mètre of walling each side would take about eleven stones; the measurement of walling in the East was done by numbering the stones, and any metrical measurement was purely European, and was not practical. The rubble between the two sides of a wall was not counted. For the inner side each stone would cost about one piastre and for the outer side about two piastres, the cost of the square mètre of eleven stones being, therefore, about thirty-three piastres. The lime would cost about five or six piastres; wages and hauling, ten piastres; the total cost being about fifty piastres—*i.e.*, about 12·5 fr. per square mètre. The cost could be sub-divided as follows:—Foundation walls, 10 to 11 fr. per square mètre (above ground, 14 to 16 fr.); partition walls (0·60 mètres thick), 10 fr.; dolma walls (wooden framework, filled with masonry), 6 fr. For vaulting, 8 fr. per square mètre, including the centreings; façade stones (100 pieces, from 10 to 14 fr.), $1\frac{1}{4}$ to $1\frac{1}{2}$ fr. extra. For external pointing, $\frac{1}{2}$ fr. per square mêtre; for corner stones (quoins), 2 fr. each; for lintels and cornices, per mètre run, 3 fr.; for door and window openings, 40 fr.; plastering, per square mètre, $1\frac{1}{2}$ to 2 fr.; cementing new cisterns, $3\frac{1}{2}$ to 4 fr. per square mètre; plastering of ceilings, $2\frac{1}{2}$ fr per square mètre. Tile Roofs.—Marseilles tiles, fluted and channelled, including labour, nails, wiring, and wood (that meant rafters and purlins of as light wood as possible: no European scantlings could be obtained)—it was difficult to get at the cost closely, for there was no timber market in the East, but the cost of tile roofs could be put down at about 12 fr. per square mètre, and 15 fr. with heavier woodwork. Tiles cost 25 fr. per 1,000. The carpentry prices were very difficult to get at, and the joinery was thin and unsatisfactory at the best, and would not be specified in England. In Jerusalem one had to be content with the cost of the window glazed, painted, and fixed, and that was 50 fr.; for each internal door, complete, 50 fr.; for each pair of shutters, complete, 40 fr. Iron bars for windows, fixed, per kilo, $\frac{1}{2}$ fr.

He would show them an illustration of the Girls' School at Jerusalem, the cost of which, including clearing the site, boundary wall, gatehouse and cistern, was about 12 fr. per cubic metre, *i.e.*, 4d. per foot. The cost of his hospital had worked out at a little over 6d., so building, on the whole, was a little cheaper than it is in England. A building cost about 12 fr. per cubic mètre, 10 fr. per cubic mètre for foundations and 10 fr. for cisterns. Marseilles bricks cost about from 4*l.* to 5*l.* per 1,000, good paving tiles could be had for from 6 fr. to 8 fr. per square metre (*i.e.*, 1*l.* per square). The price of timber was about 120 fr. per cubic metre (about 5*l.* and five times the cost of timber at home).

Mr. Pite then briefly described some plans of hospitals in Jerusalem. There were a good many hospitals there and he had made a number of studies of them—not for the purpose of illustrating hospital construction, but in order to ascertain how the ordinary building conditions of the country were met. There was the Rothschild Hospital, built by Baron Rothschild of Paris. It was designed by a French architect, and built by a local architect at Jerusalem. The cisterns were under the wards in the basement, and, as this affected the temperature, it was felt that the health of the people in the building suffered. The building cost about 3,200*l.* and it faced a main dusty road. It had no verandahs and the windows had to be protected by shutters in the hot season.

There were a number of Russian buildings in Jerusalem, and there was a Russian hospital for pilgrims, and the plan was about as bad a hospital plan as could be devised. There were fireplaces in the building. The Greek hospital was a large, pleasantly-planned quadrangular building of one floor only. The wards were small and cramped, but there was a fine, handsome staircase, by means of which the patients were able to get to the roof of the building and sit about. The hospital of St. Louis—a large modern French convent hospital—was, like the others, a singularly unsuitable building.

The lecturer then showed a number of lantern slides, commencing with the new English hospital on the Hill of Gareb, which was built for the London Society for Promoting Christianity Among the Jews.* This was followed by Christ Church, built about fifty years ago; the girls' school, and the English hospital at Jaffa, for the natives. This building was erected by the lady who owns it, Miss Newton, and it has accommodation for forty-four beds, at a cost of 100*l.* per bed. Seeing that hospitals here cost from two to three times as much, in Mr. Pite's opinion we might do well to have lady builders as well as lady architects.

Other illustrations were:—A large new German Hospital in Jerusalem, designed by Schwartzkopf and Thiesing, of Berlin, and carried out by Mr. Sandel; the Moravian Leper Hospital, Jerusalem; German School at Bethlehem; Russian Hospice for Pilgrims at Jerusalem; Russian Church at Gethsemane; view of the Jewish Colony on the Jaffa-road, outside the city; Railway Station, Jerusalem; German Church, Bethlehem; French Hospital and Nunnery, Jerusalem; View of the Gihon Valley; Tomb of David; Tower of David; Jaffa Gate; Street in Jerusalem; Church of the Knights of Malta; Church of the Holy Sepulchre; Synagogue, Jerusalem; Interior of the Damascus Gate; "Ecce Homo" Arch; Tower of Antonia; Views of the Dome of the Rock (as to the beautiful screens in which the lecturer said he had never seen anything in Europe to surpass them. The contrast between the heaving, bare rock and the beautiful surroundings was really marvellous. One was accustomed to regard St. Mark's, Venice, with the greatest admiration, but now qualified by Mosque of Omar); the Golden Gate; Church of the Virgin in the Valley of Kedron; Siloam Village; Convent of Mar Saba; and Jaffa from the sea.

The Chairman said that they had had another very interesting evening. The subject was full of deep interest to all of them. He would call upon Mr. Dickie, who was shortly to read a paper before the Institute of Architects on some early Christian churches in Palestine, to open the discussion.

Mr. A. C. Dickie, in proposing a vote of thanks to Mr. Pite, said that the more modern part of Jerusalem was interesting chiefly in the way in which it illustrated the great increase of the Jewish population. Outside the walls a new city had sprung up, which seemed to have arranged itself in an irregular and wriggling manner. Outside the walls, too, there had been erected large German shops, which covered the ancient fortifications. The modern buildings were mostly very commonplace and uninteresting, and it was a pleasure to come upon Mr. Pite's hospital in what has become known as Hospital-street. It was sad to think that on account of the German Emperor's recent visit to Jerusalem the Government had, in their misguided attempts to give him a good impression of the city, painted some of the finest buildings—such as the Mosque of El Aksa—a sickly pink all over; and the beautiful grille in the Mosque of Omar, an illustration of which Mr. Pite had exhibited, had been painted yellow. The report that the streets and the walls had been cleaned was to an extent true, but the real truth was that the filth had been removed from the main streets and deposited in the side alleys, and no doubt by this time it had been distributed again. He agreed with Mr. Pite that, after seeing the interior of the Mosque of Omar, one felt that St. Mark's, Venice, could not compare with it. The method of constructing a dome in Jerusalem was very interesting, but very primitive. When the walls were constructed centring was formed, and over the centring the roof of the dome was modelled on brushwood. On this brushwood a layer of lime and earth was put, with another layer of the same material on the top. The dome was made above this, and it consisted of muddy lime and stones. The whole dome was built in a very short time, and it set regularly and firmly and was perfectly watertight. During the three winters he was in Palestine he only once saw, in the building he occupied as an office, any signs of water coming through the roof, and that (just a little dampness) was only after a three-weeks' deluge.

Mr. Alex. Payne, in seconding the vote of thanks, said that Mr. Pite had resisted a great temptation in not dealing more fully with the ancient buildings, for the country was covered with them. Mr. Pite had done his audience a great service in bringing his experience before them, and he hoped that his remarks would be printed for the benefit of any architect who might have work to carry out in Palestine. He (the speaker) went to Palestine as an ordinary tourist, and he looked upon all the German buildings and most others of recent years in Jerusalem as so many abominations. He spent most of his time in viewing the ancient buildings, and he supposed that other travellers in Palestine generally did the same. Palestine was in some respects a disappointing country, and it was an expensive country to travel about in. One could get up to Jerusalem and make excursions thence to the Dead Sea and Jordan, Bethlehem and Hebron, with comparative ease, but to go through the interior of the country—to Damascus, say—one must go on horseback, and in that way one could not travel more than about twenty miles a day. It was most arduous travelling, too, jolting up and down hill, and very often the guides did not know the way and often went wrong. A large retinue was necessary to carry the tents and luggage, and his party of seven or eight required about thirty-five mules, for everything they required had to be taken with them. Travelling there was also very costly. Every one had to be "squared" all round—the Turkish police to protect you; the Arabs, not to rob you; and a representative Arab to see you are not robbed. As to the architectural history of this most interesting country—taking Palestine to extend right away to Lebanon—there were several distinct epochs. There was the Cyclopean period, when enormous stones were used. When he went to Palestine, he had just returned from seeing the temples of the Nile Valley and the building wonders of Egypt, and it took a great deal to astonish him, but when he got to Syria and Baalbec he was amazed at what he saw. The west wall of the ancient temple at Baalbec was formed of three stones, each being nearly 70 ft. long, 13 ft. wide, and 12 ft. high, and the under superstratum of these was formed of seven stones about 30 ft. long; and the old north wall disused by the Romans in their building was formed of nine stones each 30 ft. long and 10 ft. wide. A most interesting question was: Who put up those stones, which suggested and seemed to correspond with the date of Stonehenge? Some thought the Romans did, but though they had been at work at Baalbec, their work was utterly different. There was one stone in the quarry at Baalbec 70 ft. long above ground, and that the Romans did not attempt to use. Following that period there was the Jewish or Israelitish period of building, and it was extraordinary that this people who had for so long occupied the country, and whose history we knew so much of, had not left a stone to mark their occupation except the big stones at the bottom of the walls of Jerusalem which were probably Phœnician work like the old temple at Baalbec. There was also of Solomon's period, what were called Solomon's pools—three large reservoirs, really splendid engineering work, from which an aqueduct ran right up to the Temple enclosure to a cistern there, called the King's cistern. The next period was the Roman period, of which there was a great deal that was extremely interesting in Syria and Palestine. In the Mahommedan buildings, it was almost certain that most of the columns were Roman. In various parts of Syria Roman evidences were to be seen. At Damascus the street called Straight remained, with its triple Roman gateway, and at Samaria the street of columns with which Herod surrounded the town can be easily traced and many of the columns remain. About the next period—the Early Christian—there was a great deal of interest, but the time of the meeting had already gone, and he must not enlarge upon the matter beyond instancing the beautiful church at Bethlehem, and parts of the Church of St. Sepulchre. Mahommedan buildings were to be seen everywhere, and one most interesting matter was the appearance of the streets—many of them being arched like the one shown in the photos of Jerusalem. Jaffa was full of such streets.

Mr. R. Phené Spiers said that one or two dates had been suggested for the Mosque of Omar and the Mosque of the El Aksa—El Aksa also being reputed to be the remains of the

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See the illustration in our issue or May 9, 1896 church of St. Mary, which was built by Justinian. As regards those questions, he would refer them to the late Professor Hayter Lewis's interesting work on "The Holy Places of Jerusalem," where the author showed clearly that the Mosque of Omar, though built of ancient Roman materials taken from some of the structures built in Jerusalem between the time of Hadrian and Justinian, was erected in the seventh century. Professor Lewis also showed that the Mosque of El Aksa was not built in the position of the church of St. Mary, but was built with the materials taken from that church. De Vogüé, in his first book, maintained that El Aksa was actually the real church; but when that author visited Jerusalem and went inside the Mosque, the first glance persuaded him that he was quite mistaken, though he still kept to the opinion it was on the same site; but Hayter Lewis proved, first, that the Church of St. Mary would not have been built without being properly orientated, for the Greeks were very strict as to orientation; and, secondly, that the last place in the world for the church would be in a line with the site of the Temple, which to them was accursed. As to the large stones employed in some of the buildings, if they looked through Renan's works carefully they would find that he had arrived at the conclusion that, though contrary to the Roman manner, the stones at Baalbek were quarried by them. It was the type of work which Renan called "monolitheism," but was of Phœnician origin. The stone was cut out of the rocks, and they were used as large as possible. He thought they would all agree that Mr. Pite had done quite the best thing in keeping his building simple, and in carrying out the work just as it would have been carried out by native workmen. He hoped that Mr. Pite's splendid plan would be useful to the French and Germans at Jerusalem.

The Chairman, in putting the vote of thanks, asked if it was known what the extent was of the tank underneath the Mosque of Omar, and whether it was used for water storage or not, and if the pipes of the ancient aqueduct from Bethlehem were used for the water supply to Jerusalem?

Mr. Payne said he thought it was 40 ft. deep and nearly 750 ft. in circumference, supported on columns. It was now dry in summer.

The Chairman, continuing, said that travel in Palestine was almost certain to excite powerful religious feelings to all, but perhaps in a greater degree to architects and archæologists. Jerusalem was the Queen of Cities for that reason, although it was sad to see both the architectural and religious chaos that now existed. It was not extraordinary that practically no Jewish architectural remains existed in the city as the Architect of the Universe had decreed that such should be the case. From Mr. Catherwood's book on the Mosque of Omar, and from what Mr. Pite had said, it appeared to be easier now to get into the Mosque than formerly.

The vote of thanks having been agreed to unanimously,

Mr. Pite, in briefly replying, said he should like to mention among the modern buildings of Jerusalem a building of considerable interest, viz., the new house and church for the Anglican Bishop. It was built from the designs of Mr. Jeffrey, a Fellow of the Institute, and was an interesting building.

### *Rebuilding Vauxhall Bridge.*

Before the meeting dispersed, the Chairman said that that evening the Committee had passed the following resolution in regard to the proposed new Vauxhall Bridge, which they wanted confirmed at that meeting, viz.:—"That this meeting, recognising and appreciating the efforts of the London County Council for the embellishment of London, views with the utmost concern the manner in which it is proposed to rebuild the Vauxhall Bridge, and desires to express its sense of the unfitness of the design for a work of such architectural importance."

The resolution was agreed to unanimously.

The Chairman announced that the next meeting would be held on February 3, when Mr. Christopher Whall will give a lecture and practical demonstration on Stained Glass.

The meeting then terminated.

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A NEW THEATRE FOR SALFORD.—A new theatre is to be built in Broadway, Trafford-road. The plans were prepared by Mr. Frank Matcham, of London.

## ASSOCIATION OF MUNICIPAL AND COUNTY ENGINEERS.

A METROPOLITAN district meeting of the Association of Municipal and County Engineers was held in the Lecture Theatre of the Institution of Civil Engineers, Westminster, on Friday evening, January 20. Mr. O. Claude Robson, C.E., Willesden, President, occupied the chair, and amongst those present were Messrs. W. Weaver, Kensington; Wheeler. Westminster; W. N. Blair, St. Pancras; W. H. Savage, West Ham; G. Livingstone, St. George's; Scorgie, Rotherhithe; H. T. Wakelam, County Surveyor of Middlesex; E. P. Hooley, Nottingham; R. J. Thomas, Bucks; J. Price, Birmingham; W. H. Cooper, Willesden; A. E. Collins, Norwich; G. Laws, Newcastle, and others.

On the proposition of Mr. Blair, St. Pancras, Mr. G. R. W. Wheeler, Westminster, was re-elected Hon. Sec. for the Metropolitan district.

### *Locomotives Act, 1898.*

Mr. E. Purnell Hooley, County Surveyor of Nottingham, then read a paper dealing with the Locomotives Act of 1898. He said that some months ago he was approached by the Traction Engine Users Association with a view of ascertaining the probable course his County Council would take, as a central county, with regard to the provision of the new Act for framing by-laws. He suggested to the Association which approached him that the most desirable way of obtaining uniform action throughout the country would be to bring the matter before that Association, and endeavour to frame by-laws suitable to all. The Act was curiously framed in giving powers to frame by-laws to a comparatively few urban districts; the smaller Urban Authorities had no voice or power given them, nor had power been given to the Rural District Councils, with their large and important road areas. It seemed to him that in so important a measure all should have been considered and their opinions invited. It seemed to him that the interests of all Highway Authorities could only be conserved by a joint meeting of all classes of surveyors. The first point in the Act was that greater facilities had been given to the users of traction engines than had ever been given before, and when they considered how general had become the use of steam-rollers, so educating horses to the use of steam on highways, it was not to be wondered that the Government should use its best endeavours to encourage the traction engine and other steam appliances. How were they to meet these endeavours? Certainly not by manifold arbitrary and useless by-laws that only irritate the users, and throw cold water on useful legislation. The County Councils Association in their drafted by-laws had in his opinion overburdened the question with needless restrictions, although the forms appended were good and most desirable. His recommendations were as follows:—"No locomotive shall be used upon any highway upon which a fair or market is being held. No locomotive shall be used upon any highway after notice shall have been given to the owner or person in charge by the Surveyor that such use would be attended with damage to the culverts, sewers, drains, or gas or water mains under the highway. After notice had been given by the roadman in charge of the repair of any highway to the person in charge of a locomotive that the same is unfit for locomotive traffic; and after a notice to the like effect has been conspicuously posted thereon, no locomotive shall pass over any highway during such repair or within two days after the completion thereof. No locomotive shall pass over any road unless there shall be a clear space of 12 ft. between the outside of the traction-engine, trucks, and loads and the fence, ditch, dyke, or hollow of embankment on the off side of the locomotive, to provide room for vehicles to pass." If it were possible for an agreement to be arrived at somewhat on those lines, all the difficulty of specifying roads might be abolished, and no other highways under the head of *(a)* be necessary. A by-law should prohibit any waggon drawn by a locomotive from carrying a load that would measure more than 9 ft. 6 in. in all. A by-law should also be drafted that the foremost attendant should walk at least 30 yards in front of the engine, and the second attendant should walk at least 30 yards behind the last waggon, at any rate at night, and be provided with a shrill metal whistle to attract the attention of the driver, who should be compelled to stop immediately the whistle was sounded, until any one passing was clear of all trucks and engine.

Mr. Rutt, County Surveyor of Kent, considered it much better that the Authority having control over the largest area should have the settlement of these matters, as it would secure greater uniformity in the regulation of the locomotive traffic.

Mr. R. J. Thomas, County Surveyor of Buckingham, expressed his general agreement to the suggestions of Mr. Hooley as to the by-laws necessary to be framed, and agreed that the more uniform they could make the regulations the better. He strongly objected to the artificial means sometimes adopted by those in charge of locomotives to get them up hills as exceedingly detrimental to the roads.

Mr. Wakelam, County Surveyor of Middlesex, said that some of the Authorities in Middlesex had scheduled absolutely the whole of their roads, while others had scheduled only three or four, and the result would be that the traction owners would get into a ring-fence and not be able to get out again.

Mr. T. Codrington, former Inspector of the Local Government Board, said he was as much struck by the things which were omitted from the Act as the things which were in it. He thought a rather sanguine view had been taken as to the power to frame by-laws under Clause 6 of the Act. He was in favour of the proposal that engines should be kept off roads when they were not fit to carry them, or in times of frost; but he was doubtful whether they could do that under the Act.

Mr. W. N. Blair, St. Pancras, considered that the use of steam rollers on the road might have been protected by some clause which would have held the user free from claim for damage, so long as he complied with the clauses of the Act. He cited a case in which his Authority had to pay damages to the owner of a cab, though they complied with every requirement of the Act, and had previously warned the driver of the cab.

The President remarked that he did not see any difficulty in framing by-laws for the Counties themselves; but the difficulty seemed to him to be when they came to the Urban Districts. All the Borough and District Councils which were sending in schedules of roads to the Counties had their own ideas of the roads which should be used by locomotives. He knew that was the case in Willesden. They had questions sent by the Middlesex County Council and they had specified a certain number of roads which would be sufficient to keep any locomotives from passing through Willesden to London. If all the District Councils did as they had done, and the County Council accepted the list, it would make the Act inoperative.

A vote of thanks was then accorded to Mr. Hooley for his paper.

Mr. George Livingstone, C.E., then read a paper entitled "An English Municipal Engineer's Visit to America," which we hope to be able to print in our next issue.

On the proposition of Mr. Weaver, Kensington, seconded by Mr. Wheeler, Westminster, a vote of thanks was accorded to Mr. Livingstone for his paper; and the proceedings terminated with a vote of thanks to the Council of the Institution of Civil Engineers for the use of their premises.

## THE SURVEYORS' INSTITUTION.

AN ordinary general meeting of the Surveyors' Institution was held on Monday evening in the temporary premises of the Institution, Savoy-street, Victoria Embankment. The chair was occupied by Mr. Robert Vigers, President.

The minutes of the last meeting having been read and confirmed, and some donations to the library having been announced, Mr. Edward Boyle, Q.C., read a paper on "The Rating of Coal Mines." The paper does not come within our province to report, but we take the following remarks from it as they have a general interest:—"It would be difficult to exaggerate the importance of the coal trade, in which millions of capital and tens of thousands of men are, on the whole, profitably employed. Suffice it to say that until recent years Great Britain had practically a monopoly in the supply of coal, and even in 1866 this country produced 60 per cent. of the world's output. In 1880 this amount had decreased to 40 per cent., and in 1895 it had still further fallen to 36 per cent. of the total coal production. This fact is, perhaps, the more important when one remembers that during the last twenty years the ouput of coal in Great Britain has been increased by 42 per cent., or 57 million tons, whilst in the United States the increase has been 270 per cent., or 128 million tons; and even in Germany it has increased 145 per cent., or 41 million tons. The effect of this is to some extent shown in the present prices of coal, as although the population has largely increased and the consumption of coal per head is more than it ever was before, prices have on the whole steadily fallen. During comparatively recent years coal has been sold at the pit's mouth at over 17s. per ton and at under 5s. per ton; and when it is remembered that a colliery-owner considers himself fairly well paid if he makes a net profit of about 6d. per ton, the speculative character of the undertaking will be apparent. Many of the largest cities in the kingdom owe their importance to the fact that coal is found in the immediate neighbourhood, and one can hardly realise that only 100 years ago Sussex was the principal seat of the iron trade of England, whereas now there is no important trade of any kind carried on in the county. Although the ore remains, the want of fuel has necessitated the removal of the trade to those districts where coal abounds. It will readily be understood that the men of Sussex, using wood in the shape of charcoal for the manufacture of their iron, could not long hope to remain a match for the north and west of England using coal. The last iron furnace in Sussex was at Ashburnham, and it was only blown out in the year 1809, and at that time was supposed to produce iron equal to the best Swedish metal. It may not be generally known that the first iron cannon was made at Buxstead in 1543, and that the present iron railings which surround St. Paul's Cathedral were also made in Sussex."

A vote of thanks having been accorded the lecturer, the meeting terminated.

The next meeting of the Institution will be held on February 6, when the adjourned discussion will be resumed on Mr. W. Weaver's paper on "The London Building Act and the Official Supervision of Buildings."

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## *COMPETITIONS.*

**CENTRAL LIBRARY, HULL.**—In the competition for the Central Library to be erected in Albion-street, Hull, the first premiated design is by Mr. James S. Gibson, 11, Gray's Inn-square, London, W.C.; the second premiated design is by Mr. Henry F. Williams, 149, Fleet-street, London, E.C.; the third being by Messrs. Edwin J. Sadgrove and Alfred A. Webbe (joint architects), 22, Surrey-street, Strand, London, W.C.

**NEWCASTLE NEW INFIRMARY.**—The following are the architects selected to send in competitive designs for the new infirmary for Newcastle-on-Tyne. Mr. Alfred Waterhouse is the referee: Messrs. Armstrong & Knowles, R. B. Dick, J. W. Dyson, Dunn Hanson & Fenwick, C. T. Marshall, W. L. Newcombe, Oliver & Leeson, J. W. Taylor, Chas. Walker, of Newcastle; and Messrs. Frank Caws, Sunderland; Clark & Moscrop, Darlington; Gibson & Russell, H. Percy Adams, Simpson & Milner Allen, of London; F. R. N. Haswell, North Shields; W. Henman, Birmingham; J. H. Morton, South Shields; J. Potts & Son, Sunderland; and Worthington & Son, of Manchester.

**CLUB HOUSE, CREWE.**—A competition for a new club house centrally situated at Crewe has just been held, limited to architects invited from Crewe, Southport, Burslem, and Leek. The designs of Messrs. Wm. Sugden & Son, F.R.I.B.A. (submitted under motto "Forward the Light Brigade"), have been placed first, and will be carried out by them.

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**WORKHOUSE INFIRMARY AT RIPON.**—A new infirmary was opened on the 13th inst. in connexion with the Union Workhouse buildings at Ripon. The new infirmary is on the east side of the old administrative block of buildings, with which it is connected by a wide corridor. The building, which is of two stories, has been erected with local and Leeds bricks, with Pateley Bridge and Killinghall stone dressings. The rooms provide accommodation for thirty-eight patients. The cost of the building, exclusive of furnishing, is about 2,750*l*. The old infirmary will be used for children's wards, their rooms having been removed to make room for the new block. The building has been carried out in accordance with the plans of Mr. F. H. Hargrave, architect and surveyor, Ripon.

## THE LONDON COUNTY COUNCIL.

THE members of the London County Council re-assembled on Tuesday, at the County Hall, Spring-gardens, after the Christmas recess, Mr. T. McKinnon Wood, Chairman, presiding.

*Loans.* — On the recommendation of the Finance Committee it was agreed to lend the Islington Vestry 6,785*l*. and 15,000*l*. for electric lighting purposes; the Westminster Vestry 3,500*l*. for wood-paving works; the Deptford Vestry 5,600*l*. for the provision of public baths and wash-houses; the Fulham Baths Commissioners 10,250*l*. for the purchase of land; the Lewisham Guardians 3,700*l*. for the provision of accommodation for lunatics at the infirmary; and the St. George's (East) Guardians 2,585*l*. for provision of boilers and other works at the infirmary and workhouse.

*Fire Brigade Patents.*—The General Purposes Committee recommended, and it was agreed, that Commander Wells, Chief Officer of the Fire Brigade, be granted permission to take out at the expense of the Council patents for a collapsible hand-pump, and for an arrangement to utilise fire-alarm posts for the transmission of telephonic messages, on condition that the patents should be assigned to the Council; and that Mr. E. S. Prentice be granted permission to take out, at the expense of the Council, a patent for an apparatus to measure the force of the flow of water from hydrants, on condition that the patent be assigned to the Council.

*The Works Department.*—The Finance Committee presented the half-yearly statement of works executed by the Works Department up to September 30, showing a loss upon twelve works of 21,000*l*. during the half-year. Of those works four were commenced before the reconstruction of the Department in February, 1897, and they exhibited a total balance of loss up to the present of 24,720*l*. Upon the remaining eight works, which were commenced during the present management, there was a saving upon the estimates of 3,720*l*. The chief loss, amounting to 22,924*l*., was made upon one work, the construction of the Lewisham sewer.

Mr. E. White asserted that the Department, since its establishment, had incurred a total loss of between 40,000*l*. and 50,000*l*. The question now was whether the Council were to go on losing money at the same rate, or at even an increasing rate. The loss upon the Lewisham sewer was not in respect of materials, but in wages and charges, and he should like to suggest that the workmen were lax in the way they discharged their duties to the Council. It must be clear, as the loss was made in wages and charges, that the Council were not getting full value for wages they were paying. He was now compelled to form the conclusion that the sooner the Council recognised the blunders they had made in this Department, and what a fraud it was upon the ratepayers, the better it would be. Had the Lewisham sewer gone to a contractor they would certainly have got it executed within contract price. (A Member: "Brook Hospital.") A number of works which had been refused by the Department had subsequently been carried out by contractors for less than the engineer's estimate. Only a short time ago, Mr. Gruning, an expert, was engaged to report upon the comparative quaility of the work done by the Council and that done by contractors. That expert reported in regard to selected works that so far as brickwork was concerned there was nothing to choose between the two, that the joinery work of the Department was distinctly inferior to that of the contractors, and that in regard to certain work carried out by the Council at Colney Hatch Asylum, on which there was a loss of 5,000*l*., it was the worst work he had ever seen.

Mr. Burns, M.P., said he was glad that Mr. White had acknowledged that the establishment charges were, in part, responsible for the excess of cost. Another reason for the loss on the Lewisham sewer was that the work was originally taken by the Department at too low a price; indeed, at such a price as to render it impossible that there could be a profit. Mr. White ought to know that after the experience of the Grove Hospital and Brook Hospital, the Asylums Board, unless they established a works committee, would stand a good chance of being themselves abolished by the Local Government Board. It was to prevent itself getting into such a condition as that, that the Council had established its Works Department, which had managed to make a profit until it was made a political bear garden. He believed the Council would be compelled to reinstitute the Works Committee, if only to keep a check upon the extravagant establishment charges. Mr. White forgot to tell the Council that the loss on the Lewisham sewer took place at the time when the Department was in a state of utter anarchy and disorder. Mr. White had given no instance of defective work by the Department, and he had omitted to give instances in which the contractor's price had largely exceeded the estimate. In the case of the Clerkenwell Fire Station, the estimate was 6,200*l*., and the contractor's bill was just coming in for 11,089*l*. He (Mr. Burns) complained of the money spent in the Works Department on what he thought was needless supervision of works. If they had a manager with 1,500*l*. a year, surely he ought to be entrusted to carry out the works without a crowd of clerks about him. This over-supervision had been the cause of the men doing less work than they otherwise might have done, because they had felt that, if the Council could afford three or four clerks of works on small jobs, they were rich enough to allow the men to do less work or to be longer about it. The Works Department had not been the subject of honest supervision or criticism, but of fussy interference, and it had not yet had a fair trial.

Mr. Cohen, M.P., said he did not believe the Works Department had suffered from oppressive establishment charges. It had been more than compensated for any alleged oppressive charges by the fact that it had always had at its command unbounded capital, without the production of a copper of security, and advanced at the almost unrivalled and unsurpassed rate at which the Council was able to raise money.

Dr. Collins said he had always thought that they were using words very idly in speaking of "profit and loss" in connexion with the works carried out by the Department. It might seem paradoxical, but the real test of the value of the Department was one which could never be applied, viz., what would have been the cost of carrying out the works by contractors if the Council had not possessed the means of stepping in when it knew that inflated tenders were going to be sent in, and saying, "we will do the work ourselves"?

Mr. Ward pointed out that, in regard to jobbing works, the Department had all along shown a profit, and in regard to the other works there were more favourable conditions apparent for the future, and he thought it probable that the Department would be able to make considerable profits.

Mr. H. R. Taylor said that the Lewisham sewer had really been carried out at a saving. The Department had to accept prices 25 per cent. above those for the Holloway sewer, and this was the cause of the apparent loss.

Lord Welby, Chairman of the Finance Committee, replying upon the debate, said there were one or two points of importance in estimating the value of the Works Department. Mr. White had mixed up the results of the working of the Department under the old and under the new management. As an illustration of the manner in which the new management carried on its work, it should be stated that upon works estimated to cost 42,000*l*., the actual expenditure had been 33,000*l*., showing a saving of 9,000*l*. That was a significant indication of the manner in which the Department was now carrying on its business. Upon that fact alone the Council was entitled to form a favourable opinion, and he asked members not to listen to those speakers who had given expression to unfavourable views in regard to the Department. In the case of the Lewisham sewer the amount of the deficit chargeable to the new management was very small, amounting to only between 2,000*l*. and 3,000*l*. Even if they went further back and examined the whole management of the Department, the expenditure of something like 750,000*l*. exceeded the estimates only by some 40,000*l*. Upon the whole range of work the expenditure had exceeded the estimates by only about 5 per cent., and under those circumstances he would ask for a favourable verdict. He admitted that the establishment charges were high, but he hoped to lay before the Council results which would convince members that they were not unfair.

The statement of the Finance Committee was then received, and excess votes to cover the losses shown were agreed to.

Upon an adjourned report of the Main Drainage Committee, stating that the original estimate of 63,850*l*. for the construction of the Lewisham sewer had been exceeded by 22,924*l*.

Mr. E. White called attention to certain alleged discrepancies in the reports of the Manager of the Works Department, Mr. W Adams, which represented that the loss was due to his predecessor, whereas it appeared to have been increased from 14,000*l*. during the late management to 22,000*l*. during the present management. The fact was that the Department did not pay, and could not be made to pay. It was said that 6,000*l*. profit had been made upon jobbing works, but that was upon a turnover of 100,000*l*., with a schedule 15 per cent. in excess of what it ought to be.

Mr. Ward declared that the Works Department was working upon the same schedule as the builders. In his opinion the schedule should be raised, as two increases of wages had occurred since it was framed.

The excess vote was agreed to.

*Western Pumping Station, Grosvenor-road, Pimlico.*—The Main Drainage Committee reported, and it was agreed that the tender of Messrs. Edwin Danks & Co. (Oldbury) Limited, amounting to 2,775*l*., for the manufacture, delivery, and erection of four new Lancashire boilers, together with fittings, at the Western pumping-station, be accepted.

*Precipitation Operations during 1898.*—The same committee reported as follows :—

"We submit for the information of the Council the following table, showing the quantities of crude sewage treated, chemicals used, and sludge produced, as well as the quantity of refuse intercepted at the gratings of each of the outfall works at Barking and Crossness, during the year ended December 31, 1898 :—

| — | Barking. | Crossness. | Total. |
|---|---|---|---|
| | Gallons. | Gallons. | Gallons. |
| Sewage treated. | 43,725,243,000 | 31,845,024,000 | 75,570,267,000 |
| Maximum daily flow .. .. | 228,393,000 | 157,972,160 | — |
| Minimum daily flow .. .. | 65,151,000 | 60,905,220 | — |
| | Tons. | Tons. | Tons. |
| Lime used .. | 13,876 | 7,888 | 21,764 |
| Proto - sulphate of iron used.. | 3,081 | 2,220 | 5,301 |
| Sludge produced .. | 1,549,000 | 781,000 | 2,330,000 |
| Average per week.. .. | 29,788 | 15,019 | 44,807 |
| Refuse from gratings .. | 4,099 | 989 | 5,088 |

Comparing the above figures with the returns for the preceding year, we find that though the quantity of sewage treated at both outfalls was less by about 3,297,000,000 gallons, there is an increase of 225,000 tons in the quantity of sludge produced."

*Victoria Embankment.*—Upon the motion of Mr. Burns, M.P., it was referred to the Highways Committee to consider as to the advisability of paving the Victoria Embankment with wood.

In reply to questions it was stated that the Council's new by-law as to all vehicles carrying lights was intended to include omnibuses, and had been accepted by most of the companies, but one company objected, and the question was to be tried on a case stated by Sir John Bridge at Bow-street. The Tramways Committee are to consider the desirability of publishing notices forbidding spitting in their vehicles, a practice which Mr. A. Smith suggested was favourable to the spread of lung and throat disease.

The Council adjourned at 7.20 p.m.

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## SPECIAL LEGISLATION AFFECTING PROPERTY IN LONDON.

A PAPER was read on Tuesday last before the members of the Auctioneers' Institute, Chancery-lane, by Mr. Harold Griffin, on "Special Legislation Affecting Property in London." The President, Mr. E. Dobson (Bradford), was in the chair. One object of the paper was to present as the complement of a lecture delivered last session by Mr. McMorran, dealing with legislation as it affected property outside the metropolis, the portion of the subject then excluded. The first Act adverted to was that of 1817, commonly known as Michael Angelo Taylor's Act, which originally applied only to the City and Central London, but certain clauses of which were re-incorporated in the Metropolis Management Amendment Act of 1862, and gave power to the Local Authorities, in the whole of what is now known as the Administrative County of London, to acquire property for widening and improving streets. Its provisions were grossly inequitable to owners, because if they were unable to convince a jury that the price offered for their property by the authorities was below its real value the owners would have to pay the costs on both sides, and however completely the owner proved his case he must pay his own costs. This old Act had long been regarded as obsolete, but it had been dug up and applied by the London County Council in recent instances. For a very long time owners had contentedly repaired and relaid all drains on private property at their own expense, but a few years ago it was decided that all combined drains, except such as came under the definition of "drain" in the Metropolitan Local Management Act, 1855, were "sewers" and as such must be repaired and maintained by the authorities. This decision had been a sad awakening for the authorities, but it had the advantage to owners of checking the extravagant demands of sanitary inspectors and other Vestry officials, which, since the passing of the Public Health Act, 1891, were in many instances becoming unbearable. The fact that a supposed drain might turn out to be a sewer had made the Vestries much more chary than formerly of calling upon owners to spend money on it. The Valuation (Metropolis) Act, 1869, had been decidedly beneficial in doing away with many glaring anomalies of assessment formerly existing, and compelling a re-assessment all round every fifth year. Latterly it had become the practice to consider applications at least once a year, for reductions in assessments and, in the case of public-houses at least, the right had been repeatedly exercised by the authorities of raising the assessment where sales had been effected at much greater prices than the existing rating denoted. Many debateable points had arisen out of the Public Health (London) Act, 1891, and the London Building Act, 1894. Under the first section of the former Act many Vestries appeared to think they had a right to send their Inspectors into premises whether any complaint had been made or not ; but the lecturer was of opinion that there existed no right of entry except under a magistrate's warrant, and that no magistrate would now grant a warrant for forcible entry where an owner and an occupier were both agreed that no nuisance existed. With regard to the Building Act of 1894—a very complicated statute containing 218 clauses and four schedules, many of which were difficult to understand—the lecturer described it as a measure very far from perfect, and one which did not even entirely codify the law relating to streets and buildings in London. Part 15 certainly provided very valuable machinery for redress where the L.C.C. had made mistakes or come to unjust conclusious. It directed the manner in which legal proceedings under the Act were to be carried out before a Tribunal of Appeal.

A vote of thanks was proposed by Mr. Douglas Young, seconded by Mr. W. B. Rogers, and supported by Mr. Field (ex-President), Mr. A. Moore, Mr. E. C. Thoroughgood, Mr. Roland Peck, Mr. Perks, and the President.

The lecturer having replied to the points raised, the motion was put and carried by acclamation ; and on the motion of Mr. R. Dalton (Carlisle) a vote of thanks to the President, who had travelled from Bradford in order to be present, was accorded.

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## *ARCHÆOLOGICAL SOCIETIES.*

BRITISH ARCHÆOLOGICAL ASSOCIATION.—The fourth meeting of the session of this Association was held at the rooms in Sackville-street on the 18th inst., Mr. C. H. Compton, Vice-President, in the chair. Mrs. Collier exhibited some interesting drawings of prehistoric animals scratched upon reindeer horns found at Perigord, in France. The first paper was contributed by the Rev. Arthur Courtenay Roberts, Vicar of Dunmow, upon "An Essex Church Tower," and was read in his absence by Dr. Winstone. This tower belongs to the church of Great Dunmow, not the Dunmow of flitch of bacon celebrity. The church is of fine proportions, and possesses a very large chancel, the author's theory being that the chancel was built for right of sanctuary. The nave and tower being added later. A partial restoration was commenced in August last, when the plaster was removed and the original flint work exposed, and this restoration has brought to light many interesting features, including the exterior of the old turret staircase similar to those at Hadleigh, Ingatestone, and other churches in the Eastern counties. The second paper was by Dr. W. de Gray Birch, F.S.A., entitled "Historical Notes on Ramsey Abbey MSS." The Benedictine Abbey of Ramsey, in Huntingdonshire, is believed to have been founded in or about A.D. 969 by Alwinus a duke or earl of the East Anglians, at the instigation of Oswald, one of the most active Archbishops who ever occupied the provincial chair of York Cathedral. Regarding the derivation of the name Ramsey, the author thought it might be taken to mean Ravens' Island. The Abbey stood at the upper end of the town, towards the south, at a little distance from the present church. The only remains existing are the ruined gateway, a rich specimen of florid Gothic, and some older work in the kitchen of Lord de Ramsey's house. The paper was full of most interesting extracts from and reference to the valuable series of MSS. once belonging to this noble abbey, now preserved in the British Museum and the Public Record Office. It was intended to have visited Ramsey during the recent congress of the Association at Peterborough, but the idea was reluctantly abandoned.

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## THE BUILDING TRADE DISPUTE.

A PRIVATE meeting of the members of the National Association of Operative Plasterers was held on the 23rd inst. at the Memorial Hall, Farringdon-street. There was a crowded attendance, notices having been sent out to all the London members, close upon 4,000 men. The question of the dispute which has arisen between the Union and the Master Builders' Association, in consequence of nearly 140 men having struck work a fortnight ago at three London firms, for the reason that those firms had refused to allow their foremen and superintendents of plasterers to join the Union, was discussed at some length. No decision was arrived at, but it was understood that another meeting will be called next week to further consider the matter. The feeling of the meeting seemed to be that they did not view with alarm the threat of the masters to lock the men out if the Union did not withdraw their demands. It was considered that the state of the trade is so good at the present time that the masters would not be likely to decide upon a general lock-out.——A large and representative meeting of master builders and other employers of plasterers in London was held in St. Martin's Town Hall, on the 24th inst., for the purpose of taking into consideration the various questions arising out of the present dispute between the members of the National Association of Operative Plasterers and the London employers. The meeting discussed the advisability and the necessity of taking immediate action, and, while the desirability of avoiding a general strike or lock-out was admitted, there was a much stronger feeling that the action of the members of the Plasterers' Union had now made it imperative that the employers should take some steps for the protection of their interests and the safety of the trade. It was urged by several employers present that, inasmuch as the three firms whose workmen struck work more than a week ago had had the courage to stand by their foremen in their refusal to be coerced into joining the Union, it was proper that the Central Association of Master Builders should support them in the action that they had taken. Mr. Costigan, the secretary, was authorised to make a brief statement as to what had occurred at the meeting. He said a resolution was passed to the effect that the meeting should "adopt and carry into effect, at the earliest possible moment, the policy proposed by the National Association of Master Builders, with which Association the Central Association in London is affiliated. "It was quite obvious," the secretary's statement continued, "that the meeting had arrived at the conclusion that the recent arrogant and aggressive policy of the National Association of Operative Plasterers was now past all endurance, and must be checked at any cost." A large special fund for dealing with the situation was contributed spontaneously during the meeting. The decision to carry into effect the policy of the National Association of Master Builders is regarded as equivalent to an intimation that a general lock-out of plasterers may be instituted at any moment.——No communication has been made by the Central Association of Master Builders to the National Association of Operative Plasterers with regard to the decision arrived at by the employers at the meeting held in St. Martin's Town Hall. The formal letter to the union, stating the counter demands of the masters, is expected to come from the National Association of Master Builders, of which the Central Association is only a part. The headquarters of the National Association are in Liverpool, and a meeting, at which the final demands of the masters will be formulated, will be held at Bradford on the 31st of this month. No further development in the dispute is expected to take place until the result of the ballot of the members of the National Association of Operative Plasterers is made known a fortnight hence. That ballot, decided upon at the mass meeting held in the Memorial Hall on Monday night, is to be confined strictly to the question whether or not the union members shall work with non-union foremen, and it may be that the main issue in the present dispute will turn entirely upon the result of that ballot.

## APPLICATIONS UNDER THE LONDON BUILDING ACT, 1894.

AT the meeting of the London County Council on Tuesday, the Building Act Committee brought up the following list of applications under the 1894 London Building Act. Those applications to which consent has been given are granted on certain conditions.*

### *Lines of Frontage.*

*City of London.*—An oriel window and two balconies, at the second floor level, in front of the "Old Bell" tavern, No. 123, Holborn (Mr. A. Dixon, for Messrs. Whitbread & Co., Limited).—Consent.

*Hampstead.*—Two one-story coal-offices on the west side of West-end-lane, Hampstead, at the corner of Iverson-road (Mr. S. Bolton, for Messrs. Brewis Bros.)—Consent.

*Woolwich.*—Four houses on the west side of Plum-lane, Plumstead, next No. 13, Shrewsbury-villas (Messrs. Church, Quick, & Whincop, for Mr. J. R. Jolly).—Consent.

*Kennington.*†—A block of residential flats on the north side of Langley-lane, South Lambeth-road, Lambeth (Mr. G. Simpson, for Mr. C. Serff).—Consent.

*Battersea.*†—One-story shops upon part of the forecourts of Nos. 20, 22, 24, and 26, St. John's-hill, Battersea (Mr. C. W. Davies for Mr. H. S. Lee).—Consent.

*Bermondsey.*—A one-story shop upon the forecourt of No. 270, Southwark Park-road (Mr. G. Legg for Mr. A. Pomeroy).—Consent.

*Clapham.*—Two houses with shops on the site of Nos. 64, 66, and 68, High-street, Clapham (Mr. F. P. Bacon for Mr. W. Burton).—Consent

*Dulwich.*—Two wood and tile pent-roofs over the entrances to Nos. 47 and 48, St. Aidan's-road, East Dulwich (Mr. C. Watkins for Mr. W. Watkins).—Consent.

*Fulham.*—That the application of Mr. F. Matcham, for Sir J. H. Johnson, for an extension of the periods within which the erection of buildings on the sites of Nos. 11, 13, 15, 17, 19, 21, 23, 25, 27, 29, 31, 33, 35, 37, 39, and 41, Harwood-road, Fulham, and also on the site of stabling at the south end of that road, at the corner of Moore Park-road, was required to be commenced and completed, be granted.—Agreed.

*Fulham.*—A new shop-front to the "Red Lion Hotel," No. 492, Fulham-road, Fulham (Messrs. Doulton & Co. for Mr. H. J. Squires).—Consent.

*Hackney Central.*—A one-story shed at the fire-engine station, Bodney-road, Hackney (Mr. R. Pearsall for the Fire Brigade Committee of the Council).—Consent.

*Hammersmith.*—One story shops on the north side of Goldhawk-road, Shepherd's Bush, adjacent to the Bush Hotel (Mr. F. S. Hammond for Mr. E. Tabernacle).—Consent.

*Hampstead.*—Bath-room addition over the entrance porch to No. 39, Loudoun-road, Hampstead, abutting upon Boundary-road (Mr. A. Spiers for Mr. J. S. Laycock).—Consent.

*Hampstead.*—A new shop front to No. 153, Broadhurst-gardens, West Hampstead (Mr. E. W. Jennings for Messrs. Chard & Sons).—Consent.

*Islington, North.*—A billiard-room and addition at "St. John's Tavern," Junction-road, Islington, to abut upon St. John's-park (Mr. J. Taft).—Consent.

*Kensington, North.*—A building on the site of No. 91, Ladbroke-road, Kensington, and part of the grounds belonging to that house, to abut upon Lansdowne-road and Boyne-terrace-mews (Mr. E. K. Purchase).—Consent.

*Lewisham.*—One-story shops upon the forecourts of Nos. 56, 58, and 60, Rushey-green, Catford (Mr. A. L. Guy for Mr. R. A. Umberslade).—Consent.

*Lewisham*—Wood and tile pents over the entrances to Nos. 104 and 106, Devonshire-road, Forest-hill, Lewisham (Mr. H. G. Brace for Mr. R. J. Bowerman).—Consent.

*Marylebone, East.*—A porch in front of a building numbered 92 and 94, Great Titchfield-street, Marylebone (Mr. W. J. Miller for Mr. H. T. Schwartz).—Consent.

*St. George, Hanover-square.*—Two three-story bay-windows, and an entrance porch to 35, Dover-street, Piccadilly (Messrs. Wimperis & Arber for the Hotel, Club, and Investment Company, Limited).—Consent.

*St. George, Hanover-square.*—An additional story on an existing bay window in front of No. 6, Berkeley-square, St. George, Hanover-square (Mr. T. H. Watson for Mrs. E. Bushell).—Consent.

*Strand.*—Two iron and glass shelters at the entrances to the Hotel de Paris, in Leicester-square and Leicester-place respectively (Messrs. Saville & Martin for Mr. R. Baker).—Consent.

*St. George, Hanover-square.*†—That Mr. H. S. Clutton be informed that the Council is not prepared to accede to his request for consent to two covered ways erected in front of the Walsingham Hotel, Piccadilly.—Agreed.

*Lewisham.*†—Buildings on the southern side of a proposed extension of Manor Park, Lee (Messrs. Johnson & Aldridge).—Refused.

*St. George, Hanover-square.*†—An iron and glass shelter at the Dover-street entrance to the Avondale Hotel, No. 68A, Piccadilly (Mr. H. Gascoigne for the Directors of the Avondale Hotel and Restaurant and Hatchett's Restaurant, Limited).—Refused.

*Clapham.*—One-story shops upon the forecourts of Nos. 2 to 10, Pennsbury-terrace, Wandsworth-road, Wandsworth (Messrs. Douglas Young & Co. for the trustees of Mrs. Wigmore).—Refused.

*Greenwich.*†—A two-story addition to No. 14, Vanbrugh-park, Blackheath, to abut upon Vanbrugh-park-road (Mr. W. E. Holding).—Refused.

*Hammersmith.*—A wood and glass porch at the entrance to No. 226, Goldhawk-road, Hammersmith (Mr. J. P. Clark, for Mr. A. M. Shore).—Refused.

*Hampstead.*—A block of residential flats on the northern side of Finchley-road, Hampstead, at the corner of West Hampstead-avenne (Mr. J. Reynolds).—Refused.

*Lambeth, North.*†—That Mr. G. K. Deakin be informed that his application on behalf of Messrs. J. and H. Deakin for the consent of the Council to the erection of an iron and glass covered way in front of the Waterloo Hotel, York-road, Lambeth, having been further considered, the Council sees no reason to depart from its decision of July 26 last, not to grant the application.—Agreed.

*Lewisham.*†—Three houses with shops on the site of No. 49, Dartmouth-road, Forest Hill (Mr. W. H. Gritten for Mr. E. C. Christmas)—Refused.

*Lewisham.*†—A house on the north side of Gabriel-street, Lewisham, to abut upon Ballina-street (Mr. S. T. Harvey for Messrs. Allen, Harvey, & Co.)—Refused.

*Paddington, South.*†—An iron and glass shelter at the entrance to No. 39, Leinster-gardens, Paddington (Messrs. Watson Brothers for Dr. Huxley).—Refused.

*Peckham.*—A three-story building with one-story shop in front, on the north side of Hanover Park, Rye-lane, Peckham (Messrs. H. Jarvis & Son for Messrs. Jones & Higgins, Limited).—Refused.

*Peckham.*—Projecting illuminated tin and glass sign over the entrance to the "Marlborough Head" public-house, No. 76, Marmont-road, Peckham (Mr. J. Steadman for Mr. W. M. Collins).—Refused.

*Strand.*—Two three-story oriel windows in front of Nos. 31 and 32, Haymarket, St. Martin-in-the-Fields (Mr. J. Scott for Messrs. J. Brecknill & Turner, Limited).—Refused.

*Westminster.*—A three-story oriel window at No. 26, New Tothill-street, Westminster (Mr. P. Hoffmann for Mr. C. M. Owen).—Refused.

### *Width of Way.*

*City of London.*—A new warehouse recently erected upon the site of Nos. 13, 14, 15, and 16, Little New-street, and also upon the north-east corner of the site of the adjacent building in New-street-hill, with a part of such warehouse at less than the prescribed distance from the centre of New-street-hill (Messrs. H. Dawson & Sons, for Messrs. Eyre & Spottiswoode).—Consent.

*Chelsea.*—Stable buildings on a site between Nos. 39 and 40, Riley-street, King's-road, Chelsea (Mr. J. J. Connelly).—Consent.

*Chelsea.*—A one-story building on the south side of York-mews, Chelsea (Mr. E. T. Hall, for the Royal Hospital for Consumption).—Consent.

*Hampstead.*—An iron railing on the face of the wall of the new wing to the workhouse on the south side of New End, Hampstead (Mr. K. D. Young, for the Guardians of St. John, Hampstead).—Consent.

*Kennington.*—A one-story addition to No. 114, Vauxhall-walk, Lambeth, to abut upon Glasshouse-street (Mr. W. H. Woodward for Dr. T. J. Kane).—Consent.

*Lambeth, North.*—Buildings on the site of Nos. 19 and 21, Belvedere-road, Lambeth (Messrs. Holloway Brothers).—Consent.

*Newington, West.*—A building upon the site of Nos. 224, 226, and 228, Tabard-street, Newington (Messrs. Dewrance & Co.).—Consent.

*Westminster.*—Buildings on the west side of Regency-street, south side of Vincent-street, and east and west sides of Hide-place, Westminster (Messrs. Clutton for the Ecclesiastical Commissioners).—Consent.

*Woolwich.*—Buildings and forecourt boundaries in parts of Union-street and Union Buildings, Powis-street, Woolwich, at less than the prescribed distance from the centre of the road (Mr. H. P. Monckton and Messrs. Church, Quick, & Whincop for respective clients, Captain R. A. Ogilby, the freeholder, and Mr. H. Wright, Mr. H. H. Church, Mr. S. H. Cuff, and Messrs. Sanders & Webber, the leaseholders of the property).—Consent.

*Woolwich.*—Widening of parts of Union Buildings and Union-street, Powis-street, Woolwich (Mr. H. P. Monckton and Messrs. Church, Quick, & Whincop for their respective clients, Captain R. A. Ogilby, the freeholder, and Mr. H. Wright, Mr. H. H. Church, Mr. S. H. Cuff, and Messrs. Sanders & Webber, the leaseholders of the property).—Consent.

*Lewisham.*—That the Council make no order with respect to the application of Mr. F. A. Smith, for the executors of the late Mr. W. Smith, for consent to the erection of a block of stables in a roadway at the rear of houses numbered 34 to 70 (even numbers only), on the west side of Perry Vale, Lewisham.—Agreed.

*Whitechapel.*—That Messrs. J. Hood & Sons be informed with reference to their request for consent to construct areas, with pavement lights over, on the land given up to the public use in front of a block of model dwellings in course of erection on the east side of Frostic-place, Whitechapel, that if the work be carried out to the satisfaction of the Whitechapel District Board as proposed, the consent of the Council will not be required.—Agreed.

*Rotherhithe.*—A one-story building on the East side of Tulip-place, New Church-street, Bermondsey (Mr. W. Freeman).—Refused.

### *Space at Rear.*

*Fulham.*—A modification of the provisions of Section 41 (1) (vi.) of the London Building Act, 1894, with regard to open spaces about buildings, so far as relates to the proposed erection of No. 2, Byam-street, Stephendale-road, Fulham, with an irregular space at the rear (Mr. W. C. Poole, for Mr. Wilson).—Consent.

*Wandsworth.*—A modification of the provisions of Section 41 (1) (vi.) of the London Building Act, 1894, with regard to open spaces about buildings, so far as relates to the proposed erection of a two-story dwelling-house on the east side of Replingham-road, West Wandsworth, with an irregular space at the rear (Mr. G. F. Gray).—Consent.

### *Extension Above Diagonal Line.*

*Islington, North.*—Modification of so much of the provisions of Part V. of the London Building Act, 1894, with regard to the extension above the diagonal line as directed to be drawn by Section 41 of that Act, so far as relates to the proposed erection of a building at the rear of stabling on the west side of Hercules-place, Holloway, between Bowman's-mews and Bowman's-place (Mr. J. J. Connelly for the North Metropolitan Tramways Company, Limited).—Consent.

*Marylebone, West.*—Extension above the diagonal line mentioned in Section 41 of the London Building Act, 1894, of a portion of a building, viz., the "Globe" public-house, which is proposed to be rebuilt on the site of Nos. 43, 45, and 47, Marylebone-road and No. 21, York-place, with an open space at the rear of the new building (Mr. W. H. Scrymgour for Mr. A. C. Stock).—Refused.

*Strand.*—Extension above the diagonal line mentioned in Section 41 of the London Building Act, 1894, of a portion of a building to be erected on the site of Nos. 51, 52, and 53, Brewer-street, St. James's (Messrs. D. Cubitt Nichols, Sons, & Chater for Messrs. Dawson, Sharp, & Co.).—Refused.

### *Deviation from Certified Plans.*

*Finsbury, Central.*—Deviations from the plan certified by the District Surveyor, under Section 43 of the London Building Act, 1894, so far as relates to the proposed rebuilding of No. 76, Chapel-street and No. 7, Suffolk-street, Clerkenwell (Mr. E. Carritt for Mr. J. Sainsbury).—Consent.

*Holborn.*—Deviations from the plan certified by the District Surveyor, under Section 43 of the London Building Act, 1894, so far as relates to the proposed rebuilding of the "William the Fourth" public-house, No. 10, Beauchamp-street, Leather-lane, Holborn (Mr. M. T. Saunders for Reid's Brewery Co., Limited).—Consent.

*St. Pancras, South.*—Certain deviations from the plans certified by the District Surveyor, under Section 43 of the London Building Act, 1894, so far as relates to the proposed rebuilding of the "Globe" public-house, No. 15, London-street, Tottenham Court-road, St. Pancras (Mr. J. G. Ensor for Messrs. Watney, Coombe, Reid & Co., Limited).—Refused.

### *Lines of Frontage and Width of Way.*

*Greenwich.*—Buildings on a site abutting on Greenwich-road, Ashburnham-road, and Egerton-road, Greenwich (Mr. C. Reilly for the President and Governors of Queen Elizabeth College, Greenwich).—Consent.

*Strand.*—An angle turret and two oriel windows to a building on the site of Nos. 66 and 67, St. James's-street and No. 1, St. James's-place (Mr. R. J. Worley).—Refused.

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* Names of applicants are given in brackets. Buildings are new erections unless otherwise stated.

*Strand.*—A pent roof in front of the new choir vestry, in course of erection, to St. James's church, on the north side of Jermyn-street, Piccadilly (Messrs. Wimperis & Arber for the rector and churchwardens of St. James's church).—Refused.

*Brixton.*—A building on the south side of Canterbury-road, Brixton, to abut also upon Pope's-road and Industry-street (Mr. A. Paull for the London, Gloucestershire, and North Hants Dairy Company, Limited).—Refused.

*Kennington.*—A one-story workshop at the rear of No. 29, South Lambeth-road, Lambeth, to abut upon Langley-lane (Mr. W. H. Woodward for Mr. H. Carnell).—Refused.

*St. George, Hanover Square.*†—An iron and glass illuminated sign at the Allington-street entrance to the Royal Standard Music Hall, Victoria-street, Westminster (Messrs. Brown & Barrow for Mr. T. S. Dickie).—Refused.

### *Width of Way and Height of Building.*

*Deptford.*—Rebuilding of the "Lads of the Village" public-house, Charles-street, Deptford (Mr. J. J. Downs for Mr. B. R. Banks).—Consent.

### *Formation of Streets.*

*Lewisham.*—That an order be issued to Mr. A. W Osborn, sanctioning the formation or laying-out of new streets for carriage traffic and the widening of parts of Manor Park and Manor-lane, on the Manor Park Estate, Manor Park, Lee, and Lewisham (for Messrs. Johnson & Aldridge). That the names Manor Park (in continuation), Leahurst-road, Longhurst-road, Staplehurst-road, and Fernbrook-road be approved for the new streets.—Agreed.

*Wandsworth.*—That an order be issued to Mr. W. C. Poole, refusing to sanction the formation or laying-out for carriage traffic of a new street, to lead out of Totterdown-street, Tooting (for Mr. A. Heaver).—Refused.

### *Cubical Extent.*

*Rotherhithe.*—The erection on the east side of Shad Thames, Horselydown, to abut at the rear on St. Saviour's Dock, of a warehouse to exceed in extent 250,000 but not 450,000 cubic feet, and to be used only for the purposes of the trade of a rice merchant (Mr. G. W. Thompson for Messrs. Carbut & Co.).—Refused.

### *Buildings for the Supply of Electricity.*

*Greenwich.*—Construction of a generating station and works on the north-west side of Blackwall-lane, East Greenwich (for Mr. F. Forbes Glennie on behalf of the Blackheath and Greenwich District Electric Light Company, Limited).—Refused.

*The recommendations marked † are contrary to the views of the Local Authorities.*

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# Illustrations.

## COMPETITION DESIGN FOR MUNICIPAL BUILDINGS, CARDIFF.

THE elevation shows the position of the buildings to be devoted to municipal offices, the Law Courts block and Police Courts being separate.

The Council chamber, ante-room, and large assembly hall are placed on the upper floor, and occupy the whole of the front. The main public entrance is central, and the grand staircase under the dome. This arrrangement was adopted with a view to giving the height and dignity to the front of the buildings that the flat nature of the surroundings seemed to demand. The Mayor's suite and entrance are under the tower, and occupy the return front.

BERESFORD PITE.

## HOUSE AT DOUGLAS, ISLE OF MAN.

IN this house a somewhat dignified and stately effect has been aimed at, tempered with a certain degree of homeliness—the peculiar undefinable quality, in fact, which belongs to the English manor house of the Elizabethan period in a stone district. In the entrance front with its square forecourt the effect is focussed on the entrance doorway, the gables being plainly treated with broad wall spaces.

The interior is of the same traditional character as the exterior. The two-story hall is finished with oak panelling, above which the stone wall is relieved in places with tapestry panels and the gallery to the staircase. In the planning, special attention has been paid to modern requirement, particularly as to the routes of the family and servants, and so the hall is kept as a sitting-room.

The broad low corridor is a special feature, and the drawing-room is panelled in white, and with a mantelpiece in the Adam style.

The architect is Mr. M. H. Baillie Scott, and the drawing was exhibited at the last Royal Academy.

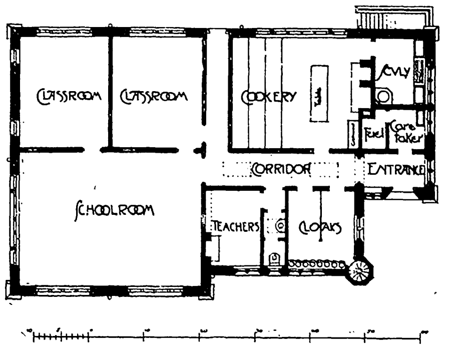
## DESIGN FOR FINE-ART GALLERY FOR BURY.

THIS is a perspective view of a design for an Art-Gallery and Public Library for the County Borough of Bury, which was exhibited at the Royal Academy last year under the names of Messrs. J. D. & S. J. Mould, architects.

We presume that it is a competition design, but we have not been able to obtain either a plan or description from the authors, and can only leave the drawing to speak for itself. As a façade for this class of building, it has considerable merit.

## NEW GIRLS' SCHOOL, WELLS BLUE-COAT SCHOOLS, SOMERSET.

THIS school is being erected in Portway, Wells, not far from the splendid Church of St. Cuthbert, and it will be seen that a simple and picturesque group of buildings has been designed, in keeping with the old-world traditions of the city.



*Addition to Wells Blue-Coat Schools. Plan.*

The design was selected by the Governors in a limited competition, and part of the cost will be defrayed by the County Council and Charity Commissioners.

The architect is Mr. H. Dare Bryan, of Bristol.

## EXAMPLES OF FRENCH SCULPTURE.

OF the two examples we give of modern French sculpture, the group entitled "La Perle," by M. Levasseur, occupied a central position in the sculpture court of the Salon last year, and has just been purchased by the Paris Municipality and placed in the Galliera Museum. It represents a sea deity holding an open shell in which stands a female figure symbolical of the beauty of the pearl. It is one of those sentimental prettinesses on a large scale which French sculptors occasionally produce; and though beautifully modelled, it has not much more interest than that of mere workmanship.

The other figure, "Dans Le Rêve," by M. Gustave Michel, is of a very different order. It is one of the most beautiful figures, both in expression and in composition and modelling, that we have seen in modern sculpture. By a curious irony of circumstance, while M. Levasseur's far more commonplace conception was given a central place, this beautiful work by M. Michel was inconspicuously placed at the side of the court (where we stumbled on it almost by accident) and was accidentally omitted from the Salon catalogue. It has now, we believe, been purchased by the State for the Luxembourg Museum, and will take an important place even in that unequalled collection of modern sculpture.

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## *ARCHITECTURAL SOCIETIES.*

BRISTOL SOCIETY OF ARCHITECTS.—At the ordinary monthly meeting held at the Fine Arts Academy on Monday last the award was made in the Students' Competition for Measured Drawing Prizes, the first prize of six guineas going to Mr. C. F. W. Dening, pupil of Mr. H. Dare Bryan, the second and third prizes being equally divided by Mr. H. F. Smith, pupil of Messrs. Crisp & Oatley, and Mr. E. G. Rodway, pupil of Mr. H. Dare Bryan. The subjects drawn were of local and historic interest, and included Kewstoke Church and Cleeve Abbey, Somerset, the cupola of All Saint's Church, Bristol, the Mede Tomb in St. Mary Redcliffe, and the interesting little Georgian Church on Redland Green. After the general business of the Society had been transacted, a paper on "Rhythm in Design" was read by Mr. F. Bligh Bond.

## PRIVATE BILLS FOR THE COMING SESSION; AND PROVISIONAL ORDERS.*

### *Railways.*

BILLS.—*Central London:* For an extension of time under their Acts of 1891-4, and to acquire the premises, Nos. 78, Davies-street, Oxford-street, 11A, Stanhope-street, Bayswater, and 548, Oxford-street. *Wood Green* to the *Strand:* A deep-level electrical line (4 ft. 8½ in. gauge) *via* Finsbury Park, King's Cross, Judd-street, Russell-square, Southampton-row, and beneath the proposed street from Holborn to the Strand, with a terminus in Holles-street, and an interchange station with the Central London Railway at High Holborn. *North-West London:* From the Marble Arch to St. Cuthbert's-road, Cricklewood, and thence to the 4-mile post on the Edgware-road, with a subway at Park-lane station of the Central London line. *Baker-street and Waterloo:* New lines from their railway (1893 and 1896) at Baker-street to Randolph-road, Paddington, and in Marylebone-road to Seymour-street, St. Pancras, with subways from their Charing Cross Station to Trafalgar-square, and from the north-east end of Paddington Station platform (Great Western Railway) to Bishop's-road bridge. *West Metropolitan:* From a junction with the joint Hammersmith and City and Great Western and Metropolitan lines at Wood-lane, to Acton (G.W.). *Brompton and Piccadilly-circus:* Lines to be worked by electricity or other mechanical power, from their authorised line (1897) (1) at Air-street to Long Acre, St. Martin's-lane; (2) at Alfred-place, Thurloe-square, to South Kensington (M.D.), with a subway beneath Alfred-place West to South Kensington station. *Charing Cross, Euston-road, and Hampstead:* From their authorised line (1893) (1) at Drummond-street to the Cobden statue, Camden Town; (2) the "Mother Red Cap," Camden Town, to near Kentish Town station; (3) from line (2) at Kentish Town to Highgate-road station (Midland); to lease the undertaking of the Baker-street and Waterloo Railway Company; and to take lands at Cranbourne-street and Charing Cross-road, and at Highgate-road station, for a generating station, and the area, including Adelaide-place, lying between St. Martin's-place, Church-path, Adelaide-place, and St. Martin's-mews, in St. Martin's-in-the-Fields parish. *City and Brixton:* An underground railway or subway from a junction with Ingleton-street and Brixton-road to the depôt of the City and South London line in Clapham-road, and for working by electricity or other motive power not being steam locomotives. *Harrow and Uxbridge:* From junctions with their authorised line (1897) at Pinner to the Metropolitan line at Harrow. *Uxbridge and Rickmansworth:* Deviations of portions of their authorised line (1896) at Harefield, Ruislip, and Denham, and to take 2 acres of Ickenham Green. *Great Northern:* To widen their main line between Finsbury Park and Harringay, at Hornsey, and at Peterborough; to build a bridge over the Welland at Deeping, and make new roads, and abolish the level crossings at Stevenage and Leicester. *London and North Western:* (1) Wolverhampton and Cannock, from their Grand Junction station at Heath Town to the Cannock branch of the South Staffordshire line at Holly-lane; (2) Welmslow and Levershulme—from their Crewe and Manchester line to North Manchester parish; (3) Red Wharf Bay—from their Anglesey central line at Llanfihangel Esgeifiog to the "Ship" Inn, Red Wharf Bay. *Midland:* Low Moor Junctions—Hunsworth to Wyke, North Bierley, through Cleckheaton; Halifax connecting lines—from Sowerby Bridge (Lancashire and Yorkshire) to Hungerhill; Huddersfield Railway—from Mirfield (Lancashire and Yorkshire) to Huddersfield, through Kirkheaton. *Great Eastern:* Various short lines (1) in the Loughton and Leyton Bridge districts (2) Manea to Upwell (3) at North Walsham; to widen their Cambridge line at Temple Mills and to build a bridge across the Lea at Tottenham, and their Colchester and Tendring Hundred line at Romford, at Ipswich, and between Wivenhoe and Elmstead; and to take 20 acres of Runton Common, and of Tottenham, Leyton, and Walthamstow marshes. *Great Western and Great Central:* To vest in the two companies a part of the former's authorised Acton and High Wycombe line, and widen, improve, and alter the former's Wycombe and Oxford line; a new line from the last-named at Princes Risborough to Grendon Underwood, (15 miles) with an extension to the latter's main line to London, passing through Illmire, Haddenham, Chearsley, Chilton, Woodham, Dorton, Waddesdon, and Quainton. *Great Central:* A railway in Derbyshire from their line at Heath Town, through Ault, Morton, and Woodthorpe, to Tupton (Midland) with a branch at North Wingfield to Clay Cross Colliery. *Midland and South Western Junction:* Extension lines from Dowdeswell, in Ashchurch, through Whittington, Sevenhampton, Charlton, Sudeley Manor, Winchcomb, Little Washbourne, Beckford, and Teddington (16 miles) to the Bristol and Birmingham branch of the Midland line with a branch to the Banbury and Cheltenham (G.W.) line at Whittington. *Great Western:* Lines (1) from Cheltenham to Honeybourne Station, near Evesham, passing through Prestbury, Southam, Brockhampton, Bishop's Cleeve,

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* See also our last issue page 70.

Gotherington, Woodmancote, Prescot, Stanley-Pontlarge, Alderton, Great Washbourne (20 miles); (2) Uxbridge to Harefield; and (3) Bearley, near Stratford-on-Avon, to Wootton Waven, joining their Stratford-on-Avon and Hatton, and Alcester branches, taking 1 acre of Langport Moor; a reconstruction of Magpie Viaduct, Buckland, taking 1 acre of Roborough Down; widening and lengthening of several bridges; and to take 2 acres of Mynyddbach-y-glo Common for the diversion of a road, at that place, which now crosses the S. Wales line, and carrying it over by means of a bridge. *London and South Western:* An enlargement of Waterloo terminus by taking some property (including All Saints' Church and schools) and the station of the London Necropolis and National Mausoleum Company adjoining Waterloo Station between Waterloo-road, Westminster Bridge-road, Lower Marsh, and York-road; to widen and improve York-street between York-road and Lower Marsh; to widen their Basingstoke and Salisbury line between Newton Toney in Amesbury rural district and Grateley, Andover, and, for a new road in Sunninghill, leading from Station-road, Ascot, to Brockenhurst-road, to take 4½ acres of commonable land, know as Sunninghill Bog—the Bill provides for annexing All Saints' district to that of St. John, Waterloo-road, and for giving a substituted station to the Necropolis Company. *South-Eastern, and London, Chatham, and Dover:* To carry on their respective undertakings as one concern; for new lines in Kent—(1) commencing in Chislehurst by a junction with the South-Eastern, through Bromley and ending in Chislehurst; (2) from the London, Chatham, and Dover, at Chislehurst, through Bromley to the South-Eastern at Bickley Park-road; and (3) various junctions between the two lines in the neighbourhood of Chislehurst, Bromley, Seal, Otford, Broadstairs, Ramsgate, Margate, and Whitstable. *South-Eastern:* For junctions with their main line in Deptford and Rotherhithe; lines from Grove Park Station, Lee, to their Bromley line at Bromley, and from their Caterham railway in Coulsdon to Purley Station; to widen their lines in Lewisham and Tunbridge; to make a road from the north-east corner of Gambia and George streets, in Christ Church, Southwark, to their Ewer-street goods depot (now being built) in St. Saviour's, at their loop line over Gravel-lane; and to take parcels of land in Southwark, Bermondsey, Rotherhithe, Deptford, Lewisham, Blackheath, Greenwich, and elsewhere in Kent and Surrey—in London the number of houses scheduled is fifty-two. *London, Brighton, and South Coast:* For the establishment of a pension fund for their officers and servants. *Tenterden:** A line, 8 miles in length, from Headcorn (S.E.) to Tenterden, through Frittenden and Biddenden; another, 5½ miles long, from Tenterden to the Ashford and Hastings branch at Kenardington. *North Staffordshire:* (1) from Stoke-in-Trent through Newcastle-under-Lyne to Trentham; (2) from Cold Norton, through Chebsey and Ellenhall, to Gnosall (8 miles), and various widenings. *Lancashire and Yorkshire:* A line from their authorised Blackpool (South Shore) line to join the Preston and Wyre main line at Kirkham North Junction (7 miles); connecting lines in Middleton and Manchester; and to widen their lines at Middleton Junction, and Hunt's Bridge Incline, Manchester, and on the branch to Middleton. A Company for a line from the Great Central at Loughborough to Sheephed, passing through Woodthorpe, Thorpe Acre, Grendon, and Nanpattan. *Leicester, Groby, and Bradgate Park*:* from Thurcaston, through Rothley, Cropston, Anstey, Groby, Ratby, and Newtown Lingford (8 miles). *Bexhill and Rotherfield*:* a line, about 18 miles long, from Bexhill by a junction with the L.B. & S.C. line, passing through Hove, Hurstmonceux, Ninfield, Ashburnham, Heathfield, Burwash, and Mayfield to a junction with the Brighton, Uckfield, and Tunbridge Wells branch of the L.B. & S.C. at Rotherfield, taking ½ acre of Hazard's Green, Ninfield. *East and West Wales*:* For lines (1) from Rheidol Bridge, on the Manchester and Milford line, to Smithfield-road, and (2) at Crosswood to the new Radnor extension line of the Kington and Eardisley Railway at its end, taking 8 acres of Rhos Twydd and 3 acres of Llandegley Rhos commonable lands in Llandegley. *Brynmawr and Western Valleys*:* A line in Monmouthshire from the G.W. at Nantyglo Station to the L.&N.W. at Brynmawr, taking 1 acre of Waun-yr-Helygen common land in Aberystwith. *Llanelly Harbour* and *Pontardulais*:* Railways in Llanelly, Llanedy, Llangennech, and Llannon. *Caledonian:* To widen their lines in Govan, Bothwell, Renfrew, Dunblane, Kilmadock, and Callander; to improve and enlarge Stirling and Glasgow Central stations; to dredge and deepen the Firth of Clyde, and enlarge and extend their pier at Wemyss Bay; also for junction lines in Falkirk, Larbert, and Grangemouth. *Douglas and Sanquhar*:* A line from Sanquhar to Douglas, through Kirkconnel, Crawfordjohn, and Lesmahagow. *Fishguard and Rosslare Railways and Harbour:* For harbour works and additional lands at Fishguard; a new railway from Cork to Fermoy, wiih a diversion of the Glanmire river, and to abandon the authorised Cork and Fermoy Railway (1898).

### *Tramways.*

BILLS.—By the Corporations of Birkenhead,* Derby, Hastings,† Salford,* and Great Yarmouth.† The Withington and Moss Side U.D. Councils (Lancs.), to adapt the lines for use of mechanical and electrical power. By various companies, in Brentford; Wolverhampton, gauge to be changed from 4 ft. 8½ in. to 3 ft. 6 in.; Southport; Seaforth (Lancs.)*; Gateshead*; Southport to Lytham*; Wrexham, Broughton, and Ruabon†; and Bexhill to St. Leonards.*

PROVISIONAL ORDERS.—By the Corporations of Blackpool,* Eccles, Halifax,† Ilkeston,† Reading,* and Southport.* By the U.D. Councils of Audenshaw,* Barking Town,† Clayton (W.R. Yrks.),* Ilford,† Matlock, and Queensbury (W.R. Yrks.).* By various companies in Devonport†, Weston-super-Mare,* Ipswich†; Swanscombe, Northfleet, Gravesend, and Milton†; Southport and Birkdale,* Dudley, Sedgley, and Wolverhampton (with alteration to 3 ft. 6 in. gauge); and by Messrs. F. Burt & Co., bankers, to work the tramways authorised by the Exeter Tramways Act, 1881.

In nearly all of the above provision is made for adopting electrical (overhead or otherwise) or other mechanical power. See also under "Municipal Improvements."

### *Light Railways.*

The Commissioners appointed under the Act of 1896 received in November fifty-four applications‡ in respect of an aggregate of 493 miles, at an estimated cost of 3,344,563*l.* for construction (exclusively of cost of plant and rolling-stock), being the largest number for any half-year; the total number received during the preceding four half-years being 121 for 1,302 miles, at an estimated cost of 7,555,976*l.* for construction. The present applications comprise the following projects:—*London United Tramways:* Hanwell to Acton, Twickenham to Kingston Bridge, and thence through Hampton Wick and Teddington to Hampton-road, Twickenham. The company obtained an Act last year for electrical tramways from the London boundary at Hammersmith, through Chiswick, Brentford, and Isleworth to Hounslow, and are negotiating with the London County Council for continuing their lines within the London border to the Central London E.R. at Shepherd's Bush, so electrical cars will thus run from Shepherd's Bush to Bushey Park, Hampton Court, and Kingston Bridge. *Finchley District E. Traction:* "Archway" Tavern, Highgate, to Hendon, Willesden, Finchley, &c.: *Drake and Gorham Electric Power and Traction:* Hounslow Barracks station along Bath and Whitton roads to Whitton Dean, thence along Hounslow and Kneller-roads, crossing the New River Crane by a new bridge, along Whitton-road, across the Old River Crane by a new bridge to be built on the west side of Coles's Bridge, and so by the London and Richmond roads, past Marble Hill and Cambridge Park to a spot distant 300 ft. from the Middlesex end of Richmond Bridge; and for single lines, with passing places, between Gorleston and Lowestoft, and Lowestoft and Wrentham (along the main roads). *Metropolitan Tramways and Omnibus:* Archway-road, Hornsey, through Tottenham, Wood Green, Southgate, Friern Barnet, Hornsey, and Finchley, to Whetstone: from their tramway at Hertford-road, Waltham Cross, through Edmonton, Enfield, and Cheshunt, and from Hampstead through Hendon, Willesden, Kingsbury, and Stanmore, to Edgware. *Crystal Palace Light Railways and Tramways,* in Croydon, Thornton Heath, South Norwood, Penge, and Streatham. *Light Railways Development:* Wallingford (G.W) station, across the Thames 500 yards above Benson Lock to Bensington, and from Didcot (G.W.) station to Sutton Courtney and Appleford: Penzance to Newlyn: St. Stephen's by Saltash (G.W.) to Penzance. By the Corporations of Doncaster, Southend-on-Sea, and Colne; and by various companies or other promoters in different parts of the kingdom.

### *Miscellaneous.*

BILLS.—*Imperial Markets and Stores:* To incorporate a company for the establishment of a market for the sale of live stock imported from Ireland, with abattoir, at Millwall (Glengall-road site), and of a market for dead meat, fish, poultry, fruits, vegetables, and other produce, in Shoreditch, on a site bounded by High-street, Great Eastern-street, Holywell-lane, and Curtain-road; to provide public abattoirs in England, and to arrange with the Local Government Board, the Board of Agriculture, and Local Authorities for the inspection of animals, meat, and other produce. *Emmanuel Church, Hampstead:* For an authority to sell and dispose of the site and buildings of Emmanuel Church, Mill-lane, Hampstead, for which the new parish church in Lyncroft-gardens has been substituted.

*River Wandle Protection:* To provide that the Surrey County Council shall be the authority for maintaining and improving the flow and purity of the River Wandle and its sources of supply, and to prohibit any waterworks company, Local Authority, land owner, or other person, to sink new wells, or drive adits, or establish pumping stations, so as to collect, intercept, divert, or appropriate for purposes of sale any water lying within an area bounded by an imaginary line drawn from Mitcham parish church to Norbury House, thence to Croydon old church, and thence to Warlingham, Kingswood, Sutton, and Mitcham parish churches.

*National Telephone Company:* For (1) re-incorporation; and (2) powers to effectively provide telephonical communication throughout the United Kingdom, Channel Islands, and Isle of Man. A Telephone Bill has been deposited by the Glasgow Corporation.

## BRISTOL MASTER BUILDERS' ASSOCIATION.

THE annual meeting of this Association was held on the 18th inst., at the offices, Small-street. Mr. A. Krauss, President, occupied the chair.

The President moved the adoption of the report, of which the following is an abstract:—"The work performed by this Association during the past year is alone sufficient to justify its existence, and perhaps it has transacted more practical business in the twelve months just ended than it has in any similar period during its establishment. It is only too certain that, whilst the builders of this country have been content to remain unorganised for the purpose of protecting themselves and their trade interests, others, whose interests are unfortunately somewhat opposed to them, have been attacking, with ever-increasing vigour, many branches of the trade which legitimately belong to the builders of this country; but it is gratifying to know that the trade generally is at last arousing itself to the importance of establishing local associations, and being affiliated to federations in their respective districts. During the past year there has been increased prosperity in the building trade of this city, though perhaps, at the same time, it must be admitted that there has been greater competition; but it is generally acknowledged that where there is competition the trade must naturally be healthy." The report then dealt with the bricklayers' strike in Bristol last month. "An important feature of 1898 was the introduction of the Workmen's Compensation Act, a measure that is no doubt fraught with good intentions, but is of such a complex and harassing character that it is to be feared it will give rise to endless and unprofitable litigation. The rates demanded by some of the insurance companies when the Act came into operation on July 1, were very exorbitant, but the members of this Association, after investigation and consultation, were enabled to secure very favourable rates and policies to cover not only the Workmen's Compensation Act, but also Employers' Liability and Common Law. The Plumbers' Registration Bill was again introduced in the House of Commons early in the year, and the members of your Association strongly protested against its provisions. The committee of your Association is convinced that in opposing the Bill it is acting in the interests of the public and the building trade generally, and intends to persevere in its efforts in this direction. The meetings of the National Association of Master Builders have been attended from time to time by representatives from this Association. The West of England and South Wales Federation, established in the previous year, is gradually gaining ground in popularity, and has considerably increased its membership. Meetings have been held at Bath and Bridgwater; the latter was attended by a large representative gathering. Numerous trivial disputes as to the interpretation of rules and other points are continually receiving consideration at the hands of the Conciliation Board, but it is satisfactory to know that invariably the true spirit of conciliation prevails, and that the points at issue are disposed of in a most amicable manner. . . . ."

The President said that in May they had their first annual federation meeting at Bath. Since then they had had their third half-yearly meeting at Bridgwater. The West of England and South Wales Federation now consisted of the following towns:—Exeter, Newport, Bridgwater, Taunton, Weston-super-Mare, Bristol, Bath, Plymouth, Cardiff, Llanelly, Pontypridd, Stroud, Hereford, Clevedon, and Salisbury. The Workmen's Compensation Act had also involved many meetings, and in a year or two they would all know more about the working of this Act than they did at present. The two last half-yearly meetings of the National Association, namely, at London and Leicester, were of very great importance, especially as regarded the federation scheme. Twelve months ago, in London, it was proposed that four national centres should be formed, and meetings had been held at Derby, Birmingham, and Liverpool. He was glad to say this federation scheme had grown very much, and they were on the eve of completing it. He would like to point out how the six weeks' bricklayers' strike which commenced in March affected a bricklayer's labourer who could not claim strike pay. Six weeks' loss, at 22s. a week, represented, for fifty-two weeks, 2s. 6d. per week; or, in other words, it reduced his wages from 22s. to 19s. 6d. per week for twelve months; and if those points were always well considered at first, and cared for by those in authority, many a strike would not occur. There had been last year 179 disputes in the building trade, affecting no fewer than 16,000 workpeople, and a loss of no fewer than 414,508 working days. That represented a great loss to the country, not calculating the number affected indirectly.

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* A new company.

* 4 ft. 8½ in. gauge. † 3 ft. 6 in. gauge.

‡ Of these, three come from Wales, nine from Scotland; and of the total, thirty-two adopt electrical traction.

Mr. Wilkins seconded the resolution, which was carried.

The President proposed, and Mr. G. Downs seconded, the election of Mr. F. N. Cowlin as President for the ensuing year.

This having been agreed to, Mr. Cowlin responded, and said he should do his best to maintain the dignity and importance of the Association. So far as could be gauged at present, there seemed to be a prosperous year before the trade locally.

On the motion of Mr. G. Humphreys, seconded by Mr. E. T. Neale, the retiring President of the Association was thanked for the services he had rendered during his terms of office.

Mr. George Humphreys was elected vice-president, on the motion of Mr. Wilkins, seconded by Mr. Cowlin. He was also reappointed treasurer, on the proposition of Mr. Church, seconded by Mr. J. E. Jones.

On a ballot, Messrs. Neale, Gosling, Walters, and Krauss were selected members of the committee.

The annual dinner of the Association took place on the 19th inst., at the Royal Hotel. The President, Mr. A. Krauss, was in the chair.

The loyal toasts having been honoured,

Professor Ryan proposed "The Mayor of Plymouth (Mr. Pethick)."

The Mayor of Plymouth said he had been connected with the building trade for over half a century. His experience was that there was no trade more handicapped than that of the building. One of the great anomalies was that all workmen were to be paid alike, good and bad. He had had as many as two thousand hands at one time in his employ, but he had never paid good and bad alike, nor would he ever. He had paid above Trade Union wages for good men, and below the standard for bad ones. Strikes were abominable things. Conciliation boards had been spoken of, and he quite agreed with them up to a point, but what was the use of such boards unless their decisions were absolutely binding? He did not think that the masters would be in a position to meet the men until they were equally as well combined as the men. He thought that when a case was submitted to arbitration both masters and men should be called upon to place a heavy deposit, to be forfeited in case the award of the Conciliation Board was not accepted. He could promise the builders a hearty Devonshire welcome when they came to Plymouth.

Alderman J. Inskip proposed "The Trade and Commerce of Bristol," and the President of the Chamber of Commerce (Mr. J. Holman) replied

Professor Wertheimer submitted "The National Association of Master Builders of Great Britain and Ireland." As principal of the Merchant Venturers' Technical College, he claimed an intimate connection with the trade. Classes were conducted there for all branches of workmen of the building trade, and the Merchant Venturers, whilst not asking for financial aid, did hope to have the moral and hearty support of the Master Builders in giving to Bristol artisans the facilities for improvement which existed in other parts of the country.

Alderman Bowen (Warwickshire County Council) responded, and said the masters would welcome any scheme which would bring about a permanent and better feeling between master and workman.

The President followed. Some years ago the builders felt the want of combination; hence the National Association was formed. Good work, especially during the last three years, had been done, but there was plenty of room for improvement. Meetings and special meetings were more numerous in 1898 than in any previous year. For years the National Association, jointly with the Institute of Architects, had striven to get a fair and proper universal contract, but they had not yet succeeded. The architects wanted an arbitration clause which would leave every dispute until the end of the contract, and that he thought was a misguided idea; the great thing was to avoid disputes, and to settle them as soon as they arose. The framing of the Workmen's Compensation Act had been well watched by the Association; it was an Act which threw on them a great responsibility, and the only safeguard for the builder was to insure himself, particularly in the Builders' Accident Insurance Society, and include the charges on the contracts or day work. Trade unions had also brought unfair restrictions on them, which were very heavily felt in many towns, particularly with regard to the limitation of apprentices and non-union labour. He was sure that company would agree with him that unions were necessary, and that they had done good for the working men. The masters had no objection to unions, if they were carried out in the interests of right and justice to all parties. This would prevent strikes and lock-outs, for by these nothing was gained on either side. He trusted that a Board of Conciliation would before long be formed, which might be able to settle any differences without going to the extreme, and he hoped the younger members in the building trade would be spared to see a better and more peaceful time than some of the elder ones had. In the last ten years wages had gone up 25 per cent., and justly so. In some trades the cost of production of work had increased 50 per cent., so there seemed to be something wrong, and the sooner it could be adjusted the better.

Mr. W. H. Brown gave "The West of England and South Wales Federation."

Mr. W. Symonds (President) said the example which Bristol had set in its building trade dispute was a pattern to the country. An arbitrator had been called in, and the decision arrived at had been honourably abided by. They had not formed their union of masters for the purpose of crushing labour; indeed, they recognised that the day for individual action was passed, and the masters only wanted what was fair and just.

Mr. F. N. Cowlin proposed "The Architects, Surveyors, and Engineers." There was, he said, scope for more artistic and imposing buildings in Bristol, and he regretted that the Town Council had not seized the opportunity which recently presented itself of accepting the proposal of furnishing the city with adequate municipal buildings. He should like to bear his testimony to the great loss the port, especially, had sustained by the death of the docks engineer.

Mr. Bligh Bond and Mr. H. Dare Bryan (hon. secretary of the Bristol Society of Architects) responded.

"Kindred Associations," proposed by Mr. W. Sapcote, of Birmingham (Vice-President of the National Association), was acknwledged by the Presidents of Bath, Bridgwater, Hereford, and Newport Associations.

Mr. F. E. Weatherly gave "The Builders' Merchants," which was responded to by Mr. G. H. Perrin (President of the Bristol Channel Timber Importers' Association).

"The Master Builders' Association," proposed by Mr. J. C. Godwin, was acknowledged by Mr. Krauss.

# Correspondence.

*To the Editor of* THE BUILDER.

## DECORATION OF ST. PAUL'S.

SIR,—I have read the recent letters on the above subject in the *Builder*, and I must say, considering the fact that you have opened your columns to such a discussion, it is surprising that so few architects have ventured to join in it. Perhaps the views of an amateur—one who loves good architecture—may be of some interest to your readers. It has always been a pleasure to me, when in the neighbourhood of St. Paul's, to spend a few quiet moments walking up and down the nave and transepts of the great cathedral, but I have not had the opportunity of visiting it for some time until last November, when I entered the buildings in company with an artistic friend. We had both heard of the decorations, of course, but we were unprepared for the change that had taken place, and by no means favourably impressed with the new aspect of the familiar interior. Having both lived in Italy for a considerable time, and become familiar with Renaissance architecture, we are unable to trace the authority for such treatment of a classical building from anything we have ever seen by the great masters of the art.

The stencilling in crude gay colours of flat surfaces under the spandrils, the cutting up of the plain jambs that support the dome with mosaic panels of paltry design and discordant colour, and the confused gloomy windows that have been introduced are among the things that injure the effect of the original design; and although I have discussed the subject with many architects and others, I have failed to find a single individual who has a good word to say for any of these innovations. The choir may or may not have been beautified by the decoration of the roof, but here again the delicate classical mouldings and ornaments of the great designer have been obliterated

It seems unfortunate that Sir W. B. Richmond should be permitted, and apparently encouraged, to experiment on the Metropolitan Cathedral when there are so many City churches, some of them unimportant enough to have offered a field for the exercise of his preliminary efforts; and, in any case, it is time that a protest were made by architects and artists of any description, who object to the transformation of Wren's masterpiece—one of our most cherished monuments, and, in a true sense, the property and heritage of the nation.

ROBERT LITTLE.
(Associate of the Royal Society of Painters
in Water Colours.)

## LONDON WATER SUPPLY.

SIR,—It is to be regretted that the writer of the paragraph on "The London Water Supply Question," in your issue of the 21st inst., did not wait for the issue of the shorthand notes of the evidence I gave before the Commission on the Water Supply of London on Tuesday last before he brought the grave charges against me of being biassed, of not thinking it necessary to tell the whole truth, and of making statements which were misleading. Accusations of this sort ought not to be made on "reports in the daily papers." I have before me a printed transcript of the shorthand writer's notes, and I can see no answer I made to any question that justifies such severe remarks. At the beginning of my examination there was a little misunderstanding as to the number of microbes in Thames water, in flood and when low, in the raw state and when filtered by the companies; a question referring to one class of water being understood as applying to another. But this was soon cleared up. The following extracts from my replies will show that I spoke in no uncertain manner:—21,561.—"As a rule we cannot find any regular relation between the number of microbes in the raw water and the number in the filtered water." 21,566.—"The microbes are in very small number when there is no rain. In a dry, droughty season, such as we have had this last year, the microbes (in the raw Thames water) were lower than ever." With a very small flow over Teddington Weir there are very few microbes." 21,572.—"We get rid of them (the microbes) by filtering, and it appears to be immaterial how many there are in the unfiltered water. The filters turn out water practically pure from microbes, under 100 per cubic centimètre." 21,590.—"The rate of filtration must be regulated by Act of Parliament . . . two and a half gallons per square foot per hour." 21,649.—"In the raw water there are more microbes in flood than not in flood. More microbes per cubic centimètre." 21,652.—"During the last drought, when there was very little water in some cases flowing over Teddington Weir, the water was very free from microbes. The filtered water—in many cases we had sterile water—no microbes at all."

As for my expressed willingness to drink unfiltered Thames water, I have during my travels drunk many a far worse water, and I have on many occasions, while boating, quenched my thirst from the Thames. I was asked whether I would object to drink it, not whether I would be willing to drink nothing else for a twelvemonth, which is a different thing. WILLIAM CROOKES.

⁂ Evidently the condensed report in the *Times* (which however we think is generally a fairly correct résumé) in this case misrepresented the effect of Sir W. Crookes' evidence as to the flood water, and we are obliged to him for giving us fuller information. But as to the last paragraph of his letter, it appears to us that if the statement "I would be willing to drink Thames water" is put as an argument in regard to the comparative purity of the unfiltered water, the question, "would you drink it for twelve months?" is a perfectly fair and logical counter-argument.—ED.

## DISTRICT AND VESTRY SURVEYORS.

SIR,—In consequence of a little throat inconvenience which makes speaking troublesome, I have not presented myself to answer Mr. Weaver's paper. Those who have taken the trouble have dealt with it too tenderly, since it should be treated as a conspiracy to turn out the District Surveyors and put in their places the Vestry Surveyors, enhance their importance, and increase their salaries.

Mr. Weaver's charge against us is that we have private practice. My answer is, so has Mr. Weaver when he can get it, since I have met him on compensation cases. He says also we do some of our work by deputy; but if the duties of District Surveyor were added to Mr. Weaver's present duties, the whole would be carried out perfunctorily, since he could not discharge them, and Vestry Surveyors might not be qualified. Some time back the slop, filth, animal, and fœcal matter of Kensington were sent to fill up excavated sites on the western side of Scrubbs-road, Hammersmith, and then an action was brought against Mr. Bird, of Kensington, by the Vestry, for contaminating the air of Kensington by burning bricks on the other side of the road and opposite to Kensington parish filth depot in Scrubbs-road.

I thought we had finished with the Mahdi, but no, a pinchbeck municipal version has seen the light. Nothing could be more ridiculous than the suggestion that the District Surveyors should be turned over to the Vestries, since on all parish Boards the speculation builder is in great force, and as he is the greatest offender under the Building Act, to give him power to vote for the election and control of the man who is to keep him in order would be just as absurd as would be the turning over to the law-breakers of London the control of the police.

The Building Act is semi-imperial, and should be, as it is now, controlled from one central body, to whom the Surveyors should be responsible only, otherwise their independence might be only a name. The present mode of payment to the District Surveyors is the best, since it is payment by results. Are not all men in business paid by results, and is not that manner of payment an incentive to activity?

If each new municipality should have the administation of the Building Act, there would be a Building Act Committee in every public-house parlour in London, the Act would be construed to suit the contention of friends, and the District Surveyor would not dare to call his soul his own.

In my district one person came down upon me for refusing to allow building to proceed on his land until the animal snd fœcal matter had been removed, yet he had done pretty well with it. First he had cut off top soil and turf and sold them; then he made bricks of the brick earth; afterwards he dug the sand and gravel; and finally received a fee for each load of slop and filth shot into the pit, and then quarrelled with me because I would not allow houses to be built on pestilential deposit. Again, when I was first appointed District Surveyor of Hammersmith, a man stopped his cart and addressed me thus:—

"You are our new District Surveyor?"

"Yes."

"I have received a notice from you to alter my buildings."

"Yes."

"Do you know, *sir*, that I am a member of the vestry?"

"I did not. I hear it now for the first time; and since you vaunt your public position, I must tell you that it is your business to teach the public to observe the law, not how to break it with impunity. Unless you at once amend your building, I shall proceed against you by summons."

Think you these men are the last of their race? Had they been my masters would they not have had their way? But as my independence was protected I had my way not only in their cases but in others, no matter whether the offender was a baronet or a bricklayer. If obstinate, I summoned him and made him obey.

As to districts outside London being administered as Mr. Weaver recommends, I know it is so, and as I have been called in several times, I can say much of the building is as bad as may be.

I have as Assistant District Surveyor a qualified man of my own training, who enjoys the same privileges as are conceded to me; the office is never left, the public have never to wait, and I see to everything.

The present Building Act is a very good Act; some slight emendations would improve it, but if applied by a dozen Local Authorities it would become a dream, a chimera, and a nullity.

T. E. KNIGHTLEY.

## THE PLASTERERS' STRIKE.

SIR,—Building is rapidly approaching a prohibitive price. The most obnoxious workman at present is the plasterer, for he has been more troublesome and unreasonable for the last few years than any other.

It is greatly to the interest of architects and surveyors, as well as builders, that buildings should be producible at a moderate price. Would it not be a sensible and gracious act for all architects and surveyors to assist the builders in their effort to defend themselves, by subscribing to their funds?

JOHN LEANING.

SIR,—On receiving the *Builder* for January 21 I saw an article in reference to the strike of plasterers, and could not help being struck by the preposterous proposals, or demands, put forward by the Union, demanding that the general foremen engaged must become members of the Union before they would consent to work on a job under them, and in one or two instances, have struck work on these lines.

I think the plasterers have been ill advised in the matter, for I do not think many foremen will consent to their proposals. I can speak for myself, and I think I can answer for the majority of the members of the Association to which I belong, viz., the London and Provincial Builders' Foremen's Association. I warn the plasterers that they will meet with considerable opposition from that quarter. We do not feel inclined to submit to slavery.

It is well known in the building trade that they oppose the introduction of more apprentices in the trade, and I think the master builders are to a great extent to blame in not insisting on more apprentices being trained. I read a paper at the London and Provincial Builders' Association on December 31 last in which I shadowed forth a scheme which, if carried out, would get over the apprenticeship difficulty.

I will not say more at present, excepting that the plasterers may reckon on severe opposition from us if they continue to insist upon their absurd and ridiculous proposal, as it is a direct blow to our liberty.

F. CHESSELL.
Member of the London and Provincial
Builders' Foremen's Association.

## THE CARTWRIGHT MEMORIAL COMPETITION.

SIR,—Clause 10 of the conditions of the above, in mentioning drawings required, speaks of "perspectives." This is, no doubt, unintentional, but it is so ambiguous that some competitors might, if they thought fit, submit six views. Everybody knows this would not influence Mr. Waterhouse in his award, which would be on the geometrical drawings.

The growing custom of excluding perspectives from public competition is without doubt the wisest and only safe course to adopt.

The selected architect could very shortly supply a reliable perspective; those made in a vast number of cases are more misleading than helpful.

COMPETITOR.

⁂ "Competitor" is quite right, and we hope the Committee will agree to save competitors the useless trouble of perspective drawings. They will not influence Mr. Waterhouse's decision.—ED.

## CLEANING OLD BRICKWORK.

SIR,—I once had this to do, and after the joints were raked out, I got a mason to tool the whole face of the brickwork. This was not costly, and it was effectual. Merely scraping did not do.

The brickwork was of course afterwards rubbed down and pointed.

C. F. M.

SIR,—I have used a liquid paint remover named "Lithicum," obtainable from any painters' merchant.

Dilute with water and then wash off with hot water, and a final wash of vinegar and water.

*Gloucester.* ROBERT PHILLIPS.

## BOOKS RECEIVED.

THE CATHEDRAL CHURCH OF GLOUCESTER. By H. J. L. J. Massé. (Geo. Bell & Sons.)

EVOLUTION OF THE STEAM LOCOMOTIVE. By G. A. Sekon. (The Railway Publishing Company.)

EVERY MAN HIS OWN LAWYER.—By a Barrister. Thirty-sixth edition, revised. (Crosby Lockwood & Son.)

MONEY, WEIGHTS, AND MEASURES OF THE PRINCIPAL NATIONS, WITH ENGLISH EQUIVALENTS. By W. A. Browne. (E. Stanford.)

ART AND THE BEAUTY OF THE EARTH. A lecture by William Morris. (Longmans & Co.)

# The Student's Column.

## ARCHITECTURAL HYGIENE.

### IV.—THE PLAN IN REGARD TO HEALTH AND CONVENIENCE.

THE *Plan* of a building must depend, of course, to some extent upon the site, and only general principles can be laid down which will serve to indicate those points that should be aimed at. The first principle we must observe is that the sun should enter every living room at some period of the day; the sun is as important to the air in a room as water is to the human body, and no room can be considered healthy which is not periodically disinfected by the sun's rays. It is, indeed generally an easy matter to ensure this, and even old and badly-planned houses can often be made healthy by the judicious insertion of bay windows, so that the occupants may enjoy the sun's rays, either in the early morning or late afternoon.

In fact we have made it a principle to put in a small "sun-window" where possible, so that the sun's rays may, if desired, be obtained at some portion of the day. Although not essential in the summer, in the winter it adds much to the cheeriness of the house, and affects in no small degree the health and spirits of the inmates.

*Daylight.*—A sufficient and abundant supply of daylight should be provided for every room. The exact amount varies with regard to any obstruction which may be in front of the house. Gwilt's rule that in a square room 1 ft. super of glass should be provided for every 100 cubic ft. of air space in the room, would seem to be enough in the open country with unobstructed views. In towns, however, this should at least be increased to 1 ft. super for every 80 cubic ft. Another rule, propounded by Robert Morris in his "Lectures on Architecture," is to find the cubical contents of the apartment, and then find the square root of the result, which represents the superficial area of the window. This gives a much larger amount of lighting than Gwilt proposes. The objection to windows being of excessive size is that they make the room so warm in summer and cold in winter.

*Windows.*—There is, moreover, a great deal to be done in the disposition of the windows. A pier in the centre of the wall of a room casts a shadow across the centre, which is objectionable, and an odd number of windows is to be preferred. No dark corners for the accumulation of dirt should be allowed. "Out of sight, out of mind," is a saying which, in all matters of sanitary planning, should be well remembered.

*Corridors.*—Corridors should be well lighted and ventilated from the outer air, and planned with due regard to economy and efficiency.

*Prospect.*—The view to be obtained must not be forgotten; indeed, in the country, it should be a strong factor in determining the general position of the rooms; the hygienic value of being able to look out on a pleasing landscape from the principal rooms must not be lost sight of.

*Aspect.*—In many plans it is evident that the points of the compass have not been studied by the designer, especially with reference to the outlook of the rooms. Remember that the sun is south at noon all the year round, and that the corridors of rooms should be so planned as to receive the sun at the time of using. As to aspect, northern and north-eastern ones are cold, and southern warm; north-western and south-western aspects have boisterous winds, and with the latter, especially in these islands, we get driving rains and gales; the south-eastern aspect is dry and mild, and forms a very good one for the living rooms of a house.

The different parts of a house should be disposed somewhat as follows:—

*The Entrance Hall and Staircase* are, as a rule, on a free site, best placed on the north side, so that the sitting rooms may face south. A good square hall, containing an open newel staircase well lighted by a large window and warmed by an open fireplace, enhances the home-like effect of any house, and can be used as an extra sitting-room or lounge.

The long narrow passage called a "hall" in London houses is generally dreary and draughty, whereas a hall should be of a cosy domestic character. The staircase should be at least 3 ft. 6 in. wide, to allow of two persons passing comfortably; to prevent over-fatigue to delicate people stairs should not be designed in longer flights than ten steps without a landing, and the construction should be strong enough to avoid objectionable creaking, which interferes with the quietude so essential to a well ordered house. The proportion of height to width of tread is important. The rule that twice the height added to width of tread should equal 24 in. will be found to give a comfortable proportion. Servants' stairs are often made with 10 in. tread and 7 in. rise.

The *Dining-room* aspect should be north or east, or north-east. If used as a breakfast-room as well, it should certainly have a few points of east, so as to get the morning sun; this can often be effected by means of a bay window. A western or south-western aspect should be avoided, as the level rays of the evening sun in the summer tend to make the room hot and unpleasant when it should be cool. The dining-room should, of course, be close to the kitchen quarters, but separated by a well-ventilated servery, so arranged as to prevent kitchen smells from entering the living rooms.

A recess for the sideboard should be formed at the end near the serving door.

For the *Drawing-room* a full south aspect is perhaps the best, but any aspect between south and west is suitable. It should be bright and cheerful, with plenty of window space and with bay windows for extra room. It should give on to the flower-garden, and a conservatory in connexion is an advantage.

For the *Library* an eastern aspect is good, as dryness is an important consideration; further, it should be retired, and, therefore, quiet, for purposes of study.

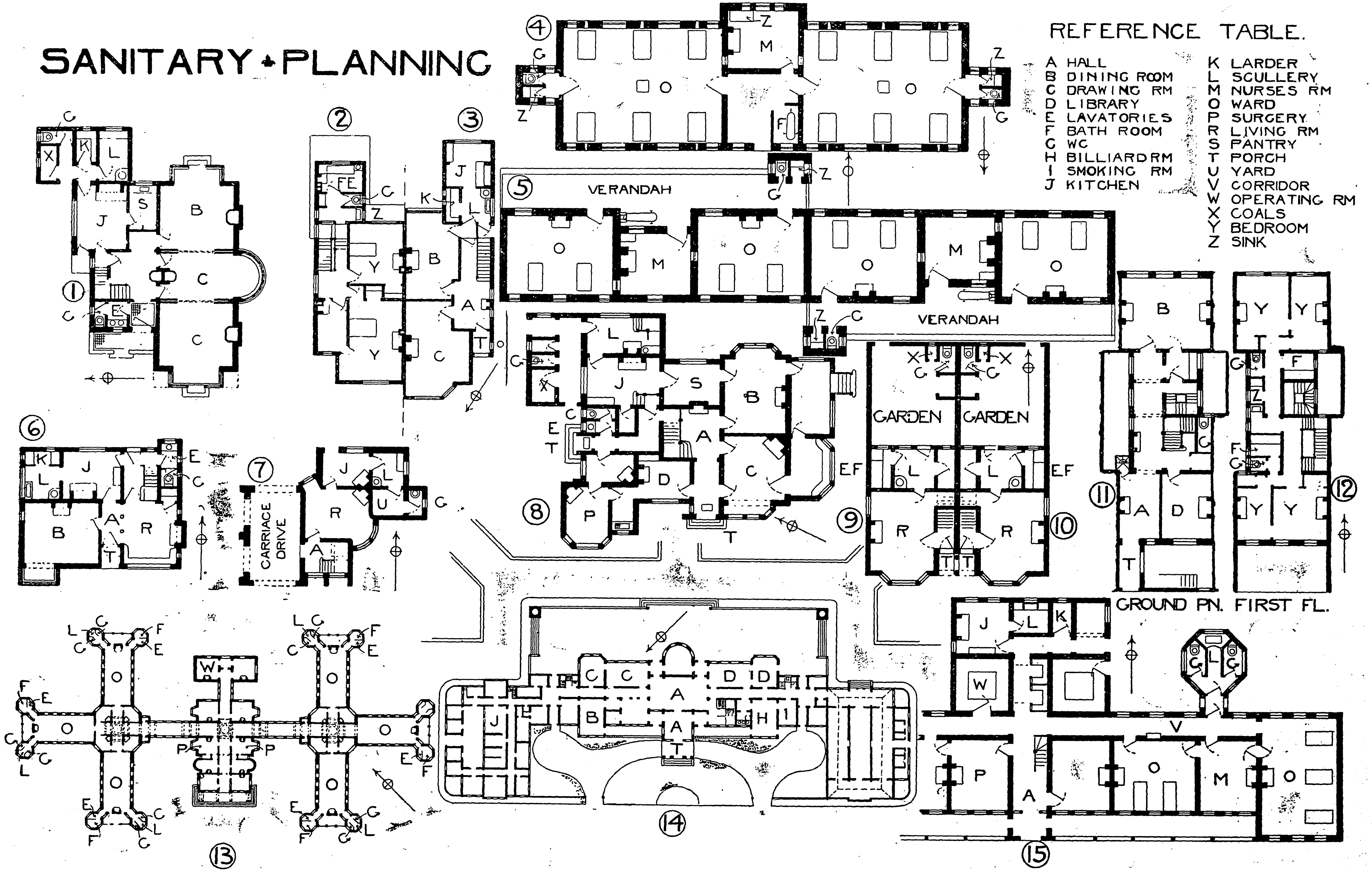
The *Morning-room* must face east or, better still, south-east, in order to catch the morning sun. If due east a bay window is a good method of obtaining the southern sun during the morning.

The position of the *Billiard-room* should be a retired one, otherwise it is not important. It is often possible to plan the ground floor lavatories in connexion therewith. The ventilation of the billiard-room is an important subject, which will be treated of under that of heating.

In the planning of *Lavatories*, *Water-closets*, and *Bath-rooms*, one of the most important points is privacy. On the ground floor a lavatory and water-closet is generally placed in proximity to the front or garden entrances, and provided they are properly screened, it is often a very suitable place. An ideal position is a sanitary wing, cut off from the main building by cross ventilating lobbies; but this is not often carried out on account of the disinclination to mark these conveniences too prominently. A ventilating lobby can, however, generally be arranged.

The *Bath-room* on the first floor may be fitted up with a lavatory having hot and cold water; thus helping in the domestic economy of labour. There is no need to overdo the size of a bath-room, for it can be contained in a room 7 ft. square. There is one important point, namely, that the architect should take care that wherever possible water-closets, bath-rooms, lavatories, &c., should be placed over

# SANITARY • PLANNING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VERANDAH
GARDEN
GARDEN
CARRIAGE DRIVE
GROUND PN.
FIRST FL.
EF
EF

REFERENCE TABLE.

| | | | |
|---|---|---|---|
| A | HALL | K | LARDER |
| B | DINING ROOM | L | SCULLERY |
| C | DRAWING RM | M | NURSES RM |
| D | LIBRARY | O | WARD |
| E | LAVATORIES | P | SURGERY |
| F | BATH ROOM | R | LIVING RM |
| G | WC | S | PANTRY |
| H | BILLIARD RM | T | PORCH |
| I | SMOKING RM | U | YARD |
| J | KITCHEN | V | CORRIDOR |
| | | W | OPERATING RM |
| | | X | COALS |
| | | Y | BEDROOM |
| | | Z | SINK |

*Illustrations to Student's Column.*

each other on each floor so that the wastes can discharge into the same down pipes. With regard to *baths*, it is often possible to plan these at the highest point of the drain so that they may act as "drain flushers."

Taking next the *Kitchen Offices*, it is evident that the kitchen should be planned with a view to cross ventilation, so that smells from cooking may not find their way into the house. The aspect should be north or east, being cool and dry, and the position convenient for dining-room and front entrance, so that the latter can be reached without crossing the main hall. (This, of course, refers to cases in which no servants' hall exists.) The cooking range should be planned so that the light comes from the left, to enable the cook to see what she is doing. This is a common failure with young architects, who often seem to think that, as long as light is introduced into the kitchen, its position does not matter. It may often, however, make the difference between a well and badly-cooked dinner.

The *scullery* should have a cool aspect, and be in connexion both with kitchen and serving room. The sink should be in front of a window, and of glazed stoneware in preference to stone, into the latter of which the grease sinks. The wall above the sink should be lined for 2 ft. or so in height with glazed tiles, so that the splashings may be easily cleaned off. The flooring should be impervious, and tiles make a good covering, and may easily be washed. The *pantry*, which is used for the cleaning and storing of china, glass, and silver, should be in connexion with the kitchen, and may form part of the service room. It should be fitted with a lead-lined butler's sink, and hot and cold water should be laid on. This is preferred to glazed stoneware, as fewer breakages occur. The *larder* should face north for coolness, and have two windows, to prevent stagnation of air and to create a through draft. The windows should have perforated zinc gratings to prevent admission of flies and insects while the windows are open. It is often a good plan to have a *summer larder* placed in the basement, with plenty of air, and it helps to keep the food, &c., cooler in summer.

With regard to *bedrooms*, they should be planned, where practical, so as to get as much morning sun as possible, and therefore east, south-east, or south are all good. As old Dr. Fuller said in the seventeenth century:—"An East window gives the infant beams of the sun before they are of strength to do harm, and is offensive to none but a sluggard." The position of the bed should be indicated on the architect's plans, and should be placed so as not to be in a direct draught between door and fireplace, and so that the sleeper has not his eyes facing the light, and, furthermore, the head of the bed should not be too near the window, otherwise colds and sore throats will ensue. No bedroom can be considered healthy which has no fireplace for ventilation purposes. No bed should be placed with either of the sides against the wall, as the sleeper, on turning over to the wall side, is apt to inhale his own breath again, owing to the impeding of its escape by the wall surface. A fireplace or ventilation flue is required by all sanitary authorities. Besides the position of the bed, the position of the dressing-table, wardrobe, and washstand should be considered, and the doors and fireplace planned with regard to these.

The plans on the accompanying sheet have been selected as types for different kinds of buildings. They are not given as necessarily the best plan for each building; because each building erected has to be designed according to its site, surroundings, and the personal idiosyncrasies of the owner. It is thought that they will show the student the principles which should guide the architect.

Fig. 1 shows a *detached house* for a suburban site, with three rooms communicating. An attempt is made to make the hall more inviting, by making it of a squarer shape than usual and adding a fireplace. The lavatories are cut off from the house as much as possible.

Figs. 2 and 3 are the ground floor and first floor plans of a pair of *semi-detached houses*. On the ground floor a square hall with fireplace is given, and the service from kitchen to dining-room is planned for the interception of kitchen smells.

Fig. 4 is a plan of a ward pavilion of an *isolation hospital* for twelve beds on the Local Government Board model. The sanitary wings are cut off from the wards by cross ventilating lobbies; a movable bath is provided. The wards can be air-flushed by the windows opposite each other. The heating is by central stoves.

Fig. 5 is a Local Government Board example of an *isolation block* for eight beds. It will be seen that the sanitary blocks are entirely disconnected from the building, and approached by a verandah. Each ward is entirely disconnected, the nurse having to reach them by the open verandah. A bath on wheels is provided.

Fig. 6 is a plan of a small economical *bungalow* consisting of two living rooms: namely, dining-room and hall sitting-room. In this type no passages occur. The stairs are screened off from the hall. The water-closet is entered through the lavatory and has besides an intercepting ventilated lobby. The kitchen, &c., are fairly convenient for the front door and dining-room.

Fig. 7 is the plan of an *entrance lodge*. The unusual shape of living room is necessitated because a look-out window is down the main road and along the private drive. Bedrooms are placed over the entrance carriage drive.

Fig. 8 is the ground plan of a *doctor's small house*. There is a large square hall with fireplace, lit from windows high up in the pantry wall. The consulting-room, surgery, and waiting-room are self contained, and yet in communication with the house. The surgery entrance is in connexion with the waiting-room, as are also the lavatories. The consulting-room is in touch with the front door as the better class of patients would enter here. The pantry would act as a ventilating lobby to the kitchen.

Figs. 9 and 10 represent a pair of *workmen's cottages*; or two of a terrace. There is a large kitchen—living-room and a bath-room is provided next the scullery. A bath-room is seldom found in a workman's cottage, but it is perhaps more required here than in any dwelling, so that on returning from dirty occupations a warm bath may be obtained. Being close to the scullery, it is readily supplied with hot water and becomes, in fact, a lavatory and bath-room combined.

Figs. 11 and 12 are the ground and second floor plans of a *town house*. The first floor is omitted because it is given up to reception-rooms, and needs no explanation. On the ground floor a good outer hall and entrance hall with fireplace are obtained. The service stairs to basement enable the servant to get to the front door without traversing the inner hall. A vaulted passage 7 ft. wide leads to the dining-room. A small cloak-room and lavatory are placed under the stairs.

The serving-room and service stairs are placed conveniently for the dining-room. On the second floor are two suites of rooms, front and back, and only lavatories, bath-rooms, and water-closets are lighted from areas.

Fig. 13 is a plan of a *hospital* for a country town. It is laid out so as to catch all the air and sunshine possible. At the end of each ward are two sanitary wings, each with a cross-ventilated lobby. In one are the water-closets and sinks, and in the other the bath-room and lavatory. A small nurses'-room and ward kitchen are placed at the inner end of the ward. In this case the wards are warmed with radiators and with open fireplace.

Fig. 14 is the ground plan of a large *country house*. It forms a crescent shape on plan, so that all the living rooms may, as far as possible, get the sun's rays at some portion of the day. The kitchen block wards off the cold north-east winds. The dining-room is easily served from the kitchen, and faces north for the sake of coolness. In consequence, a morning-room is provided which can be used as a breakfast-room. The billiard-room is in connexion with the ground floor lavatories. The conservatories and winter garden are placed so that the sun is on them during the whole of the day.

Fig. 15 is rather more than half the plan of a *cottage hospital* for twelve patients. The central portion contains the surgery and nurses' rooms, operating theatre and mortuary, kitchens, &c. On either side of the central block are a two-bed and a three-bed ward, and sanitary blocks with cross-ventilated passages containing bath-room, water-closet, sink, &c.

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WESLEYAN HALL, WHITBY.—On the 16th inst. the Brunswick Room, a hall centrally situated in Whitby, in which most of the religious and philanthropic meetings of the town are held, but which is the property of the Wesleyan Methodist Connexion, was reopened after alterations. The work has been carried out by Mr. John Braim, of Whitby, Messrs. Whitehead, of Leeds, and others. The designs for the alterations and extensions were prepared by Messrs. W. Waddington & Son, of Manchester.

## *OBITUARY.*

COUNCILLOR J. M. RICHARDS. — Mr. J. M. Richards, contractor and builder, died at his residence, St. Michael's-terrace, Helston, on the 16th inst. He was in his sixtieth year.

MR. JOHN MCCURRICH.—The death has just occurred at Bristol of Mr. John McCurrich, the engineer to the Bristol Docks Committee. Mr. John Martin McCurrich, M.A., M.Inst.C.E., was born at Dunning, Perthshire, in 1852; and was educated at the Dunning and at the Perth Dollar Academies. In 1870 he took the Lord Glenalmond prize for mathematics, open to the counties of Perth and Clackmannan; he attended Edinburgh University for four years, and graduated M.A. He was articled to Messrs. Bell & Miller, civil engineers, Glasgow and Westminster. While in Glasgow he was President of the Graduates' Section of the Institute of Scottish Engineers and Shipbuilders, and was hon. treasurer and member of the Committee of the College of Science and Arts. In 1883 he went to Cardiff as resident engineer on new dock works, and was subsequently with the Great Eastern Railway Company at Liverpool-street Station, London. In 1885 he was appointed assistant engineer to the Bristol Docks Committee under Mr. J. W. Girdlestone, whom he succeeded as chief of the department in 1890. He had been President of the Bristol Association of Engineers and also of the Bristol Caledonian Society.

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## *GENERAL BUILDING NEWS.*

RESTORATION OF THE OLD PARISH CHURCH OF BOTHWELL.—The old Parish Church of Bothwell, whose restoration has now been completed, was reopened on the 12th inst. The movement for the restoration was begun, says the *Scotsman*, about two years ago. The first work was to clear away from 2 ft. to 3 ft. of earth which, from the interments of centuries, had accumulated round the walls. The floor had also, to nearly the same depth, been filled up to make it correspond with the exterior. It was lowered to its original level. The stone mullions of the windows, which had disappeared, were renewed. The carvings above the doorway, the sedilia, and the piscina were restored. The stone roof has always been a special feature of the church. This has been carefully preserved and put into good order. The representatives of the various families have put their respective monuments into the best possible order. In connexion with the restoration, a large number of gifts have been received. These include an organ and a Communion table. The entire operations have been carried out under the direction of Dr. Rowand Anderson. In connexion with the restoration movement, two new entrances have been presented to the church. A house has been built for the church officer, and a conservatory erected for providing flowers for the grounds. In the centre of the ground which has been acquired, a monument has been erected to the memory of Joanna Baillie, who was born in the manse of Bothwell. The monument is 16 ft. in height. It rests on polished red granite. The distinctive feature of the monument is the filling of the four panels with mosaics. On the side fronting the street there is a portrait of Joanna Baillie. On another side there is a reproduction of Horatio M'Culloch's painting of Bothwell Castle. On the third there is a representation of the children of Bothwell in the early days of the poetess; and in the fourth the apple and plum trees of the valley of the Clyde. Below each of these descriptive letterpress is given in mosaics, including Sir Walter Scott's reference to Joanna Baillie in "Marmion" and extracts from her writings recalling her early days in Bothwell.

WESLEYAN CHAPEL, CAVERSHAM, READING.—The new chapel erected in the Gosbrook-road, Caversham, by the Wesleyan community was opened recently. The design is Gothic, and the building is built with red bricks and Bath stone dressings, the roof being red tiled. The structure is 50 ft. long and 40 ft. wide. There are two entrance porches, both facing the main road, the one on the north-west angle being carried up as a tower, surmounted with an octagonal wooden turret and spire, covered with oak shingles. The interior provides seating accommodation for about 300 persons. In the rear of the rostrum is placed the vestry, with an organ loft and choir seats above. The building is heated by hot-water apparatus. The total cost of the building has been about 1,600*l*. Messrs. Joseph Morris & Son, of Reading, were the architects, and Mr. Thos. Pilgrim, of Coley, Reading, the builder.

NEW CHURCH, ABERDEEN.—Tenders have just been accepted for the erection of a new church at St. Mary's College, Blairs, Aberdeen. The church is 120 ft. long and 35 ft. wide, with side chapels 22 ft. long and 17 ft. wide. Accommodation is provided in the choir for 150 students and, separated from these by an oak screen, sittings are provided for 150 people. The church will be built of grey granite, with interior fittings of oak, with elaborately carved oak screen and stalls, and an open timbered roof. The tower and spire is 150 ft. high. When completed the church will cost upwards of 12,000*l*. The architect is Mr. Robert Curran, of Warrington.

BOARD SCHOOL, MEERSBROOK BANK, SHEFFIELD.—A new mixed school at Meersbrook Bank was opened on the 9th inst. The building, which is of local stone, with Dunford Bridge facings, and Grenoside dressings, is three stories in height, and contains ten class-rooms, none less than 14 ft. in height, each fitted with dual desks for sixty children —besides cloak and teachers' rooms. The basement has enclosed play-sheds, and cellars for heating apparatus, fuel, and storage. One of the class-rooms is fitted up for teaching cookery lessons. By the use of folding partitions, two, three, or four class-rooms may be thrown into one. The contractors for the building were Messrs. Groom & Co., Ltd., Bakewell; for the folding partitions, Messrs. F. M. Thornborongh & Son, Manchester; for the heating, which is on the low-pressure system, Messrs. J. C. & J. S. Ellis, Limited, of Sheffield. Mr. S. E. Cliffe, of Meersbrook Bank, has acted as clerk of works. The whole of the work has been carried out under the superintendence of Mr. Joseph Norton, architect, Sheffield.

PROPOSED NEW SCHOOLS, SHEFFIELD.—At a recent meeting of the Sheffield School Board, the Buildings Committee recommended that the plans prepared by Messrs. Hemsoll & Paterson be accepted for the school proposed to be erected at Morley-street; that the design of Messrs. Holmes & Watson for a school at Western-road, and that of Mr. J. Hale for a new department at Owler-lane School be accepted. It was also reported that the Committee approved and adopted Mr. C. J. Innocent's plan for the provision of additional accommodation for 120 infants, and of a room for cookery and laundry work, and a caretaker's house in connexion with Park School. Mr. Esam, in moving the adoption of the Committee's minutes, said in connexion with the Morley-street, Crookes, and Owler-lane Schools several local architects submitted plans. The Committee had decided to give the first premium for Morley-street to Messrs. Holmes & Watson, and the second to Messrs. Hall & Fenton; the first premium for Crookes to Messrs. Hemsoll & Paterson, and the second to Mr. Hale; and the first premium for Owler-lane to Messrs. Hemsoll & Paterson, and the second to Mr. J. A. Teather.

INFANT SCHOOL, INVERNESS.—A new infant school is to be erected in the grounds of the High School, Inverness. Mr. W. Mackintosh, of Inverness, is the architect.

LECTURE HALL, M'QUISTON MEMORIAL PRESBYTERIAN CHURCH, BELFAST.—The foundation stone of a lecture hall in connexion with this church, situate on the Castlereagh-road, was laid recently. The general idea is that of an amphitheatre, with a central platform and class-rooms radiating from the external wall towards this platform. Provision has thus been made for ten separate class-rooms, divided from each other by sliding partitions. These dividing partitions can be set back, so as to leave the whole space open for the purpose of a general assembly hall. The central part of the floor area will always be open and free for Sunday school or general purposes. The diameter of this Sunday school-room is 85 ft. There will be light from the sides, and also from the central dome. On the ground floor under the school there will be vestibule and entrances from both streets, and a large lecture hall capable of seating 300 or 400 people. To the right of this there will be committee-room accommodation, besides a private parlour for the minister. To the left will be the private parlour for ladies; also a kitchen and office accommodation for the church. The contractor for the works is Mr. William Dowling; and the plans have been prepared by, and the work is being carried out under the superintendence of, the architect, Mr. William J. W. Roome.

THE PROPOSED TOWN HALL, CARDIFF.—Messrs. Lanchester, Stewart, & Rickards, the architects for the new town hall at Cardiff, have submitted amended plans for the building. One of the chief objections originally was that the elevation was not sufficiently lofty, and the amended design shows an increase of 6 ft. in the height of the building. The front has also been extended by something like 21 ft., and this allows of additional accommodation, but it also means that the expenditure will be increased by 30,000*l*. Several internal alterations have been made on recommendations submitted to the architects by the committee.—The amended plans have been adopted by the Committee.—*Western Mail.*

NEW MANSION, AT KILDRUMMY, ABERDEENSHIRE.—The property of Kildrummy, on which stands the ruins of the castle of that name, was recently purchased by Colonel James Ogston, Aberdeen, and at his request Mr. A. Marshall Mackenzie, A.R.S.A., has prepared plans of a new mansion-house to be built near the site of the old castle. The new house will be in the Tudor style, and will resemble the old castle. The walls will be built of cream-coloured freestone, quarried on the spot. It is contemplated to light the building by an electric installation. It is also intended to erect new stabling and gate lodge.

UNDERGROUND CONVENIENCE, BOLTON.—An underground lavatory in Nelson-square, Bolton, has just be opened. The accommodation consists of fifteen compartments, four closets, and four wash bowls. The fittings were supplied by Messrs. Twyford, of Manchester, the compartments being of white glazed earthenware relieved by red rouge facings with tiled treads. The walls are of white glazed bricks and the ceilings of opalite tiles, the place being lighted throughout by electricity. The work has been carried out under the supervision of the Borough Surveyor, with the assistance of Mr. Ward, of the Surveyor's Department. Mr. Seddon was the contractor.

PROPOSED NEW HOTEL, HANWELL, MIDDLESEX.—It is proposed to erect a new hotel at Hanwell from the designs of Mr. G. Pargeter, of London. Facing the proposed hotel, eleven shops are to be erected, from the designs of the same architect.

NURSES' HOME, INVERNESS.—A nurses' home is to be provided in connexion with the Inverness Infirmary. The architects are Messrs. Ross & Macbeth.

WINTER GARDEN, ABERDEEN.—A winter garden or palm house is to be erected in Duthie Park, Aberdeen, from designs prepared by Mr. Rust, City Architect.

SPURGEON'S TABERNACLE.—The lower hall of this building, beneath the superstructure, has been restored after the fire last year. This lower hall is a room 142 ft. long and 80 ft. wide. The roof is supported by iron columns painted white, and the walls are of varnished matchboarding. Above, within the walls of the upper building, the process of reconstruction is being actively carried on. The architects are Messrs. Searl & Hayes, of Ludgate-hill, and the builders Messrs. Higgs & Hill.

YACHT CLUB, PLYMOUTH.—The new house of the Plymouth Corinthian Yacht Club in Madeira-parade, under the Citadel, was opened on the 17th inst. The architect of the building was Mr. E. Coath Adams.

CONSERVATIVE CLUB, RIPPONDEN, YORKSHIRE.—The corner stone has just been laid of the new Conservative Working Men's Club for Ripponden and district. The site is situated at the corner of Halifax-road and Royd-lane. The building has been designed by Messrs. C. F. L. Horsfall & Son, of Halifax.

THE NOTTINGHAM AND COUNTY CONSTITUTIONAL CLUB.—This building was formally opened on the 25th ult. by the Duke and Duchess of Portland, having been about two years in course of erection. The competitive design has been practically carried out in its entirety, and includes the following accommodation:—Ladies' room, entered from the first vestibule, and divided from the club proper by an entrance screen, overlooked by the porter's room; smoke-room and billiard-room, for three tables, with large lantern light over, and bar serving-room on ground floor; dining-room the whole of Market-street frontage; private dining-room, committee-room, writing-room, reading and two card-rooms, with serving-room and butler's pantry on first floor. Five members' bedrooms, steward's-room, secretary's office, kitchen, scullery, and servants' hall occupy the second floor, and men and maid servants' bed and bath-rooms the third floor. Connected with the club, but divided from it by two doors, is a large assembly hall, which has a special entrance and emergency exit into the street at the back, and will accommodate about 250 people; it is provided with a platform, with ante-room and retiring-rooms, all so arranged as to be conveniently used in connexion with the club or independently. The main entrance hall, 26 ft. by 25 ft., is lighted with a large lantern of stained glass. The main staircase is built of yellow Mansfield stone with York stone steps. A circular oriel balcony, with carved panels and the Royal arms over an elliptical arch, carried on Fuglevik granite columns, and pedestals with Ionic caps, is a feature of the hall, the floors of which are in marble mosaic. Three large sets of lavatories and conveniences are provided, and a skittle alley, 50 ft. long under the entrance hall, is reached by a staircase under the main stairs. The front entrance porch is panelled in black Kilkenny and Lanquedox marbles, and the vestibules with mahogany dado and vestibule screens filled with stained glass and bevelled plate. The registration offices of the Party are also arranged in the building. The basements are used for beer and wine cellar and heating apparatus. The principal rooms are heated by means of ventilating radiators and ventilated with fresh air inlets, the foul air being extracted by Blackman's electric ventilating fans. The frontage is built of Derbyshire stone from Darley Dale, and is in the Renaissance style. A special feature has been made with a large circular oriel window on the first floor with balconies on each side. The contractor for the foundations was Mr. W. Woodsend, and for the upper portion Mr. J. Hutchinson; the heating and electric lighting by Messrs. T. Danks & Co., who have also made the front wrought iron gates from special designs by the architect, the copper repoussé panels in this being by Mr. Edgar Simpson. Messrs. Mainzer have done all the mosaic floors, and Messrs. Clark, Bunnett the lifts; the marble work is by Messrs. Gibson & Son, of Nottingham; the lead lights by Mr. T. H. Yates, of Smethwick, all from special designs by the architect; the whole of the wood mantels are from the architect's designs, made by Messrs. Foster & Cooper, who with Messrs. Barker & Co. have supplied the furniture. The decorations have been carried out by Mr. F. R. Marriott. The architect is Mr. A. R. Calvert, of Nottingham, who gained the work in competition, assisted by Mr. W. R. Gleave, who has also acted as clerk of works.

BOARD SCHOOL, WALTHAMSTOW.—Mr. Edward North Buxton, J.P., opened recently a school erected by the Walthamstow School Board. The school is situate in Wood-street, on a site of four acres which the Board have acquired. It is built on the one floor principle, with accommodation for 480 girls, 480 boys, and 506 infants. The plans for the school were prepared, and the building was erected under, the superintendence of Mr. W. A. Longmore, the Architect to the Board. The builders were Messrs. R. & E. Evans, of Peckham.

NEW BANK, GRIMSBY.—Messrs. Smith, Ellison, & Co., of the Old Bank, Lincoln, are about to erect a new bank at Grimsby. The architect is Mr. Campbell Jones, of London, and the erection of the building has been entrusted to Messrs. Robert Neill & Sons, of Manchester.

RESTORATION OF CHANCEL, ADDINGTON CHURCH.—The chancel of Addington Church, which has been restored and decorated as a memorial of the late Archbishop Benson, was re-opened and dedicated on the 20th inst. The work of restoration consists in the re-opening of a Saxon window and the construction of a hexagonal oak ceiling on the underside of the ancient thirteenth century roof timbers, in place of the lath and plaster ceiling, which at some period had been substituted for the original boarding. The most interesting feature of the decorative work is a low reredos, of perforated white alabaster scroll work, with statuettes of four Archbishops, under canopies, between the windows. Archbishops Theodore and Benson are the principal figures, Cranmer and Laud being placed at the north and south ends of the reredos. The walls are adorned with diaper work, figures, and escutcheons. On the north side are the armorial bearings of Trinity College, Cambridge, Wellington College, Lincoln, and Truro, all closely associated with the late Primate's life work. On the opposite wall are those of the five predecessors of Archbishop Benson, all of whom resided at Addington Park. Below the shields are figures of Cosmas on the south wall, and Damian on the north wall, the Arabian brother physicians and martyrs, to whom an altar was dedicated in Addington Church; and on the east wall, for the same reason, the Virgin Mary and St. Catherine are represented, and above, at the apex of the roof, the Christ in Glory, with adoring angels on either side. The architect is Mr. Arthur J. Reeve.—*Times.*

## *STAINED GLASS AND DECORATION.*

ST. ANDREW'S PARISH CHURCH, HALSTEAD, ESSEX.—The second portion of the scheme for the interior decoration of this church has just been completed. The north chancel wall has been painted and decorated with an elaborate diaper and appropriate texts, also a large-size painting of the figure of David, standing under a canopy in the fifteenth century style; the south wall has been treated in a similar manner. The fine oak roof has been partially gilded, and the chancel arch has been redecorated with monograms and emblems of the patron saint. The work has been carried out by Messrs. Percy Bacon & Bros., of London, and will be continued as funds come in.

WINDOWS, ST. MARY'S CHURCH, WATERLOO, LIVERPOOL.—The two stained-glass memorial windows which have been placed in the north and south transepts of St. Mary's Church, Waterloo, were dedicated on the 21st inst. One of the windows represents the "Transfiguration" and the other the "Ascension." Both are the work of Messrs. Jones & Willis, of London and Liverpool.

## *FOREIGN.*

FRANCE.—A jury of municipal councillors and of architects has been formed, under the presidency of M. Bouvard, to adjudge the awards in the competition for the façades of houses for Paris.——The annual exhibition of the "Société des Artistes Français" (Old Salon) will be held, as last year, in the Galerie des Machines.——The statue of Ambroise Thomas, the composer, is to be erected in the Parc Monceau, Paris.——M. Lucien Magne, architect, has been appointed Professor of Applied Art in the new ateliers recently created at the Conservatoire des Arts et Métiers. The appointment was made at the instance of the Académie des Beaux-Arts.——M. Niederhausen-Rodo, sculptor, has been commissioned to execute the monument to be erected to the poet Verlaine, at Paris.——The work of reconstruction and enlargement of the National Library at Paris is to be shortly commenced. The scheme includes the erection of a new block of building on the line of Rue Vivienne, with a public hall of oval form, to accommodate 300 readers, and a large vestibule. A large museum of coins is also to be formed on the part of the site comprised between Rue des Petits Champs and the garden at the angle of Rue Vivienne.——M. Robida has just completed the drawings of a "Reconstitution de Vieux Paris" which is to form a feature in the 1900 Exhibition. The drawings, at present on view at the "Bodinière," Rue St. Lazare, comprise a reproduction of the Porte St. Michel, a "Place du Pré aux Clercs" and a "Tour du Louvre," as well as the "Maison aux Piliers," the Grand Chatelet, and the Pont au Change with its double range of houses.——The death is announced, at the age of sixty, of M. Georges H. Love, a former president of the Société des Ingenieurs Civils.——M. Waltner, the well-known etcher, has been promoted to be "Officier" in the Legion of Honour.

## *MISCELLANEOUS.*

Professional and Business Announcements.—Mr. Geo. Simpson, architect, has removed from 2, Wellington Chambers, Buckingham Gate, to 15, Buckingham Gate Mansions, Nos. 42 and 44, James-street, Buckingham Gate.——Mr. T. Butler Wilson, architect, of 12, East Parade Leeds, has taken into partnership his former assistant, Mr. R. P. Oglesby. The title of the firm will be "T. Butler Wilson & Oglesby."——The address of the Institution of Mechanical Engineers is for the future Storey's Gate, St. James's Park, Westminster, S.W. ——Parker's Joinery and Cabinet Company, Limited, of Birmingham, have opened a London show-room and offices at 292, High Holborn, W.C.

Public Improvements, King's Norton, Birmingham.—Colonel W. Langton Coke, one of her Majesty's Local Government Board Inspectors, attended at the King's Heath Institute on the 18th inst., to inquire into the application of the Urban District Council of King's Norton and Northfield, who have asked for sanction to borrow 9,000*l.* for purposes of street improvement and bridge widening, and 7,700*l.* for works of sewerage. For kerbing and channelling footways the following sums are required:—Moseley, 1,062*l.*; King's Heath, 1,672*l.*; Selly Park, 1,974*l.*; Selly Oak, 707*l.*; and King's Norton, 577*l.* For street and bridge improvements 1,536*l.* is needed for expenditure in Moor Green-lane, Moseley, and for improvements in Bournville-lane to King's Norton-lane 1,000*l.*, and a considerable sum is required for expenditure in small amounts in various parts of the parish. Amongst those who gave evidence in support of the application was Mr. A. W. Cross, the Engineer and Surveyor to the Council.

Organ, Parish Church, Tayport. — A new organ for the parish church, Tayport, is being built from designs by Messrs. C. & L. Ower, Dundee. The organ is being built by Mr. John R. Miller, Dundee. The specification was prepared by Mr. David Stephen, Dundee.

Pont Alexandre III., Paris. — In the short article on "Artistic Decorations for the Paris Exhibition," in our last issue, we were in error in describing M. Victor Cousin as the engineer of the new bridge; M. Cousin and M. Cassien-Bernard are joint architects; M. Résal and M. Alby, of the "Ponts et Chaussées" department, are the engineers.

Monument to a Shipowner.—There has just been completed at the Aberdeen Granite Works (Messrs. A. Macdonald & Co., Limited), from designs by Mr. Pittendrigh Macgillivray, A.R.S.A., Edinburgh, a large monument, to be erected in Glasgow Necropolis, in memory of the late Mr. Allan, founder of the Allan Steamship Line, and his wife. The central portion is 14 ft. high, and the features of the stone work (red granite) are the pediment, fluted piers, and canopy. In the centre under the pediment has been placed a bronze double medallion with busts in relief of Mr. and Mrs. Allan. The pediment is designed after the style of the Erectheum at Athens.

Barnsley Builders' Dinner. — The annual dinner of the Barnsley Association of Master Builders took place recently at the Coach and Horses Hotel. Mr. James Bycraft, the President, occupied the chair, and the vice-chair was filled by Mr. W. Guest (Blacker Hill), the retiring President, and now a vice-President of the Association. In the course of the evening, Mr. D. R. Snowden proposed "The Barnsley Association of Master Builders." This was an age of associations and federations, brought about by the strong combination of the employees. None of them denied the employees the right to combine together for their own mutual protection, but the masters claimed the same right, and almost every trade had found it necessary to combine. He (the speaker) had been mixed up a good deal with federation work in the last two or three years. They had established a federation which comprised the whole of the building trades. He had been very pleased indeed with the loyal support that Association had given to the federation, and with the loyalty that existed amongst the members of the society.—The President, in responding, said the original builders' association was established some thirty years ago, Mr. Taylor being the first secretary. It lapsed for a few years, but in its resuscitated form it had shown more vitality than ever. They had tried to be loyal to the Building Trades Federation, and their members had joined it *en masse.* It was their wish that good will should prevail in all the branches of the building trade, and that the standard of the trade should be raised. Both the architects and themselves, however, were victims to the craze for cheapness. He believed the architects themselves resented very much having to accept tenders when they knew they wouldn't get value for the money. They would rather have competent and responsible contractors, on whom they could rely for creditable work. This craze for cheapness was a very serious matter: it tended to deterioration in every way, from the workman upward, for they could not take the same pride in their work. They wanted to unite with the architects in trying to lift things a little higher. Mr. Councillor Dunk proposed "The Barnsley Architects," Mr. H. Crawshaw and Mr. J. Wade responding. Other toasts followed.

The "Silex" Filing Cabinet. — We have received a photograph and description of this form of cabinet for keeping files, which are placed like books on the shelves, with their distinguishing titles or numbers on the back. One half of the cabinet is hinged in the form of folding doors; when they are opened out their full width the whole range of files is seen, and when closed the whole can be secured and locked up by one lock. A flap in the central portion will fall out as a writing-desk. The whole is an admirable and compact arrangement. The cabinet is 6 ft. 9 in. high, 3 ft. 1½ in. in width when shut, and double that width when open; 11 in. in depth when open, and 2 ft. 1½ in. in depth when closed. It is the patent of and is made by Messrs. McKenzie & Co. (London).

Southend Master Builders' Association.—The inaugural dinner in connexion with the Southend Master Builders' Association took place at the Royal Hotel on the 16th inst., when the Mayor, Councillor Ramuz, J.P., presided over an attendance of about ninety gentlemen. In the course of the proceedings Councillor Prevost gave "Success to the Southend Master Builders' Association" The Association, he said, was in its infancy, having been established only three weeks. If the Association were to be of standing strength, it must consist of men who would do their duty. "Shoddy" buildings would mean the downfall of Southend; and from what he knew of several gentlemen in the room, he believed they were interested in putting up a superior class of building. Mr. W. Stubbs, as President of the Association, said the Association would not admit any "jerry builders." About fifty builders in Southend employed an average of twenty men each, which, at 30s. each—although many had 2*l.* and over—would amount to 1,500*l.* paid weekly, and of that amount 95 per cent. was spent in Southend. They did not believe in the "Union" rate of wages, but believed that men should have what they were honestly worth. Mr. W. H. Adams endorsed what Mr. Stubbs had said, and remarked that the Association wanted to do their business in a peaceable way, without the petty tyranny they had to put up with. Mr. J. Freakley hoped the Association might be floated in the teeth of any antagonism. Other toasts followed.

Back-to-Back Houses in the Insanitary Area, Leeds.—It is stated that the Local Government Board have declined to allow the Leeds Corporation to erect back-to-back houses on the York-street Insanitary Area. By the clearing away of that portion of the city about 2,000 persons will be turned out of their homes. The Corporation intended building sufficient back-to-back houses to accommodate that number, but, seeing that the Government Department objects, they are placed in a dilemma. The peculiar part of the question is that the Corporation may sanction the erection of back-to-back houses in any other part of the city but on the insanitary site, where a cheap house is most needed. It is not at all improbable that the Local Government Board's decision may result in the introduction into Leeds of the flat system, so widespread in London, the North of England, and Scotland. In places like Newcastle, where building land is hard to get and extremely dear, flats are in great vogue, and it is possible that the Corporation may resort to a similar expedient in their present difficulty. Flats, however, are not an unmixed blessing. The tenement system is another alternative, and there has been some talk of municipal lodging houses, *à la* Glasgow. For the latter, we fear, Leeds is not sufficiently enterprising, and it is doubtful if they would meet the present difficulty. The construction of through houses will not, we believe, meet with much approval from the members of the Corporation.—*Leeds Daily News.*

Memorial Font, Edinburgh.—There has been placed in New Greyfriars Parish Church a baptismal font in memory of Miss Phœbe Blyth. The font is octagon in shape, of white Sicilian marble, with pillars and panels of coloured marble, and stands upon a base of polished grey granite. The design, by Messrs. Hardy & Wight, architects, was executed by Mr. William Fraser, sculptor.

Proposed New Workmen's Dwellings. — Negotiations have just been completed for acquiring, by Guinness's Trust, of a large estate in Fulham Palace-road, London, W., where it is proposed to erect a large number of workmen's dwellings. The land is to be purchased for 7,000*l.*, and a deposit was handed over a few days ago. The Trust intend that the new buildings shall be similar to those put up of late by the London County Council.

The Carpenters' Company. — A course of lectures on matters connected with building will be given at Carpenters' Hall, London-wall, on Monday next and the four succeeding Mondays at eight o'clock. On January 30 the lecturer will be Mr. J. Mansergh, and the subject, "The Bringing of Water to Birmingham from the Welsh Mountains." On February 6 Professor Banister Fletcher will lecture on "Ornament." On the 13th Mr. Basil Mott will describe the building of an underground railway. On the 20th Professor Roger Smith will speak on "Terra-cotta, its Nature, History, and Use." On the 27th Mr. William Poel, director of the Elizabethan Stage Society, will lecture on "English Playhouses in the Sixteenth, Seventeeth, and Eighteenth Centuries." Each lecture will have lantern illustrations. Admission can be obtained by ticket to be obtained at Carpenters' Hall.

## *CAPITAL AND LABOUR.*

Aberdeen Joiners. — The operatives' unions have demanded an increase of the standard rate of wages from 8d. to 8½d. per hour as from May 1, a rise of 1d. an hour for work in demolition of buildings, a change in the date for alteration of by-laws, &c. The Employers' Committee decline to accede to these terms, and a general meeting of operatives will be held to consider as to enforcing the demands made on their behalf. At a mass meeting of the operatives on the evening of Monday, 23rd inst., it was unanimously resolved to press the demand for increase of wages, and unless the question is settled before February 1 a strike may ensue.

The Leigh Bricklayers' Dispute.—The strike at Leigh, which has affected about ninety men, and lasted over a week, has been satisfactorily settled. The Leigh men were afraid that for jobs in towns outside Leigh the masters, instead of paying walking time, as prescribed by the rules, would engage strangers on the spot and thus throw them out of employment. Having been guaranteed that this will not occur, the men have resumed work.

## *LEGAL.*

### CASE UNDER THE BUILDING ACT.

At the Clerkenwell Police-court on the 20th inst., Mr. W. R. Sutton, Golden-lane, St. Luke's, was summoned by the London County Council for erecting a building at New-street and French-alley contrary to Section 200 (sub-section 2) of the London Building Act, and also with neglecting to set back the building to the prescribed distance from the centre of the roadway, viz., 20 ft.—Mr. Chilvers appeared on behalf of the London County Council, and Mr. Glen, barrister, defended.—In March last the building, which fronts three thoroughfares—New-street, Hatfield-street, and French-alley—was commenced. On the 23rd of the same month Mr. Macdonald, the District Surveyor, called the attention of the foreman to the fact that the building was beyond the line, but in June Mr. Sutton's architect notified that the building would be proceeded with. For the defence, it was pointed out that for the purpose of widening French-alley Mr. Sutton gave up a piece of land, value 5,000*l.* Mr. Glen argued that the London County Council had failed to serve a notice upon the defendant intimating that the building line was being infringed, and that no action was taken by the London County Council until some time after the building had been proceeded with. Mr. Horace Smith said he was of opinion that there had been an infringment of the Act, but he did not think there had been any attempt on the part of the defendant to steal a march upon the London County Council. He imposed a fine of 40s., but declined to accede to an application for costs.

### ACTION TO RESTRAIN BUILDING AT STOURBRIDGE.

The case of the Attorney-General (at the relation of the Urban District Council of Stourbridge) and the District Council *v.* Rufford & Co., Limited, came before Mr. Justice North on the 19th inst. on a motion by the plaintiffs for an interim injunction to restrain the defendants until the trial or further order, from building or erecting any buildings or erections on land adjoining or abutting on Brick Kiln-lane, in the Urban District of Stourbridge, so as to make out or lay out that lane as a new street less than 30 ft. wide. It appeared that Brick Kiln-lane was a public carriage-road in the district of the Council, and varied in width from 19 ft. to 28 ft. With the exception of two cottages, there is or has been no buildings on the west side of the lane. There were formerly two cottages on the east side of the lane, but these were recently removed by the defendants, and no other buildings have ever existed on the east side of the lane. The lane was bounded on either sides by hedges, with the exception of a brick wall in front of the two cottages on the western side, and except that on the same side, at the northern end, the defendants have erected some buildings used as a bath and glazed-brick factory, these buildings adjoining and abutting on the carriageway of the lane, and extending along the side of the road about 485 ft. The defendants on June 14, 1898, gave the District Council notice of their intention to erect upon the east side of the lane, opposite to their factory on the west side, some new buildings, the outer walls of which would be 233 ft. in length, and would immediately adjoin and abut upon the east side of the lane, and would be throughout their whole length at a distance of 21 ft. from the outer walls of the defendants' factory on the west side of the lane. The District Council, while approving the defendants' plans, required the defendants to set back their new buildings to a line which would make the street 30 ft. wide. The defendants, however, refused to comply with this requirement and gave the District Council notice of their intention to commence the construction of their new buildings in such a way as to leave the road about 22 ft. wide. The present action was then commenced, and the question to be determined was whether the erection of the defendants' new buildings would render Brick Kiln-lane a "new street" within Section 63 of the Town Improvement Clauses Act, which, with certain exceptions, is incorporated with the Stourbridge Improvement Act, 1866.

At the conclusion of the arguments of counsel, his Lordship, on the authority of the House of Lords in the case of "Robinson *v.* The Barton-Eccles Local Board," held that Brick Kiln-lane was a "new street," at any rate as to that part of the lane which lay between the defendants' old and new building, and granted the injunction sought, the relators giving the usual undertaking as to damages.

Mr. Farwell, Q.C., and Mr. Cunningham Glen were counsel for the plaintiffs; and Mr. R. Neville, Q.C., and Mr. R. E. Moore for the defendants.

## ALTERATIONS AT CROSBY HALL:

### CASE UNDER THE LONDON BUILDING ACT.

ON the 16th inst., in the City of London Court, before Mr. Commissioner Kerr, an action was brought by Alderman Sir Horatio D. Davies, M.P., against Messrs. Lewis & Marks, merchants, 8, Finch-lane, for the purpose of setting aside an award which had been made in certain arbitration proceedings. The proceedings were brought by Sir Horatio Davies, as the owner of Crosby Hall, Bishopsgate-street, a dispute having arisen between him and the owners of adjoining premises.

The dispute arose under the London Building Act of 1894, under which an award had to be made, subject to an appeal to that Court. The whole of the award was not in dispute. It directed: 1. That the building owner might pull down and rebuild the party structure; that the words "party structure" to be understood as applying to the whole party structure, including such portions of it as were coloured blue on the drawing attached to the award. 2. That the cost of pulling down and rebuilding such portion of the party structure as was coloured blue situated below the level of the floor of the first ground floor of the premises of the adjoining owner should be entirely borne by the building owner. 3. That the cost of pulling down and rebuilding the portion of the party structure situated above the said level should be borne by the building owner and the adjoining owner in due proportion, regard being had to the use that each owner might make of the party structure, and to the thickness required for the support of the respective buildings parted thereby. 4. That the building owner should erect and maintain during the pulling down of the said party structure a sufficient hoarding to protect the premises of the adjoining owner, and should securely strut and shore up the adjoining owner's premises, the cost of that work being borne by the building owner; the hoardings were not to encroach upon or project into the premises of the adjoining owner for a greater distance than 2 ft. 6 in., measured from the north face of the new party structure. 5. That the building owner should make good all damage occasioned to the internal finishings and decorations of the adjoining owner's premises by the pulling down and rebuilding of the said party structure, or by works incidental thereto; the cost of making good such damage to be borne by the building owner. 6. That the building owner might build the new party structure to a greater height than the old party structure. 7. That the gutter carrying the rainwater from the back part of the adjoining owner's premises to the Bishopsgate front must be maintained. 8. That the boundary between 30 and 31, Bishopsgate-street Within, was the centre of the existing party structure taken at the level of the ground floor of 32, Bishopsgate-street Within. 9. That the building owner should not do any work in connexion with the said party structure before November 5, 1898. As to the party structures separating 9, Crosby-square, from 32, Bishopsgate-street Within, the award determined that the building owner might underpin, cut into, repair, and raise the party structure on condition of making good all damage occasioned thereby to the adjoining owner's premises, or to the internal finishings and decorations thereof, the cost of such underpinning, &c., to be borne by the building owner. The building owner was not to do any work in connexion with the said party structure before November 5, 1898. The costs of the award were to be paid by the building owner.

Under the London Building Act the defendants had certain rights vested in them. They had served the plaintiff with a party structure notice, by which they expressed their intention to take down and rebuild the party structure. The way in which the defendants proposed to do their work was very strongly objected to by the plaintiff, and the matter was referred to arbitration. The arbitrators had decided in the terms of the award referred to, but they were of such a nature, counsel explained, that the plaintiff was compelled to appeal to the Court for protection. If the rebuilding was to be done in the way asked for by the defendants the plaintiff's business at Crosby Hall would be seriously interfered with. In fact, it would be almost impossible for him to carry it on during the rebuilding. The arbitrators had defined what a party structure was, and that, the appellant contended, they had no right to do. At present about 2,000 persons were accommodated with luncheons or dinners during the middle of the day at Crosby Hall, to say nothing of those who went there for liquid refreshment only. Mr. Donald Campbell, architect, 4, Finsbury-circus, who had acted for the plaintiff in the arbitration, was called in support of the appeal. For the defendants it was said that it was not proposed to put the plaintiff or his customers to any more inconvenience than could be helped during the necessary alterations which would have to be made. The defendants were willing to take steps for the protection of Crosby Hall. It was a building 600 years old, and the defendants would have to shore it up and in other ways take measures to prevent it from falling into the street, which was what would happen if the defendants were not allowed to do what was proposed. Mr. Smith, the defendants' architect; Mr. H. H. Collins, the District Surveyor for the eastern division of the City; and Mr. E. A. Gruning, were called at the hearing in support of the defendant's case.

Mr. Commissioner Kerr, who had taken time to consider his decision, now said that the foundation of the proceedings was the notice of September 5, 1898, given by the building owner to the appellant (Sir Horatio Davies). In it the proposed work was specified to be to take down and rebuild "the party structure" therein referred to. The appellant's first objection was to the second paragraph of the first head of the award, which provided that the words "party structure" were to be understood as applying to the whole party structure, including such portions of it as were coloured blue, on the drawing marked "A" attached to the award. As the portions of the alleged party structure coloured blue were admittedly not a party structure, but the property of the appellant, he was obliged so far to sustain the appeal and to strike out of the award the second paragraph. The second paragraph of the award was by consent of both parties to be amended by adding thereto the words from section 95, sub-section 2, B, viz., that "a fair allowance, in respect of the disturbance and inconvenience caused to the adjoining owner shall be borne by the building owner." The appellant's next objection was to the second section of the fourth head of the award, providing that the hoardings therein mentioned were not to encroach upon or project into the premises of the appellant for a greater distance than 2 ft. 6 in., measured from the north face of the new party structure. The appellant contended that by building the party wall in the manner described by him a space of 6 in. and not 2 ft. 6 in. would be sufficient. Upon hearing the evidence he (the learned Commissioner) had arrived at the conclusion that the 2 ft. 6 in. mentioned was essential to the proper construction of the new party structure. He must, therefore, dismiss the appeal so far as it related to the fourth head of the award. The appellant's next objection was to the sixth head of the award, providing that the building owner might build the new party structure to a greater height than the old party structure. As his doing so would involve the destruction of the alleged party structure, the property of the appellant, he (the judge) must again so far sustain the appeal, and strike out that head of the award. It was unnecessary to say anything upon the objection stated by the appellant to head three of the award, except that the pulling-down and rebuilding must be confined to what was admitted by both parties to be a "party structure." No order was made as to costs.—*City Press.*

## WORKMEN'S COMPENSATION.

SOME curious points arising out of the Workmen's Compensation Act were dealt with at the Birmingham County Court on the 17th inst., in a judgment delivered by his Honour Judge Whitehorne. The case was one in which compensation was claimed under the Act by Thomas Williams, of Coleshill, journeyman painter, for injuries received while at work for Walter Upton, of Coleshill, on September 14 last. His Honour said that the case was one of some novelty and difficulty under the Workmen's Compensation Act of 1897. Williams, the applicant, was employed by the respondent, an "undertaker" within the meaning of the Act at a dwelling-house at Elmdon, which the respondent was engaged in putting into good condition for letting. The applicant was a painter painting the walls of the hall. It was not necessary to put on paint from the point of view of repairs. The workman's directions were to put on a certain amount of ornamentation as well as a coat of paint, and in painting the upper part of the walls he used a plank, one end of which rested on the rungs of a ladder placed against the sill of a window, while the other end rested on a pair of steps. The ladder slipped, and the plank on which the applicant was standing tripped up, the applicant falling to the floor and sustaining more or less serious injuries. No question of misconduct or contributory negligence on the workman's part was raised. The height of the house from the level of the road was admitted to be less than than 30 ft. to the highest point of the walls—the crown of the gables. It was also admitted that the chimneys, or at any rate the highest part of them, reached to a height of more than 40 ft. from the roadway. From the medical evidence it appeared that the material injury suffered was the loss of nervous and muscular power in the hands and arms, which would prevent the applicant from working for a month to come, and it would probably be some considerable time before the applicant's full force returned. Meanwhile his employer had been paying him 10s. a week, and it seemed practically certain that as soon as he was able to work he would be taken back into his employer's service. Both sides in fact, wanted the case decided as purely a question of the construction of the Act. The question was whether, under the circumstances which he (the Judge) found as facts, the injury was caused to this workman in an employment within the Act, that was to say in or about a building exceeding 30 ft. in height which was being repaired by means of a scaffold. If it were so the applicant was entitled to the proper compensation under the Act. Otherwise, it was admitted, the applicant could not succeed. Taking the points in reverse order, it was clear that a scaffold must be a construction, an edifice consisting of several items furnishing a sort of platform on which a man or men might stand. Whether the erection was of greater or less complexity, of greater or less size and permanence, seemed to him to be immaterial. Once given a construction for such a purpose and of such a character, it was a scaffold under the Act. He decided, therefore, that this plank on the ladder was a scaffold within the Act. As to whether the work applicant was engaged in was a repair that had to do with the structure, no doubt there was a line to be drawn between mere decoration and repair. But to confine the definition of repair to injuries to the actual structure, the bricks and mortar, or the stone and timber of the building, was to read into the Act a limitation which was not there. Repair, under the Act, was contrasted as something different from construction or demolition. It seemed to him to mean anything effected, the intention of which was to restore the whole construction, wholly or partially, to the state in which it was when perfect and complete for the purpose for which it was created—in the case of a dwelling-house for ordinary use as a habitation. If this view were correct, it justified him in looking for guidance to the well-known cases on covenants for repairs. In these cases repairs included reasonable painting. Therefore, he decided that the painting of the hall in this particular case was repairing a building within the meaning of the Act. As to the height of the building, the Act gave no datum line from which to measure; but the dictum of the Court of Appeal was that the datum line was to be the level of the street. As to whether they should measure up to the roof or to the top of the chimney the Act did not say, and there had been no decision. He held that it would be unjust to take the height of the chimney, which could be easily varied—for instance, by putting on or taking off a cowl, and that the height of the building within the meaning of the Act was the height to the ridge of the roof, or to the highest part of the parapet if that rose above the roof. He therefore decided that the house in this question was not 30 ft. in height. On this point, then, his judgment would be against the applicant. Had he found for the applicant, he should have fixed the compensation at half his ordinary wages—namely 17s. 6d. per week.—Mr. Pritchett, who had been instructed for the applicant, asked for a case to be stated on the last point, and added that Mr. Shakespeare, who appeared for the respondent when the evidence was taken, would probably ask for a case to be stated on the other two points.—*Birmingham Post.*

## POINT UNDER THE LONDON BUILDING ACT, 1894.

THE case of Woodthorpe *v.* Spencer and another came before a Divisional Court of Queen's Bench, composed of Mr. Justice Lawrance and Mr. Justice Channell, on the 20th inst., on the appeal of Mr. Woodthorpe, the District Surveyor under the London Building Act, 1894, for the Northern Division of the City, who summoned before one of the City Aldermen the respondent, Mr. J. A. Spencer, for having between December 21, 1897, and January 5, 1898, contrary, as it was alleged, to the provisions of the London Building Act, 1894, united a building known as 45a and 46a, Basinghall-street, E.C., with a building known as 4, London Wall-avenue, and the other respondent, Mr. J. Husbands, with having committed and abetted the commission of the offence. The Building Act provides that buildings shall not be united except where they are wholly in one occupation or are constructed or adapted to be so, and it appeared that between the dates in question an opening or doorway was made between the two buildings on the first floor in spite of the appellant's refusal to sanction such a proceeding. This was said to constitute an offence against the Act, but it appeared that the original lease from the freeholder required that there should be an opening from end to end through the buildings, and connecting Basinghall-street with London Wall-avenue, and that the building was originally erected with an opening in the wall between the two houses on the ground floor, so as to be available for occupation by one or more tenants. To meet the requirements of tenants this opening was afterwards closed up, and an opening, according to the appellant, illegally made on the second floor. Subsequently to this the respondents, who occupied between them the two buildings, made the opening on the first floor, now complained of. The alderman dismissed the summons, and their lordships, after hearing the arguments of counsel, affirmed the decision of the alderman and dismissed the appeal with costs.

Mr. Horace Avory and Mr. Daldy appeared as counsel for the County Council in support of the appeal; Mr. Cunningham Glen for Mr. Spencer; and Mr. George Elliott for Mr. Husbands.

## UNSKILLED LABOUR:

### A QUESTION OF SUPERVISION.

AT Brompton County-court last Friday, before His Honour Judge Stonor and a jury, George Rolfe, a labourer, living at Westbourne Park, claimed, under the Employers' Liability Act, from Mr. Henry Lovatt, builder and contractor, of Wolverhampton, 230*l.* as compensation for injuries sustained, said to have been caused through negligence for which the defendant was responsible. Mr. Randolph was counsel for the plaintiff, and Mr. Swanton defended.

The plaintiff stated that on May 3 last, having been engaged by the defendant as general labourer for about two months, he was sent to work at some new flats at Fitz George-avenue, West Kensington. He was instructed by the timekeeper and material clerk, William Trudell, to assist in unloading and stacking some matchboarding and "skirting" in a passage, but was not shown how the boards were to be stacked. The boards had been piled up 7 ft. or 8 ft., and, as he was turning round to get some more boards, the stack fell down, crushing him against the wall. He was at once conveyed to St. George's Hospital, where it was found that both his legs were broken. He remained in the hospital for twelve weeks, and afterwards attended as an out-patient for twenty-five weeks. His average earnings while in defendant's employ amounted to 29s. a week.

Cross-examined: He had been in the building trade for only eight or nine months, and had never stacked heavy timber before, although he had helped to stack light boards. He did not tell the foreman that he could not do the work. He maintained that three "labourers" should have a "leading hand" over them.

Other labourers having described the accident, the house-surgeon at St. George's Hospital said that the plaintiff was not likely ever to regain the free use of his limbs.

Counsel for the defence: I submit, your Honour, that there is no case against my client.

The Judge: The question is whether there was negligence in taking an unskilled man to do the work. That must go to the jury.

For the defence, Frederick Trudell, the timekeeper and material clerk, stated that he instructed the plaintiff to assist in stacking the boards in question, but considered it quite unnecessary to tell him how the work should be done. He had never known a leading hand to be told off to supervise the work of ordinary labourers. There were plenty of "ties," or cross pieces, for binding boards together about the job.

The Judge said it was for the jury to say (1) Whether Trudell was justified in assuming that the plaintiff knew how to stack the timber? (2) Whether the accident happened through the negligence of the plaintiff in turning round and knocking over the timber? (3) Whether there was any defect in defendant's ways and works? (4) Whether there was neglect by not providing proper "ties" for stacking the timber? (5) Whether there was negligence in Trudell directing the plaintiff to stack the timber without seeing that "ties" were at hand, or in not giving directions for him to get them?

The jury found that Trudell was justified in assuming that the plaintiff knew how to stack the timber, and answered the other questions in favour of the defendant, for whom judgment was given.

## INFRINGEMENT OF ANCIENT LIGHTS OF A HOTEL IN RUPERT-STREET, W.

THE case of Baker *v.* Lewis came before Mr. Justice Kekewich in the Chancery Division on the 21st inst., on a motion by the plaintiff, the owner of Challis's Hotel, in Rupert-street, W., for an *interim* injunction to restrain the defendant from building so as to obstruct the plaintiff's ancient lights.

Mr. Stewart Smith, in support of the motion, said that the plaintiff's hotel was on the west side of Rupert-street, looking east. A neighbouring building of the height of 37 ft. was recently pulled down, and the defendant commenced to erect upon the site a building which it was proposed should be 78 ft. high, it being at the present time 71 ft. high. The obstruction of the plaintiff's ancient lights was not denied, and the only issue was whether there was a verbal agreement of compromise entered into between the parties on November 16 last.

The learned Counsel said that his case was that, although the heads of agreement had been prepared the parties had not been able to agree.

His Lordship: That is a question I cannot decide now.

Mr. Stewart Smith said that the fact remained, that the plaintiff's ancient lights were admitted, and the obstruction was not denied, and his contention, therefore, was that he was entitled to an injunction to restrain the defendant, until the hearing, from building so as to cause an admitted obstruction.

Mr. C. E. Jenkins, Q.C., for the defendant, said that his client began the building complained of in November, 1897, and no objection was made until October, 1898. Then the parties met, and, according to the defendant's case, there was a binding agreement come to by which the defendant agreed to pay a sum of money. Afterwards the plaintiff sought to impose further terms, which the defendant was quite willing to consider, but could not agree on the point raised, so he fell back on the old agreement. This was not like the case of running up a wall, but it would be a most serious thing to stop the defendant building.

In the result the learned Judge directed that the motion should stand over till the 27th inst.

## EXETER ANCIENT LIGHT CASE:

### MANDATORY INJUNCTION GRANTED.

THE case of Smith *v.* the Devon and Exeter Turkish Bath Company, Limited, concluded before Mr. Justice Byrne, on the 23rd inst., an action brought by the plaintiffs, the trustees of the building and premises known as Providence Chapel, on the east side of Northernhay-street, Exeter, for a mandatory injunction restraining the defendants from allowing to remain erected such part of their building as obstructed the access of light to certain windows in the chapel and class rooms to a greater degree or extent than such parts of certain almshouses as formally occupied the site of the defendant's building obstructed the same. There was an alternative claim for damages. The defence was a general denial.

Mr. Eve, Q.C., and Mr. A. F. Peterson were counsel for the plaintiffs, and Mr. Foote, Q.C., and Mr. R. J. Parker for the defendants.

It appeared that, prior to 1895, certain almshouses stood on the site of the defendants' building, and these almshouses had existed for a number of years. The almshouses were at one end 24 ft. 10 in. from the front of the chapel and 22 ft. 6 in. at the other end, and were 17 ft. 9 in. high at one end opposite the chapel and 19 ft. 9 in. at the other. Those almshouses were pulled down in 1895, and the defendants erected the building complained of on the site but at a greater distance from the front of the chapel than the almshouses were, the frontages being put back about 3 ft. 8 in. The height of the defendants' building was 31 ft. 6 in. at one point, 34 ft. 3 in. at another, and 37 ft. at another. The windows of which the plaintiffs complained as having been obstructed by the defendants' building were five windows in the chapel itself and four windows in the class-rooms below, all of which looked out on Northernhay-street. The defendants commenced the erection of their building in March, 1897. On July 1, 1897, when the defendants' building was not above the line of the old almhouses, the work was interrupted by a strike in the building trade at Exeter, and work had to be suspended until September 13, when work was resumed; soon after which the plaintiffs alleged they noticed an interference with their light by reason of the defendants' building. Negotiations between the parties took place, and on October 9 the defendants entered into an undertaking not to build higher than the spring of the windows on the top floor pending an amicable arrangement. Subsequently, on the plaintiffs threatening to apply for an injunction, it was suggested that the whole matter in dispute should be referred to arbitration. This, however, came to nothing, and the defendants re-commenced to build on November 4. The writ was issued two days later. The plaintiffs after the action was commenced applied on motion for an interim injunction, but on that occasion the judge ordered that the matters in dispute should stand till the trial, on the defendants undertaking to "pull down" if so ordered at the trial.

His lordship, after hearing a great deal of evidence on one side and the other, in giving judgment said that he had come to the conclusion that the light coming to the defendants' class-rooms had been materially interfered with. One argument had been founded on the suggestion that a portion of the site of the old almshouses, not yet built upon, afforded a certain amount of diffused light which was sufficient compensation for any light of which the plaintiffs had been deprived, and that, therefore, he was not to say there was obstruction. But he came to the conclusion that, as the building stood, the light coming to those class-rooms had been materially interfered with. It was clear that there should be an order to pull down some portion of the defendants' building. He could not do better than adopt the angle of forty-five degrees obstruction rule, and in doing so, and having regard to the narrowness of the thoroughfare and the other circumstances in the case, he was disposed to think he was giving the defendants the benefit of the rule rather than imposing something stronger than he might impose. Accordingly his lordship held that the plaintiffs were entitled to a mandatory injunction directing the defendants to pull down in accordance with a line which should allow obstruction to the angle of 45 deg., defendants to pay the costs. The operation of the injunction was suspended for six weeks to allow the parties to come to some arrangement if possible.

## MEETINGS.

### FRIDAY, JANUARY 27.

*Institution of Junior Engineers.* — Professor J. A Ewing, F.R.S., on "Measurements of Elasticity" (at the Westminster Palace Hotel). 8 p.m.

*Institution of Civil Engineers (Students' Meeting).*—Mr. F. C. Grimley on "King's Lynn Water Works. 8 p.m.

### SATURDAY, JANUARY 28.

*South Kensington Museum (Lecture Theatre).*—Dr. Lockyer on "Astronomical Instruments." I. 3.30 p.m.

*St. Paul's Ecclesiological Society.* — The Annual Meeting (at the Chapter House). 2.30 p.m.

*Institution of Junior Engineers.*—Anniversary Dinne (at the Westminster Palace Hotel). 7 p.m.

*London and Provincial Builders' Foremen's Association.*—Mr. Isaac Young on "Sanitation (Metropolitan and Some of the Laws Relating Thereto." 8.30 p.m.

### MONDAY, JANUARY 30.

*Carpenters' Hall, London Wall (Free Lectures on Matters connected with Building).*—Mr. J. Mansergh on "The Bringing of Water to Birmingham from the Welsh Mountains"—with lantern illustrations. 8 p.m.

*Society of Arts (Cantor Lectures).*—Dr. Samuel Rideal on "Bacterial Purification of Sewage." III. 8 p.m.

### TUESDAY, JANUARY 31.

*Northampton Institute, Clerkenwell.*—Lectures on Mediæval Architecture, by Mr. Francis Bond, M.A. IV.—"The Early Christian Churches." 7.45 p.m.

*Society of Arts (Applied Art Section).*—Mr. Edward F. Strange on "The Centenary Exhibition of Lithographs, with Remarks on Further Developments of the Art." 4.30 p.m.

*Institution of Civil Engineers.*—Papers to be further discussed:—1. "The Effects of Wear upon Steel Rails," by Mr. William G. Kirkaldy. 2. "On the Microphotography of Steel Rails," by Sir William Roberts-Austen. 3. Time permitting, paper to be read: "The Waterworks of the Madras Presidency," by Mr. J. A. Jones. 8 p.m.

### WEDNESDAY, FEBRUARY 1.

*Royal Archæological Institute.* — (1) "Christian Emblems at St. David's Cathedral," by Mr. A. C. Fryer; (2) "A Saxon Crypt, Sidbury Church, Devon," by Mr. Walter Cave. 4 p.m.

*British Archæological Association.*—Mr. C. H. Compton, V.P., on "The Marches of Wales." 8 p.m.

*Society of Arts.*—Mr. Dixon H. Davies on "The Cost of Municipal Enterprise." 8 p.m.

*Builders' Foremen and Clerks of Works' Institution.*—Ordinary meeting of the members. 8 p.m.

### THURSDAY, FEBRUARY 2.

*Society of Antiquaries.*—8.30 p.m.

*Institution of Civil Engineers.*—Students' Visit to the Millbank Station of the London Hydraulic Power Supply Company. 2.30 p.m.

### FRIDAY FEBRUARY 3.

*Architectural Association.*—Mr. Christopher Whall on "Stained Glass"—with practical demonstration. 7.30 p.m.

*Royal Institution.* — Dr. Victor Horsley on "The Roman Defences of South-East Britain." 9 p.m.

*Sanitary Inspectors' Association.*—Sixteenth Annual Dinner, Holborn Restaurant. 6.30 p.m.

*Glasgow and West of Scotland Technical College (Architectural Craftsman's Society).* — Discussion on "Building Deficiencies," to be opened by Mr. Isaac Low. 8 p.m.

### SATURDAY, FEBRUARY 4.

*Architectural Association.*—First Spring Visit, to the Carlton Hotel, Haymarket. 3 p.m.

**British Institute of Certified Carpenters.*—Visit to Russell Hotel at 3 p.m. Meeting at 6 p.m., paper by Mr. J. D. Macnair on "Sound in Buildings."

*South Kensington Museum (Lecture Theatre).*—Dr. Lockyer on "Astronomical Instruments." II. 3.30 p.m.

## RECENT PATENTS:

### ACCEPTED SPECIFICATIONS.

### *Open to Opposition until March 18.*

[1897.] 29,505, Lodge, Magnetic Telegraphy and Telephony. [1898] 391, Bower, Water Gas. 731, Bousfield, Detachable Roller Frame for Sliding-doors. 835, Atkinson, Current Motors. 949, Wernick, and 24,657, Wachtl, Vices. 963, Dresser. Bascule Elevators. 1,002. Voysey & Wilson, Electricity Measuring Instruments. 1,011, Bott, Holders or Sockets for Electrical Incandescent Lamps. 1,212, Woolheim, Automatic Syphons. 1,819, Kelly & Roantree, Carbide o. Calcium. 2,331, Guttridge, Bricks and Building Blocks 2,754, Carlyle & Shannon, Dove-tailing Machines. 3,016. Fletcher, Neil, & Fletcher, Russell & Co., Gas and Oil Condensing Stoves. 3,365. Sinclair & Aitken, Telephone Systems. 4,919, Voigt & Haeffner, Registering or Recording Apparatus. 5,021, Pocock, Pocock, & Nevett, Seats for Water Closets. 5,029, Leitner, Regulating Apparatus for Arc Lamps. 5,034, Bastian, Electrolytic Electrical Meters. 5,065, Davis & Conrad, Arc Lamps. 5,117, Sankey, Sheet-metal Baths. 5,138, Adams, Water-closets. 5,261, Walker, Chimney Pots or Ventilating Terminals. 5,565, Day and others, Ladders, Trestles, &c. 5,733, Lewis, Stone-Sawing Machine Attachments. 5,755, Gill, Moulding and Pressing Bricks, &c. 5,793, Pitt and others, Grab-working Apparatus. 6,025, Sykes, Draw and Junction boxes for Electrical Mains. 6,631, Green, Building Blocks, Tiles, &c. 6,840, Nilsson, Air-heating Stove. 7,393, Glover & Glover, Gas-heaters, such as Stoves, &c. 7,485, Hussey, Float Valve. 7,874, Murray, Cutting Roofing Tiles, &c. 9,438, Glover & Glover, Gas blast Appliances. 15,038, Harrison, Sash-fasteners for Windows. 15,447. Agar, Folding-chair with Table and Easel Combined. 17,657, Medbery, Potter, & Potter, Pipe and Conduit Couplings. 18,067, Shackleton, Circular-saw Guards. 18,796, Corby, Corby, & Mayer, Moulding Dough and similar Plastic Substances. 21,059, Terrey, "Treating Air for Ventilating, Healthful, and Like Purposes." 22,319, Foley, Building Tiles. 23,061, Klause, Two-way Connecting Piece for Hot and Cold Water Delivery Pipes

# COMPETITIONS, CONTRACTS, AND PUBLIC APPOINTMENTS.

## COMPETITIONS.

| Nature of Work. | By whom Advertised. | Premiums. | Designs to be delivered. |
|---|---|---|---|
| Additions to Town Hall | Shoreditch Vestry | 50*l.* and 25*l.* | Mar. 22 |
| *Memorial Hall and Art Gallery | Bradford Corp. | 150*l.* : 100*l.* ; 50*l.* | April 14 |
| *Market Hall and Shops | Leeds Corp. | 150*l.* ; 100*l.* ; and 50*l.* | June 1 |

## CONTRACTS.

| Nature of Work or Materials. | By whom Required. | Forms of Tender, &c. Supplied by | Tenders to be delivered. |
|---|---|---|---|
| Road Making and Paving Works, Ellerdale-street | Lewisham B. of W. | Surveyor's Dept. Town Hall, Catford | Jan. 31 |
| * Road Making and Paving Works, Aitken and Barmeston-roads | do. | do. | do. |
| Market Hall, &c. | Ilfracombe U.D.C. | O. M. Prouse, Engr. Town Hall | Feb. 1 |
| Club House, Mossley, nr. Manchester | ........ | T. Cook, Archt. 39, Victoria-buildings, Manchester | do. |
| Additions to Workhouse | Larne (Ireland) Union | W. Hay, The Workhouse, Larne | do. |
| Warehouse, &c. Williamstown, near Penygraig | Lock & Co. | James & Morgan, Archt. Charles-street Chambers, Cardiff | do. |
| Power House, Offices, &c. | British Electric Traction Co. Ltd. | Jones & Rowlands, Archt. 58, Wind-st. Swansea | do. |
| Schools, Anglesey, N. Wales | Rhosybol Sch. Bd. | R. Davies, Archt. 125, High-st. Bangor | do. |
| Technical School, Balliol-road | Bootle Corp. | E Reid, Surv. 7, Westminster-chambers, Crosshall-street, Liverpool | do. |
| Widening Bridge, Horninglow-street | Burton-on-Trent Corp. | G. T. Lynam, Boro Engr. Town Hall | do. |
| Road Works, Arthur-street, Hove | ........ | Borough Surv. Town Hall, Hove | do. |
| *Creamery | Finn Valley Co-op. Dairy Soc. | M. A. Robinson, Richmond-st. Londonderry | do. |
| *Workmen's Dwellings | Richmond T.C. | Borough Surv. Town Hall, Richmond | Feb. 2 |
| Pipe Sewers, &c. | Llandudno U.D.C. | E. P. Stephenson, Engr. Church Walks, Llandudno | do. |
| Drainage Works | Levenshulme (Lancs.) U.D.C. | J. Jepson, Archt. Stockport | do. |
| Cast Iron Water Mains, &c. | Worthing Corp. | F. Roberts, C.E. Town Offices | do. |
| Flagging Works, Stockport-road | Levenshulme U.D.C. | J. Jepson, Surv. Guardian-chmbrs. Stockport | do. |
| Footbridge, Winlaton Mill | Blaydon-on-Tyne U.D.C. | Hy. Dalton, Council Offices | do. |
| Stables, East-end, Brook | Chatham Corp. | C. Day, Borough Surv. Military-rd. Chatham | do. |
| *Jarrah Wood Paving | Hampstead Vestry | Surveyor, Vestry Hall | do. |
| *Lavatory Accommodation at Infirmary | St. George's in the East Guardians | G. A. Wilson, Vestry Hall, Cable-street, E | Feb. 3 |
| Additions Business Premises, Great Yarmouth | T. Shreeve | C. G. Baker, Archt. Town Hall-chambers, Great Yarmouth | do. |
| Alterations at Asylum, Lancaster | Visitors | Superintendent, County Lunatic Asylum, Lancaster | do. |
| School, Staincross, near Barnsley | Darton Sch. Bd. | Senior & Clegg, Archt. 15, Regent-st. Barnsley | do. |
| Sewerage Works, Ynyshir | Rhondda U.D.C. | W. J. Jones, Surv. Council Offices, Pentre, R.S.O. Glam. | do. |
| Sewerage Works | Wellingborough R.D.C. | J. B. Everard, C.E. 6, Millstone-street, Leicester | do. |
| Additions to Grove Brewery, Luddenden Foot, Halifax | ........ | J. F. Walsh, Archt. L. & Y Bank-chambers, Halifax | do. |
| House, Bridge-terrace, Armfield Plain, Durham | ........ | J. Norman, 24, Bridge-terrace, Armfield Plain | do. |
| Iron and Steel Work at Electric Lighting Station | Edinburgh Corp. | J. Cooper, Burgh Engr. 1, Parliament-square | do. |
| *Dining Hall, &c. at Workhouse | Kingston Union | W. H. Hope, Offices, Portsmouth-road, Kingston-on-Thames | Feb. 4 |
| Whinstone (2,600 tons) Slag, &c. | Escrick (Yorks.) R.D.C. | Surv. Council Offices, 1, Museum-st. York | do. |
| Additions to Schools, Carlton, Yorks. | Lofthouse-with-Carlton Sch. Bd. | W. E. Richardson, Archt. 28 Bond-street, Leeds | do |
| Additions to Business Premises, George-street, Lancaster | F. Wolfenden | C. F. Thompson, Archt. The Arcade, Lancaster | do. |
| Broken Granite | Norfolk C.C. | The Clerk, Shirehall, Norwich | do. |
| *Cast Iron Pipes and Special Castings | Cork Corp. | H. A. Cutler, Town Hall | Feb. 6 |
| Additions to Chapel, Nelson, Lancs. | ........ | H. Whitaker, Archt. 21, Market-sq. Nelson | do. |
| Additions to Schools | Normanton (Derby) Sch. Bd. | Naylor & Sale, Archt. Irongate, Derby | do. |

## CONTRACTS—*Continued.*

| Nature of Work or Materials. | By whom Required. | Forms of Tender, &c. Supplied by | Tender to be delivere |
|---|---|---|---|
| Alterations to Workhouse | Wilton (Wilts.) Union | J. Harding & Son, Archt. 58, High-st. Salisbury | Feb. 6 |
| Surveyor's Materials | Midhurst R.D.C. | A. G. Gibbs, Surv. Council Offices | do. |
| Sewers, &c. Willaston, Cheshire | Wirral R.D.C. | H. Hughes, Surv. 5, Birch-road, Bebington Wirral | do. |
| *Various Materials | Newington Vestry | L. J. Denham, Vestry Hall, Walworth, S.E. | do. |
| Public Hall, Library, &c. King-street, Irlams | Salford Corp. | B. C. P. Heywood, Archt. Town Hall | Feb. 7 |
| Bridge, Godley-road | Halifax Corp. | E. R. S. Escott, C.E. Town Hall | do. |
| Sewers (4½ miles) | Ayr (N.B.) Commrs. | J. Eaglesham, C.E. Ayr | Feb. 8 |
| Hartshill Stone | Bicester R D.C. | G. Walsh, Council Offices | do. |
| *Refuse Destructor and Electricity Works | Fulham Vestry | C. Botterill, Town Hall, Walham Green | do. |
| Surgery at County Infirmary, Sligo | ........ | W. T. Vernon, Board Room, Infirmary, Sligo | Feb. 9 |
| Making-up Park-rd. | Broadstairs U.D.C. | H. Hurd, Surv. Council Offices | Feb. 10 |
| Wall, Gates, &c. Kent-st. | York Corp. | A. Creer, Engr. Guildhall, York. | do. |
| Granite Setts (1,000 tons) | Hull Corp. | A. E. White, City Engr. Town Hall | do. |
| Aqueduct (5½ miles) | Birmingham Corp. | J. Mansergh, Engr. 5, Victoria-st. S W. | do. |
| *Isolation Hospital | Wimbledon U.D.C. | C. H. Cooper, Council Offices Broadway, Wimbledon | Feb. 13 |
| Road, Girder Bridge, &c. | Kirkcaldy (N.B.) Comrs. | W. D. Sang, C.E. Kirkcaldy | do. |
| Drainage Works | Cirencester U.D.C. | T. Hibbert, Sur. Cirencester | Feb. 14 |
| Additions to St. George's Church, Leeds | ........ | H. Walker, Archt. 8, Upper Fountaine-st. Leeds | do. |
| Cast-iron Pipes (253 tons) | Ashton-under-Lyne, &c. Waterworks Commte. | G. H. Hill & Sons, Engrs. 3, Victoria-st. S.W. | do. |
| Pipe Sewers (2,680 yards) | Mansfield T.C. | R. F. Vallance, C.E. Mansfield | do. |
| *Extension of Public Offices | Willesden D.C. | O. C. Robson, Offices, Dyne-rd. Kilburn, N.W. | do. |
| *Road Making and Paving | do. | do. | do. |
| * Widening Road | do. | do. | do. |
| *Works and Materials (various) | do. | do | do. |
| *Public Offices | Rugby U.D.C. | D. G. Macdonald, Council Offices, Rugby | Feb. 15 |
| Whinstone, &c. | South Shields Corp. | S. E. Burgess, C.E. Chapter-row, South Shields | do. |
| *Erecting Workhouse Buildings | Hastings Union | Jeffery & Skiller, 5, Havelock-road. Hastings | Feb. 16 |
| *Sewers, Lampholes, &c. and Concrete Storm Culvert | Coalville U.D.C. | J. B. Everard, 6, Millstone-lane, Leicester | Feb. 18 |
| Granite Setts (950 tons) | Clayton-le-Moors U.D.C. | A. Dodgeon, Council Offices | Feb. 23 |
| *Exhibition Buildings | Glasgow International Exhibition | F. A. Healey, 141, Buchanan-st. Glasgow | Mar. 15 |
| *Works and Materials (various) | Westminster Vestry | G. R. W. Wheeler, Town Hall, Caxton-st. S.W. | See advt. |
| Offices, Tay and High Streets, Perth | General Accident Assce. Corp. Ltd. | G. P. K. Young, Archt. 42, Tay-st. Perth | No date |
| *Hotel Wrexham | ........ | W. Slater, 9, High-street, Wrexham | do. |
| Factory, Worthing | R. Fry & Co. | Clayton & Black, Archt 152, North-st. Brighton | do. |
| Ten Houses, Elland-rd. Holbeck, Leeds | T. Cromack | F. W. Rhodes, Archt. Upper Wortley, Leeds | do. |
| Nurses' Home, Coatsworth-road, Gateshead | ........ | L. H. Armour, 16, West-street, Gateshead | do. |
| Two Pairs Villas, Ben Rhydding, Yorks. | ........ | Isitt & Co. Archt. Prudential-buildings, Bradford | do. |
| Store Buildings, &c. Chopwell, co. Durham | Blaydon Indus. Prov. Soc. Ltd. | Liddle & Browne, Archt. Mosley-st. Newcastle-on-Tyne | do. |
| Two Houses, Shop, &c. Vergette-st. Peterborough | G. Markham | M. Hall, Archt. Huntley-grove, Peterborough | do. |
| Kerbing, Flags, &c. | Atherton (Lancs.) U.D.C. | D. Schofield, Council Offices | do. |

## PUBLIC APPOINTMENTS.

| Nature of Appointment. | By whom Advertised. | Salary. | Application to be in. |
|---|---|---|---|
| *Architectural Assistant | Southport Corp. | 3*l.* per week | Feb. 1 |
| *Borough Surveyor | Hemel Hempstead T.C. | 150*l.* per annum | Feb. 7 |
| *Engineering and Surveying Assistant | Huddersfield Corp. | do. | Feb. 10 |
| *Building Inspector | Willesden D.C. | 150*l.* rising to 200*l.* per an. | Feb. 14 |
| *District Surveyor | Sheffield Corp. | 230*l.* per annum | No date |

*Those marked with an asterisk (*) are advertised in this Number.* *Competitions, p.* iv. *Contracts, pp.* iv. vi. vii. viii. & xxi. *Public Appointments, pp.* xviii. xix. & xxi

23,128, Arnold, Cutting Device for use by Paperhangers. 23,900, Valder, Weighing Machines, Scales, &c. 23,990, Gessner, Fire-grates. 24,103, Henze & Barg, Inverted Incandescent Gas or Vapour Burner. 24,405, Mauser, Hinges. 24,800, Davies, Window and similar Sash Fasteners. 24,902, Bändel & Klinik, Catch Apparatus for Hoists. 24,939, Martini, Closets, Urinals, &c. 25,268, Rammoser, Röhrs, & Röhzson, Automatical Ignition Mantles. 26,250, Phare, Coin-controlled Mechanism for Automatical Delivery of a Pre-determined Quantity of Liquid.

### *Abstracts of Patented Inventions.*

20,914.—COIN-FREED ELECTRICITY METERS: *F. C. Raphael.*—Upon a shaft, to be turned by hand by means of a coin-freed mechanism, is a cam which will close a gap between two separating terminals, and an electromagnetical switch cuts off the current. The action of the cam upon the terminals depends upon the shifting of its shaft by a solenoid that acts in opposition to weights or a spring, and the shaft is driven at variable speeds, which depend upon the wheels—of different diameters—thereon, that come into gear with wheels upon a parallel shaft whose rate of rotation is uniform.

20,944.—FLUSHING LATRINES: *Duckett & Son, J. Duckett, & J. W. Bullock.*—The basins discharge into a trough which has a double-sealed trap connected to the cistern by an air-pipe whose upper end is turned down in the flushing-pipe, and whose top is open to an air-chamber. In the operation of flushing the trough is discharged by the exhaustion of air from the crown of the trap; when air enters the chamber and passes to the trap the siphonical action is arrested. The sink discharge is received by means of a channel in the covering stone of the chamber for the waste water-closet tipping-tank.

20,966.—NON-CONDUCTING COVERING AND COMPOSITION: *C. Hardy.*—The compositions are made of an admixture of blue clay (1½ parts), shale (3), and freestone rock, to which is added some porous material, such as cotton or flax, and, it may be, a little ammonia and tar. When formed into a paste the compound can be applied by means of a trowel to the surface or joint.

20,974.—GAS STOVES AND FIRE BURNERS: *E. W. T. Richmond.*—As a modification of No. 21,574, of 1894, the inventor has devised a small auxiliary light for gas-stove and fire-burners which is intended to re-light the main burner when it is extinguished by either design or mischance; a cam on the tap of the supply pipe bears against another cam on the tap that passes the supply to the auxiliary light when the two valves are closed in such a manner that the two taps are opened together, and that the supply-pipe tap may then be turned at will without affecting the other tap until the latter is closed by the operator.

20,980.—MOULDING BRICKS, TILES, &c.: *N. Collier.*—The mould-box, which may be lined with steel plates that project above its upper edge, slides upon vertical bolts on which are coiled springs that press it upwards to a limited amount, the plunger has rounded or bevelled edges to bear against similar edges on the loose plates forcing them outwards and preventing the escape of clay by their pressure against the lining plates of the mould-box, whilst air can escape through holes in the plates, but clay cannot escape owing to the upper die being rabbeted to fit the box's inside lining; when the brick or tile is placed into the mould the upper die is forced downwards, and the mould-box with it at the same time.

21,003.—REPAIR OF GAS AND WATER MAINS, PIPES, &c.: *A. E. Barnett.*—The device consists of an elongated collar or socket, which is fitted over the pipes or mains, and has two flanged parts, strengthened with webs, and bolted together. A ridge on the upper flange fits into a groove in the lower flange with lead or other packing; if a branch is needed, the socket of the branch projects inside either of the two flanged parts of the collar to fit into the main. The branch socket may be separate from or form a part of the flange.

21,069.—FASTENINGS FOR DOORS, SASHES, CASEMENTS, &c.: *A. Barter.*—A link has a set-screw, and is mounted upon a bracket on one of the sashes so that it can engage with a hook on the other sash, the two sashes being drawn together by a tightening of the screw in the link after the latter has been placed over the hook. The link may be fitted to slide in grooves in the end of a cylindrical pivot, or guided by pins placed far enough apart to allow it to be depressed when its operation is not required.

21,089.—PLUG COCKS: *Landers, Feary, & Clark.*—In order to convert a stop and waste cock into a right or left hand cock the inventors put the handle's head upon a squared projection of the plug, so that its stop meets one of two shoulders as soon as the plug-way forms a connection between the main and the house-service pipes, a stop upon the plug meets one of the shoulders as the plug is turned back, thus connecting the service pipe with the waste nozzle by means of two passages.

21,110.—ELECTRICAL ARC LAMPS AND GLOBE-HOLDERS: *Allgemeine Elektricitats-Gesellschaft (of Berlin).*—For a clutch lamp having an enclosed arc, the upper carbon is passed through a circular clutch, to which an electro-magnet's armature (carried on a plate which sustains the inner globe and lower carbon) is connected by levers and links; the upper carbon is centrically maintained by means of a cover upon the inner globe, which rests thereupon and is kept in position by guide-rods, the bottom of a cylindrical casing, which is suspended by hooks and a sling, receives the outer globe which is cemented therein. The clutch comprises a block, having radial slots for rollers, together with a rounded slot for the short axles on the rollers; a lowering of the clutch moves the rollers outwards and upwards as they impinge against a ringed stop so as to disengage the carbon; the lamp-plate-rests upon a casing, being retained in position by means of pins that engage in slots in the sling, so as to close the outer globe and the cylindrical casing above it.

21,185.—GULLEY TRAPS: *J. Johnson.*—The invention affects gulley traps made under No. 10,028 of 1896, wherein is substituted a trapping-bowl carried by a plate instead of one made in a piece with the outlet; if the outlet is P-shaped the bowl is not required, the pipe being provided with guide-feathers, whilst the silt-box also can be dispensed with by making the pipe extend beyond the plate.

21,233.—SAFETY SUSPENDING OR RETAINING APPARATUS FOR HOISTS, WINDLASSES, WINCHES, AND OTHER LIFTING APPLIANCES: *W. T. Eades & T. Matthews.*—To improve their No. 17,948 of 1897 the inventors have devised a contrivance whereby a pair of discs which have inclined meeting faces and projecting lugs respectively upon their inside peripheries, is placed within a recess of the framing of a geared pulley-block; the discs are rotated upon one another by means of a projection on the spindle which the hand-wheel turns, and in such a manner that they move out of contact with the closing-plate, but if the load falls the discs are rotated upon one another by a projection on a loose pinion so that their outer sides press upon the closing-plate and the bottom of the recess, and in so doing form a brake; by a modification the contrivance may be applied to ungeared pulley-blocks.

21,266.—DOOR CHECKS: *B. Turner.*—The arm of a T-shaped lever is connected to the piston-rod of a check cylinder, which is pivotted to the cross-bar of the framing, and teeth on the lever engage with correrponding recesses on the arm of the door pivot. When the door is opened a groove on the boss of the door pivot's arm engages with a pin upon one of the two extended arms of the T-shaped lever, so as to thereby prevent the lever and piston from shifting out of position until the closing of the door again brings the teeth into engagement.

21,386.—WINDOWS: *J. Hayton.*—For sliding stiles, with sashes pivotted thereto, which may be readily reversed, or removed, the inventor provides that the bolt or pivot which joins the sash to the stile shall turn either within a slotted plate or between bearing-plates, and shall be removed by raising the pivot out of the slot or by taking away one of the bearing-plates. When the pivot handle is turned upwards into a horizontal position the stile is drawn tightly against the sash and holds it in place; when the handle is turned downwards the sash is released by the forcing outwards of the stile—a pin or screw entering a helical groove in the pivot. The stiles are T-shaped in section, and slide in linings and beads.

21,394.—URINALS: *P. Bright.*—The novelty lies in an arrangement whereby each stall of a system of urinals shall drain into the gutter by means of an open-topped channel; the gutter and the several channels are covered by a pivotted grating.

21,435.—PLUG COCKS: *S. Bamforth.*—The object of the invention is to prevent corrosion where the valve is coated with lead or similar material; around the ends of the passage-ways through the plug are put end rings of phosphor-bronze or other hard metal; by another method the whole interior of the passages may be similarly lined.

21,456.—CEMENT, CONCRETE, ARTIFICIAL STONE OR WOOD, PRESERVATIVE COMPOSITION, &c.: *C. Heap & T. Oddy.*—To a solution of chloride of magnesium and silicate of soda is added a small quantity of hydrochloric acid, and silica and lime are added to the gelatinous precipitate obtained from the solution: for the making of (1) bricks, tiles, artifical stone, and similar goods, the mass is rendered plastic (for purposes of moulding) by the addition of water, and various broken or powdered materials—such as ground or broken glass, quarry marble or stone-cutting refuse, asbestos, plaster of Paris, fine quartz, refuse sand from glass works, clay, sawdust, cork, slag, sheet-iron cuttings, wood and paper pulp, fibre, shale, gravel, retort-scale, ironstone, hay, staw, &c.; (2) cement, by drying the material and then grinding it; and (3) a paint or coating for metal work, a small amount of arsenic is added—an addition that is also made if metal clippings are incorporated with the composition.

21,473.—VALVES AND COCKS (BALL AND FLOAT): *A. Platford.*—An india-rubber valve or cushion bearing against a seating at the curved end of the service pipe is carried upon the float arm, if the cock is placed under the water—in which position the noise will be lessened—a chain connects the lever to the float.

21,492.—DRAINS AND GULLEY TRAPS: *W. Crowther.*—A circular trap, made in one casting, is divided by a vertical partition that extends along nearly all of its length, then one half of the trap is divided into two quadrant-shaped portions, which are covered in with a semi-circular plate; the water passes through the outer chamber into one of the quadrant shaped portions, whence, flowing over the covering plate, it finds its way down the discharge pipe.

21,515.—SAWING OF STONE: *S. Keighley & R. T. Hardisty.*—In order to reduce the wear of the pillars the inventors adopt adjustable wearing plates, against which the frames may bear, and furnished with (or without) rollers. The plates are secured in slides that rise or fall together with the frame, by means of their attachment to the other slides from which the frame swings, or by means of additional rollers resting on the frame.

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## SOME RECENT SALES OF PROPERTY:

### ESTATE EXCHANGE REPORT.

January 12.—By HORNBY & CRANSWICK (at Hornsea).

| | |
|---|---|
| Great Cowden, Yorks.—A freehold farm, containing 227¾ a. | £2,600 |

January 16.—By J. & R. KEMP.

| | |
|---|---|
| Regent's Pk.—5, Osnaburgh-ter., and 4, Frederick-mews, u.t. 23½ yrs., g.r. 5*l*., r. 111*l*. | 1,000 |
| 53, York-ter., u.t. 22½ yrs., g.r. 21*l*., r. 75*l*. | 450 |

January 17.—By DEBENHAM, TEWSON, & Co.

| | |
|---|---|
| Old Kent-rd.—Glengall-rd. f.g. rents 100*l*. 19s., reversions ranging from 23 to 26 yrs. (in lots).. | 4,155 |
| Glengall-ter., f.g. rents 21*l*., reversion in 27 yrs. | 860 |

By A. PREECE (at Shepherd's Bush).

| | |
|---|---|
| Hammersmith.—23 and 25, Raynham-rd., u.t. 65 yrs., g.r. 10*l*. | 450 |
| 6, Overstone-rd., u.t. 64 yrs., g.r. 6*l*., r. 28*l*. | 325 |
| 19, Mall-rd., u.t. 64 yrs., g.r. 7*l*., r. 42*l*. | 400 |
| Fulham.—16, May-st., u.t. 64 yrs., g.r. 6*l*., r. 26*l*. | 230 |
| Shepherd's Bush.—17, 19, 32, 34, 36, and 38, Leffern-rd., u.t. 53 yrs., g.r. 30*l*. | 875 |
| 39 and 41, Melina-rd., u.t. 53 yrs., g.r. 12*l*. | 340 |
| 3, 5, 7, and 9, Ellerslie-rd., u.t. 64 yrs., g.r. 24*l*., r. 112*l*. | 1,050 |
| Notting Hill.—14, Silchester-ter., u.t. 64 yrs., g.r. 6*l*. 6s. | £200 |
| 3a, Acklam-rd., u.t. 62 yrs., g.r. 5*l*. 10s., r. 34*l*. | 265 |
| 325, Ladbrook-grove, u.t. 64 yrs., g.r. 10*l*. 10s., r. 35*l*. | 255 |
| 11, Raymede-st., u.t. 62 yrs., g.r. 7*l*. 10s. | 175 |
| 49, Swinbrook-rd., u.t. 64 yrs., g.r. 7*l*., r. 28*l*. | 285 |
| 39, Blagrove-rd., u.t. 63 yrs., g.r. 6*l*., r. 28*l*. | 205 |
| Westbourne Pk.—43, All Saints'-rd., u.t. 62 yrs., g.r. 10*l*., r. 38*l*. | 300 |
| 23, Edenham-st., u.t. 61 yrs., g.r. 7*l*. | 170 |

January 18.—By FIELD & SONS.

| | |
|---|---|
| Hyde Pk.—14 and 14a, Lancaster-st., u.t. 39 yrs., g.r. 24*l*. | 1,000 |
| 2, Brook-mews North, u.t. 39 yrs., g.r. 4*l*. | 330 |
| Old Kent-rd.—93, 95, and 96, Avondale-sq., u.t. 56 yrs., g.r. 16*l*. 10s. | 930 |
| Camberwell.—Camberwell-rd., i.g.r. 45*l*., u.t. 62 yrs., g.r. 15*l*. | 615 |
| Mansion-st., i.g.r. 30*l*., u.t. 62 yrs., g.r. 15*l*. | 280 |
| Blackfriars.—7, Bennett-st., f., r. 94*l*. 5s. | 960 |

By BEARD & SON.

| | |
|---|---|
| Bayswater.—Chepstow Tavern-mews, i.g.r. 128*l*., u.t. 44 yrs., g.r. nil | 2,320 |
| 56, Porchester-rd., and 1 and 2, Celbridge-mews, u.t. 45 yrs., g.r. 15*l*. | 1,810 |
| 43, Archer-st., u.t. 45 yrs., g.r. 7*l*. 7s., r. 50*l*. | 510 |

*Contractions used in these lists.*—F.g.r. for freehold ground-rent; l.g.r. for leasehold ground-rent; i.g.r. for improved ground-rent; g.r. for ground-rent; r. for rent; f. for freehold; c. for copyhold; l. for leasehold; e.r. for estimated rental; u.t. for unexpired term; p.a. for per annum; yrs. for years; st. for street; rd. for road; sq. for square; pl. for place; ter. for terrace; cres. for crescent; yd. for yard, &c.

## PRICES CURRENT OF MATERIALS.

### TIMBER.

| | | |
|---|---|---|
| Greenheart, B.G. ton | 8/0/0 | 0/0/0 |
| Teak, E.I. ....load | 10/10/0 | 15/10/0 |
| Sequoia, U.S. ft. cu. | 1/9/0 | 2/0/0 |
| Ash, Canada, load | 3/17/6 | 5/5/0 |
| Birch, do. | 3/0/0 | 5/0/0 |
| Elm, do. | 4/12/6 | 5/15/0 |
| Fir, Dantsic, &c. | 2/0/0 | 4/0/0 |
| Oak, do. | 3/5/0 | 3/15/0 |
| Canada | 4/0/0 | 6/0/0 |
| Pine, Canada red. | 0/0/0 | 0/0/0 |
| Do. yellow | 4/7/6 | 6/5/0 |
| Lath, Dantsic, fath | 4/10/0 | 5/10/0 |
| St. Petersburg.. | 4/0/0 | 6/10/0 |
| Wainscot, Riga, &c., log | 3/15/0 | 5/15/0 |
| Odessa, crown | 3/15/0 | 5/15/0 |
| Deals, Finland 2nd & 1st std. 100 .. | 9/15/0 | 10/5/0 |
| Do. 4th & 3rd.. | 9/15/0 | 10/5/0 |
| Do. Riga | 8/5/0 | 9/5/0 |
| St. Petersburg, 1st yellow | 11/15/0 | 14/5/0 |
| Do. 2nd yellow. | 10/15/0 | 12/5/0 |
| Do. white | 9/15/0 | 11/15/0 |
| Swedish | 9/15/0 | 16/15/0 |
| White Sea | 10/15/0 | 18/0/0 |
| Canada, Pine 1st | 18/15/0 | 25/5/0 |
| Do. do. 2nd .. | 13/15/0 | 17/0/0 |
| Do. do. 3rd, &c. | 6/0/0 | 10/0/0 |
| Do. Spruce, 1st. | 8/10/0 | 10/10/0 |
| Do. do. 3rd and 2nd | 7/5/0 | 8/10/0 |
| New Brunswick | 7/5/0 | 8/0/0 |
| Battens all kinds. | 5/0/0 | 16/0/0 |
| Flooring boards, sq., 1 in., prep. 1st | 9/6 | 16/3 |
| Do. 2nd | 8/0 | 13/3 |
| Other qualities— | 6/3 | 7/0 |
| Cedar, Cuba, ft. | /4 | /4½ |
| Honduras, &c.. | /3¼ | /4½ |
| Mahogany, Cuba. | /5¼ | /7 |
| St. Domingo, cargo av. | /5 | 1/3 |
| Mexican, do. do. | /3¼ | /4 |
| Tobasco, do. do. | /4 | /6½ |
| Honduras, do. | /4 | /6 |
| Box, Turkey, ton. | 4/0/0 | 15/0/0 |
| Rose, Rio | 7/0/0 | 14/0/0 |
| Bahia | 6/0/0 | 12/0/0 |
| Satin, St. Doming. | /5 | 1/0 |

### TIMBER (*continued*).

| | | |
|---|---|---|
| Satin, Porto Rico | 0/0/9 | 0/2/0 |
| Walnut, Italian .. | 0/0/3 | 0/0/7 |

### METALS.

| | | |
|---|---|---|
| Iron—Pig, in Scotland ....ton | 2/14/11 | 0/0/0 |
| Bar, Welsh, in London | 6/0/0 | 6/5/0 |
| Do. do. at works in Wales | 5/15/0 | 5/17/6 |
| Do. Staffordshire, in London | 6/5/0 | 7/10/0 |
| COPPER—British cake and ingot | 70/0/0 | 70/10/0 |
| Best selected .. | 70/10/0 | 71/0/0 |
| Sheets, strong.. | 73/0/0 | 75/0/0 |
| Chili bars | 66/13/9 | 0/0/0 |
| YELLOW MTL. lb. | 5⅝d. | 6d. |
| LEAD—Pig Spanish ....ton | 13/5/0 | 0/0/0 |
| English com. Brands | 13/10/0 | 0/0/0 |
| Sheet, English 6 lbs. per sq. ft. and upwards .. | 14/10/0 | 0/0/0 |
| Pipe | 15/0/0 | 0/0/0 |
| ZINC—English sheet ....ton | 28/10/0 | 0/0/0 |
| Vieille Montagne | 29/10/0 | 0/0/0 |
| Spelter | 25/10/0 | 25/12/6 |
| TIN—Straits | 110/5/0 | 0/0/0 |
| Australian | 110/15/0 | 111/0/0 |
| English Ingots.. | 113/0/0 | 114/0/0 |
| Banca | 0/0/0 | 0/0/0 |
| Billiton | 0/0/0 | 0/0/0 |

### OILS.

| | | |
|---|---|---|
| Linseed ....ton | 17/0/0 | 0/0/0 |
| Cocoanut, Cochin | 27/15/0 | 0/0/0 |
| Do. Ceylon | 24/10/0 | 0/0/0 |
| Palm, Lagos | 21/15/0 | 0/0/0 |
| Rapeseed, English pale | 22/5/0 | 0/0/0 |
| Do. Brown | 20/15/0 | 0/0/0 |
| Cottonseed ref. .. | 15/0/0 | 16/0/0 |
| Oleine | 17/0/0 | 18/0/0 |
| Lubricating U.S. | 0/5/3 | 0/7/6 |
| Do. Black | 0/5/0 | 0/6/6 |
| TAR—Stockholm barrel | 1/5/0 | 0/0/0 |
| Archangel | 0/18/0 | 0/0/0 |
| Turpentine | 31/0/0 | 31/2/6 |

## TO CORRESPONDENTS.

"Nisi Dominus" (no objection).—E. H. & Son.—C. S. & Son.—R. G. S. (appeared in our last issue).—C. C. H.—R. & W. (amounts should have been stated).—W. S. (too late; next week).

NOTE.—The responsibility of signed articles, letters, and papers read at public meetings, rests, of course, with the authors.

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Letters or communications (beyond mere news items) which have been duplicated for other journals are NOT DESIRED.

We are compelled to decline pointing out books and giving addresses.

Any commission to a contributor to write an article is given subject to the approval of the article, when written, by the Editor, who retains the right to reject it if unsatisfactory. The receipt by the author of a proof of an article in type does not necessarily imply its acceptance.

All communications regarding literary and artistic matters should be addressed to THE EDITOR; those relating to advertisements and other exclusively business matters should be addressed to THE PUBLISHER, and *not* to the Editor.

## TENDERS.

[Communications for insertion under this heading should be addressed to "The Editor," and must reach us *not later than* 10 *a.m. on Thursdays.* N.B.—We cannot publish Tenders unless authenticated by the name and address of the sender; and we cannot publish announcements of Tenders accepted unless the amount of the Tender is given, nor any list in which the lowest Tender is under £100, unless in some exceptional cases and for special reasons.]

BEDLINGTON (Northumberland).—For the execution of sewerage works, for the Urban District Council. Mr. C. Brawn, surveyor, Bedlington. Quantities by surveyor:—

| | | | |
|---|---|---|---|
| Jacob Robson | £393 8 6 | John Thompson, Gosforth (accepted) | £360 10 9 |
| Robert Johnson | 385 16 1 | | |

BOURNEMOUTH.—For works to be done in connexion with making up the existing part and the proposed continuation of Braidley-road, for the Borough of Bournemouth. Mr. F. W. Lacey, Borough Engineer and Surveyor:—

| | | | |
|---|---|---|---|
| George Troke | £715 | Grounds & Newton, Bournemouth* | £615 |

* Accepted.

BROMSGROVE.—For the execution of street works, Stoke Prior, for the Rural District Council. Mr. H. W. Smith, surveyor, 4, Foregate-street, Worcester:—

| | | | |
|---|---|---|---|
| J. Biggs | £3,394 | Currall, Lewis, & Martin.. | £2,274 |
| Tilt Bros. | 2,708 | G. Trentham | 2,084 |
| R. W. Fitzmaurice & Co. | 2,477 | T. Vale | 2,076 |
| J. Mackay | 2,349 | G. Law, Kidderminster* | 1,999 |
| W. T. Hall | 2,290 | A. Cooper | 1,911 |
| Jones | 2,280 | | |

* Accepted.

BURY (Lancs.).—Accepted at schedule of prices for the execution of street works, Back Ainsworth-road, &c., for the Corporation. Mr. J. Cartwright, Borough Surveyor, Town Hall, Bury:—
Radcliffe & Woodhead, Bury.

CHURCH (Lancs.).—For sewering, &c., Grimshaw and other streets, for the Urban District Council. Mr. W. E. Wood, Surveyor, District Council Offices, Church:—

| | | | |
|---|---|---|---|
| W. Bury | £128 4 0 | L. Sharples | £116 0 10 |
| G. Adams | 122 2 0 | James Grimshaw, Church (accepted).. | 107 3 4 |
| J. Moore | 119 11 4 | | |

DOVER.—Accepted for alterations and additions to 128, Snargate-street, Dover, for Mr. J. Jarry:—

| | |
|---|---|
| Albert J. Dawkins | £312 10 |

ECCLES (Lancs).—For sewering, draining, &c., Back St. Mary's-street, and others, for the Town Council:—

| | |
|---|---|
| *Barton-grove.*—Snape & Sons, Boardman-street, Eccles | £244 8 8 |
| *Back Hampson-street.*—Snape & Sons | 60 9 9 |
| *Back New-lane East.*—Snape & Sons | 248 1 4 |
| *Back New-lane West.*—Snape & Sons | 54 5 0 |
| *Back St. Mary-street.*—Johnson Bros. & Smith, Patricroft | 83 4 3 |

EDGBASTON.—For villa residence, Poplar-avenue, Edgbaston, for Mr. J. Wentworth. Messrs. Bailey & McConnal, architects, Bridge-street, Walsall:—

| | | | |
|---|---|---|---|
| J. Rollason | £1,565 | E. J. Charles | £1,397 |
| W. Hopkins | 1,480 | J. Harley & Son | 1,360 |
| Whitehouse & Sons | 1,449 | Walton Bros. | 1,348 |
| J. W. Smith | 1,420 | J. Mallen, West Bromwich* | 1,330 |
| G. H. Marshall | 1,397 | | |

* Accepted.

FARNBOROUGH (Hants).—For the erection of South Farnborough Workmen's Club, for the trustees. Mr. W. E. Trevena architect, Southampton-road, Farnborough:—

| | | | |
|---|---|---|---|
| Chinchen & Co. | £820 | G. Lunn | £560 |
| E. C. Hughes | 698 | E. Kemp, Frimley* | 548 |
| W. Smith | 580 | | |

* Accepted

FARNBOROUGH (Hants).—Accepted for the erection of two villas on the Hillfield Estate, for Mr. C. Ray, of Plymouth Mr. W. E. Trevena, architect, Southampton-road, Farnborough:—

| | |
|---|---|
| E. Kemp, Frimley | £1,976 |

FORRES, N.B.—For the erection of two semi-detached villas in the Sanquhar Estate, for the Forres Building Company, Limited Mr. John Forrest, architect, Forres:—

| | |
|---|---|
| *Masonry.*—John Mackenzie, Market-street, Forres | £2,138 18 |
| *Carpentry.*—James Robertson, South-street, Forres | |
| *Slating.*—Alex. Forbes, Tytler-street, Forres | |
| *Plastering and Tiling.*—Angus & Ross, Orchard-road, Forres | |
| *Plumbing and Gasfitting.*—Wm. Munro & Son, Urquhart-street, Forres | |
| *Painting and Glazing.*—James Robertson, Urquhart-street, Forres | |
| *Railings, &c.*—Wm. Smith & Son, High-street, | |

FOWEY (Cornwall).—For the construction of a reservoir, for the St. Austell Rural District Council. Mr. T. H. Andrew, engineer, 1 Trevarrick-villas, St. Austell:—

| | | | |
|---|---|---|---|
| J. Shaddock | £900 | Brown & Son | £475 |
| J. P. Isbell | 515 | Oliver & Menear | 465 |
| J. H. Mitchell | 480 | Blamey & Hoskings, Fowey* | 424 |

* Accepted.

HANWELL (Middlesex).—For the erection of an Infants' school Hanwell, for the Managers of the Central London School District. Messrs. J. T. Newman & Jacques, architects, 2, Fen-court, E.C. Quantities by Messrs. R. L. Curtis & Sons:—

| | | | |
|---|---|---|---|
| Hearle & Farrow | £6,597 | Stimpson & Co. | £5,930 |
| F. J. Shopland | 6,229 | F. Nye | 5,793 |
| Battley, Son, & Holness .. | 6,024 | F. J. Coxhead* | 5,489 |
| G. H. Gibson | 6,022 | H. Flint | 5,433 |

* Accepted.

HESTON (Middlesex).—For the erection of a villa residence, for Mr. P. A. Cragg. Messrs. W. S. Cross & Kekwick, architects, 18, Outer Temple, Strand. Quantities supplied:—

| | | | |
|---|---|---|---|
| H. Wall & Co. | £2,074 | T. G. Sharpington | £1,875 |
| Hayworth & Sons | 1,997 | T. Hiscock | 1,849 |
| Wisdom & Son | 1,896 | A. & B. Hanson* | 1,750 |

* Accepted.

KINGSTON.—For making-up Eastbury-road, for the Kingston Corporation:—

| | | | |
|---|---|---|---|
| S. Kavanagh | £595 | S. Atkins | £435 |
| S. Adams | 500 | Wm. Adamson, Kingston* | 409 |
| Free & Son | 490 | | |

* Accepted.

LONDON.—For pulling down and rebuilding the "British Queen," East-street, Walworth, for the New London Brewery Company. Mr. J. Hamilton, architect:—

| | | | |
|---|---|---|---|
| Jarvis & Son | £2,234 | Whitehead | £1,985 |
| W. Smith | 2,003 | Snewin Bros. | 1,845 |

LONDON.—For sundry additions and alterations to the biscuit works, Glamis-road, Shadwell, for Messrs. Meredith & Drew, Limited, under the superintendence of Mr. Frederick Colyer, architect, 14, Victoria-street, Westminster, S.W.:—

| | |
|---|---|
| J. T. Robey, Bow, E.* | £544 |

* Accepted, subject to variations.

LONDON.—For alterations of the "King's Arms," Tabernacle street, for Mr. R. Butlin. Mr. A. E. Pridmore, architect, 2, Broad-street-buildings:—

| | | | |
|---|---|---|---|
| W. Antill & Co. | £700 0 | W. London & Co. | £648 0 |
| Jenrick & Crocker | 686 0 | Lyle Manufacturing Co. | 630 0 |
| A. Hood | 662 0 | Marchant & Hirst | 627 10 |
| C. Hedges | 661 0 | | |

Accepted.

LONDON.—For repairing, alteration to, and extension of black smith's shop (Contract No. 4) at "London Yard," Cubitt Town, E. for Messrs. Yarrow & Co., Limited. Messrs. Bradshaw, Brown & Co., architects and surveyors, Billiter-square-buildings, E.C.:—

| | | No. of weeks to complete. | Price of usable old Bricks. |
|---|---|---|---|
| T. H. Jackson | £4,655 | 21 | 40s. |
| Harris & Wardrop | 3,969 | 16 | 35s. |
| Dove Brothers | 3,755 | 32 | 30s. |
| F. G. Minter | 3,700 | — | — |
| Chafen & Newman* | 3,638 | 20 | 35s. |

* Accepted.

LONDON.—For erecting outside staircases for the Woolwich Union:—

| | | | |
|---|---|---|---|
| Measures | £1,056 0 | St. Pancras Ironwork Co. | £830 0 |
| Haywood Bros., & Eckstein | 847 0 | Wenham & Waters | 820 0 |
| Thomas & Edge | 839 0 | Morwood & Sons | 780 15 |

LONDON.—For overhead traveller at North Woolwich pumping station, for the London County Council:—

| | | | |
|---|---|---|---|
| Musgrave Bros. | £400 0 | Pickerings, Ltd. | £261 0 |
| T. Broadbent & Son, Ltd | 355 0 | Carrick & Ritchie | 250 0 |
| Princes Dry Dock Co. | 341 16 | Flavell & Churchill | 245 0 |
| Rawlinsons, Ltd. | 325 0 | Higginbottom & Mannock | 230 0 |
| J. Thompson | 320 0 | J. M. Henderson | 195 0 |
| J. Carrick & Sons, Ltd. | 278 0 | | |

LONDON.—For alteration of Crossness main engines, for the London County Council:—

| | | | |
|---|---|---|---|
| Fleming & Ferguson | £45,000 | Easton, Anderson, & Goolden, Limited | £24,412 |
| J. Stewart & Sons, Limited | 30,000 | R. Goodfellow | 22,400 |
| Phœnix Foundry Company | 29,750 | Clay, Henriques, & Co., Limited | 19,456 |

LONDON.—For the erection of oak fencing at Southwark Park, for the London County Council:—

| | | | |
|---|---|---|---|
| T. Turner, Limited | £1,790 | M. Marshall | £1,469 |
| B. Horton & Son | 1,625 | B. Batchellor | 1,461 |
| J. & S. Coats | 1,479 | Rowland Bros. | 1,242 |
| J. Stenning & Son | 1,473 | | |

LONDON.—For the construction of the Greenwich footway tunnel, for the London County Council:—

| | | | |
|---|---|---|---|
| ethick Bros. | £142,560 16 2 | T. Taylor | £131,030 0 0 |
| Mowlem & Co. | 135,330 0 0 | J. Cochrane & Sons | 101,800 0 0 |

LONDON.—Accepted for new boiler and hot-water pipes at the Receiving Workhouse, Bear-yard, for the Guardians of the Strand Union. Messrs. W. S. Cross & Kekwick, architects, 18 Outer Tenple, Strand:—

Dent & Hellyer ........ £141

LONDON.—For alterations and fittings to the Receiving Workhouse, Bear-yard, for the Guardians of the Strand Union. Messrs. W. S. Cross & Kekwick, architects, 18, Outer Temple, Strand:—

| | | | |
|---|---|---|---|
| W. Wright | £142 | Love & Co.* | £135 |
| W. Hornett | 140 | | |

* Accepted.

LONDON.—Accepted for new drainage and sanitary work, central yard and buildings Cleveland-street Sick Asylum, for the managers. Messrs. W. S. Cross & Kekwick, architects, 18, Outer Temple, Strand:—

Love & Co., Exeter-street ........ £393

LONDON.—Accepted for shop fittings, 125, High-street, Chiswick:—

W. Vanstone ........ £224

LONDON.—Accepted for sanitary and other alterations at 375, Strand, London:—

W. Vanstone ........ £320

NEATH (Wales).—For the construction of a filter-bed at the Knoll, for the Corporation. Mr. D. M. Jenkins, Engineer, Gwyn Hall, Neath. Quantities by the Engineer:—

| | | | |
|---|---|---|---|
| J. Allan | £1,414 3 4 | Barnes, Chaplin, & Co. | £1,003 18 2 |
| D. Jenkins | 1,109 2 10 | E. Jones, Neath* | 941 8 10 |
| J. Snow | 1,066 16 0 | | |
| W. Jones | 1,050 5 0 | | |

* Accepted.

SCHULL (Ireland).—For the construction of reservoir, filter-beds, pipe-laying, &c., for the Guardians. Mr. Richard Evans, C.E., 53, South Mall, Cork:—

James White ........ £891 18 6
A. W. Smith, Bandon, Co. Cork (accepted) ...... 795 0 0
[Engineer's estimate £811 0s. 0d.]

TEDDINGTON.—Accepted for alterations and additions to Rock Hall and new stabling, for Mr. James Willing, Junior. Messrs. W. S. Cross & Kekwick, architects 18, Outer Temple, Strand:—

Love & Co., Exeter-street ........ £1,560

WALSALL.—For extension to premises, George-street, Walsall, for Messrs. J. Shannon & Son, Limited. Messrs. Bailey & McConnal, architects, Bridge-street, Walsall:—

| | | | |
|---|---|---|---|
| T. Tildesley | £10,000 | J. W. Smith | £9,000 |
| T. Rowbotham | 9,994 | C. Gray Hill | 8,936 |
| J. Harley & Son | 9,975 | Smith & Pitts | 8,900 |
| W. & J. Webb | 9,936 | J. Mallin | 8,850 |
| H. Willcock & Co. | 9,856 | J. L. Jones | 8,832 |
| W. Sapcote & Son | 9,333 | R. Morton Hughes | 8,671 |
| W. Wistance | 9,157 | J. Dallow | 8,450 |
| E. Giles & Son | 9,150 | W. Hopkins, Birmingham* | 8,440 |
| W. Brown & Son | 9,106 | | |

* Accepted.

WALSALL.—For extensions to Metropolitan Bank of England and Wales, Walsall. Messrs. Bailey & McConnal, architects, Bridge-street, Walsall:—

| | | | |
|---|---|---|---|
| W. & J. Webb | £6,550 | W. Wistance | £5,997 |
| J. L. Jones | 6,250 | J. Moffat & Sons | 5,794 |
| Harley & Sons | 6,150 | W. Sapcote | 5,678 |
| T. Rowbotham | 6,075 | J. Mallin | 5,250 |
| H. Willcock & Co. | 6,037 | W. Hopkins, Birmingham* | 4,990 |

* Accepted.

WARWICK.—For additions to workhouse, for the Union Guardians. Mr. F. P. Trepess, C.E., 8, Jury-street, Warwick:—

| | | | |
|---|---|---|---|
| E. Tallip | £189 10 | B. Atkins | £178 10 |
| A. & P. Chaplin | 187 0 | J. Riley, Warwick* | 170 0 |
| J. H. & J. Cashmore | 185 15 | | |

* Accepted.

YSTRAD (Wales).—For additions to laundry at Hospital, for the Rhondda Valley Urban District Council. Mr. W. D. Morgan, architect, 23, St. Mary-street, Cardiff. Quantities by the architect:—

| | | | |
|---|---|---|---|
| Alban Richards | £2,051 18 11 | D. Thomas & Co. | £1,655 0 0 |
| W. E. Willis | 1,920 9 10 | Morgan Bros. | 1,615 19 8 |
| T. Maggs | 1,708 3 0 | Watkin Williams, Pontypridd* | 1,475 0 |
| C. Jenkins & Sons | 1,668 6 6 | | |

* Accepted.

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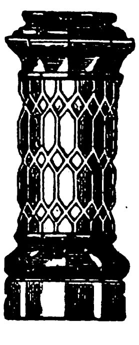

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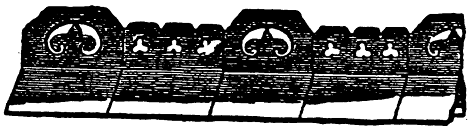

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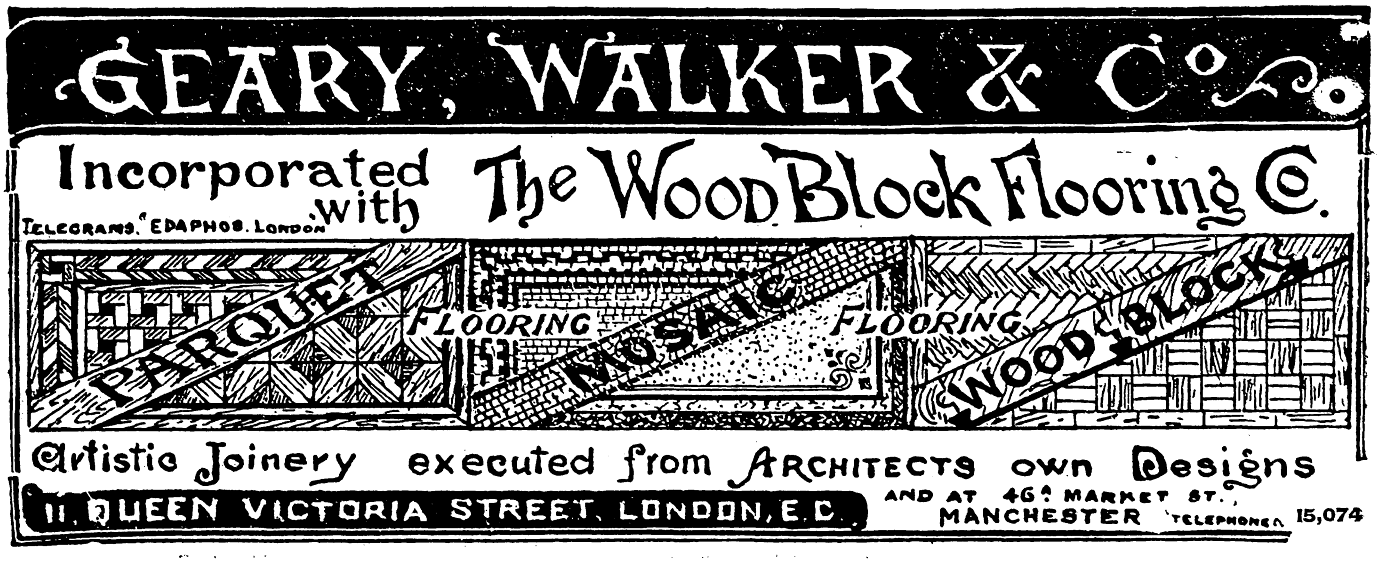
PRIZE MEDAL, CLASS XXIV., EXPOSITION UNIVERSELLE, 1856.



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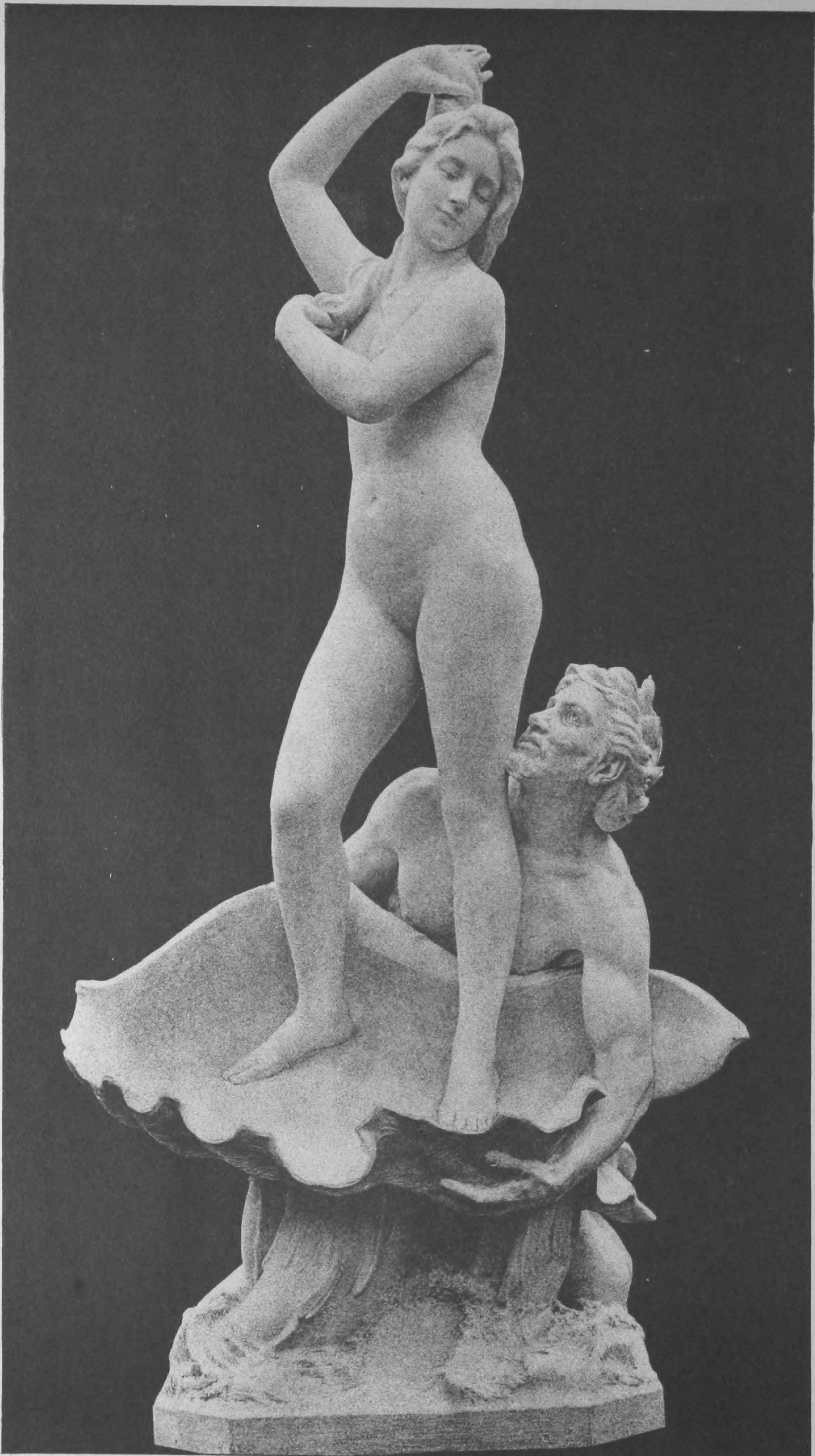

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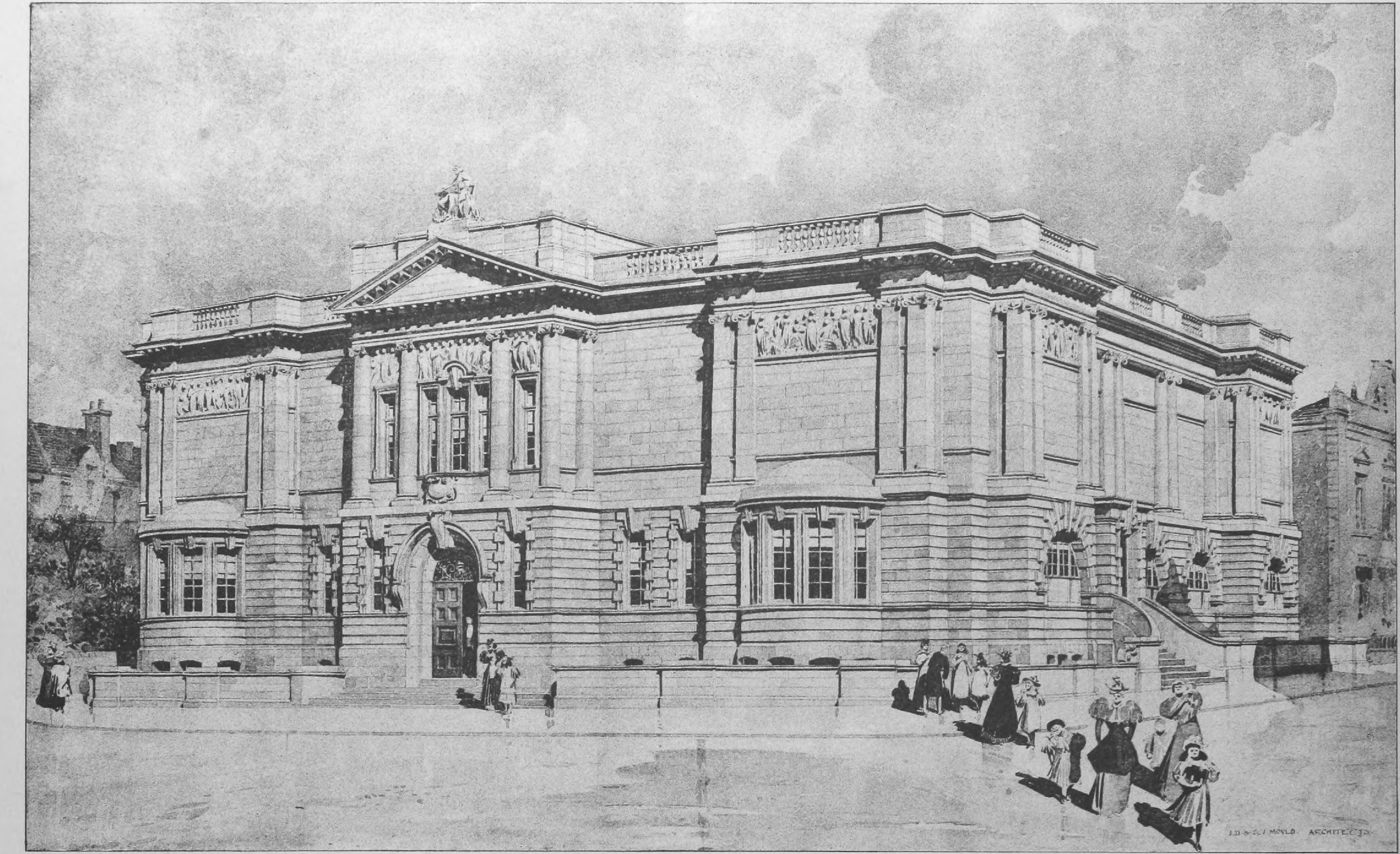
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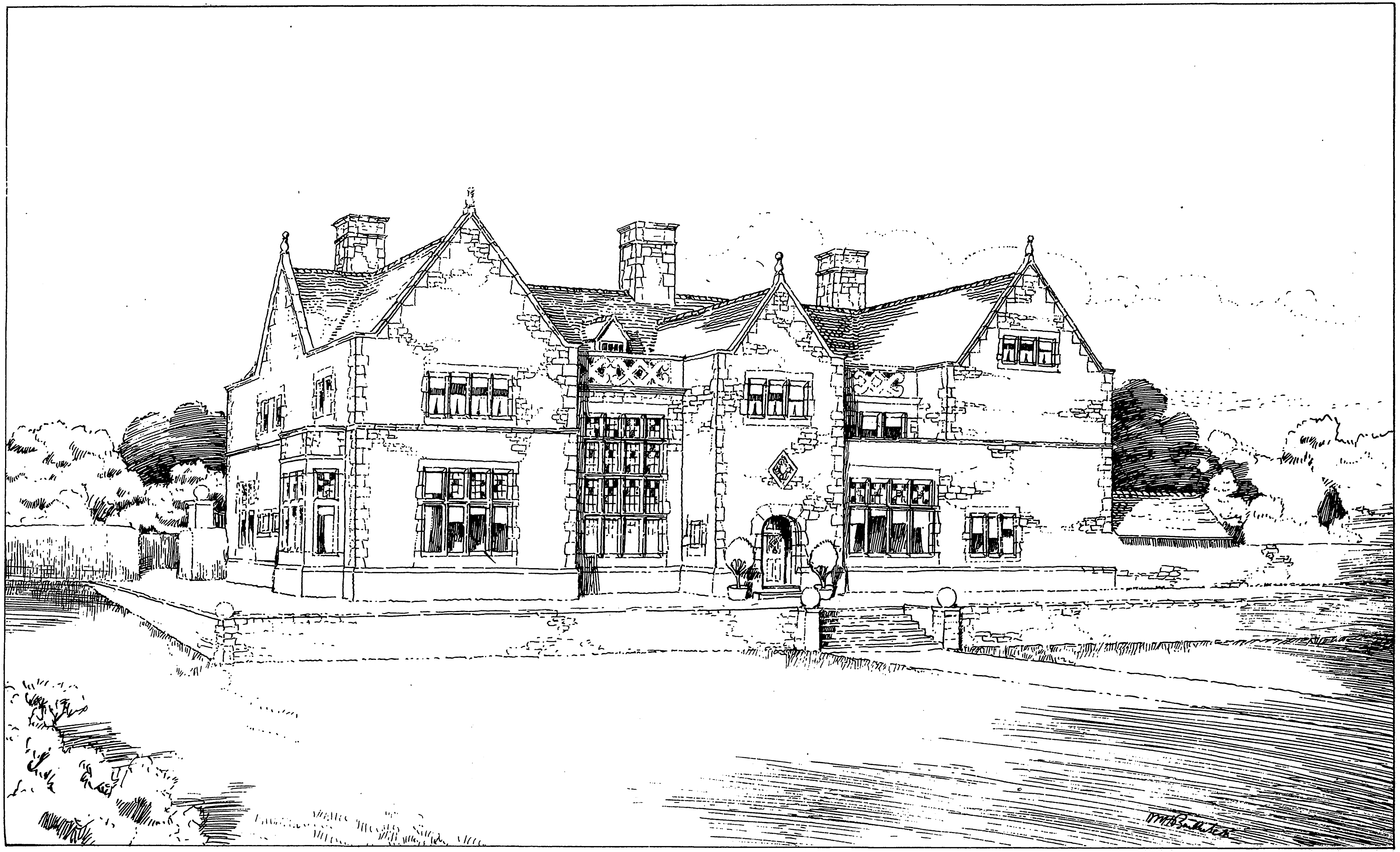

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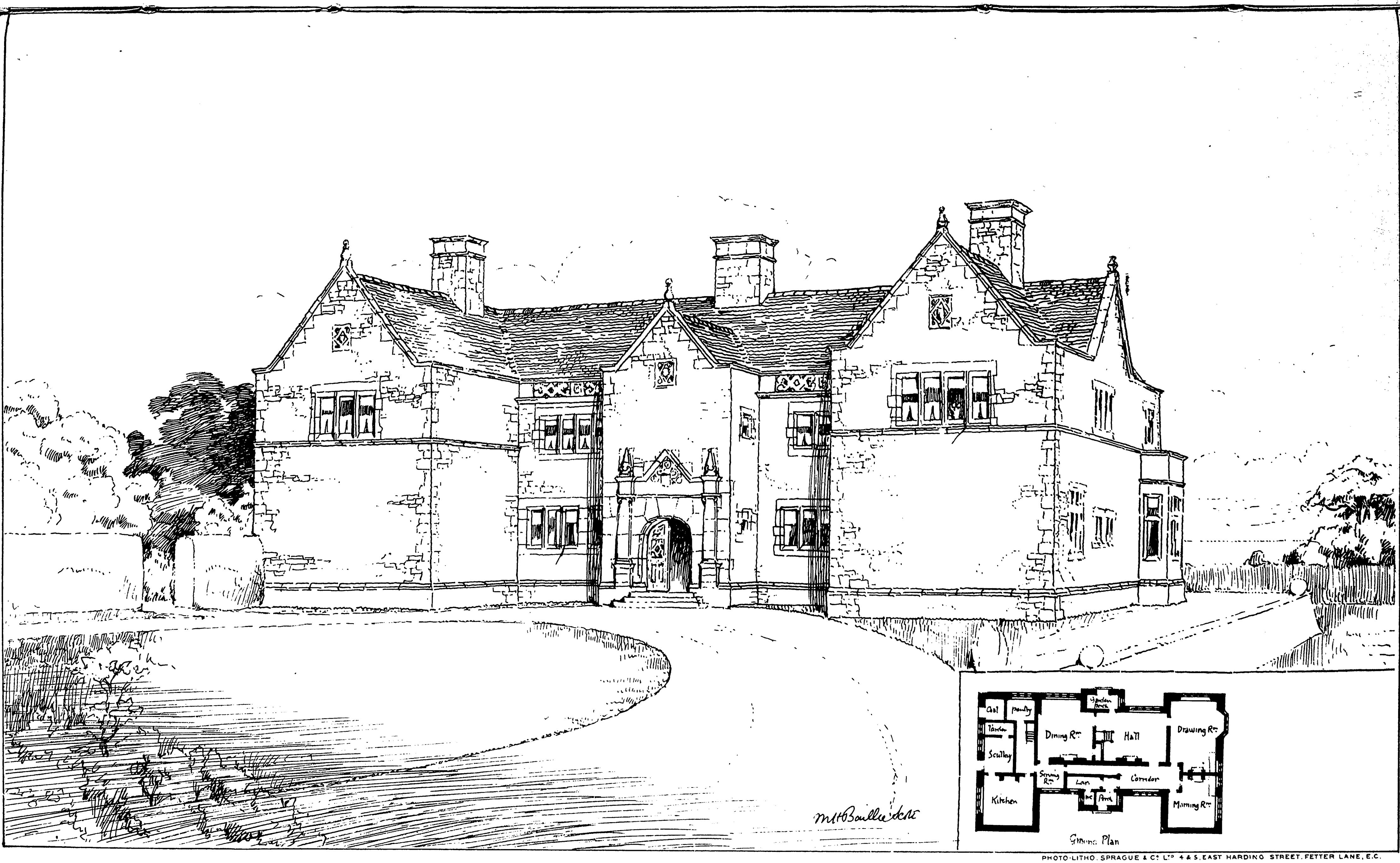
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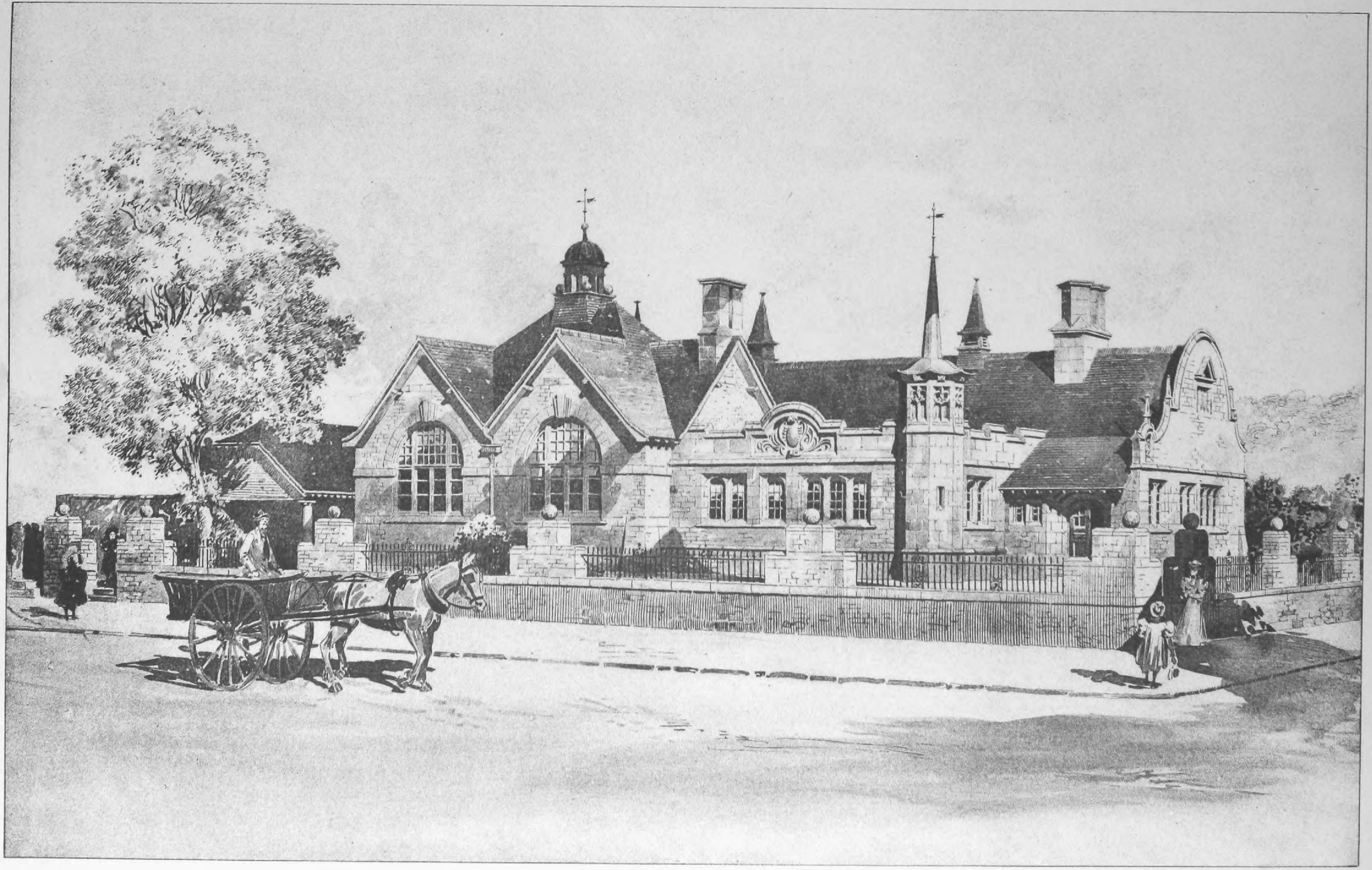

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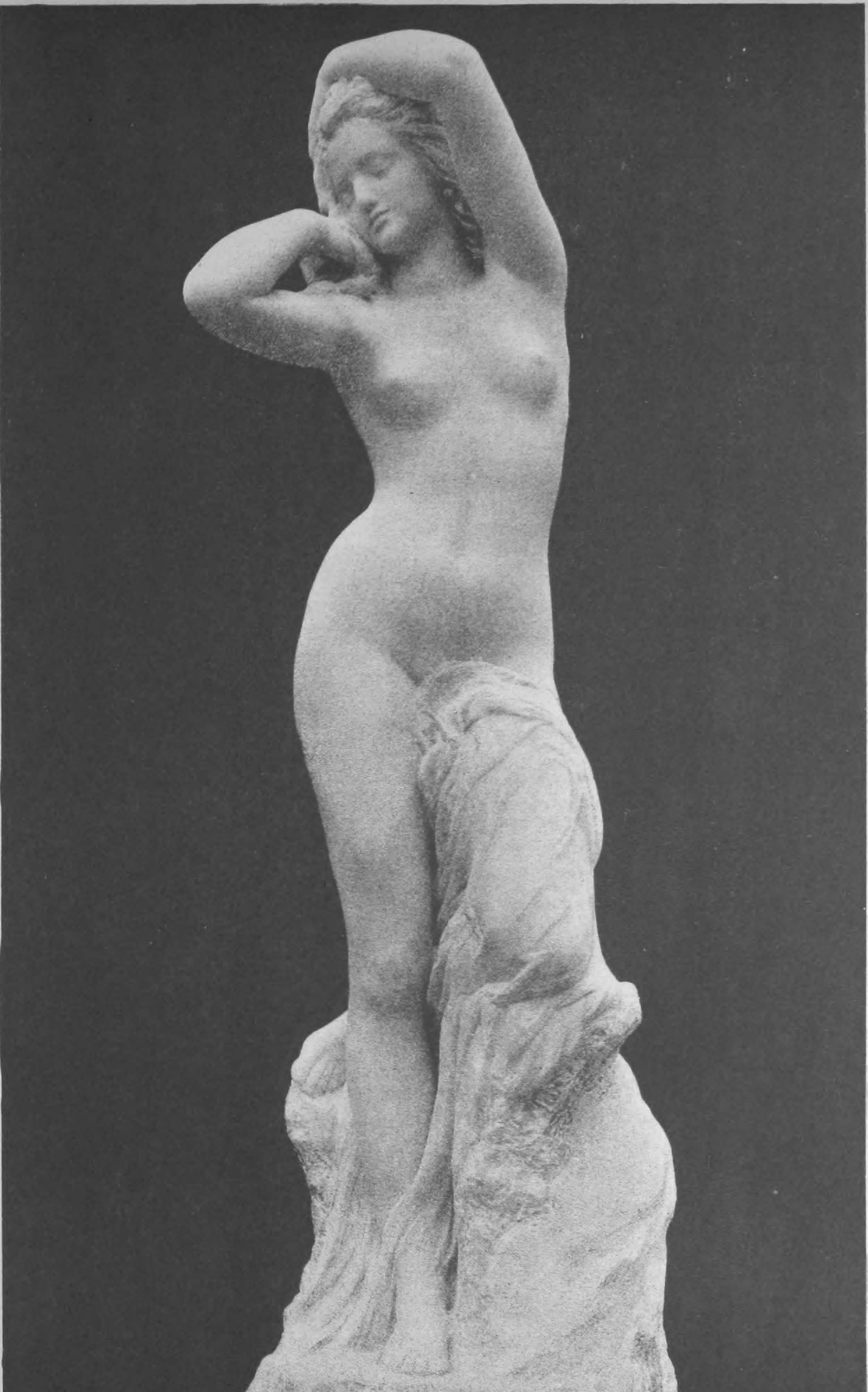

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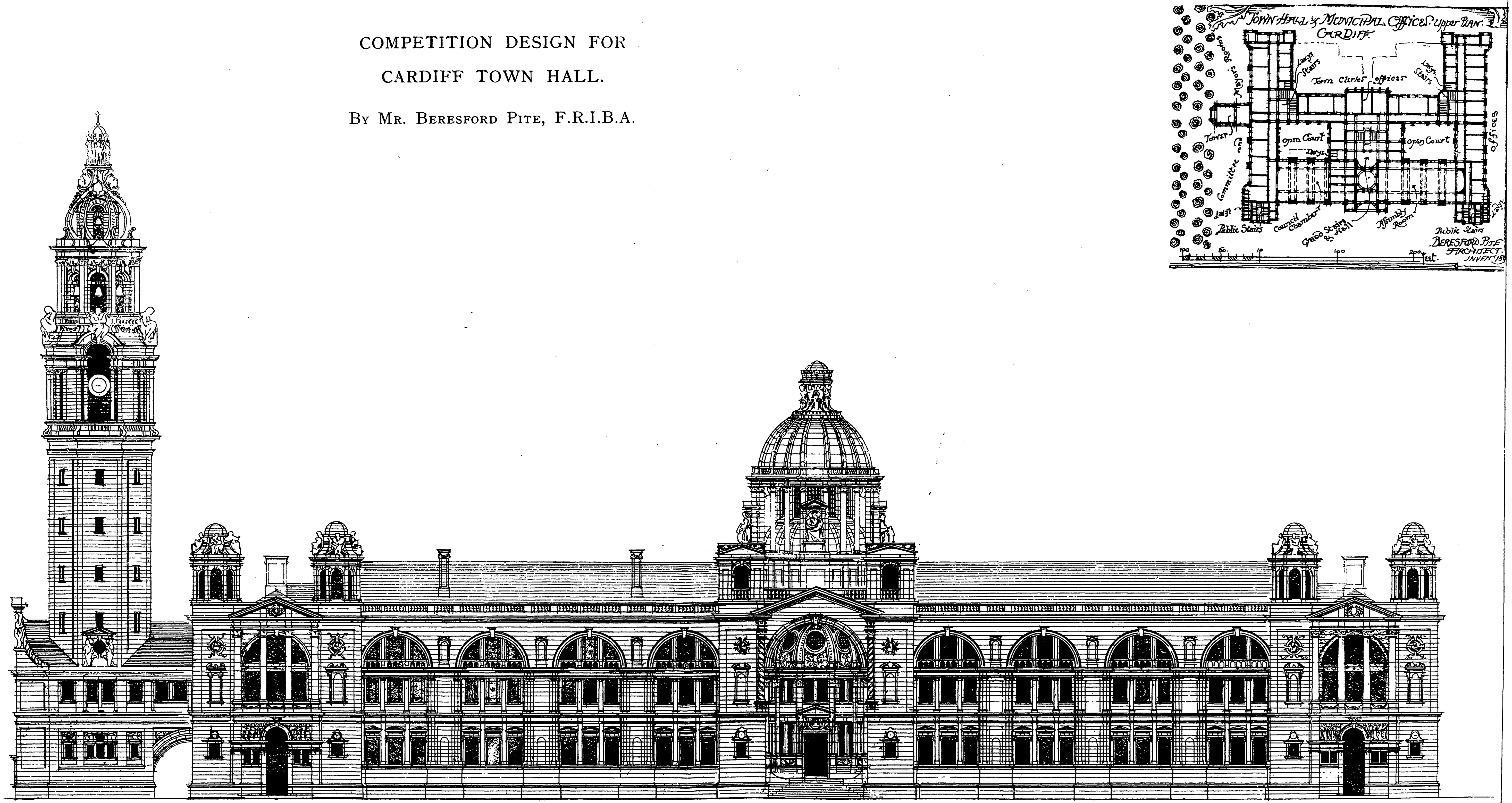
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# The Builder.

VOL. LXXVI. No. 2922. FEBRUARY 4, 1899.

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Scheme for the New Playing Fields, Eton College.—By Mr. F. Inigo Thomas ........ *Double-Page Ink-Photo.*

Design for a Royal Mausoleum, by Mr. J. B. Fulton: Tite Prize Drawings (Institute of Architects), 1899 ........ *Two Single-Page Ink-Photos and Two Single-Page Photo-Lithos.*

The Princess of Wales Theatre, Kennington.—Mr. W. G. R. Sprague, Architect ........ *Single-Page Photo-Litho.*

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## *A Note on the Decoration of St. Paul's.*

SEVERAL letters have appeared in our columns during the last two or three weeks from architects, commenting strongly on the manner in which the interior of St. Paul's is being treated in carrying out Sir W. Richmond's scheme of decoration; and we printed one last week, a very moderate and very sensible letter, from Mr. Little, a member of the Society of Painters in Water-colours. We have received two other letters from architects this week, but do not think it worth while to continue the correspondence, which is rather a repetition, and in which we observe that none of the leaders of the architectural profession have taken part; whether from indifference, or because they are averse to attacking the distinguished painter engaged on the work, we cannot say; the latter is the more probable reason.

We are not surprised that there should be a good deal of strong feeling in regard to some features in the decorative scheme that is in progress; but the criticisms are rather discounted by the fact that some of them are too strong and all of them come too late—for the present section of the work at all events. Some years ago, at a meeting at the Society of Arts, when Sir W. Richmond read a paper on the subject (when only one bay of the choir roof had been done), the Editor of this journal, in the course of the discussion following the paper, ventured to suggest that although the method employed of forming the mosaic with rather rough cubes set in cant-wise, so as to give a rich and soft texture to the mosaic surface, was excellent in itself, the character of the work (as well as of much of the design) was not suited to the character of a Renaissance church like St. Paul's, and would be more in place in a building of Byzantine type. The point, however, was not appreciated, and the only apparent result was to make the lecturer and the chairman (one of the Ecclesiastical Chapter of the Cathedral) rather angry. They will now be likely to find that everybody will be telling them what they refused to listen to then.

When Sir W. Richmond's coloured studies for the decoration of St. Paul's were first exhibited at the New Gallery, they created a most favourable impression; and the revival of the system of setting the mosaic *in situ* was also an interesting development. Of course it was easy to see at a glance that the decorative scheme as a whole was of a kind which Wren never for a moment contemplated; but then it might reasonably be replied that Wren's ideas of coloured decoration, like those of other Englishmen of his day, were so very superficial that they could hardly be taken too seriously into account. If the possible paintings or mosaics which Wren spoke of for the cupolas and the apse had been carried out in his day, it is hardly likely that they would have been such as we should now admire, though they would no doubt have been more in keeping with the building than the recently executed decoration. There is a good deal that is very good in the choir roof decoration; the rich and soft-looking texture of surface obtained by the special treatment of the mosaic is a charm in itself; but the further the work has been carried the more evident has it become, first, that it is out of keeping with the architectural character of the building; secondly, that it is open to the great difficulty that, having embarked on so rich a scheme of colour in the roof, it is impossible to know where to stop—in a vertical sense at least; horizontally we may come, as we shall have to suggest, to a boundary; but vertically the difficulty of staying the hand seems insuperable. There must be some colour below to support all that colour above.

One point about which our correspondents complain is the treatment of the windows—the "confused gloomy windows," as Mr. Little calls them. When we saw the designs for these windows on paper we liked them very much; they seemed to us to have solved the problem of giving something like Gothic richness to a window which was nevertheless not unsuitable to a Renaissance building; even now we like them in themselves; and surely they are to be preferred to the windows cut up into little plain squares, in the remainder of the cathedral. We confess however, not to have foreseen—what is apparent enough now—the extent to which they would rob the building of light; which again is out of keeping for a Renaissance interior, of which brightness and cheerfulness are the essential qualities. And one is rather surprised that Sir W. Richmond, as a painter, did not himself perceive that if he filled the roof with coloured mosaic designs rather too small in character for their position (for that is one of the mistakes), he would require plenty of white light to see them by. As it is, the effect of the choir now is decidedly gloomy—rich, no doubt, but gloomy; and it is to be feared these windows are a mistake under the circumstances. If the interior had been left uncoloured they would have improved its appearance very much; but now they stop out light that is wanted. We cannot wish that the windows should have been left in their original state; but they might have been treated in a decorative manner which would not have darkened the building so much.

The strictures which have been made in regard to the walls being covered with stencil-like decoration, &c., are rather exaggerated. There is only some painted scroll decoration behind the lettering of the text on the frieze, and some similar decoration on the archivolt of the secondary arches under the dome, to connect the one portion with the other. The lettering of the texts requires some decorative treatment behind it, to give scale to the letters; we do not like this ornament very much, certainly, especially on the archivolts where there is no lettering, and where it looks weak and fidgety; but it is not quite so serious a matter as it is made out to be.

The fact is that, unless all the mosaic is to be removed from the choir again, the work cannot be stopped at the point where it now is, and the criticisms come too late. In spite of mistakes, it has been work very well intended, and it has unquestionably, in a sense, added to the interest and beauty of the interior. It seems essential that the portion under the dome should be completed so as to harmonise to a certain extent with the choir; but here we suggest that there should come what we have called the horizontal boundary of the decoration. The nave and transepts may very well be left as Wren left them, and intended to leave them. We should then have that portion of his architecture entirely intact and unaltered; and there would be nothing unsuitable in the fact of having the colour decoration concentrated on the portions of the cathedra specially used for worship. Only it must be remembered that the decorative treatment of the dome and the drum underneath it is a matter of the most vital consequence to the whole effect of the interior. It would be easy to ruin the building by a mistaken treatment in the decoration of the dome. A year or two ago the Dean of St. Paul's wrote to the *Times* asking for funds to decorate the dome, without the slightest intimation as to what it was proposed to do. Matters cannot be carried on in that light-hearted manner. Before anything is ordered or any money subscribed, we ought to know exactly what it is proposed to do, so that public opinion may be expressed before it is too late. And the opinion of a jury of architects ought to be taken on the subject before anything irrevocable is done. We have not the slightest doubt, of course, that Sir W. Richmond considers himself quite able to decide the whole question without any architectural interference. But that, unfortunately, is one of the points on which we cannot all agree with him.

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## GAS CONSUMERS' COMPLAINTS.

IN all directions complaints are to be heard regarding the quality and price of the public gas supply. Gas companies are charged with supplying bad gas, Local Authorities are reproached for neglecting to guard the consumers' interests, or where the gas is supplied by the Local Authority, with gross mismanagement, and builders are accused of furnishing their buildings with inferior and inefficient gas fittings.

It is true that these complaints are somewhat lacking in novelty, for since its infancy the gas industry has been subject to the frequent spasmodic attacks of consumers of gas, and the increasing number of complaints is but an indication of the fact that the number of consumers is rapidly increasing, and that gas is becoming more and more extensively used as a domestic convenience. Everywhere the proportional consumption of gas during the hours of daylight appears to be steadily increasing, a fact which demonstrates the increasing popularity of gas as a fuel, and affords hope that the present generation may yet see the atmosphere of our large towns rendered clearer and brighter by the general substitution of smokeless for smoky fires.

According to statistics published in the *Gas World*, some 500,000 penny-in-the-slot gas-meters have been fixed during the last eight or nine years in consumers' premises in this country alone, and as most of these are fitted in the homes of workingmen who use gas largely for cooking purposes, it is evident that the general substitution of gas for coal is no longer beyond the "sphere of practical politics."

Now the value of gas to the consumer depends mainly upon the pressure at which it is supplied, and its illuminating and calorific value. The standard of illuminating power and of pressure is regulated by various Gas Acts, and it is in the power of the different Local Authorities to see that the gas complies with the provisions of these Acts. Hitherto a standard calorific value has not been enforced, but should some means be found of cheaply enriching water-gas to the sixteen-candle standard, without at the same time increasing the calorific value of the water-gas to approximately that of sixteen-candle coal gas, it is probable that a calorific standard would have to be adopted.

It is not our intention to discuss the prices charged for gas in different parts of the country, since these prices are necessarily regulated by local conditions, but a few words may be devoted to the subject of the price of gas in London, a subject which is just now agitating the minds of many gas consumers and Local Authorities. In London we have three distinct gas companies supplying gas of the same quality, and yet charging widely different prices, with the additional anomaly that the company which supplies nearly double the quantity of gas sold by the two remaining companies together, is the company which charges the highest price for gas. Those consumers of the Gas Light & Coke Company who live north of the Thames are charged 3s. per 1,000 cubic feet of gas, while the consumers in the district of the Commercial Gas Company are charged only 2s. 6d., and the consumers in the district of the South Metropolitan have to pay only 2s. 2d. per 1,000 cubic feet of gas. It is only fair to add that whereas meter rents are still charged by the two latter companies, they have been abolished by the former; but this is a trifling matter compared to the difference in prices. That a small manufacturing company should have to charge more than a large one is comprehensible, but we fail to understand why the largest manufacturer should have to charge a price so much greater than its neighbours, and it is not surprising that consumers in one part of the town should object to paying 38 per cent. more for gas than consumers in another part of the same town.

We do not anticipate that any startling revelations will result from the inquiry of the Select Committee that was appointed during the last session of Parliament to inquire into the charges made for gas in the metropolis, nor do we know whether the order of reference can be so construed as to include an inquiry into the alleged faulty management. Such errors as may have been made in finance or in management are apparently errors of the past, but it would be interesting to know whether there is any truth in the rumour that the Beckton works, the largest in the world, are a financial failure, as compared with the smaller works; and if so, to what extent.

But to return to the complaints of "bad" gas. The fact that in London complaints are constantly being made that the gas companies are supplying gas of very inferior quality is excellent evidence that, while a gas company is sending out gas of more than standard quality, it may in all sincerity be accused of supplying bad gas. For in London there are over twenty testing stations, well distributed throughout the Metropolis, and in these stations the gas is *daily* tested by thoroughly qualified officials paid by the controlling authorities. Hence the assumption that any of the London companies persistently send out gas of less than standard quality is mere nonsense. In London at least one must look for some cause other than the perfidy of the gas manufacturer, for the undoubted fact that a large number of consumers obtain a very unsatisfactory gas supply.

Nine complaints of bad gas in every ten are due to the inefficiency of the supply, and not to the inferior quality of the gas. This inefficiency may be due to faults in the gas company's fittings, or to faults in the consumer's fittings. The size of the service pipe from the street main to the consumer's meter may be too small, or the service may have become partially blocked with naphthalene, tarry matter, or water; or a ten-light meter may be retained where a forty-light meter should be fixed. In any of these cases the consumer should communicate with the company. But the fault which most commonly calls forth the complaint of bad gas is the insufficient capacity of the service pipes within the building itself. Everywhere we see gas fires and gas stoves supplied by services originally intended for some ten or fifteen flat-flame burners only, and often used, especially in the winter time, simultaneously with the burners. And who does not know the house where the dismal gas-flame in the dining or smoking-room jumps suddenly to a satisfactory brilliancy so soon as the servants turn off the other burners in the house and retire for the night? The remedy is a simple one; but when, as very often is the case, the pipes meander beneath plastered walls and covered floorboards, the annoyance and cost entailed by changing the size of the service-pipes are by no means trifling. Consumers frequently insist upon having extra gas-brackets and gas fires fixed to existing services, and the result is naturally very often far from satisfactory.

In large towns the gas is generally too frequently tested to allow of any great deficiency in quality, and as it is the desire of the gas company to sell as much gas as possible, it is not often that a sufficiently large meter, or service between the street main and the meter, is denied. The company's responsibility terminates at the meter, and should the internal fittings be at fault, the consumer has usually to bear the expense of any alterations he may require. The cost of substituting a large for a small service is considerable in large buildings, but economy in this direction will inevitably lead to dissatisfaction with the gas supply, and probably to unjust vilification of the gas manufacturer.

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## NON-OPERATIVE OPERATIVES.

IF things go on much longer as they are, the word "operative" will acquire a new meaning, as signifying not a man who does work, but a man who refuses to do it; or it may be defined in future dictionaries thus:—"*Operative*—a man engaged and paid to do certain work, who endeavours to avoid doing it himself, and to prevent others doing it." That seems to be what it is coming to.

It is possible that the action of the "National Association of Operative Plasterers," as they humorously style themselves, may have the result, other than was intended, of bringing about a check in this system of striking work and dictating to employers. Things have been pushed to the point when even the most long-suffering of employers of labour (and they are in these latter days a very long-suffering class) may be wrought to a determination to put up with this kind of thing no longer. The National Association of Master Builders have at all events gone so far as to call upon the "Operative" Plasterers for an assurance that they will abandon certain lines of action which are duly set forth in the Master Builders' communication. The mere enumeration of the masters' causes of complaint, reported in another column, indicates the exercise of an unreasonable and petty tyranny such as seems almost incredible. One gathers from this that it is a constant practice to endeavour to coerce foremen and superintendents of plasterers' work into joining the mis-named Association, and if they refuse, to visit their recusancy on the contractor by threatening to withdraw all the men from the job. One would hardly imagine (to use an old-fashioned phrase) that the blessing of Heaven, or of earth either, could rest on an association whose ranks were recruited by such means; and it is a curious example of the difference in the laws of honour and morality which appear to govern the conduct and form the standard of the upper and the lower classes. If any society or association of a professional standing were to adopt any similar means of compelling people to join its ranks, or making it inconvenient to them not to do so, such association and all connected with it would be absolutely disgraced in public opinion. But an association of "operatives" may do anything, apparently; no one expects honour or fair dealing from them. The refusal to work on buildings where any men are employed who do not belong to the sacred association is another form of the same tactics. Suppose a certain number of architects, members of the Institute, who had been invited to take part in a competition, were to send in a statement that they refused to compete because an architect who was not a member of the Institute had been included in the list, and demanded that his name should be struck out; what indignation would be expressed, what contempt passed upon the Institute, as a body capable of so mean a proceeding! Yet in the case of an association of "operatives" this is to be regarded as a natural and every-day kind of proceeding, so common as hardly to call for comment, and regarded by the members of the Association themselves as a spirited policy. If working-men want the upper classes to respect them, they must give up practices which in the upper classes are considered disgraceful. But even more preposterous than these is the practice mentioned in the fifth heading of the Master Builders' "Schedule of Charges," of refusing to accept the employer's decision as to whether certain work is to be done, of right, by the plasterers or by some other workmen, and proceeding to the use of the usual weapon—withdrawing all their members from the work. The employer is the natural arbitrator in such a case, and certainly is the person who knows best which hands are best fitted to carry out the work; but the plasterers, forsooth, are to arbitrate in their own cause, and go off the work in dudgeon if they are not permitted to do so; a kind of behaviour, again, which would be regarded as utterly impossible in the higher ranks of society.

Two letters which we print in the present issue draw attention to the general decline in good work and the general increase, among building artisans, of the endeavour to do as little work as possible for the wage, and to hinder others from doing more. As our correspondent "Clerk of Works" puts it, formerly one man endeavoured to do as much as another; now he endeavours to do as little as another. There is no meaner or more contemptible principle of life. We once heard it remarked with praise of a man in a position of trust in the professional class — "he always does more than is expected of him"; and that is the honourable aim of not a few men in English professional and official life. It is such men as those who are universally trusted and respected, and in the end rise high. But the object of the "operative" seems nowadays to be, always, if possible, to do less than is expected of him; in other words, less than he is paid for. This appears, in fact, to be part of a system now; and we may hope that there are individual workmen who have a higher ideal of duty than that, and who would willingly do better than their associations will allow them to do. But if it is useless to appeal to the sense of honour of those who act on this kind of system, an appeal may perhaps be made with more success to their self-interest; if they can once be made to realise the fact that by cutting down work to a minimum they are cutting their own throats by destroying the trade which gives them a livelihood, they may perhaps listen to this argument though not to that of honour.

An important point is touched on in Mr. Nicholson's letter; the fact that contractors are bound to deliver work by a certain period, while they have to employ workmen on whose labour they cannot reckon. And he suggests that by the Unions themselves a man ought not to be considered a fully-qualified mechanic unless he turns out work at not less than the average rate. Some such reform must certainly be carried out, unless the very name of "operative" is to become a byword, a synonym for a man who does nothing and gets as much as he can for it.

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## NOTES.

The Workmen's Compensation Act.

THE decisions of County Court Judges have not the same binding force as those of a Divisional Court of the Queen's Bench Division or of the Court of Appeal, but they should sometimes be noted. One recently given by Judge Stonor is of some importance. A man working inside a building on a trestle claimed compensation for injury received in the course of his work. The building was above 30 ft. high, but the man was not working on a scaffold on the building, and the Judge held that he was not entitled to compensation. The decision is no doubt right, but it is another example of the absurd injustice of the Act in regard to men who work on buildings. We have called attention to it before, but there can be no doubt that every succeeding example shows the need of amending the Act. If it is good for workmen on high buildings, it is equally good for workmen on low buildings. These instances of injustice occur often in the case of smaller workmen, who, in many ways, are those to whom the Act would—if applicable—be the more beneficial.

Educational Areas.

THE recent meeting of the Executive Committee of the County Councils Association shows pretty plainly that, in the opinion of the Local Authorities who are best able to judge, the areas for secondary education should be the administrative counties (in which term is included county boroughs), with, possibly, here and there modifications. Until the Government produce their Bill, it is unnecessary to consider this particular detail at length, but we can hardly doubt that the county is the only area which can be justified. It is most undesirable to create new local bodies; indeed, it would be better that their number should be diminished. It cannot be doubted that the District Councils should be the educational authority for elementary schools in place of School Boards. There would then be a systematic organisation of education in the country districts — the District Councils having charge of elementary, the County Councils of secondary, education; though we fear that the voluntary schools could not be forced into the system at once. It is probable that if the County Councils become the area for secondary education, this fact will give an impetus to the creation of larger areas for elementary education.

"Practical Sanitary Science."

IT has often struck us as matter for surprise that young architects do not more frequently sit for the examination of the Sanitary Institute in "Practical Sanitary Science." Of course the subject is included in a general way in the Royal Institute of British Architects' Final examination, but a comparison of the questions set by the two Institutes shows that the examination in "Practical Sanitary Science" requires the more detailed and more extensive knowledge. If students think it an easy matter to obtain the certificate of proficiency in this subject, a perusal of some of the questions which have already been set will disabuse their minds of that opinion. The same moral is pointed by the proportion of failures among the candidates during the year 1898; out of forty-one candidates who presented themselves for examination in London and the provinces, no fewer than twenty-three were plucked, a proportion of failures equal to 56 per cent., and in the last two examinations only two candidates passed out of twelve, the failures amounting to 83 per cent. We venture to think that we should hear less of "Sanitary Specialists" and "Sanitary Engineers" if architects would take more interest in sanitary matters, and we know of no better course of preliminary study than that which is required in order to obtain the Sanitary Institute's "Certificate in Practical Sanitary Science."

Electric Wiring Rules.

THE three papers on electric wiring rules, by Messrs. Crompton, Wordingham, and Pigg, which were recently discussed at the Institution of Electrical Engineers, agreed in stating that the present diversity of rules and regulations adopted by fire insurance and supply companies was little to the credit of the profession. For example, as Mr. Drake pointed out, one fire insurance company insists on there being a fuse in every ceiling rose, and another that no ceiling rose should have a fuse. Numerous other cases where the rules are in direct conflict could easily be cited. Professor Ayrton seemed to think that the fire insurance companies were largely to blame for the present want of agreement, but the fire insurance inspectors who spoke subsequently showed that they were really very moderate in their demands as compared with the supply companies, and some of them even expressed their willingness to accept the Institution rules in their entirety. Mr. Crompton and Mr. Wordingham were evidently of opinion that the rules of the Institution were nearly perfect. This, however, is far from being the case, from the consumer's or the scientist's point of view. For example, the resistance of copper is given wrongly, so that we have the anomaly of ordinary soft commercial copper having a conductivity of 102 per cent. when referred to the Institution standard. Again, no test is provided for the resistance between the mains, so that a consumer's meter may be continually registering with no lights on, although his installation has passed the Institution's tests. The worst of the rules is the one concerning insulation resistance. Instead of quadrupling the insulation resistance when the voltage is doubled, the rule only requires that it should be doubled. It is, therefore, inequitably favouring high tension supply at the expense of supply at lower pressures. Again, no distinction is anywhere made in these rules between alternating and direct current supply, or between a two-wire system and a five-wire system. The rules may represent a compromise between the opinions of the various members of the Institution Committee, but an inequitable and unscientific compromise will not command the respect of either the public or of expert electricians.

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Memorials of King-street, Westminster.

ON January 16, 1599, at his lodging in King-street (now being demolished) died Edmund Spenser, "the prince of poets in his time," for lack of bread—as Ben Jonson told Drummond of Hawthornden. He was honourably buried, at the charges of the Earl of Essex, in the south transept, Westminster Abbey—the first poet, after Chaucer, buried there; and his monument, restored in 1778 by Mason, was erected and inscribed by Lady Anne Clifford, Countess of Dorset, Pembroke, and Montgomery. In the account book at the Soane Museum, of "workes done by Nicholas Stone, sen.," is an entry:

> "1625. Monument for Mr. Spencer the Poet. The Countess of Dorset payd me 40*l*."

The original inscription, long ago effaced, stood thus:—

Hic prope Chaucerum situs est Spenserius, illi
Proximus ingenio, proximus et tumulo.

King-street can boast of many famous inhabitants; amongst them were Oliver Cromwell, when Lieutenant-General, who was rated for a house on the west side between the "Blue Boar's Head" (rebuilt in 1750) and Ram s-mews, whither he removed, it seems, in 1643 from Long-acre (where Nicholas Stone was his next neighbour), remaining there until 1649; Dr. Sydenham, in a house on the site of Ram's-mews; Lord Howard of Effingham; the Earl of Dorset; Sir Thomas Knyvett, who captured Guy Fawkes; Julian le Notaire, bookbinder, in 1498, who removed *circa* 1503 to the "Three Kings," without Temple Bar, and whose notarial mark is known to collectors. The October Club used to meet at the "Bell," *temp.* Queen Anne. On January 23, 1683, Evelyn visited Sir Francis North in King-street to congratulate him upon his succeeding the Earl of Nottingham as Lord Keeper. The house was the first one built of brick in the street: and he mentions in his diary, February 27, 1695, that Charles II. was minded "to buy all the street and build it nobly. . . . This might have been done for the expence of the Queen's funeral, which was 50,000*l*., against her desire."* At that time King-street formed the main thoroughfare southwards to Westminster from Charing Cross, though the road was so ill kept that faggots were laid down when the Sovereign went in State to Parliament. The gate, standing at the south-west corner of the (old) Privy Garden, where is now Downing-street, was built by Henry VIII. and pulled down in 1723. It was 35 ft. 6 in. deep, and had a carriageway 12 ft. wide, with two footways, 4 ft. 6 in. in width. The northern, the "Cockpit," or "Holbein's," Gate, standing opposite the later Dover House, was removed in 1750. Sandby made designs for its re-erection at the end of the Long Walk, Windsor.

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The Late Mr. Harry Bates.

THE unexpected death of Mr. Harry Bates, at a comparatively early age, is one of the most serious losses that English sculpture could have experienced at present. As a sculptor he combined the power of ideal poetic conception with that of vigorous and powerful modelling. His "Hounds in Leash" was one of the most powerful examples of the display of energy of action in sculpture which has been seen of late years, while his various bas-relief subjects from Virgil recalled the ideal feeling and purity of line of Flaxman. He treated round or bas-relief with equal success. His great equestrian monument to Lord Roberts, which stood in the court-yard in front of the Royal Academy two or three years ago, though not superior to some of his other works except in scale, made a great impression on the public, and was certainly one of the most effective and dignified pieces of monumental work which has been produced by an English artist.

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New Academicians.

THE Royal Academy have elected the veteran French painter, M. Jules Breton, Honorary Foreign Academician; an honour which comes late in the day, for M. Breton, who may almost be considered to be the founder of the modern French school of paintings of peasant life, the precursor of Bastien-Lepage and Millet, made his reputation in the last generation rather than the present one, and by the popular frequenters of exhibitions his name is possibly almost forgotten. The honour paid him by the Academy may serve at least to revive the recollection of his work and his fame in this country. The three English Associates elected were Mr. Arthur S. Cope, Mr. Alfred East, and Mr. Goscombe John. No one will quarrel with the selection. Mr. Cope has been steadily rising into reputation as a very refined portrait painter; Mr. Alfred East is the author of many beautiful landscapes, marked rather perhaps by sentiment and delicacy of effect than by power; but we think the election of Mr. Goscombe John is the one which will be received with most satisfaction in the artistic world. He is a sculptor who, though he has not hitherto shown remarkable power of ideal conception, has the root of the matter in him; his treatment of the figure is always marked by that kind of knowledge which in sculpture is power; his work is never commonplace, and is characterised by a strong individuality, and he is an artist whom we may expect to produce even better works than we have already had from him.

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Mr. Fulleylove s Sketches of Oxford.

WE rather question whether Mr. Fulleylove has added to his reputation by the collection of small oil sketches of Oxford now on view at the Fine Art Society's Gallery. The former set exhibited ten years ago, of Oxford sketches in water-colour and pencil, interested us much more, and showed the architectural character of the buildings a great deal better. In the present set the artist professes himself to be rather concerned with the general picturesque effects of Oxford than with special buildings. For small sketches, they are rather heavy and loaded in execution, and they do not, to our thinking, convey truthfully the real colour and effect of Oxford. The best are those of places outside the city, and partaking partially of landscape character, such as "Iffley Mill from the River" (48), "Blenheim Park" (32), "Almshouses at Abingdon," and "A Farmstead, Radley" (38). Among the views in Oxford may be mentioned "Holywell-street" (43); "Bishop Heber's Tree" (58), with the mass of white cloud behind it; "New College Tower from the Sheldonian Theatre" (68), an excellent bit of colour; and, certainly the best of all, "St. Mary's Porch and the High" (71), in which the porch with its twisted columns is seen in the foreground, and a distant view of the High-street and its buildings winding away in the sunlight. This is a beautiful little picture, but few of the views come up to this standard, and the exhibition is rather a disappointing one as a whole.

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The Goupil Gallery.

AT the Goupil Gallery there is a "two-man" exhibition of the works by Mr. Wilfrid Von Glehn and M. Monod, an Associate Member of the Société Nationale des Beaux-Arts of France, otherwise known as the "New Salon." Both are "progressive" artists, as the phrase goes. Mr. Von Glehn's paintings are rather decorative panels than pictures; as such they have a good deal of interest. "What Songs the Mermaid whispers to the Gulls" is a very original and effective work in its way,—a half-length of the mermaid with gulls flying round her, and a shimmer of blue and white sea beneath; not real sea (or rocks) but a conventional indication of them. "The Evening Glow-Coast of Brittany" is again merely an effect of Nature conventionalised into a decorative shape. There are also examples of landscape in the ordinary sense, such as "Morning after a Storm" and a "Fresh Breeze," in which there is a fine effect of air and wind, though the sea is treated in rather a mannered way, and there is a predominance of white in many of the paintings which has rather the effect of a trick, and of which one gets tired. The largest painting is a recumbent nude figure with the outstretched plumage of a great swan as a background—again for a decorative effect in white, under the title of "Leda and the Swan." "Decorative panel" would have been just as good a title, and we cannot help suggesting that modern painters might as well dispense with allusions to or illustrations of that very indecent old Pagan legend. The few works by M. Monod are of a higher class; mostly tender and melancholy landscapes painted in a dream-like half-tone The one entitled "Lethe," a nude figure standing beside the "slow and silent stream," either unwilling to drink or mourning over the result of the draught (it will bear either interpretation), is a very poetic work.

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* Queen Katharine, *ob.* February 6 was buried on March 5, 1695.

**The Society of Miniature Painters.**

THE fourth exhibition of this Society, at the Modern Gallery in Bond-street, seems rather like a repetition of the others. All the work is good up to a certain point, but the average miniature portrait, after one has seen a good many, seems rather devoid of artistic interest; correctness and a pretty finish are the main qualities aimed at, and the result is something which is chiefly interesting to the friends of the sitters. Here and there we find an example in which there is an aim at a higher kind of expression, and a variation from the usual enamelled smoothness of finish, as in Mr. Cecil Hobson's "Study of a Head" (68), Mr. Tayler's "Study of a Girl's Head" (80) and Miss Goshawk's "Mrs. Wakefield" (30). Mdlle. Debillemont-Chardon's "Les Vieux" (113) is a fine and carefully worked-out study of four aged figures, but its scale hardly belongs to what is usually understood as miniature painting. There are some miniature studies in landscape, like Mr. Robertson's "Shrimpers on the Sussex Coast" (109), too pretty nudes, "Sea Foam" and "Summer" (102, 107) by Mr. F. Brooks; and Mr. Dudley Hardy's very minute and decorative Eastern subjects (109) are almost gem-like in delicacy and glow, and could be worn as "personal ornaments" in a brooch or necklace—which was perhaps the artist's intention.

**Society of Women Artists.**

THE "Society of Lady Artists" has now become the "Society of Women Artists." We do not know what (if any) change in the aims of the Society is implied by the assumption of the less aristocratic title, but we fear the artistic results are much the same, and the forty-fourth exhibition (at the Suffolk-street Galleries) does nothing to alter our opinion that such a Society is a mistake and is not worth keeping up. It is absurd to pretend that women have any prejudices to contend against in the artistic world; every woman who can paint a picture that is worth exhibiting takes her place in general exhibitions just as well as one of the other sex; and the only result of a women artists' society is to find wall space for those who do not paint well enough to find their way into other exhibitions. Where you see a striking work in this exhibition, you generally find it bears a name well known in general exhibitions. Mrs. Swynnerton, for instance, sends her curious but powerful work "St. Martin's Summer" (384), already exhibited in London; Mrs. Jopling has one or two works (not among her best); Miss Nora Davison exhibits two good shipping scenes, "The End of the Season" and "The End of the Voyage," (107, 113) and Mrs. Marrable a good architectural picture, "Street in Rothenburg" (152). Among the few good works by names unknown to us elsewhere Miss Annette Elias has a good landscape, "The Ridge of the Down" (375); Miss Kempson's smaller landscape, "Haymaking near Bognor" (260), is also to be noted, and Miss Anna Nordgren's "Swedish Interior" (218), rather after the manner of Israels. The addition of two rooms dedicated to decorative work, repoussé brass and embroideries, is a good idea, and the latter are really women's work in a special sense. Among these exhibits are some very good specimens. But the pictures are a depressing collection for the most part.

**Decoration of a Hospital in Paris.**

SEVERAL painters in Paris have combined to decorate, gratuitously, the new Hôpital Broca, the new and airy building which now replaces the ancient and melancholy Hôpital de Lourcine. In the large promenade or day-room, towards the gardens, M. Georges Clairin has painted two large panels showing green and sunlit landscapes in which the convalescent patients are represented as taking exercise. The idea of the paintings is "La santé rendue aux malades par la Nature." A neighbouring room is to be decorated by M. Dubufe with a view of Capri and the Mediterranean. In other rooms, MM. Bellery-Desfontaines, Kœnig, Guérin, and Lauret have painted figures symbolising "Hope," "Health," "Convalescence," &c.; and in another M. Roger Jourdain has painted two Parisian scenes—"Promenade dans le Parc" and "Pâturage sur le Lac." The whole are painted in a bright decorative key, and it is needless to say that they have greatly brightened and enlivened the interior of the building.

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## GREEK ARCHITECTURE.*

WHEN I finished my lectures last year, I said I thought of giving you an account of St. Peter's at Rome, and for that purpose I went to Rome last autumn, visited St. Peter's, and went up into the ball, and through the kindness of the Archbishop of Mellitone, Monsignor Neckere, I was allowed to see the model on which the iron ties are painted, and also the original model of Antonio da Sangallo.

It seemed to me that it would be more useful to give you lectures on Greek architecture than on St. Peter's, for, after all, St. Peter's, although it is the largest cathedral, was completed when the art was in a decadent state, while some of the Greek architecture which still survives was executed at the very culminating point of its excellence.

It seems to me that now there is so much building going forward, and in many instances of important public buildings, municipal and otherwise, that it would be an opportune time to bring before your notice that architecture that has almost every merit and certainly the fewest defects. There are many things to be said on the subject: the climate of Greece is clear and sunshiny, while ours has little sunshine and is frequently obscured by thick mists and fog, and the air has generally the disadvantage of being laden with watery vapour.

In the first place, there was in Greek architecture the comparative simplicity of requirement called for by the simple wants of the people, while now the smallest building for domestic uses is full of complexity, and large buildings are almost as full of various mechanical contrivances as the human body itself.

It is always useful to have an aim, and when we see with what simplicity and perfection the Greek problems were solved, and that Greek buildings have been the admiration of mankind for over 2,000 years, I cannot help thinking that we might make an effort to divest the architecture of our buildings of all unnecessary complexity. The Greeks may be said to have been the inventors of mouldings, and their mouldings are even now our admiration and delight for their exquisite form and logical sequence, but they cannot with any propriety be used in this country, for they were made for Greece and not for England. The utmost care was taken to design them for sunshine, and in the clear sky, with the blinding sunshine, of Attica, the slightest nick or the slightest projection told as a sharp shadow or a brilliant light. There was no device, however subtle, that was not called into requisition to make the series of mouldings assist and enforce one another, and for each one to be beautiful in itself; but in England, or any of the moist and sunless climates of the West, Greek mouldings are ineffective, and therefore they can only be held up to you as a pattern of the end to be aimed at. The Greeks executed their mouldings in a very perfect material—white marble—and we have to get analogous effects in the coarser material of stone or brick, which is to be played on occasionally by a very feeble sun, and in an atmosphere rendered more or less opaque by vapour.

The Mediæval architects were the only ones since the Greek who took the trouble to design their mouldings for the climate, and though their mouldings are very inferior in grace and elegance to those of the Greeks, they, as a rule, got the lights and shadows wanted. In shafts, in a sunny climate, the streak of bright light on the part nearest the sun is perhaps the most striking thing in the shaft. In the grey mists of the West this is hardly perceptible, so that the Gothic architects put a fillet where the light should be, or, instead of making the shaft round, curved it to a beak-shaped form, sometimes with a fillet on the edge. The first of these forms has rather a ludicrous effect when it is seen in sunshine; there are some cases of this on the exterior of the choir of Southwell Minster; but, of course, the architect thought that it was better to have this redundance for so small a proportion of sunlight in the year. When the Mediæval architects wanted a shadow they made a deep sinking, in many instances undercut. What we have to do is to see that our mouldings are as distinct as the mediæval mouldings and, if possible, make them as perfect and as graceful as the Greek. Unfortunately, the study of moulding has been given up—I mean as a practical study to enable us to secure what we want, and not as a study for re-using mouldings which are either not suited to the climate or are more or less barbarous. In one of my former lectures I gave you my notion as to how this double end might be attained, *i.c.*, by setting up a cast of a group of Greek mouldings in the open air and running the same in clay alongside of the model and altering the shape for the various changes in the sky and noting how long each phase lasted, for it is obvious that the moulding which, when cut in stone, cannot be altered, should be made effective for that phase of the sky which lasted the longest.

The Temple, which to a great extent was the form adopted for all important public buildings, was merely an enlarged wooden house mostly executed in white marble, and the form which the more important temples took was that of the house after it had been surrounded by a verandah. This form is particularly effective in a country of strong sunlight, for the columns which form the light part are thrown up by the shadows between, and this was not only beautiful to look at but was very necessary for the protection and comfort of those visiting a Temple or looking at the sculptured frieze on the outside of the nave, but in Western climates a portico or covered colonnade is only useful as a protection against rain, and probably for at least one-third of the year, the columns and the shadow between them are indistinguishable in the mist. In the misty countries of the West, to obtain light is almost as important as it is in hot climates to exclude it, so that windows under a portico or an arcade are through the greater part of the year almost useless.

In England most buildings are wanted to be of many stories, while in Greece there mostly is only one, the ground floor; externally the only parts that are solid besides the roof are the timbers supported by the columns to carry the roof, called the entablature, and at the east and west ends, the triangular gables, called pediments—these parts were originally of wood, but were of course translated with the columns into marble.

I think you will see by this that actual Greek architecture is of very little use in England, and that the features so characteristic of Greek work, the portico or colonnade, would form for the greater part of the year a very poor embellishment and would be only useful as a shelter from rain. The only really effective feature that I recollect, where the effect is gained by shade, is not in England, but in the West of France; it is a deep porch at Coutances Cathedral, but I saw it so many years ago that I cannot exactly call to mind the full effect, though I know that it was in June or July when I saw it.

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* Professor Aitchison's first Royal Academy lecture, delivered on Monday last.

I am afraid that you will think from my references to Greek architecture there cannot be much to learn from it that can be applied in this country, but that is really not the case. There is a simplicity, a plainness, a restraint about it that can be applied in any country, if the methods of making the parts effective are studied for the climate as the Greeks studied them for theirs. M. Anatole France has made some very good remarks on a cognate subject. He says we all know what is meant by a simple style, atthough we know that the labour to produce it is very great, but it has the air of not being laboured but of being spontaneous. It is like this ray of light that falls on my writing table—it is perfectly clear, white, and diaphanous, although we know it is composed of seven colours. Other charms of Greek architecture are produced by the exquisite proportion of the parts to one another and to the whole, and also by those optical devices that the Greeks used to make their buildings look right—the delicate entasis of the columns, the curving of the horizontal lines and the slight differences between the distances of parts supposed to be exactly equal, which, like the slight variations in Nature's works, prevent them palling through monotony, and the intermingling of the rigid lines of the architecture with the most perfect sculpture the world has ever seen. Still, without the sculpture, the architecture has transcendent merits of its own, even in a climate like ours, where it loses nine-tenths of its beauty. One autumn, a good many years ago, I was at Aberdeen, and there was a Grecian Doric façade to a market there, on a tolerably large scale. In that misty climate most of the loveliness of the Doric capital and entablature had disappeared—not so the proportions, and I looked around at all the new buildings in all sorts of styles, and felt that even in that clime the imitation Greek carried off the palm.

Of course, we do not want imitation Greek nor any other imitation; we want if possible to get the master principle on which these brilliant and sublime structures were designed, so that we may apply the principles to our own work. As a poet wants to learn how to present his noble thoughts majestically, he learns the way by studying and paraphrasing the great Greek poets. We want if possible to endow our own country with buildings which may be the admiration of the world, and I think the best method of trying to learn how to do so is to study and to paraphrase the works of those who have succeeded. Studies strenuously pursued and carried over centuries may work wonders, and we should always endeavour as much as in us lies to look upon the art we practise as the torch race among the Greeks—when each man had to run as far as he could to hand the torch to the new runner. At any rate, we ought to make up our minds to conquer, even if this conquest is only to be achieved by our last successors.

Almost all Greek temples are in ruins and the roofs gone, so that we cannot even view the bare walls of their interiors in the deepening shadows which once made them so impressive. The idols are gone, all the accessories and offerings are gone, too, as well as the painting, and we can hardly picture to ourselves the effect of the beams of the morning sun striking on those idols, which were the most perfect man ever made, while the most celebrated of them were of ivory and gold. All that we can now do, is to study those proportions, those curves and those mouldings that have given an undying celebrity to Greece. It is worthy of your consideration that no columns have been invented, either before or after their time, that have the exquisite proportions and finish of the Greek columns. The Doric, which is by far the finest of the three exquisite orders, is perhaps, the least suitable to our climate; the want of sunshine makes the capital dull and uninteresting, while the brilliant sunlight of Greece produces the full effect of the marvellous light and shadows that the subtle devices of the architect produced on the capital and shaft; but our more profound knowledge of construction and of the strength of materials makes the unnecessary bulk of the column, to carry such slight superincumbent weight, ridiculous.

That the Greeks considered the Doric the most perfect order is shown, I think, by their generally using it in temples to the father of the gods, and mostly confining it to the temples of their male deities.

The Ionic, more slender and more ornate, with a capital whose exquisite beauty has caused the despair of all succeeding architects, is, in spite of its beauty, less successful in the play of sunshine than the Doric.

The Corinthian, the last of the Greek orders, though it took the fancy of the Romans and all succeeding architects, is not so satisfactory as the Doric or the Ionic. In view of its supposed invention by Callimachus, the goldsmith, it has been suggested that the adornment of its capital was originally in metal, and certainly it does not suggest a stone treatment, as all the floral parts are of parasitic growth on the bell or basket; but this, if it be a fault, is not its only one, for, from its great height, it looks rather unstable—still, a paraphrase of it has been almost universally adopted by all succeeding architects; the Arabs alone have kept the form, but have ornamented it with stalactites instead of with leaves.

Supposing we believe Vitruvius' story that Callimachus, who lived somewhere about the time of Alexander the Great, was the inventor, the other two orders were invented many hundreds of years before, and through a succession of improvements were gradually brought to perfection; still we must give the Greeks the credit of inventing and perfecting this capital, which all the nations since that time have vainly endeavoured to equal or surpass. Though I must say that the Romans made the capital more majestic and better suited to a colossal order.

The entablature, suggested by the bressummer and the roof-timbers, was brought to an equal perfection by the Greeks, for no nation since has been able to equal or to surpass it in proportion and effect, nor in the beauty and logic of its mouldings. That the Doric entablature was not only fitted to its end, but was most superbly designed for the climate of Attica is, I think, beyond dispute; its trigylphs not only form the required contrasts to the long horizontal lines, but give the necessary emphasis to the curved and modulated surface of the sculpture in the Metopes, and carry up into the entablature an echo of the fluted column of the portico beneath, while the sloping under-side of the mutules and their guttæ cause shadows that serve to take off the stiffness of the triglyphs.

We know not whether Greek architects were sculptors or not, but the whole free part of the Greek nation was deeply versed in the human form, seeing, as they did every day, youths and men taking their gymnastic exercises and drill naked. I cannot help thinking that the architects, whether sculptors or not, must have noticed how the young clod-hoppers who came as recruits had their shapes rapidly improved and perfected by their training, and thus the architects were very much set on the repression of redundancy, and saw how almost imperceptible changes could produce the highest form of beauty. Most of you have drawn plants and flowers, and have found the difficulty of getting any beautiful curve correctly; you have made the leaf or flower sufficiently like to be known, but the exquisite beauty of certain parts, which probably tempted you to draw it, has evaporated in the process, and you have to draw this flower or leaf over and over again before you even get an approach to its beauty. Now this is a lesson that you should take greatly to heart in all the architecture that you design, to see how you can improve any part you have done so as to make it perfect. Whenever this desire for perfection shows itself among a large proportion of the architects, we shall be sure to see that their work becomes comparatively plain and simple, for where there is great complexity or multiplicity of parts, the life of man is not long enough to produce perfection.

Architecture, looked upon as the creation of organisms that emulate those of Nature, is composed of a suitable arrangement for the purpose required. This arrangement is then to be executed in the materials that we have at hand, or can get consistently with the sum we have to spend. The putting together of these materials is to be in accordance with most advanced knowledge of construction. Really this gives us our building; when the proper cubical contents for breathing are known, all that remains for us to do is to proportion our windows to the light we want and our doors for the number of persons that are to come in or go out together. Lanterns and piers, eaves, gutters, protection from rain to the windows and doors, are practically all that we have to exercise our æsthetic skill on, for in such a climate as ours columns, except internal ones, are rarely called for, and although the orders are very beautiful things, nothing can be more absurd than to stick them over a front where they are not wanted merely as ornaments, besides showing the greatest barrenness of invention.

When we have got so far, I think we are in a fair way of starting an advance in architecture, although I admit that few human being can do admirably any one of the three parts which are necessary for the completion of the structure. The only other ornaments that are required are in the hands of the painter, the sculptor, the statuary, and the glazier.

The Romans were born constructors, but they certainly had not the artistic gifts necessary for the designing of perfect architecture; and admiring, as they did, the perfection of Greek architecture, they thought it was enough to adorn their buildings with the coarse imitations of it applied to them. It is hardly necessary to tell you that the Romans were the first people to use the arch as an architectural feature. Greek architecture was what has been called post and lintel construction, and the Romans on their arched buildings put these imitations of Greek architecture. This gave rise to a particular feature in Roman architecture. We will take the large Thermæ, or hot baths, as an example. In their halls enormous window openings were required, and the entablature, which went from column to column, was not only useless when the columns supported groined vaults, but greatly obscured the light from the windows. The Romans, with that practical sagacity which so distinguished them, cut off the entablature, leaving only a small piece over each colum to carry the vaults, and left out the rest. The Roman idea that good architecture could be produced by foreign additions was very like that of our modern engineers who are conscious that their structures are very ugly, but think that an æsthetic expression may be given them by screwing on a certain quantity of cast-iron pateræ and lions' heads.

It was not until the time of Diocletian, who abdicated in 305 A.D., that we have any example of arches springing directly from the capitals of columns, at least as far as I know, and long after his time this isolated piece of entablature was imitated in a rude way and used over columns. When Byzantine architecture was thoroughly organised at Constantinople these imitations of pieces of entablature were gradually disused.

We must certainly follow the method of teaching architecture used by the Mediævals if we want architecture again to progress, because unfortunately we do not know the method of teaching in Greek times, not even that pursued by the teachers of Constantine's time, not even the Mediæval methods, but by examining Mediæval works we find that an exact knowledge of the strength of the material was possessed by the architects; that they had some rough way of ascertaining the thrusts of arches and vaults; that they were perfectly logical in their application of principles to practice, and that they were not bound by any antiquarian restrictions, for they could invent: they racked their brains to solve the problems, practical or æsthetic, that came before them, and learnt from their failures where they had gone wrong. As I said before, they were the first architects after the Greeks who studied their mouldings so as to make them effective in the dull and misty climates of the West, and they were truthful and genuine in what may be called the necessities of their buildings; they put in nothing that was not wanted because it looked well, but they were not restrained from putting what was necessary because they could not make it take æsthetic form—I may instance the buttresses. The other necessary features of their buildings were managed in the same way, but to these they gave considerable æsthetic effect—I mean their large windows. In many of our large public buildings we require huge windows to light certain parts, but as yet no one has been able to make anything of them, so they are not used except in the case of imitation Gothic buildings, where large imitation Gothic windows are used as of old. We want a large window, but we do not want it filled with geometric tracery—we want something more elegant, more simple, and more refined.

We want to get our sculptors and ornamentalists to give us monumental floral sculpture from the plants that grow in the neighbourhood of the structure, or at any rate, in our own country, for we are sick of the repetitions of the Greek and Roman Acanthus, and we are by no means satisfied with the barbarous foliage that was used in the Middle Ages, for you must recollect that we are a cultivated people, although not a very artistic one.

Greek architecture is the original model from which modern architecture has come, mainly through the Roman adaptation, and in this way may be said to be the father of the Romanesque Gothic and Saracenic, while the Italian Renaissance was derived from it by the pure imitation of Roman models; and seeing that the Corinthian capital, as modified by the Romans, was the type of all subsequent floriated capitals, the Royal Academy made one of its requirements for the admission of students that all students should be able to draw the three Greek orders and the four Roman ones from memory. The students for this year were given the Ionic example from the Erectheum, as being a beautiful and strongly marked example, but not one of the aspirants had the least recollection of the order, the wretched Roman paraphrase being alone shown, and the substance of their knowledge was that the order had volutes, but that the lower part between the volutes took the line of a festoon they had forgotten. The ornamented necking was not shown, nor that the upper torus of the base was horizontally fluted. This ignorance is very disgraceful on the part of would-be students of architecture.

We want to learn the principles of Greek architecture to improve ourselves and to secure for our own buildings an equal degree of excellence and sublimity, although our works are so much more complex than those of the Greeks, and we have now materials that I have so often said that the mediævals would have used, if they had possessed them—I mean wrought and cast iron and steel.

Steel is used very largely in America for the frames of buildings, but to safeguard it from fire it is cased with terra-cotta, stone, or marble.

I believe this is the only protection yet discovered, but these protective substances should be used so as to show the real construction, and not be used so as to imitate the appearance of brick, terra-cotta, or marble buildings.

In my future lectures I shall quote largely from Vitruvius, who is the first writer on architecture who has come down to us. He gives us to understand that a great many treatises of the Greek architects had been read and studied by him. Nothing is known of him but what can be extracted from his book. His book is dedicated to Augustus Cæsar, and he speaks of having served with Julius Cæsar, of whom Augustus was the nephew and subsequently the adopted son. We judge Vitruvius' book to have been early because he seems to imply that crude bricks were mostly used, and he gives minute description of an arch, and explains that it has a thrust, which seems rather to speak of its early use. With the exception of Vitruvius being mentioned by Frontinus, Pliny the Elder, and by Servius, the next mention of him that I know is by Eginhard, sometimes called Charlemagne's secretary, who writes to a friend to help him to translate some of the passages of Vitruvius' book. We next know that the Codex was discovered at St. Gall by Poggio Bracciolini in 1414; it was copied by most of the foremost architects of the day, and doubtless by scholars; and the Editio Princeps is supposed to have been printed and published in Rome in 1486, by George Herolt. Vitruvius has been subsequently translated into most of the European languages. Early in this century, C. F. L. Schultz, Counsellor of State at Wetzlar, examined Vitruvius' book and wrote to Goethe in 1829 of his doubts as to its authenticity. Professor Ussing, of the University of Copenhagen, wrote a pamphlet in Danish on Vitruvius, believing Vitruvius to have been an author of the third, fourth, or fifth century. This treatise the Royal Institute of British Architects have had translated into English, and a copy of it can be obtained for a trifling sum at the Institute, in case any of you are sufficiently interested to read it. I trust that some of the scholars of the day will take the trouble of examining the grounds of Professor Ussing's objections, for the question will really have to be settled by Latinists rather than by architects. I hope we shall have some interesting correspondence on the subject in the *Journal* of the Royal Institute of British Architects. I merely mention this to show that its authenticity has been questioned. I may say that Professor Baldwin Brown has some interesting remarks in the last Royal Institute of British Architects' *Journal*.

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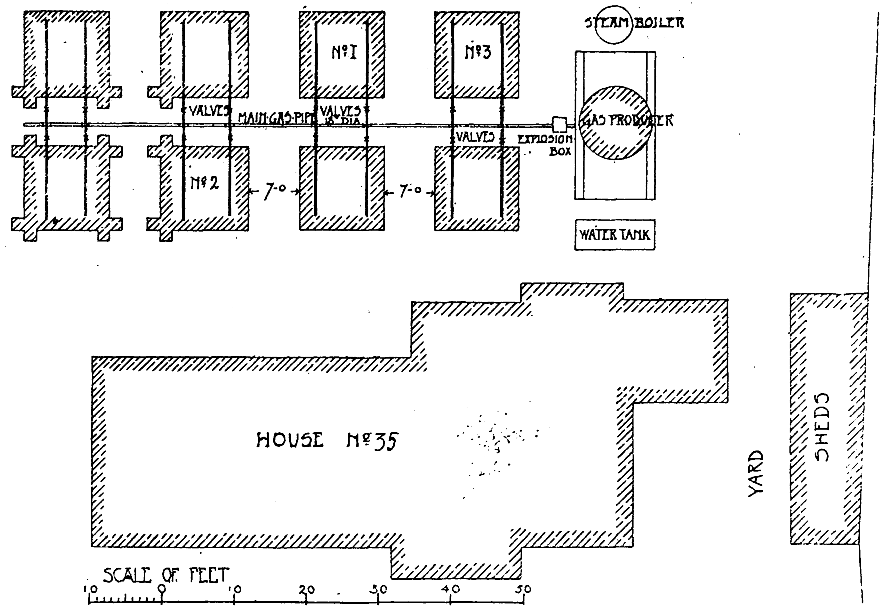

*Block Plan of the Fire-Prevention Committee's Testing-Works.*

## THE FIRE-PREVENTION COMMITTEE'S TESTING STATION.

THE British Fire-prevention Committee, started by the efforts of Mr. E. O. Sachs, and to which reference has several times been made in our columns, has now completed its fire-testing station, of which we give a block plan, on a site at No. 35 North Bank, close to the St. John's Wood Railway Station. The house has been taken as it stands, for offices and committee-room, and in the garden at the back a series of testing-houses are to be built, as shown on the plan, consisting of square apartments of ordinary brickwork, with fireproof floors, an iron closing door at one side, and a range of small openings about a foot square along one side, at the top, through which the condition of the material in process of testing can be seen and photographed at intervals, and through which also the end of the pyrometer wire can be inserted. Only part of the testing-houses have as yet been erected. In testing floors, the floor is built over the top, as a ceiling to the compartment, and three large gas jets inserted through the floor—water gas and atmospheric air, mixed, supply the fire. The walls, we understand, will only survive about two tests, and have then to be rebuilt from the floor.

The pyrometer, a very delicate instrument, is placed in an upper room in the house, and connected with the furnace by a wire which, at the end inserted into the furnace, consists of a double twist of platinum and iridium, which sends a light electric current, varying with the intensity of the heat, to the pyrometer, where the heat-curve is recorded automatically on a slowly revolving cylinder covered with sensitised paper divided up into grades.

A series of tests have now been commenced, at intervals of a week.

As to the financial aspect of the station, the establishment expenses have been met by a special subscription, which will also cover the expense of conducting tests of general technical interest. Tests with patented materials, makers' systems, &c., &c., are, however, subject to a scale of charges, but these charges are so figured as to only just cover the actual cost. The services of the members conducting or attending tests are given gratuitously.

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BRADLEE HOUSE, BOSTON, U.S.A.—We learn that this historical house is about to be demolished for the building of some business premises. Erected in 1771, upon a site now valued at more than 20,000*l.*, it forms the scene of a famous episode, for in its kitchen the ringleaders of the Boston Tea Party assembled to disguise themselves as Mohawk Indians, and thence they sallied forth to the wharf to throw the cargoes of tea into Boston harbour on December 16, 1773.

## TIMBER SEASONING BY ELECTRICITY.

A PRIVATE exhibition of the Nodon-Bretonneau process of seasoning timber is being given this week at the works of Messrs. Johnson & Phillips, electrical engineers, Charlton, Kent. The inventors claim that they have solved the difficulty of seasoning and preserving timber economically; and, judging by the samples of wood we have seen treated by this method, including maritime pine and Grisard woods, which have hitherto only been considered fit for firewood, we consider that they have to a certain extent proved their claim. The process has now had nearly a year's trial in France, and that it is an undoubted commercial success is shown by the fact that the shares of "La Société Anonyme pour la Sénilisation rapide des Bois et Matières fibreuses" are now at a premium of nearly 600 per cent.

It is claimed that the effect of the electrical treatment is to totally expel the sap from the wood and replace it by matter which is insoluble and not subject to putrefaction. During no part of the treatment is the wood subjected to a higher temperature than 100 deg. Fahrenheit, and it is stated that the new matter introduced into the wood increases its resistance both to vertical compression in the direction of its fibres and its tenacity under stresses perpendicular to its fibres.

The wood to be treated is placed inside a vat on a lead grating, which is connected to the positive terminal of a dynamo. The solution used at the demonstration contained 10 per cent. of borax, which is a strong antiseptic, 5 per cent. of resin, and 0·75 per cent. of carbonate of soda, this latter ingredient being added merely to make the resin dissolve. It is then poured into the vat until the level of the solution is about 1 in. below the level of the top of the rectangular log of wood. On the top of the log is placed a porous tray, the lower surface of which consists of two sheets of canvas with a sheet of felt between them, and above this is placed a sheet of lead connected to the negative terminal of the dynamo. The solution is kept at an uniform temperature of 100 deg. Fahrenheit by means of a steam pipe which is in the solution underneath the grating. When the current is turned on, the solution is sucked from the bottom and gradually permeates the whole mass of the wood owing to what is called electric osmosis. The sap is driven out and floats to the surface, being replaced by the borax and the resin. The time usually taken for this to happen in a log 10 in. thick is from six to eight hours. After the electrical treatment the wood is then dried. At Johnson & Phillips' works a small drying oven is used through which a current of air is driven by means of an electric fan, and its temperature is maintained at 75 deg. Fahrenheit. In the summer time two to eight weeks in the open air under cover is necessary to dry it.

We were told that about a unit of electrical energy was required for every six cubic feet of timber treated. Hence, so far as expense goes, there is a large margin for profit, as natural seasoning costs about 15 per cent. of the prime cost of the wood.

Not very much is known at present about electric osmosis, and so far as we know this is the first industrial application of it. If the two electrodes in an electrolytic solution are separated by a porous partition and a current passes, then the volume of the liquid in contact with the positive pole diminishes whilst that in contact with the negative pole increases. The action of the pores of the partition apparently is to prevent the return of the liquid carried along with the current. The exact mechanism of this phenomenon is not known. Quincke and Wiedemann have shown that the worse conductor the liquid is, the more energetic is the osmotic action.

In one of Lord Armstrong's experiments, a piece of wetted thread was placed with its ends in two vessels filled with distilled water. The passage of a current from one vessel to the other along the thread caused the thread to move bodily in the reverse direction to the current and at the same time the water crept along in the same direction as the current. That some such action takes place in this process of seasoning seems highly probable.

We were told that the wood could be made non-inflammable by immersion in a solution of what was vaguely described as a phosphorescent salt, and subjecting it to a further electrical treatment for three hours. Other antiseptic solutions, mineral salts being generally employed, are used to make the wood aseptic, besides the borax solution mentioned above. Wood treated in this way is also useful for musical instrument makers, a plank of Austrian pine we examined being particularly resonant. A careful study of this process has convinced us that it is a valuable one, although it is too early yet to tell whether wood treated in this way will keep its strength as well as wood which has been subjected to natural seasoning.

## *ARCHITECTURAL SOCIETIES.*

Glasgow Architectural Association.—On the 27th ult. a meeting of this Association was held at the Rooms, Mr. John Fairweather, A.R.I.B.A., in the chair, when Mr. Wm. H. Baxter read a paper entitled "Some Hints on Shoring.' The paper dealt with the difficulties commonly met with in the carrying out of such work, and especially in regard to needle and to raking shores and their foundations. In connexion with the former, whilst the use of the screw-jack was advocated, the danger of leaving them to carry all the weight was pointed out, and blocking up under the needle suggested. The use of cast-iron needles was condemned, especially in conjunction with screw-jacks, owing to the unreliability of the material. Steel-rolled beams were better,. owing to their elasticity. The calculation of the weight to be borne by these was touched upon, and it was pointed out that in the era of fireproof construction which lay before us, the added weight of these would require to be allowed for. Common joisted floors which weighed 12 and 14 lbs. per superficial foot were now replaced by patent systems, which were enumerated, weighing up to 60 lb. and 70 lb. per square foot. Improved methods of bracing openings and supporting internal and area walls were demonstrated. Raking shoring was taken up, and some of the English methods were shown by drawings, and the peculiarities of shoring for brickwork exhibited. The mechanics of raking and flying shores, and the calculations necessary before their erection, closed the practical side of the paper. In his conclusion, the lecturer blamed the present lax method of describing such work in specification as the cause of so much inferior and insecure work being in evidence in Glasgow, and gave it as his opinion that if architects were to take a closer personal interest in the work, and control it to a greater extent than at present, the system of doing such work would be improved. The paper caused a good deal of discussion, and the lecturer was awarded a vote of thanks at the close.

Bradford Society of Architects and Surveyors.—At the annual meeting of this Society, held at the Great Northern Victoria Hotel, the President (Mr. B. D. Fairbank) in the chair, the annual report and balance-sheet were submitted and approved, and various alterations were made in the rules of the Society. The officers and committee were unanimously reelected. After the business meeting the members dined together.

Glasgow Institute of Architects.—A general meeting of this Institute was held on the 26th ult. in the Rooms, Pitt-street, the President, Mr. David Barclay, I.A., in the chair. The President referred to the death of Mr. James B. Stewart, architect, Greenock, who had held a high position in his profession and long been a member of the Institute. The Secretary reported a correspondence he had had with the Corporation regarding the Glasgow Buildings Regulations Amendment Bill, and stated that a conference had been arranged between the Corporation's committee and the representatives of the Institute, but that before the conference was held an intimation had been received that the Corporation did not intend to proceed with the Bill in the ensuing session of Parliament. The Institute's committee on the subject was continued in view of the intention expressed by the Corporation to proceed with a Building Act at an early date, and it was suggested that if a conference were held between the Corporation committee and the representatives of the Institute while the proposed clauses were being considered, it would be likely to lead to a better result than if held after the clauses had been passed by the Corporation. A letter was read from Mr. George A. Paterson, the present holder of the Alexander Thomson Memorial Studentship, giving descriptive notes of his tour, and submitting for the inspection of the Institute the drawings and sketches made by him during his stay abroad. The meeting directed that the second instalment of the studentship of 60*l.* should be paid to him. It was resolved that the subject of the next competition for the Alexander Thomson Memorial Travelling Studentship should be "A Gentleman's Country House," and it was remitted to a committee to fix details. It was recommended that the Library Committee should suggest works on architectural subjects suitable for purchase to the value of 20*l.* Satisfaction was expressed that the Institute assessors had been appointed and had arranged suitable conditions for the district halls competition for Springburn and Cowlairs.

York Architectural Society.—The annual dinner of the York Architectural Society was held at the White Swan Hotel, Pavement, on the 28th ult., the President (Mr. George Benson, A.R.I.B.A.) in the chair. After the loyal toasts had been duly honoured, Dr. Chapman proposed the "Archbishop, Clergy, and Ministers of Denominations," to which the Rev. G. Hewison responded. Mr. A. B. Burleigh submitted the toast of the "Royal Institute of British Architects and their Allied Centres." Referring to the proposed registration of all practising architects, Mr. Burleigh expressed the opinion that so long as the Institute and its examinations were available there was no need for registration. The York Architectural Society had this year been entrusted with the conduct of those examinations at the York centre. Mr. Burleigh also spoke of the excursions which took place during the year under the auspices of the Society, adding that they afforded a welcome relief from actual professional work.—Mr. G. Bertram Bulmer, of Leeds, in reply, spoke of the long existence of the Institute, mentioning that they had had a Royal Charter for sixty years. A society which for such an extended period had been supported by members of the profession from every nook and corner of the country had, by right, attained a position which could not very easily be upset. Mr. Bulmer complimented the York Society on the progress it had made, speaking especially of the examinations held during the past year, at which York men had passed with credit to themselves and their city.—Mr. Councillor Storey submitted the toast of the "York Architectural Society," and advised the Society to exert greater influence in the city when proposals for public improvements, alterations, and rebuilding were under consideration. In the Minster their ancestors had left them a noble example to live up to, and they ought to try and make the city correspondingly beautiful. The President, in acknowledging the toast, made reference to the condition of the Minster, pointing out that the action of the atmosphere, charged as it was with gases emitted from various chimneys, brought about quick decay in the magnesian limestone, of which the Minster was constructed, necessitating constant renovation. In recent repairs a different kind of stone, harder in quality, had been used, which, however, had caused the building to look patchy. It would be well if some preservative colourless solution could be devised which should be applied to the stone by means of a brush. He had no doubt that some permanent preservative of that kind could be found. Proceeding the President said that there was a constant and increasing traffic of heavy wagons along the road which skirted the Minster from the east end to the west front. This constituted a real danger to the stability of the fabric when they considered the enormous weight of the building pressing on the ground, and the fact that already the south transept leaned outwards. The concluding toast was the "Corporation of York, and Prosperity to the City," proposed by Mr. W. Hepper, and responded to by Mr. Councillor Procter.

Institute of Architects of Ireland.—On the 27th ult. a special meeting of the Royal Institute of Architects of Ireland was held at their premises, 20, Lincoln-place, to hear a paper read by Mr. Charles J. M'Carthy, City Architect, on "Some Intentional Irregularities in Italian Mediæval Architecture." Mr. T. Drew, R.H.A., the President, was in the chair. Mr. M'Carthy, in the course of his paper, dealt with the discoveries of Professor W. H. Goodyear, of America, of the well-defined irregularities in Italian Mediæval architecture.* In concluding his remarks, Mr. M'Carthy said he thought they would be forced to admit that to these irregularities were due in a very large measure the variety, the freshness, and, if he might say, the appearance of life which never failed to charm them when they viewed with a seeing eye these monuments of the Middle Ages. And if he was right in this, might not the absence of these irregularities largely account for the tameness, the monotony, and the want of life that to his mind, at least, he regretted to say, were the principal characteristics of all modern work?—The President said these irregularities occurred frequently in Mediæval British and Irish architecture, but he doubted whether any theory of design or intention could be yet based on such investigations as those of Professor Goodyear. A vote of thanks was passed to Mr. M'Carthy, and the proceedings closed.

## *ENGINEERING SOCIETIES.*

Institution of Junior Engineers.—At the meeting on the 27th ult., the Chairman, Mr. Basil H. Joy, presiding, a lecture was given by Professor Ewing, Honorary Member of the Institution, on "Measurements of Elasticity." After a general account of what is meant by elasticity and elastic strain, the lecturer proceeded to define the various constants by which the elasticity of a material could be expressed. Of these constants those most usually measured were Young's Modulus of Elasticity, or the Stretch Modulus, and the Modulus of Rigidity, or the Shear Modulus. From these two the other constants could be inferred. In measuring Young's Modulus the whole amount of elastic stretching in such a substance as wrought iron did not much exceed one one-thousandth of the original length. The determination of the Modulus with any accuracy, therefore, required measurements of great refinement, except in the case of wire, where long lengths could be dealt with. For experiments with long wires a simple scale and vernier, reading, say, to hundredths of an inch, would suffice, but for short specimens, such as were used in the testing machine, where the measurements were made on a length of 8 in. or so, extensometers were required capable of reading at least to ten-thousandths and preferably to fifty-thousandths of an inch. After describing extensometers designed by Bauschinger and by Unwin, the lecturer went on to show several forms of an extensometer of his own invention, which had been found at once convenient and accurate in practice. This instrument is entirely self-contained, and is attached to the piece under test by two set-screws at the ends of the length on which the observation of extension is to be made. In its usual form for tension tests, Professor Ewing's extensometer reads to one fifty-thousandth of an inch, but in a special form designed for measuring the elastic compression of short blocks the readings are taken to one two-hundred-and-fifty-thousandth of an inch.

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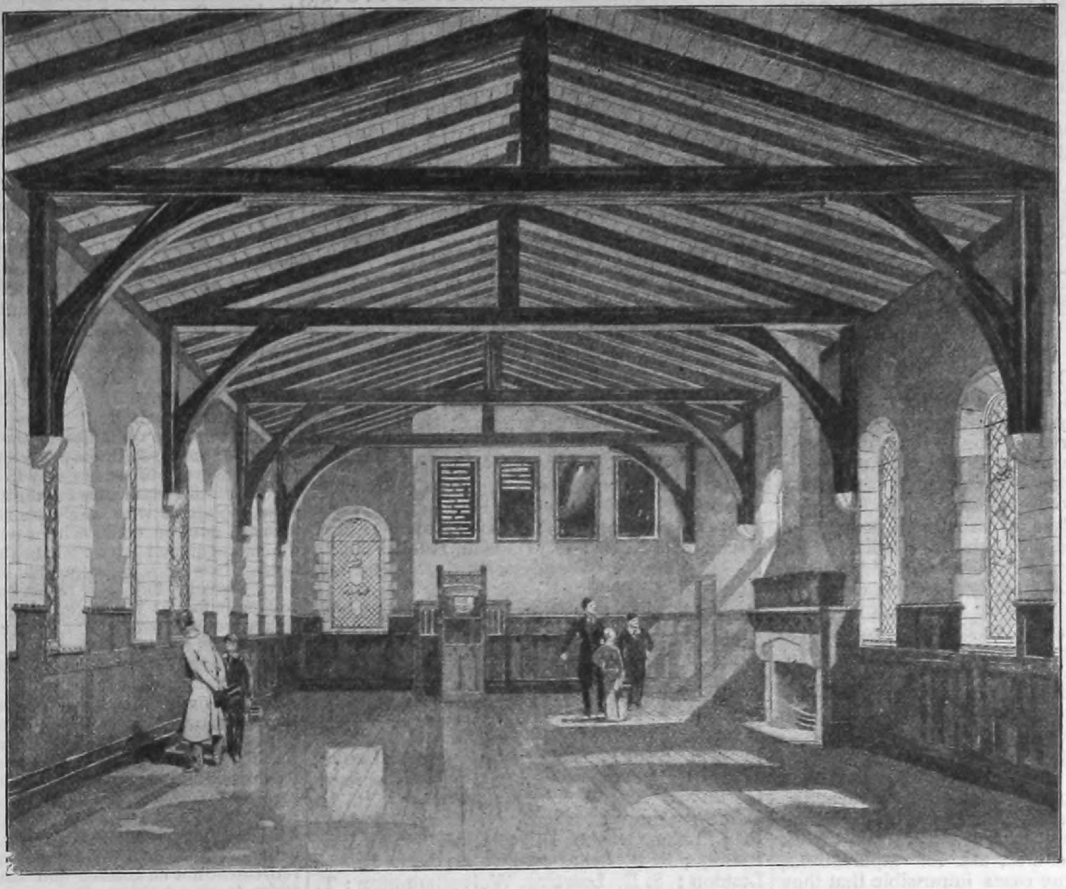
* Professor Goodyear's views have already been referred to in the *Builder*.



*The School-room, King's School, Canterbury.*

The various forms of the instrument were exhibited by means of lantern slides. Slides were also shown of a number of other pieces of laboratory apparatus which he had designed for measuring the elastic Moduluses by bending and by twisting. The lecturer next described the very imperfectly elastic condition into which iron or steel is thrown by overstraining it—that is, say, by straining beyond the ordinary limit of elasticity. Immediately after being overstrained and when the load is removed, the piece, on being reloaded, does not follow Hooke's Law at all, and cannot be said to have any elastic limit. But as time passes the elasticity comes back, and after an interval of a few days in the case of wrought iron, or of many weeks in the case of steel, it is found that the material has practically perfect elasticity up to a limit which may be much higher than the primitive elastic limit. This recovery of elasticity had formed the subject of investigation by Bauschinger. Curves were exhibited to show the progressive recovery of elasticity in overstrained material through the lapse of time. The experiments described had been made by Mr. Muir in the lecturer's laboratory at Cambridge, using the Ewing extensometer. The curves showed that there was much hysteresis in the relation of strain to load, in overstrained metal, when cyclic processes of loading were gone through before the recovery of elasticity had taken place. Mr. Muir had, on the lecturer's suggestion, tested the effect of heated overstrained metal to moderate temperatures, and had made the remarkable discovery that a bar of overstrained iron or steel is completely restored to a perfectly elastic state by being exposed for a few minutes to the temperature of boiling water or steam. By alternately heating the bar in this way, and loading it just beyond to its new limit of elasticity so as to slightly overstrain it, a piece of mild steel may be made to break with scarcely any total elongation and to show an extraordinarily high range of elasticity and ultimate strength.

KEW BRIDGE.—At a meeting of the Middlesex County Council on the 26th ult., the joint committee of Surrey and Middlesex recommended that the new Kew Bridge should be widened to the extent of 10 ft. beyond the 45 ft. originally designed, if this could be done at an additional cost approximating to 24,000*l*. The report was adopted.

## KING'S SCHOOL, CANTERBURY.

ON December 21 the large school-room which has been undergoing repairs and decorations was formally declared open by the Archbishop of Canterbury. The school-room was built in 1855, and is approached by steps from the school quadrangle on one side, and by the "Norman staircase" on the other. The work which has been done to the room is a memorial to the last four head-masters, Dr. Wallace, Bishop Mitchinson, Dr. Blore, and Dr. Field, and has been carried out under the auspices of the present head-master, the Rev. A. J. Galpin. It consists of oak panelling 5 ft. 3 in. high all round the room, with a seat round three sides enclosing the hot-water pipes. There was an existing oak rail on which were carved the names of many old boys, and this has been framed up in the new panelling. The fireplace has been reconstructed and lined with tiles, and an oak chimney-piece has been put over it. The glazing of the windows has been entirely renewed, and coats of arms of various celebrities connected with the school have been introduced. The walls have been painted a light olive green, the stonework cleaned, and the roof timbers have been stained. There is only one piece of old work remaining in the room, viz., an Early English stone corbel in the south wall, which was part of the pilgrim's hall, which used to occupy the place of the present room. This has been carefully preserved. The contractor for the work was Mr. F. T. Gentry, of Canterbury, and the glazing has been executed by Mr. Caldwell, also of Canterbury. The architect was Mr. B. Vaughan Johnson.

## COURT OF COMMON COUNCIL.

A MEETING of the Court of Common Council was held on the 26th ult. at Guildhall. In the absence of the Lord Mayor through illness, Alderman Sir Henry Knight presided. The Streets Committee brought up a report which provoked a long discussion. It appeared that about a year ago Messrs. Faudel Phillips & Co., of Newgate-street, applied for permission to construct a light fireproof bridge over Queen's Head-passage, to afford communication between two warehouses, of which they are the freeholders, on either side of the passage. The Court declined to give their sanction, but, notwithstanding that, the firm, acting on legal advice, erected the bridge. On April 21 the Court called upon Messrs. Faudel Phillips & Co. to remove the bridge, but they had not done so. Since then the Streets Committee had consulted counsel, and they now recommended that, having regard to the uncertainty of the law on the subject, as judged from conflicting legal opinion, and to the fact that similar structures had been erected elsewhere without complaint and without annoyance, no further action be at present taken for the removal of the bridge, and that it be allowed to remain during the pleasure of the Corporation.

Mr. A. C. Morton moved as an amendment that it be referred to the Streets Committee to take proceedings to enforce the order for the removal of the bridge, as advised by counsel. He said the Commission of Sewers had always objected to these erections over the public ways, and had refused their consent to any proposals of the kind. By the 154th Section of the Sewers Act, 1848, the Court, if they considered any projections or obstructions against or in front of any building to be an annoyance in consequence of its rendering the passage of the public less commodious, were empowered to give notice for its removal, and, if that failed, to remove it. The same powers were given in the more recent Building Act. The Court itself, when Sir George Faudel Phillips was Lord Mayor, absolutely prohibited even temporary obstructions of the kind on Jubilee Day. He asked the Court to carry the amendment, so that they might go to the Supreme Court and get the law defined.

Mr. Deputy Johnson seconded the amendment. If the committee's report were carried, they would have those bridges all over the city. They ought to have the law well-defined.

Mr. D. J. Ross, the City Engineer, replying to a question, said there were some thirteen or fourteen of these private bridges existing in the City, and he knew of no case where the Corporation had proceeded to a demolition of the structure.

Upon a division there were seventy-two votes for Mr. Morton's amendment, and ninety against it, and it was therefore lost. The report of the Committee was consequently carried.

At the instance of the Streets Committee it was decided to form an accumulated fund to defray any claim that might arise against the Corporation under the Workmen's Compensation Act, 1897. It was determined to oppose in Parliament the National Telephone Company's Bills, the Telegraph Act Amendment Bill, and the Gas Light and Coke Company's Bill, and to support the Glasgow Corporation Telephone Bill. On the recommendation of the Improvements and Finance Committee 5,000*l.* was given for the leasehold and trade interest at Nos. 1 and 2, Cheapside, with a view to a public improvement there. It was reported that 11,413*l.* had been received from the London County Council towards the net cost of widening Upper Thames-street, between Queen-street and St. Andrew's Wharf.

Having transacted other business, the Court adjourned.

## METROPOLITAN ASYLUMS BOARD.

Sir Edwin Galsworthy presided on Saturday at the fortnightly meeting of the Managers of the Metropolitan Asylums District, at the County Hall, Spring Gardens.

*The Brook Hospital.*—The Works Committee submitted a report replying to the criticisms of the Local Government Board with regard to the Brook Hospital, particularly as to the supervision of works in progress, and the payments to contractors on architects' certificates. The Committeee altogether repudiated the view of the Local Government Board that committees should directly supervise works in progress. The immediate and direct responsibility ought to rest on the Board's professional adviser. Committee supervision could never be efficient in practice. Few members possessed sufficient knowledge of building and engineering to make their supervision of any value, and such supervision would render their presence necessary almost day by day, and that they should be furnished with all the elaborate details of construction given by the architect to the contractor. If the Committee were aware of unauthorised work they would, of course, ask for explanations, but it was in many cases impossible that they should know that a particular item was outside the original specifications unless they were told. The Committee felt that the Managers must disclaim the special responsibilities which their professional advisers were appointed and paid to bear. They proposed, however, that in all future contracts a clause should be inserted requiring that an order from the architect for any deviation from the plans or specifications should be countersigned by the Clerk, as evidence of the approval of the Managers or of their authorised Committee. A book might be specially provided and submitted to the Committee, all orders for deviations issued by the architect being entered in it.

With regard to the objection of the Local Government Board to the drawing of cheques for the amounts included in the architects' certificates without information being furnished as to the works for which the certificates were given, the Committee reminded the Managers that they were bound by contract to make these payments so long as the "retention money" was not encroached upon. Any information given by the architect would be of no more value than the certificate itself unless they went to the expense of employing other professional assistance to check the architect. Besides, in large works certificates were granted on a general knowledge of the progress of the work, and without any exact measurement. The labour and cost involved in such measurements would be very serious and quite unremunerative. As the work neared completion and the part remaining undone became easily computable, it was possible to be more accurate, and certificates were then only given if the amount in hand covered the work to be accomplished and the retention money.

The Committee recommended that an answer to this effect should be sent to the Local Government Board. The consideration of the report was deferred.

The Slate Trade.—With the exception of the last quarter of 1898, demand was very brisk, and the present year shows a great improvement both in the export and home trade. The output also (except at some of the Carnarvon quarries) will probably also show an improvement, and this increase will gradually displace the foreign slates which got a footing in this conntry during the Penrhyn strike. The Workmen's Compensation Act has so far worked without any friction, and there have not been many claims; but many accidents are now reported which would not have been heard of before the passing of this Act. It entails on the quarry owner a cost of 4d. to 6d. per ton of manufactured slate.

## THE SURVEYORS' INSTITUTION:

### STUDENTS' PRELIMINARY EXAMINATION.

Of the candidates who presented themselves at the preliminary examination of this Institution, held concurrently in London, Manchester, and Dublin on January 18 and 19, the following satisfied the examiners:—L. H. Adams, Burgess Hill; P. Adams, Shortlands; L. H. Allen, Upper Clapton; H. Anderson, Streatham; A. E. Bare, Wandsworth; C. R. Barker, London; H. G. Barker, Bedford; N. B. Batterbury, Berkhampstead; A. H. Bell, Addleston; J. I. Benson, Downton; A. N. Blake, Gosport; H. K. Blyth, Cotham, Bristol; B. A. Boyton, Fulham; R. W. Brealey, Leek; S. Browning, Clifton; W. J. Carter, Brighton; C. H. Clark, London; C. J. Clements, Mildenhall; H. R. E. Coker, Dulwich; F. S. Daniell, Colchester; W. R. Davidge, Teddington; J. G. M. Davies, Rugby; R. H. Demuth, Leek Wootton, Warwick; J. B. Densham, Purley; C. H. Dinwiddy, Greenwich; H. J. Dodd, Goring-on-Thames; J. R. F. Driver, Cambridge; D. H. Eldridge, Crouch Hill; S. F. H. Farmer, Birmingham; C. Fishwick, Hastings; H. V. Fletcher, Tonbridge; R. G. Francis, Sudbury; T. Goodgames, Eaton Socon, St. Neots; H. Hanson, Huddersfield; H. C. Hardy, Wandsworth; R. Hartley, Aspatria, Carlisle; H. G. Heal, Southsea; R. Hewett, Seale, nr. Farnham; F. Hill, Bury; W. H. Hillyer, Catford; R. V. Hitchings, Guildford; R. C. Holbeche, Birmingham; P. L. Hopkin, Pontardawe, nr. Swansea; R. B. Hopkinson, Huddersfield; F. V. How, Lincoln; A. B. Howes, Balham; L. U. Hubble, Maidstone; G. P. Insley, Bournemouth; R. S. Jackson, Sittingbourne; R. C. James, Poole; W. H. R. Jarvis, Worthing; F. W. Jeffery, Hastings; A. W. Johnson, Barnet; R. H. Kaines, Gillingham; L. N. Knox, London; R. J. Lake, Crouch Hill; H. M. Leach, East Putney; R. B. Lees, Congleton; E. L. Lewis, London; S. E. Lowsley, Wolverhampton; T. Martin, Farnham; A. W. Neate,* Newbury; L. R. Notley, Staines; W. H. Overton, Brighton; S. A. Parnwell, Dalston; M. H. D. Parsons, Exeter; J. Patten, jun., Alnwick; D. W. Perkin, Tavistock; C. F. Perkins, Boscombe; P. S. Pitt, Cambridge; A. E. Priest, Old Hill, Staffs.; H. de L. Reaney, Chiswick; C. C. Reed, Beeford, nr Hull; E. Reed, Rottingdean; E. C. Richardson, Stamford, Lincs.; A. H. Rippengal, Croydon; J. A. Robinson, Kirkby Lonsdale; G. A. Rowlandson, Carlisle; H. G. Russell, Thames Ditton; S. R. Sackett, Orsett; E. A. Scollick, Burgess Hill; H. D. Short, Watton; J. H. Slade, Upminster; H. R. G. S. Smallman, Sutton; D. H. Smith, Southend-on-Sea; S. A. Smith, Monkseaton; W. H. Smith, Rochester; T. W. Smyth, Barnstaple; A. P. Stockings, Cheshunt; F. Stone, Launceston; S. D. Taylor, Ashby-de-la Zouch; E. G. Temple, Forest-gate; W. Thompson, Carlisle; F. F. Tomlin, Wood Green; F. Ward, Leytonstone; A. L. Watt, Aspatria, Carlisle; A. D. M. Webber, Bangor; W. J. W. Westlake, Plymouth; P. H. Wharton, Beckenham; J. W. E. White, Tunbridge Wells; E. M. Whitehead, London; J. L. Whytehead, Warminster; C. Wilks, Highbury; H. R. Willmott, Chesterfield; H. M. Wilson, Kettering; J. G. Wood, Upper Warlingham; R. H. Wood, Horsham; F. Wright, Chelmsford; C. A. Young, London.

*Irish Candidates.*—R. H. T. Gahan, Rathgar, co. Dublin; R. B. Gahan, Dundrum, co. Dublin; J. T. Goff, Killiney, co. Dublin.

## THE LONDON COUNTY COUNCIL.

The usual weekly meeting of the London County Council was held on Tuesday, at the County Hall, Spring-gardens, Mr. T. McKinnon Wood, Chairman, presiding.

*Loans.*—On the recommendation of the Finance Committee, it was agreed to lend the Plumstead Vestry 4,200*l.* towards the purchase of a site upon which to erect buildings for the Vestry; the St. Olave's Guardians 80,000*l.* for the erection of a workhouse; and the Managers of the Central London Sick Asylum District 21,810*l.* for the erection and lighting of an asylum.

*Flash-light Advertisements.*—Dr. Longstaff presented a petition, signed by upwards of 300 architects practising in London, praying the Council to seek powers from Parliament effectively to prevent the existence of illuminated or flashing signs, and to deal generally with the advertisement nuisance, by way either of limiting the size of the letters to be used, or limiting the height above the ground at which they might be exhibited. The petition was referred to the General Purposes Committee. The memorial has been signed among others by the following:—Professor G. Aitchison, R.A., J. Belcher, G. F. Bodley, A.R.A., W. D. Caröe, Basil Champneys, Sir A. W. Blomfield, A.R.A., J. M. Brydon, A. Cates, E. Goldie, T. G. Jackson, R.A., E. W. Mountford, R. Plumbe, C. F. A. Voysey, A. Waterhouse, R.A., J. Oldrid Scott, J. Slater, H. H. Statham, W. White, R. Norman Shaw, Ernest George.

*Appointment of Superintending Architect.*—The General Purposes Committee reported as follows, the recommendation being agreed to without discussion:—

"On December 6 last we reported to the Council that, having carefully considered the applications received in response to the advertisement issued in pursuance to the resolution of the Council of October 25, for the appointment of Architect to the Council, we were unable to see our way to submit the names of any of the candidates for the appointment. We have considered what course should, in the circumstances, now be taken with a view to filling the appointment, and have come to the conclusion that applications should be again invited by public advertisement, but at a higher salary than the one originally fixed. We believe that if the amount of salary were raised from 1,500*l.* to 2,000*l.*, applications would be received from gentlemen in the architectural profession from among whom the Committee might feel justified in making a selection. We may point out that the salary paid to the Superintending Architect of the late Board between the years 1878 and 1886 was 1,750*l.*, with pension rights, and that the salary (1,500*l.*) of the present architect also carried with it the claim to pension on the retirement of the architect. The new appointment will, however, as in the case of other appointments made since the Council came into office, have attached to it the condition that the person appointed shall on retirement not be entitled and shall not make any claim to any retiring allowance under the Superannuations Act, 1866, and that he will submit to the Council's regulations in respect of the superannuation and provident fund. The actual difference, therefore, between the salary now proposed and that previously attached to the position is, now that there is no pension, comparatively slight. In further support of our proposal we would remind the Council that during the last ten years the work of the department has much increased, both in the administrative and constructional duties devolving upon the architect. We recommend that applications for the appointment of Superintending Architect be again invited by public advertisement, and that the salary to be attached to the appointment be increased from 1,500*l.* to 2,000*l.* a year."

*Working Colony for Epileptics.*—The Asylums Committee recommended:—"That the Council do approve the provision of a working colony for the male epileptic insane on the Horton Manor estate. That the estimate of 3,000*l.*, to be submitted by the Finance Committee for preliminary expenditure in preparing drawings, specifications, bills of quantities, and taking out levels for the necessary buildings for 300 patients and staff, be approved."

The first recommendation having been adopted by the Council,

Mr. Goodman moved to amend the second recommendation by adding a request for plans of permanent buildings.

Mr. Crooks seconded the amendment.

Mr. Hubbard accepted the amendment on behalf of the Committee, and the recommendation, as amended, was agreed to.

*Fire Station, Tooting.*—On the recommendation of the Fire Brigade Committee, it was agreed that the estimate of 1,950*l.* submitted by the Finance Committee in respect of the acquisition of a site for a new fire station at Tooting be approved; that the Council do acquire for the sum of 1,900*l.* No. 91, Trinity-road, Tooting, and adjoining ground. That the Fire Brigade Committee be authorised to make the necessary preliminary arrangements for the erection on the above-mentioned site of a new station in substitution of the existing Tooting station.

*Waterlow Park.*—Mr. Nathan Robinson, Chairman of the Parks Committee, replying to Mr. Idris, stated that, in addition to the 6,000*l.* given by Sir Sydney Waterlow towards the acquisition of Fairseat House, Waterlow Park, he had offered to contribute another 2,000*l.* The matter was before the Committee, and a report would be made to the Council.

*The Boadicea Statue.*—It was agreed to expend 1,500*l.* in the provision of a granite pedestal on the wall of the Victoria Embankment on which to erect the Boadicea statuary group presented by Mr. J. I. Thornycroft to the Council.

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* Passed at head of list.

The Council having transacted other business, adjourned.

## THE ARCHITECTURAL ASSOCIATION DISCUSSION SECTION.

THE seventh meeting of the Discussion Section of the Architectural Association was held at 56, Great Marlborough-street, W., on the 27th ult., Mr. H. J. Leaning, Chairman of the Section, presiding.

In opening the proceedings, Mr. Leaning stated that he was sorry to have to say that Mr. C. V. Johnson was obliged, through pressure of engagements, to discontinue as Secretary. The meeting felt, therefore, it must accept the resignation with great regret. Mr. R. H. Weymouth was elected to fill the vacancy.

Mr. C. Spooner then read a paper on "Furniture." He thought we should approach this subject as artists, not as commercial men; as craftsmen too, thus being enabled by knowledge of the material we had to deal with to treat it artistically, avoiding thus either mere copying of ancient work, or horrible decadent eccentricities, the mark of much modern work. Off the beaten track one meets with many difficulties. Firstly, the great trouble in obtaining well-tempered steel tools to begin operations with. Then to obtain properly seasoned wood, and the overwhelming prohibitive cost as compared with the furniture turned out of a wholesale manufacturer's warehouse. The lecturer dwelt some little while on the methods of manufacture of modern furniture, absence of all tenoning (using dowelling instead), veneering cheap woods, and the excessive division of labour, whereby all the *personal* element is eliminated, and the workman becomes himself hardly better than a living machine. He then dwelt upon the methods of cutting timber, seasoning, and the various uses and ways of dealing with the different kinds, as oak, mahogany, deal, walnut, rosewood, ebony, &c., as shown in the making of furniture. How, also, veneer should be used in panel, preferably, for its protection, showing itself to be veneer.

Mr. Spooner then went into the comparative methods of work of a cabinet maker and joiner in dealing with furniture, contrasting the finish of the former with the greater boldness of the latter; argued for their both making their own metal work, as hinges, handles, &c., and closed by quoting from Professor Marshall's "Economics of Industries": "When the necessaries of life are once provided, every one should seek to increase the beauty of things in his possession rather than their number or their magnificence. An improvement in the artistic character of furniture and clothing trains the higher faculties of those who make them, and is a source of growing happiness to those who use them."

Mr. W. B. Hopkins opened the discussion, followed by Mr. E. S. Prior (who, along with Mr. H. B. Quennell and Mr. George Jack, were Special Visitors). He thought that furniture, as designed by architects, grouped under three heads, viz., of fittings, for display, and for every-day use. He agreed with the lecturer, that we should aim at good modern furniture, and not be always falling back on old stuff.

Mr. Quennell thought perhaps we might make an increased use of machinery, and, adapting it to our ideals, work out a new style in keeping with our own times.

Mr. Crawfurth Smith and the Chairman followed, the latter claiming that, with the names of Christopher Dresser, E. W. Godwin, and Burges architects, had led the way in this field of design.

The next meeting, a joint one with the Institution of the Junior Engineers, is to beheld on February 10, at Westminster Palace Hotel, when a paper on "Factory Design," by Mr. T. H. Pearson, is to be read.

## *COMPETITIONS.*

TECHNICAL COLLEGE FOR WIGAN AND DISTRICT.—Mr. Alfred Hewlett recently presided over a meeting of the Building Committee of the proposed Technical College for Wigan and the district. The Chairman announced that seven sets of designs for the Technical College Buildings had been received from selected architects. It was resolved that Mr. Henry Hartley, F.R.I.B.A., of Liverpool, the assessor, who was present at the meeting, should arrange to report upon the designs. This report will be made, as early as convenient, to the Building Committee, who have reserved to themselves the selection of the successful competitor.

## THE NATIONAL ASSOCIATION OF MASTER BUILDERS.

THE annual Conference of the National Association of Master Builders was held on Tuesday at Bradford. The morning was devoted to sittings of the Executive Committee, whose proceedings were private. The chief topic discussed was the relationship between the Association and the Plasterers' Union in regard to the threatened lock-out.

The general meeting was held in the Council Chamber at the Town Hall in the afternoon.

On the motion of Mr. J. S. Jones, of Liverpool, the President of the Association, seconded by Mr. Alderman Jessop, Mayor of Huddersfield, a vote of thanks was accorded to the Mayor of Bradford for various acts of courtesy.

The President then moved the adoption of the Report and balance-sheet. He said the Council had had a great deal to do during the past six months. First of all there was the federation scheme. At their last half-yearly meeting the absolute need of federation had been realised, and the scheme had been carried to completion. The relationship of the Association with the operatives had been in a somewhat unsettled state lately, and the Association had received numerous notices of increase of wages and alteration of rules to come in force in the spring. During the past six months there had been no serious strikes, for it was unusual in the building trade to go out on strike in the winter months. But the aggressive manner adopted by some of the trades unions, particularly in regard to freedom of management of employers had become no longer bearable. No doubt the Council would be called upon to join the Federation, and to adopt some policy which would effectually check these aggressive measures. The Workmen's Compensation Act, though it had only been in operation six months, had already given rise to numerous questions of a very serious kind to the employers, causing much litigation, and letting them know the great risk that they ran of pecuniary responsibility as imposed by this Act. The limitation of apprentices was very prevalent in the building trade, and steps ought to be taken for the removal of such restrictions on the inalienable rights of employers.

Mr. Green, of Liverpool, seconded the motion, which was agreed to.

The retiring President moved that Mr. Alderman W. Holdsworth, of Bradford, be elected President of the Association for the ensuing year, which was seconded by Mr. Bowen, of Birmingham, and agreed to.

Mr. Alderman Holdsworth, in responding, said that the main object of the Association was of a defensive character. Although the action of certain employees might have tempted them to take an aggressive attitude, they had every sympathy with the workmen. He had always held, and never could believe otherwise, that men were not all alike, and ought not to be paid alike. Each workman should be paid according to what he earned, and it was hard that he should have to contribute towards the idleness of some, at any rate, of his fellow workmen. He wished the men could see that it was to their interest to get paid what they were worth.

Mr. Church (Bristol) moved, and Mr. Shepherd (London) seconded, the appointment of a Standing Committee to deal with matters delegated to them by the Council. A discussion followed as to the powers of the Standing Committee, some speakers desiring that they should have authority to deal with labour disputes, and others holding that they should report to the Council. Mr. Alderman Jessop said he thought a great deal of power should be left to the Committee. There was the plasterers' question, for instance. That was about to come on, and he was hoping that was to be made a test question as to the worth of that institution, and the Standing Committee would be the means of pointing out to the whole National Association what they had been formed for.

An amendment moved by Mr. Myers, of Leeds, "That all cases of emergency arising between the full meetings of the Council shall be dealt with by the Standing Committee," was carried, and nine gentlemen were elected to serve on the committee.

Mr. W. Cunliffe raised the question of the Builders' Foremen's Society. He said the two most vital questions before them that day were those of the formation of the Foremen's Society and the apprentices rule. Whilst the foremen were members of the Operative Society, it was impossible for them to get proper and trustful information from the works, for the foreman dare not tell what he knew. He moved a resolution that the Executive should do all they could to secure the formation of a Foremen's Union, and insist upon the foremen joining it and be liberated from the Operatives' Union.

The resolution was carried unanimously.

Mr. Shepherd (London) moved a resolution that a donation of ten guineas be devoted to the Free Labour Association, which, he said, was doing very valuable work in insisting on the right of labour to secure its own market. The resolution was adopted.

Colonel Stanley Bird reported an action under the Workmen's Compensation Act, and said there were several matters in regard to which they were going to the House of Lords. It had not been necessary yet to touch anything of the Reserve Fund that they had put away twelve months ago.

The Conference decided to hold the next annual meeting at Plymouth.

The subject of the difficulty with the plasterers was then discussed, but representatives of the Press were excluded. It was officially stated afterwards that the following resolution was adopted unanimously:—"That the Secretary of the Council inform the National Association of Operative Plasterers that in consequence of the hindrance to business and continued friction caused to employers by the conduct of their members, the National Association of Master Builders have determined to call on them for an assurance that they in future abstain from the objectionable practices set out in the printed circular of January 10, and to request a reply by February 14."

## APPLICATIONS UNDER THE LONDON BUILDING ACT, 1894.

AT the meeting of the London County Council on Tuesday, the Building Act Committee brought up the following list of applications under the 1894 London Building Act. Those applications to which consent has been given are granted on certain conditions.*

### *Lines of Frontage.*

*Bow and Bromley.*†—That Mr. J. G. Needham be informed that the Council is not prepared to accede to his request for its consent in respect of a projecting illuminated sign at the "King's Arms" public-house, No. 167, Bow-road, Bow; and that the solicitor do take the necessary proceedings to obtain the removal of the sign.—Agreed.

### *Width of Way.*

*Finsbury Central.*—Re-erection of No. 7, St. John's-lane, Clerkenwell (Mr. L. Solomon for Mr. E. C. Arnold).—Consent.

### *Formation of Streets.*

*Wandsworth.*—A variation from the plan sanctioned on December 14, 1897, for the formation of new streets on the Furzedown Park Estate, Mitcham-lane, Streatham, so far as relates to the formation of Fallsbrook-road (Mr. A. Wellings).—Consent.

*Wandsworth.*—That Messrs. Tompkins & Barker be informed that their application for the Council's sanction to the formation or laying out of a new street on the Woodlea Estate, on the eastern side of Bedford Hill-road, Balham, having been further considerd, the Council sees no reason to depart from its decision of December 13, 1898, refusing to grant the application, but that when the applicants are in possession of the whole of the land necessary for the formation of the street, a further application will be considered.—Agreed.

### *Line of Frontage and Width of Way.*

*Marylebone West.*†—A one-story addition in front of the coach-house at No. 10, Gloucester-mews West, St. Marylebone (Messrs. C. Brown & Sons for Mr. T. R. Warrington, Q.C.). That the applicants be informed that such consent only operates so far as the provisions of the London Building Acts, 1894 and 1898 are concerned.—Agreed.

### *Line of Frontage and Construction of Building.*

*Dulwich.*—That Mr. J. W. Brooker be informed that the Council is not prepared to accede to his request for the Council's licence in respect of a wooden structure unlawfully set up and retained at the "Walmer Castle" public-house, Peckham-road, Camberwell.—Agreed.

### *Width of Way and Construction of Building.*

*Clapham.*—Two open iron sheds in a yard on the east side of Green-lane, Lavender Hill, Battersea (Mr. W. C. Poole for Mr. J. Stanley).—Consent.

### *Buildings for the Supply of Electricity.*

*Battersea.*—A generating station and works on the east side of Lombard-road, at the corner of Holman-road, Battersea (Mr. C. S. Peach for the Vestry of Battersea).—Refused.

### *Width of Way and Artisans' Dwellings.*

*Bermondsey.*—Two blocks of buildings on a plot of land on the south side of Webb-street, Bermondsey, abutting upon Swan-mead (Mr. C. L. Morgan for the London, Brighton, and South Coast Railway Co.).—Consent.

### *Conversion of Building.*

*Hoxton.*—That the Council do, in the exercise of its powers under Section 211 of the London Building Act, 1894, allow the conversion of a proposed warehouse on plots 6 and 7, Boundary-street, High-street, Shoreditch, between Old Nichol-street and Church-street, into a dwelling-house (Messrs. Ford,

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* Names of applicants are given in brackets. Buildings are new erections unless otherwise stated.

Son, & Burrows, for Messrs. J. Rotherham & Co., Limited).—Agreed.

### *Buildings on Low-lying Land.*

*Greenwich.*—That the solicitor do prepare a licence, under Section 122 of the London Building Act, 1894, to Mr. A. Roberts, for the erection of two dwelling-houses on low-lying land in Trafalgar-road, Greenwich.—Agreed.

*Woolwich.*—That the solicitor do prepare a licence, under Section 122 of the London Building Act, 1894, to Mr. T. J. Young, for the erection of two dwelling-houses on low-lying land, situated on the north side of Bostal-lane, Abbey Wood, Plumstead (for Mr. F. G. Thomas).—Agreed.

*Greenwich.*—That the solicitor do prepare a licence under Section 122 of the London Building Act, 1894, to Mr. R. W. Lightup, for the erection of two shops and a dwelling-house on land situated at the corner of Whitworth-street and Trafalgar-road, East Greenwich.—Agreed.

*The recommendations marked † are contrary to the views of the Local Authorities.*

## THE BUILDING TRADE DISPUTE.

THERE is very little to report this week in regard to the plasterers' dispute. At the Bradford meeting of the National Association of Master Builders on Tuesday, the Conference discussed the matter in private, but it was subsequently officially stated that it had been resolved to inform the National Association of Operative Plasterers that in consequence of the hindrance to business and continued friction caused to employers by the conduct of their members, the National Association of Master Builders had determined to call on them for an assurance that they would in future abstain from the objectionable practices set out in the printed circular of January 10, and to request a reply by February 14. The objectionable practices referred to are as follows :—

1 (*a*) The persistent attempt to coerce foremen of plasterers or superintendents of plasterers' work into the membership of the National Association of Operative Plasterers; also (*b*) the threat to withdraw all members from the building firms employing such foremen or superintendents.

2. The limitation of apprentices.

3. (*a*) The practice of boycotting certain building firms and employers of plasterers in spite of the fact that such firms adhere to the rules agreed between the Master Builders' Associations and the N.A.O.P. (*b*) The practice of printing and circulating amongst the members of the N.A.O.P. a list of such firms for whom they are forbidden under penalty to work.

4. The refusal to work on buildings where some of the workmen employed may not belong to a trade union.

5. (*a*) The refusal to accept the decision of the employer as to which workmen shall do certain work in cases where plasterers dispute with other trades as to their right to do such work. (*b*) The practice of withdrawing all their members when such work may not be placed in the plasterers' hands.

6. The objection to submit all trade disputes to discussion at a conference between employers and employed with a view to arrive at an amicable settlement prior to any strike or withdrawal of workmen.

## GLASGOW SCHOOL OF ART.

THE fifth lecture of the series on the "Architecture of the Renaissance in France" was given by Mr. W. J. Anderson on January 23, when the Louis Quatorze and Quinze periods were reviewed. To illustrate the passage from the interiors of the Henri Quatre period to those of Louis Quinze, the chamber of Marie de Medicis at the Luxembourg and the Galerie d'Apollon at the Louvre were compared, and a series of interiors presented, including the Galerie des Glaces at Versailles and the Salle du Conseil at Fontainebleau. By arranging them in processional order, so to speak, it becomes possible to grasp their character and meaning better even than by a visit to Versailles or Fontainebleau, for this leaves a sense of confusion till the historic relation is fully apprehended. Ostentation was described as the prevailing note of the Louis Quatorze style, luxury that of the Louis Quinze. During the Louis Quatorze style a tendency towards the rounding of panels, the softening of angles, &c., is traceable, and by the time of Louis Quinze every detail and accessory had been invested with a roundness of contour and suppleness of form. Some of the happiest results were attained in painted decoration, like that of the Salle du Conseil at Fontainebleau, where the delicate paintings are imposed on the Louis Quatorze wainscotting. The influence of Watteau is a prevailing one in the decorative painting, but the ideal which the artists had in view is born of the Far East, whose civilization had now began to affect Western Europe. From the extremes of this free and graceful work there resulted in the time of Louis Seize the inevitable reaction to forms of a simpler nature, conforming more directly to constructive principle. But regarded as a style for interior decoration, expressive of luxury and ease, of a high type of civilisation and an aspiration after something higher, the Louis Quinze, in the long procession of French interiors, must bear the palm. The contending tendencies towards chillingly correct classicism on the one hand, and freakish construction of ornament on the other, are noticeable here as in Italy, though confined respectively to exterior and interior work, while the rococo decoration is of a more refined type in France. More distinctively than in Italy does the Renaissance revive the mytholgical motives, for while in spirit the Italian variety is Christian and Roman Catholic the French is Pagan and Imperial. The walls of Versailles give back the echo of the proverb of its maker, "I am the State;" they testify as nothing else can do to his pomposity, self-sufficiency, extravagance, and thirst for military glory. The cost of the building of the palace may take its place as a determining factor in the progress to the Revolution, holding to that event the relation which St. Peter's holds to the Teutonic Reformation. But a great work of architecture is never anything but a great gain to a nation, and in Versailles Louis Quatorze provided for the proletariat of Paris, without in the least intending it, a magnificent historical museum, and a park and playground unrivalled in the world.

## THE LONDON SCHOOL BOARD AND THE ASSISTANT ARCHITECT FOR REPAIRS.

AT the meeting of the London School Board on the 26th ult., the Works Committee reported upon a question of drainage in connexion with the Board's Brentwood Industrial School. The report stated that the whole of the drainage at the school was reconstructed under the supervision of Mr. H. Bradfield, then superior officer for repairs, at a total cost of 503*l.* 17s. 8d. During last summer an outbreak of illness occurred at the school, and the Medical Officer of the Board, who was requested to inquire into it, submitted reports, in the course of which he stated :—"It would be well to take the opportunity to have the drainage system thoroughly examined and tested by a competent person; and if it could be arranged for the soil pipe, which I have already mentioned, to be removed to an external situation, so much the better." "I would also advise the Committee to take steps to obtain a thorough examination of the drainage system of the school, as in many respects this requires alteration." On these recommendations Mr. Bradfield, Assistant Architect for Repairs, was instructed by the Sub-Committee on Repairs, Sanitary Works, &c., to make inquiry and to report, and on November 15 last he submitted the following report :—"I have carefully examined and tested the drainage and sanitary arrangements both with testing tubes, smoke, and water, but fail to find any defects or leakages. The whole of the drainage was reconstructed under my supervision some five years ago; the pipes are all laid in concrete and jointed in cement. Inspection chambers are provided at all important points, there is a proper and efficient system of inlet and extract ventilation, which I find to be in perfect working order. All wastes are disconnected and discharge over outside gulleys, and the whole system is disconnected from the main drainage by a proper intercepting chamber and interceptor. I cannot see that any alterations are required. The Medical Officer and Sanitary Surveyor are arranging, I believe, to visit the school this week and make another inspection and test." The Medical Officer of the Board, however, was not satisfied, and requested that a further investigation should be made. Thereupon Mr. Peacock, the Board's Sanitary Surveyor, was instructed by the Industrial Schools Committee to examine the drainage system, and on November 22 he reported serious defects in the drainage. This report was so inconsistent with that of Mr. Bradfield that the Works Committee determined to consult an independent sanitary expert. Mr. G. A. Pryce Cuxson, F.S.I., A.R.I.B.A., was called in, and the two reports of Mr. Bradfield and Mr. Peacock were submitted to him without names, and he was requested to make an independent inquiry. This was done, and the report of Mr. Cuxson confirmed that of Mr. Peacock. The Committee then asked Mr. Bradfield for his observations on this report. He adhered to his former statement, and submitted various observations on Mr. Cuxson's report. These observations were forwarded to Mr. Cuxson, who in no way modified his report, but expressed surprise at some of the propositions put forward by Mr. Bradfield. As the illness at the Brentwood School had in some cases resulted in death, the Committee felt that the matter was a very serious one, and that, having regard to the extremely responsible and independent powers of Mr. Bradfield as their adviser, they could no longer repose the necessary confidence in him, and they accordingly called upon him to send in his resignation. Mr. Bradfield, however, had declined to take this step, and it became necessary therefore to recommend the Board to confirm the action of the Committee.

The Medical Officer of the Board reported that, after a careful consideration of the whole of the facts of the case, he was of opinion that the outbreak of illness at the school was to be ascribed to the defective drainage arrangements, aggravated by the overcrowded condition of the school, whilst the school provision for the water supply was not altogether free from suspicion. He suggested that the whole system of drainage should be remodelled under proper skilled supervision, and, pending such a revision, that the boys should not be allowed to return to the school.

Professor Corfield also reported upon the matter. He stated that he had examined the sanitary arrangements and had read the reports of the Sanitary Surveyor and Mr. Cuxson and the remarks of the Assistant Architect for Repairs on those reports. At the end of his report Professor Corfield says :—"In conclusion I consider that the drainage and other sanitary arrangements have been well planned and carried out, although certain minor improvements might no doubt be made, as is always the case in buildings where the sanitary arrangements have been carried out so long as seven years ago, and especially where some of the old fittings have been left in order to save expense; but the alterations required are in my opinion few and inexpensive, and there is no reason why this school should not be a perfectly healthy one. I see no reason at all for any reorganisation of the drainage arrangements, which I consider quite unnecessary."

Lord Morpeth (Chairman of the Works Committee) moved—"That the Board confirm the action taken by the Committee in calling upon Mr. H. Bradfield, Assistant Architect for Repairs, to submit his resignation."

The Rev. Father Brown moved as an amendment that the matter be referred back to the Committee for further consideration and report.

Mr. Barnes seconded the amendment.

The discussion was adjourned on the motion of Mr. Costelloe, who said he had never known a case in which there was a clearer conflict of testimony.

Other business was transacted, and the Board adjourned.

## Books.

*Building Construction. Advanced and Honours Courses.* By CHARLES F. MITCHELL. Second Edition. London: B. T. Batsford. 1898.

*Building Construction and Drawing. Firs Stage or Elementary Course.* By CHARLES F. MITCHELL. Fourth Edition. London: B. T. Batsford. 1898.

THE approval we expressed of each of these books on their first appearance, three and ten years, respectively, ago, has been amply justified. Not only have both had very large sales, as shown by the number of reprints, but each new edition has been conscientiously corrected and added to, and made a distinct improvement on its predecessor. The two together form unquestionably the best guide to all the mechanical part of architecture which any student can obtain at the present moment. (Therefore it seems rather a pity that both books should not be "got up" quite uniformly, and made consecutive volumes of the same work). In fact so far as it is possible for any one to compile a satisfactory treatise on "building construction," regarding it as a separate, isolated subject—divorced, that is to say, from all considerations of æsthetics or tradition, Mr. Mitchell has performed the task as well as we are likely to see it done. All the characteristics which we formerly praised in these works still distinguish them, and both the letterpress and the number of illustrations in each have been considerably added to; the larger volume has an increase of about forty pages and twenty-five illustrations, and the smaller of sixty pages and twelve illustrations, and it may be added that many of the new drawings show a further improvement in the direction of clearness and usefulness. We are sorry, though, to notice that our suggestion, calling in question the advisability of sacrificing so much space to the printing of South Kensington examination papers, has not borne fruit; the questions loom as large as ever, and we still think that it would be better not to burden so excellent a *general* text-book with the details of special examinations which any student could easily obtain separately.

These two books offer so much really valuable information at such a very moderate price that it is rather difficult to complain of omissions; still, any one expecting a complete account of all building processes may be surprised to find in the list of titles of chapters no mention of plastering, painting, or glazing. As a matter of fact, the two former of these crafts are dealt with, somewhat briefly, in the chapter entitled "Materials," in the Advanced Course; but the glazier, for some reason or other, "finds his occupation gone" entirely. It is worth while, though, on the other hand, to call attention to the author's praiseworthy endeavour to raise the present far too low standard of quality in brickwork. The British bricklayer, however radical he may be in other respects, is tenderly conservative in sticking to the worst form of bond, whether for strength or for appearance, used by any civilised nation. Mr. Mitchell by no means overstates the case when he commends "Dutch bond" (the method practised almost universally in Holland, Belgium, and Germany) as being "certainly superior to much of the very inferior work one is accustomed to see as examples of the modern bricklayer's skill in bonding." No better service could be done by the new technical schools than by their instructing the rising generation of bricklayers to improve upon the system which now satisfies their fathers, and we may fairly hope that Mr. Mitchell, in the large and important school which he directs at the Polytechnic, will initiate this advance. In general, we may say that the arrangement of matter in these books is good; both volumes are sufficiently indexed; and they can be thoroughly recommended for all the purposes which they are designed to serve.

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*The Romano-British City of Silchester.* By Frederick Davis, F.S.A. [Reprinted from "Bygone Hampshire."] London: W. Andrews & Co. 1898.

This pamphlet gives a clear and concise summary of the excellent work carried out since 1890 by the Silchester Excavation Fund, which we have from time to time described at greater length in these columns. The topography of the city, the disposition of the buildings, so far as they have been revealed by the excavations, their arrangements and materials, are all dealt with in turn, and Mr. Davis has also something to say about the water supply and the absence of any system of drainage. In writing about the numerous antiquities discovered we are glad to notice that Mr. Davis rightly gives the first place to the architectural remains, the capitals and bases of columns, the fragments of moulded stonework and marble, and the few fragments of inscriptions. These remains and the ground-plans of the buildings practically form the only material from which the history of the Roman town can be put together, for the objects in pottery, bronze, glass, and iron, as well as the coins, are not local to the spot, and so add but little to the story.

Mr. Davis has a good deal to say about the manner in which the remains of the town, chiefly floors and foundations of buildings, have become buried to depths ranging from 6 in. to 30 in. below the present level of the ground. Being evidently a disciple of Darwin, he attributes it entirely to the action of worms. "Earth worms are the *vera causa*," he says, and ten pages out of sixty-two are devoted to a discussion of the theory. Mr. Davis's deductions are ingenious, and if Darwin's conclusions from his study of earth worms be accepted, there is much in their favour; but our readers must see for themselves what is to be said on the subject.

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*Journal of the Sanitary Institute.* Vol. XIX. Part IV. London: The Sanitary Institute, January, 1899.

This volume consists chiefly of papers read at the Birmingham Sanitary Congress in September last, and of reports of the discussions thereon. We naturally turn first to the papers in the section on "Engineering and Architecture," but are surprised to find that, of the eight contributions to the section, five are written by doctors, two by civil engineers, and one by a sanitary engineer; not a single paper has been contributed by an architect (except the President's address). Whether this is the fault of the Sanitary Institute or of architects, we cannot say, but it is certainly a curious anomaly that, under the heading of "Architecture," architects are conspicuous by their absence. There is a good paper by Dr. Barwise on the *Plenum* system of ventilation as applied to public elementary schools; in it he criticises adversely the building Regulations of the Education Department, and shows that these regulations entirely ignore the *Plenum* system. He instances the Bolsover Colliery Company's schools, and two Board schools at Leicester, as excellent examples of the system; and, in the discussion which followed, the President of the Section, Mr. W. Henman, referred to his own experience at the General Hospital, Birmingham, and at the Handsworth Technical Schools. The general opinion was undoubtedly in favour of the system, although Dr. Scurfield considered it doubtful whether it was the right system to adopt for hospitals with such a large air-space per bed as at Birmingham—namely, 1,800 cubic feet; for elementary schools, however, where the air-space is only from 100 to 140 cubic feet per head, he was of opinion that "they must have mechanical ventilation or foul air." A paper by Mrs. White Wallis, on "Hygiene of School Life in Practice," before another Section, is well worth perusal. She thinks that "defects of eyesight and of lung capacity are forced upon the children during the period of their school education, preparing them to be physically incapable adults;" but she is careful to say that the fault does not now rest with architects, her opinion being that "architects and engineers, who are practical people, construct almost perfect school buildings from a sanitary point of view." But why "engineers"?

Space forbids us to consider the remaining papers, although many of them are well worth attention. They include a record of tests of the quantity of water required for flushing water-closets, the analysis of water, the purification of sewage, the causes of endemic typhoid fever, &c.

Altogether, this is an excellent number of the *Journal* and shows that the Sanitary Institute is doing very good work indeed.

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*The Purification of Sewage: being a Brief Account of the Scientific Principles of Sewage Purification and their Application.* By Sidney Barwise, M.D., M.R.C.S., D.P.H., Medical Officer of Health to the Derbyshire County Council. London: Crosby Lockwood & Son. 1899.

We know of no book of the same size, or anywhere near it, which gives so complete and accurate an account of the principles of sewage purification as is to be found in this one. Of course the portions dealing with the application of those principles are not sufficiently detailed for the purposes of the engineer, but they are quite sufficient to give any one a good general idea of the chief methods and apparatus now in common use. Amid all the noisy claims of rival patentees, Dr. Barwise preserves his calmness and sanity. Analyses do not mislead him; the determination of chlorine in samples of sewage taken before and after purification is, he says, "always an important one, as, if the percentage of purification effected by any process is to be gauged, the chlorine in the effluent must be practically the same as that in the sewage; it is a pity that this elementary fact has not been more generally appreciated by the advocates of many patented processes, as the analyses they publish prove too much." In the small hours of the morning, sewage is very weak, what arrives at the purification works being largely diluted by subsoil water, &c.; if this takes five or six hours to pass through the tanks, and samples are taken at, say, 9 a.m., of the tank-effluent and of the sewage arriving at that hour, it follows that the effluent will show a far higher degree of purity than the sample of raw sewage; but the trick, for it is not worthy of a better name, will be discovered by a comparison of the chlorine in the two analyses.

This is only one out of many valuable hints given by Dr. Barwise. As Medical Officer of Health for Derbyshire he has had, to quote his own words, "constant opportunities for the inspection of sewage works in actual operation, and for analysing the effluents from such works," and his book of only 150 pages affords proof that he has taken full advantage, not only of these opportunities, but of many others, and that he possesses the great gifts of thoroughness, condensation, and lucidity. Like good wine, this book needs no bush.

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*The Law of Light and Air.* By Alfred A. Hudson and Arnold Inman, Barristers. London: *Estates Gazette* Office, and Snell & Maxwell. 1898.

Before saying anything in regard to this work we would point out that there is no date of publication on the title-page, an omission which is often of great inconvenience to librarians. The book itself is one which will certainly be found useful. The plan of the book is the statement of the law in sections, which are followed by illustrations. This plan at first sight seems good, but it is doubtful whether it is really of much value, unless the legal statements are put very shortly and clearly. This can scarcely be said of this book. For instance, Chaper XII is entitled "Remedies by Action." Section 2 of it is headed, "Damages in Lieu of an Injunction." The first part of this section contains a portion of Lord Cairns' Act, and a slight discussion of it followed by an illustration showing a case in which damages were not awarded. So that on the whole we are inclined to think that a work more truly systematic in form would have been published had the usual plan of law books been followed. This, however, is a criticism of form only. As regards the substance of the book it may be relied on as a safe guide to the subject of which it treats. As the Courts have decided recent cases on light and air they have been noticed in our columns. There is, therefore, nothing new to comment on in this book. It is sufficient to say that it is a safe guide to a particular branch of the law.

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*The Law of Negligence.* By T. W. Saunders, Barrister. Second Edition. By E. B. Wright, Barrister. London. 1898.

This is a small work which deals with the whole law of negligence, and incorporates within its pages the Employers' Liability Act and the Workmen's Compensation Act. It is an old work modernised, and, we fear, without sufficient consideration. For the subject is a huge one, and to include into it the two statutes we have named prevents any possibility of really doing justice to either branch. We are bound to say also that when space is so valuable we are surprised to see it taken up by statements which are of no use whatever. Thus we find under the head of "Specialist" the following, "It would seem a principle that a specialist would be expected to have the skill of a specialist, and if he only came up to the ordinary degree of skill of a family practitioner he would be liable for negligence; but the difficulty would be to define where his skill fell short of the required degree," p. 124. Specialists are not confined to the medical profession, and this paragraph, while it may make all specialists tremble, does not tell them when they are safe and when they are not. Again, there are so many books on the Employers' Liability Act that a buyer would hardly ask for one which is made larger by vague general statements on the law of negligence.

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*Accidents to Workmen.* Being a Treatise on the Employers' Liability Act, 1880, Lord Campbell's Act, and the Workmen's Compensation Act, 1897. By R. M. Minton-Senhouse, Barrister, and G. F. Emery, LL.M., Barrister. London: Effingham Wilson. 1898.

"This book," say the authors in the preface, "may be regarded as a new edition of the Employers' Liability Act, 1880," by the first of the writers of the work. We have spoken favourably of that book, and of this we can also speak well. The plan of the book makes the statutes the basis of it. They are incorporated in it, and comments are made section by section. Then there are various chapters dealing with important points in the Acts. We can strongly recommend the work to both laymen and lawyers.

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## BOOKS RECEIVED.

Beverley Minster. By Charles Hiatt. (Geo. Bell & Sons.)

The Cathedral Church of York.—By A. Clutton-Brock. (Geo. Bell & Sons)

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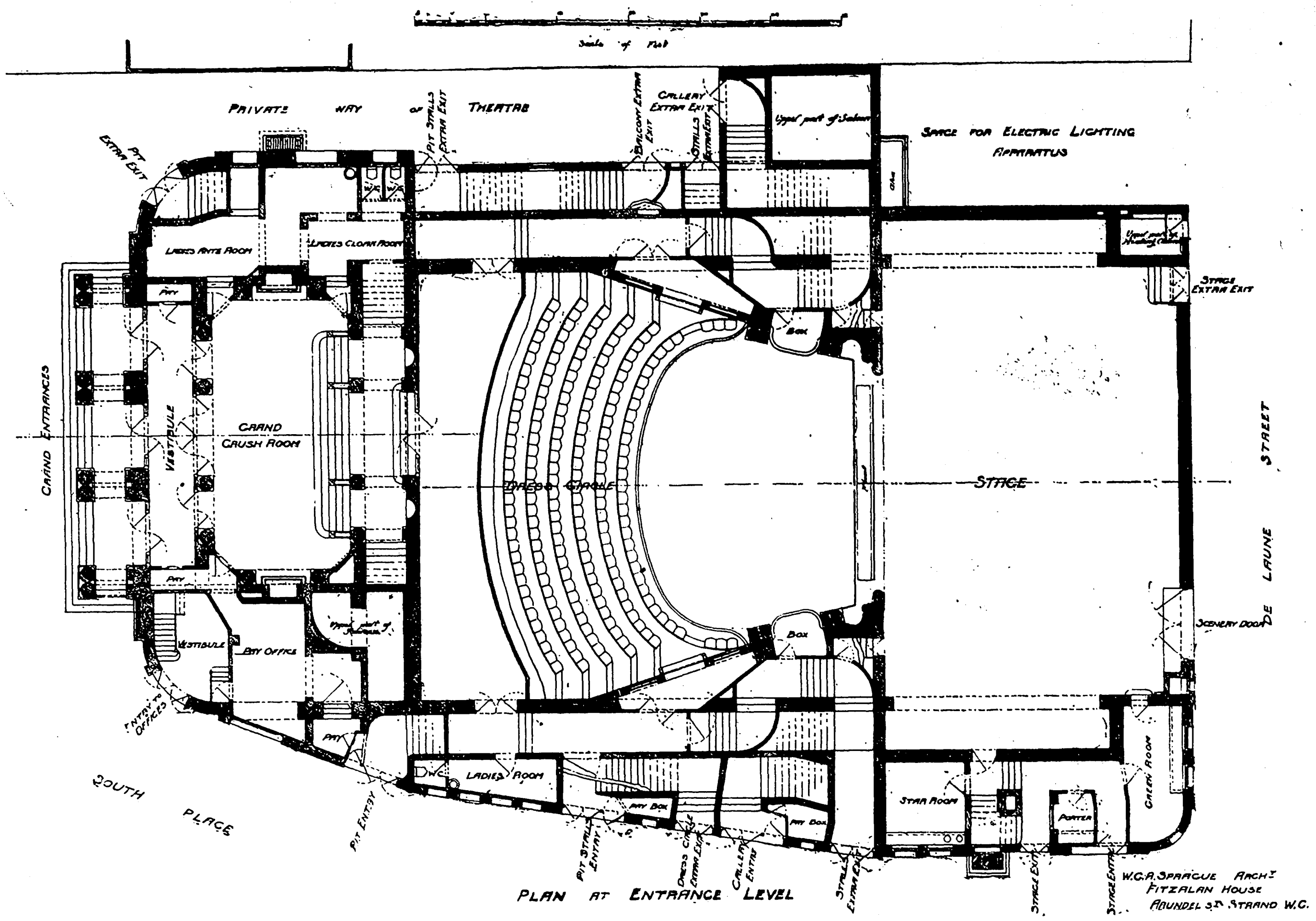
Compensation for Compulsory Purchase.—On the 24th ult. a case for compensation came before Mr. Under-Sheriff Burchell and a jury at the Sheriff's Court, Red Lion-square, to assess the amount to be paid to Spences' Trustees by the Surrey Commercial Dock Company for an improved ground-rent of 28*l.* 7s., with fifty-three years to run, secured upon five shops in Lower-road, Deptford, compulsorily taken by the company and absorbed in their dock premises. A claim was made on behalf of the trustees by Mr. William C. Banks, architect, of Gracechurch-street and Lewisham, for 822*l.* 10s., and Mr. Stenning and Mr. Green gave evidence in support; and Mr. Nye, Mr. Field, and Mr. Dowsett (who put the amount at about 600*l.*) for the company. The jury, after a short consultation in private, awarded 817*l.* 12s. Mr. Gregson Ellis was counsel for the trustees.



*Princess of Wales Theatre, Kennington.*

# Illustrations.

## SCHEME FOR LAYING OUT NEW PLAYING FIELDS, ETON.

THE drawing is intended to represent the land called "Agar's plough," laid out as playing fields according to a scheme made for the Eton governing body. The point of view from which the drawing is made would be a little west of Upton village, looking up the main avenue that terminates eastward in Upton Church tower, and in Eton College Chapel to the west. "Agar's plough" is shown as divided into four irregular quadrangles by avenues and counter avenues, with architectural ornaments at their intersections. Since it has been urged by some, who are possibly not aware of the extent of the ground to be treated, that these compartments would be too small for cricket, it may be well to point out that the least of them is more than twice, and the largest quite five times the size of the present "Upper Club" ground. The Eton and Slough road is enclosed in the avenue on the right of the drawing, and Datchet-lane lies among the trees of the next cross avenue beyond the round pond. More land beyond the Slough-road was treated in the plans and report, but in the view illustrated this is not included. F. INIGO THOMAS.

⁂ We may add that the drawing was exhibited at the last Royal Academy Exhibition. As a first attempt, as far as we know, to lay out school playing-fields on an artistic scheme, it is of considerable interest.—ED.

## DESIGN FOR A ROYAL MAUSOLEUM.

THIS interesting design, of which we give the complete drawings, is the one for which the Council of the Institute of Architects awarded its author, Mr. Jas. B. Fulton, the Tite Prize, founded for the encouragement of the study of Italian architecture.

We have already made some comments on the design, in the course of an article on the Students' designs generally, and need only here leave Mr. Fulton's drawings to speak for themselves.

## PRINCESS OF WALES THEATRE, KENNINGTON.

WE give the perspective view and plan of this theatre, recently built from the designs of Mr. W. G. R. Sprague.

The whole of the main frontages are executed in stone. The principal parts of the house are entered from the Kennington-road through a colonnade into a vestibule or lobby and thence to the crush room, the walls of which are lined with a specially selected Pavonazzo marble. The dress circle is approached by a marble staircase, branching off right and left from a bold flight of marble steps from the grand crush room. Directly above the crush room is a ladies' foyer and saloon, approached from the grand staircase. The style of decoration adopted throughout the interior is French Renaissance, with paintings introduced in the ceilings and panellings.

The auditorium is about 70 ft. by about 60 ft., and constructed on the two-tier principle, viz., stalls, pit-stalls, and pit on the ground level, the dress-circles forming the first tier or balcony, and the gallery and amphitheatre the second floor. The theatre throughout is heated and ventilated on the "Plenum" system by Messrs. Emly & Sons, of Newcastle, fresh warm air being introduced by means of conduits and flues to the various parts, and the foul air extracted by exhausts. A complete system of fire hydrants is arranged for all parts, and the stage is fitted with a special double asbestos and steel fire-proof curtain, so arranged as to be under the control of one man. This work has been carried out by Messrs. Shand, Mason, & Co. The stage is about 80 ft. wide, by about 50 ft. deep, provided with the latest improvements and machinery, and has been fitted up by Mr. Cawdrey, stage carpenter and machinist.

The electric light is used throughout, obtained from independent plant, set up in the electric engine-house adjoining, and also from the Electric Company's main, power being provided sufficient to supply upwards of 3,000 lights. The installation has been carried out by Messrs. Barclay & Sons, under the supervision of Messrs. Lucas & Pyke, consulting engineers. As a reserve in the event of either of the sources of electric light supply failing, a gas installation is also provided, which has been put in by Messrs. Stott.

The dressing-rooms are numerous and provided with all the best sanitary appliances, and the dressing-room block is entirely separated from the stage by brick walls and iron doors.

The furnishing has been carried out by Messrs. Hampton, of Pall Mall, and Mr. Southorn, of Liverpool. The builder is Mr. Walter Wallis, and the decorations of the entrances and auditorium have been executed by Messrs. De Jong.

## SLOANE COURT, S.W.

THIS large group of West End residences and flats has been in the course of building during the last two years.

The two lines of structures shown in the perspective are now complete, and a third parallel line has been commenced. The site overlooks the charming old gardens of Chelsea College, and is about one minute's walk from Sloane-square.

The line on the left consists of family mansions. The buildings on the right are flats, of two reception-rooms, four bedrooms, and offices, &c., fitted up with every modern convenience.

All the details and the finishings have been carefully considered by the architects of the entire series, Messrs. Rolfe & Matthews, of London.

The architects of the above building have declined to furnish any plan of it, a decision which they did not communicate to us until it was too late to withdraw the illustration, as we should otherwise have done. We may take the opportunity of pointing out that we do not profess, or desire, to publish pictures of buildings without plans; such illustrations failing short of the proper object of an architectural journal.

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DRINKING-FOUNTAIN, WALTON-ON-THAMES.—A drinking-fountain in granite has just been erected at Walton-on-Thames by Messrs. J. Whitehead & Sons for the Metropolitan Drinking-fountain and Cattle-trough Association.

# Correspondence.

*To the Editor of* THE BUILDER.

## THE ARTS AND CRAFTS, FROM ANOTHER POINT OF VIEW.

SIR,—As an architect, living in the country, who has employed craftsmen of all sorts, and of varying skill and position, and who, moreover, has from the very first (now over thirty years ago), not only found it politic, but also, it is hoped from an innate regard for his kind, has always tried by kindly and brotherly co-operation to treat them as fellow-workers, I have no hesitation in affirming that, from the *craftsman's* point of view, he not only feels lost without a head officer—call him the "master-mind," or what you will—but that his best efforts always go out to such a one, provided he is a reasonable being. As with the architect, so with the craftsman; I have always desired to be perfectly fair, frank, and straightforward, and to give, both publicly and privately, full credit for excellent work; and blamed, with equal candour, work carried out badly or half-heartedly. I have also given every encouragement to the learner and to a person lacking skill but possessing hopefulness or perseverance.

The modern craze (for I believe it *is* a craze, and will pass away), that the craftsman is going to do nobler work, *per se*, without any designer or design at all, is as unnatural as it is absurd. I have very frequently talked it over with my loyal workers, always to discover that their ideas on the point coincided with my own. A short time ago I went to a "function," taking with me the two craftsmen concerned in working into a concrete form the object to be dedicated, and thus publicly acknowledging their services, and my sentiment of regard for them, as also my sense of the utter futility of producing a design, however powerful, without hands to bring it to good effect. This is, I believe, that *true* union of the Arts and Crafts and *not* the mere *talk* about it.

I ask the men who "prate" only, do they, for one moment, allow their craftsmen to improve (?) a single detail of the hybrid and extraordinary "exhibits" (hateful word!) that one occasionally finds on view at the "Arts and Crafts" Exhibition in Regent-street? I trow not! I have known excellent foremen in large shops who pass their lives among good work, the very *best* of work, who, in my absence, have done their best to ruin the work they were engaged in, for want of some knowledge of that unwritten law of accord and good taste, and the laws of evolution in ornament (which really do exist, in spite of all that may be urged to the contrary). Depend upon it, the laws of division of labour cannot be rightly divorced or broken through, and, while the art-man confines his main attention to his art the craftsman must give equal attention to his craft, whether to the realisation of it in stone, wood, iron, or whatever material it be, both remembering that unity of effort is as important as on board a ship, where the captain, dependent as he is upon his subordinates, is still the chief officer, however kindly he may be to them, or, I might say, perhaps with greater truth, *because* he is kindly, considerate, and just, rather than imperious, in his dealings with his crew.

It was just this habit of sympathy with his fellow workmen that made the architecture of the late J. D. Sedding so excellent and so interesting; not because he took, or allowed to be taken, liberties with his men or his work. That freedom which can be brought about by a personal talk, showing fellowship and good feeling between the artist and his craftsmen, is bound to work well; but not such as accrues from either the neglect of the artist to look after his work, or the priggishness of certain craftsmen who think that work would be much improved by their emancipation from the wholesome control of the artist.

The *true* union, I take it, between the "Arts and Crafts" is that healthy condition of affairs which makes it quite clear from the outset that head, hand, and heart must march in perfect unison and, in the words of Scripture, "the eye cannot say unto the hand, I have no need of thee." The motto of Mediæval times seems to have been "Not the workman but the work," and it was a motto well realised, as the names, both of the artists and of the craftsmen, have been but rarely handed down to us. In the times of the Renaissance this seems to have been different, especially in Italy and France, where, whether they wished it or no, the great *thinkers'* names *have* descended to our own day, but those of the *producers*, painters excepted, but rarely. However humble a man may be, if he works from a high motive, he will rejoice, not because of the vast sums of money he has spent, or with which he has been entrusted, nor even of the elaboration and *richesse* of the works produced under his care, but rather in the sense of fitness, good proportion and beauty of them; and will take an honest pride and gratification to his own soul that such have, in spite of poor professional recognition and miserable financial advantages, made his calling a delightful one; and, though it may not *always* be so, I rejoice to think that there are many "hewers of wood" who still take more pride in doing their very best, even under direction and control, by reason of that feeling of brotherhood to which I have alluded, than they would have done over a piece of costly furniture evolved "out of their own heads." The great enemies to the true union of art and craftsmanship are, I believe, "trades-unionism" and "machinery." Such may be very well in craftsmanship *per se*, but not for works of a partly artistic nature; they take the ground from under the very feet of those whose wish is not only to make the pattern, but also to encourage their fellows to copy it worthily. Even a pair of boots, made without regard to the history and traditions of the shoemaker's craft, must not only be ugly to look upon, but, I fear, most uncomfortable to wear also; and a design made by a craftsman, without some regard for the traditions of the past, both as to design and method of workmanship, would be one that even the "Arts and Crafts" Exhibition would hardly be proud of. No one is more sensible than myself of the very many good results which flow from that Institution as a whole, but, to say that perfect freedom from the control of the master-mind is a thing of the past, so far as it is concerned, would, I think, be the reverse of truthful. Any striving after originality is a good thing, but a thing may be beautiful that is not original, and original without being beautiful. "Design with beauty—build in truth" is an admirable watchword, and, though some may have eliminated all "true principles" from modern work, there is yet a lower bathos still yawning beneath us—that which would ignore all principle whatsoever.

One other point and I have done: If we leave off dealing with those who serve us badly or indifferently, we must, if consistent, be loyal and true to those who serve us well and faithfully. One of my craftsmen, who has worked for and under me for many years, and still talks with honest pride, not of *my* work, but of *our* work, will never be deserted by the writer of this letter, so long as he thus acknowledges the true union of the "Arts and Crafts" in this pleasant and honourable way.

Depend upon it the more the craftsman shows that he *can* be trusted, in matters purely artistic, by the artist, the more *will he* be trusted.

E. SWINFEN HARRIS.

## LABOUR IN THE BUILDING TRADE.

SIR,—May I use your valuable columns to draw attention to some serious evils in the present condition of labour in the building trade? This trade is at present in a most properous condition, and all competent mechanics have the opportunity of working full time at a higher rate of pay than has ever been paid before, and so laying by for the slack time which comes periodically to every trade. Instead of doing so, a large number of the men are wasting their time on trivial disputes, and are doing less work for the higher pay than has ever been done before. Surely this is very unfair. Builders are strictly bound to the amount of their contract, and if the trades unions force them to pay a certain minimum rate per hour to mechanics, they should also make it a strict rule that a man is not to be considered a fully qualified mechanic unless he turns out work at not less than the average rate. For instance, no man should be rated or paid as a fully qualified bricklayer unless in ordinary work he can lay at least fifty bricks an hour, or a proportionate amount in more difficult work, and the other trades should do the same. If employers are to be bound to do a certain amount of work for a fixed sum of money they must, in turn, have a guarantee that their employés will work up to a fixed standard, if they are paid full wages. Otherwise, business will become impossible, and the men will find out too late that the way to secure high wages is not by doing less work. Already we are losing trade, owing to the uncertainty of orders being executed in England in consequence of strikes. If the masters will combine, and form a fund to carry the smaller firms through a time of stoppage of trade, they can force the trades unions to cease their present suicidal policy of encouraging men to work badly and slowly, and preventing boys being properly apprenticed and taught trades. The price of building affects every other trade, and if we are to compete with other nations our trades unions must devote as much attention to keeping up the standard of work as they do to keeping up the standard of pay; and the men must understand clearly, that pay is dependent on the quality and quantity of work done, and the profit produced by it. Until this is clearly understood, these disastrous disputes will go on. EUG. M. NICHOLSON.

2 and 4, Old Queen-street, Westminster.

## DO WORKMEN SHIRK?

SIR,—The *Municipal Journal* and *London* of January 5 and 12 last, brought this matter forward under the above heading, and several prominent men replied thereon as to whether workmen in the building trade of the present day (bricklayers in particular) do as much work as formerly, and whether it is better done.

Sir Richard Farrant, managing director of the Artisans' Dwellings Company, says the work is not done better, and that there appears to be an unwritten law with the bricklayers that 400 bricks per man per day is the maximum quantity to lay. Mr. Henry Holloway, of Holloway Bros., builders, states that the cost to lay bricks now is 100 per cent. more than ten years ago, and the quality of the labour is inferior. "A Borough Engineer" says the quality of work done now is inferior to what it was formerly and it costs more.

Mr. Alderman Taylor, L.C.C., on the other hand, says the system of work now is entirely different, for men never scamp it, and the work is better, much better. Mr. Stephenson, secretary to the Labourers' Union, states that "the evolution of society renders it necessary that there should be a reduction in the output of labour." (This appears a very neat way of saying a man shall do as little work as possible.) Mr. John Burns, M.P., L.C.C., asserts that any one with eyes to see can see that work is better done, and must therefore necessarily be done slower, and cost more money; and if sometimes work is plentiful and labour scarce, a bricklayer, following the example of an ex-company promoting duke or an ex-lord mayor, will construe his altered position into doing less work.

Now, sir, having spent over forty years actively employed in the building trade, I ought to know something about it, and I have no hesitation in saying that workmen of the present day do not do anything like so much work; and, "to say the least," it is no better done than formerly. The time was when a man would try to do his work creditably, and in as little time as his fellow workmen, but now every man endeavours to do *not more* than his fellow, and in such a manner that it may possibly pass. If in any branch of the trade skilled labour has apparently improved, it is not because of greater skill in the artisan (except in the plumbing trade) but of the adoption of improved machinery and appliances.

Have the three last named gentlemen the personal knowledge of the subject necessary to form a correct judgment? Have they the opportunity of watching and scrutinizing, hour by hour and day by day, the manner in which the work is done? I contend their knowledge is obtained from hearsay. The cook who makes the pie must be allowed to know better of what it is made than the person who eats it. Mr. Alderman Taylor says bricklayers insist upon doing their work well in the way of flushing up, &c.; hence better work. Now the flushing up business is one of the things which bricklayers nowadays persist in not doing; it was formerly done by labourers, but as that is not now allowed by the trade, it is not done at all, without continual insistence by the clerk of works.

Mr. Burns says the 1,000 bricks a day period has gone by, because, now that glazed and pressed bricks are used, it takes much longer to lay them to a sharp and true line, and that Sir Richard Farrant's Streatham estate is built much better than his former estates, notwithstanding Sir Richard's assertion to the contrary. I wish to point out to Mr. Burns that extravagance in design, as at Streatham (as compared with former estates), does not mean better work, and that a brick with a straight and true face ought to be laid quicker than a crooked brick; that it ought not to take longer to do work right than wrong, and that due allowance is always made when glazed bricks are used; also that anybody acquainted with the trade knows that red facings are no better done (and certainly the same applies to party and inner walls) than they have been done for ages past.

What is good brickwork? It is each brick to be laid straight and true, properly bonded and bedded, and this means a mortar bed on every side of the brick which comes in contact with another brick. And this bedding, or grouting, is the most important part of the performance. Our forefathers studied this latter a great deal more than the bonding of the bricks. See the old foundations often dug up in London; and where can you find stronger work?

Mr. Burns also condemns the clerk of works as an unnecessary and expensive adjunct in the building trade, and he intimates that on L.C.C. works several of these gentlemen are employed on one job. Of course, every one acquainted with the trade knows that there is never more than one clerk of works on one job unless it is a very large job indeed; in fact, most of the L.C.C. clerks of works have each several jobs to superintend. I emphatically assert that no work is, or ever has been, properly done unless properly supervised, and it is a slur upon that useful body of men to state that they assist in running up the cost of the work.

I am informed by one of our largest London brick merchants that bricks are now 40 per cent. dearer than in 1890 and 1875, but they are exactly the same price now as they were in 1879. Now, as brickwork costs 75 per cent. more than at any former period there must be something radically wrong, and I contend that, apart from the question at the head of this letter, there are two main causes which help to swell up the cost.

One is the great lack of *esprit de corps* existing between foremen and workmen, and between employer and employed. In former times a foreman mixed more with the men, assisting and showing them how to do it, and often taking a turn at laying bricks; but that sort of thing is not permissible now by the bricklayers; you may tell them, but you must not show them how to work. I have known a foreman to be ordered off the scaffold by the bricklayers and told to go in his proper place *i.e.*, his office, as he was not wanted on the scaffold.

And surely, as regards the employer, is there not room for the exercise of a little more of the doctrine of charity to those who work for him?

Another great cause is the abolition of apprenticeship, for which the L.C.C. as pioneers of reform are to be blamed. No apprentices or boys are to be seen on any of their works; boys may be allowed to roam the streets to become Hooligans, or the more fortunate may take a stool under a gas flare in some office, and by the time he is a man may earn 10s. less per week than a mechanic.

We in London depend entirely on the country to manufacture workmen for us. There a workman, through apprenticeship, becomes a good artisan, and there, in consequence of a good all-round general knowledge of all branches of the trade, good foremen and clerks of works are obtained. Technical education will never make a mechanic or a foreman or a CLERK OF WORKS.

## LIABILITY OF ARCHITECTS.

SIR,—Some time ago (about two years, I should say) I read that an "Owner" had obtained judgment against his architect for an amount by which a builder's bill exceeded the contract price. Is an architect liable for extras unless he gives a written guarantee or is guilty of culpable negligence or collusion with the builder? Many specifications, however carefully drawn up, have omissions, often very trivial, and of course the builder has to be paid if the items omitted in the specification are put into the work. Is the architect liable for the cost of these items, as the best of men sometimes make mistakes? C. S. T.

*** It is always dangerous to answer theoretical legal questions, since everything depends on the facts of a case; but it is clear that an architect is not liable for extras—in other words, for damages—in consequence of some negligent act, unless clear evidence of want of proper skill and care can be shown.—ED.

## HULL CENTRAL LIBRARY COMPETITION.

SIR,—The present mode of forwarding designs, without motto or distinguishing mark, has some disadvantages, as I have experienced in this instance.

With my plans another competitor's report has been returned. They all bear the same number, put on by the same hand.

I have complained to the Town Clerk, but he repudiates all responsibility and declares the alteration "was certainly not made by any one in my office."

It is too bad that competitors should be the victims of such carelessness.

May I ask, with your kind indulgence, the competitor (who has mine) to exchange reports with me?

A. H. GOODALL.

14, Market-street, Nottingham.

## THE METROPOLITAN DRINKING FOUNTAIN ASSOCIATION.

SIR,—It has been brought to my notice that reports are being circulated that this Association is about to discontinue its good work.

May I trespass on your valuable space to give such reports a most emphatic denial, and to state that this Association is, on the contrary, doubling its efforts to provide new drinking fountains and cattle troughs to keep pace with the growth of the Metropolis. WM. SIMPSON, Secretary.

# The Student's Column.

## ARCHITECTURAL HYGIENE.

### V.—SANITARY CONSTRUCTION.

| | |
|---|---|
| Walls. | Floors. |
| Damp Courses. | Roofs. |
| Chimneys. | Furnishing. |
| Wall Coverings. | |

THE late Sir B. W. Richardson, who did so much for sanitary science, said that "The intention and object of domestic sanitation is so to construct houses for human beings, that the various diseases and ailments incidental to bad construction may be removed to the fullest possible extent."

In the following remarks we shall endeavour to point out those defects which should be avoided in the construction of houses, and to indicate the most sanitary way of dealing with the house so as to ensure healthy conditions.

The principal enemy we have to contend with is *damp*, which must be kept out of the building if it is to be healthy and fit for occupation. The materials used in building should therefore be as compact, dry, and as impermeable as possible. The site should always be covered with concrete, as explained in Chapter II., and it is evident that materials which are as non-porous and non-absorbing as possible should be used in the construction of the house, and especially those which hold as little as possible of noxious substances which, when set free, are diffused and cause disease. Bricks should be as free from porosity as possible, wood sound and well seasoned, and plaster and other wall coverings impermeable.

*Walls.*—In the component parts of a house, walls are an important element, and we may fitly discuss their construction from a hygienic point of view. Walls are usually constructed of brick, stone, timber, or concrete, on the quality of which depends the good or bad character of the structure in which they are built.

The porosity of any building material can be tested by placing it in water for a definite time and weighing it before and after absorption. The following is a list of different materials with their absorption per cent. of their dry weight, according to Rivington:—

| | | | |
|---|---|---|---|
| Granite ... ... | ½ to 1 | per cent. | of its weight. |
| Malm bricks ... | 20 to 22 | „ | „ |
| Grey stocks ... | 10 | „ | „ |
| Hard stocks ... | 7½ to 8 | „ | „ |
| Common stocks ... | 10 | „ | „ |
| Blue Staffordshire bricks ... | 6 | „ | „ |
| Good sandstones | 8 to 10 | „ | „ |
| Portland stone ... | 14 | „ | „ |
| Bath stone ... | 17 | „ | „ |
| Kentish rag ... | 1½. | „ | „ |

An ordinary London stock absorbs about one-tenth of its weight. It should be mentioned that a brick backing, which is often only 4½ in. thick, but which should not be less than 9 in. thick, is generally placed behind all stone walls. Care must be taken that the backing is thoroughly bonded with the stone facing.

The principal consideration in building brick or any walls is to keep out the damp. Damp may enter the building in two ways, viz.:—(*a*) horizontally through the walls through damp earth or by rain driving against the surface, and (*b*) vertically, by the action of the ground water, in being drawn up by capillary attraction. (*a*) The horizontal entrance is prevented by a vertical damp course, by hollow walls, by areas, or some impermeable covering such as tiles or cement affixed to the wall. (*b*) The entrance of damp vertically is prevented by a horizontal damp course of some non-absorbent material through which the ground water cannot pass.

*Damp Courses.*—Before proceeding to discuss the various methods of applying damp-courses to suit different purposes, we will look at the various materials used for the purpose.

1. Two courses of slates in cement, the slates being laid so that they break joint, are a very usual but not very effective way of preventing the uprising of the damp, as the slates are liable to crack with the slightest settlement of the wall.

2. Asphalte is frequently used. Seysell rock asphalte, laid in two layers of ¾ in. each, forms a very good damp course. The ordinary tar asphalte is cheaper, but not so effective.

3. Lead has been used to form a damp course, but is not now often employed.

4. *Callender's* patent bituminous composition may be mentioned, as it has been much used in England. It is sold in sheets of varying widths, and is useful for both vertical and horizontal damp courses. One of the useful properties that it possesses is its elasticity, so that in case of a settlement in the building it is still effective. It should be laid with lapped joints, the pressure of the wall above forming it into one homogeneous mass.

5. Another form of damp course is to place a course of *air bricks* round the walls. These should be formed of vitrified fire or other clay which is non-absorbent, and which, being set in cement on the under and upper surfaces, effectually prevents the entrance of damp, and at the same time ventilates the space under the ground floor, thus preventing any tendency to dry rot in the timbers. In putting damp courses into old buildings where they have been omitted, this is the best and cheapest method, as a course of bricks can be cut out all round the building, and the air bricks inserted in sections.

All *horizontal damp courses* should be fixed at a height of not less than 6 in. above the surface of the ground adjoining the wall, and, of course, underneath any wall-plates and flooring which it is essential to protect from damp.

Illustrating these remarks by actual examples, we have, firstly, as a common instance, (i.) a *house without a basement*, which is simply treated with a damp course placed, as shown in fig. 16, not less than 6 in. above the surface of the ground. It is not advisable to place it nearer than 6 in. to the ground, because water might splash or be blown against it, and so be drawn up into the walls above it.

ii. In *habitable basements*, or, what is the same thing, a building in which the ground floor is below the level of the ground, it is necessary to prevent any damp entering the wall horizontally as well as vertically. This is effected either by means of an asphalte lining in two thicknesses of ¾ in. each, as shown in fig. 18, or by means of what is known as a "dry area" placed outside the wall, and either left open and drained or covered over and ventilated, as illustrated in figs. 17 and 19. This dry area may be 12 in. wide, or it may be only 2½ in. wide, in which case it becomes really a portion of a hollow wall to the basement, fig. 20. The cavity should be carried up 6 in. above the surface of external ground, and a damp course inserted at the base and top of the cavity. In exposed situations, hollow walls may be used with advantage. These walls (figs. 20 and 21) are usually brick and one-half brick thick respectively, and are connected together with bonding bricks at intervals. Architects differ as to whether the brick or half-brick wall should be placed externally. There are advantages and disadvantages in both, but on the whole it seems better construction to put the half-brick wall externally, so that the floor and roof timbers can rest on a solid 9-in. wall.

The bonding bricks are of the shape shown in fig. 20, the reason for which is that rain may not be drawn through from the outer skin to the inner one, and so do away with the advantage of the hollow wall. These bonding bricks are therefore curved upwards so as to prevent the rain being drawn in. The section is also shown in fig. 21 through a head and sill of a window in a hollow wall, showing how the damp in the cavity is prevented from touching the woodwork.

Walls, especially at the seaside, are often protected from the driving rains by having their faces rendered in cement, which, although not generally pleasing in appearance, is certainly effective.

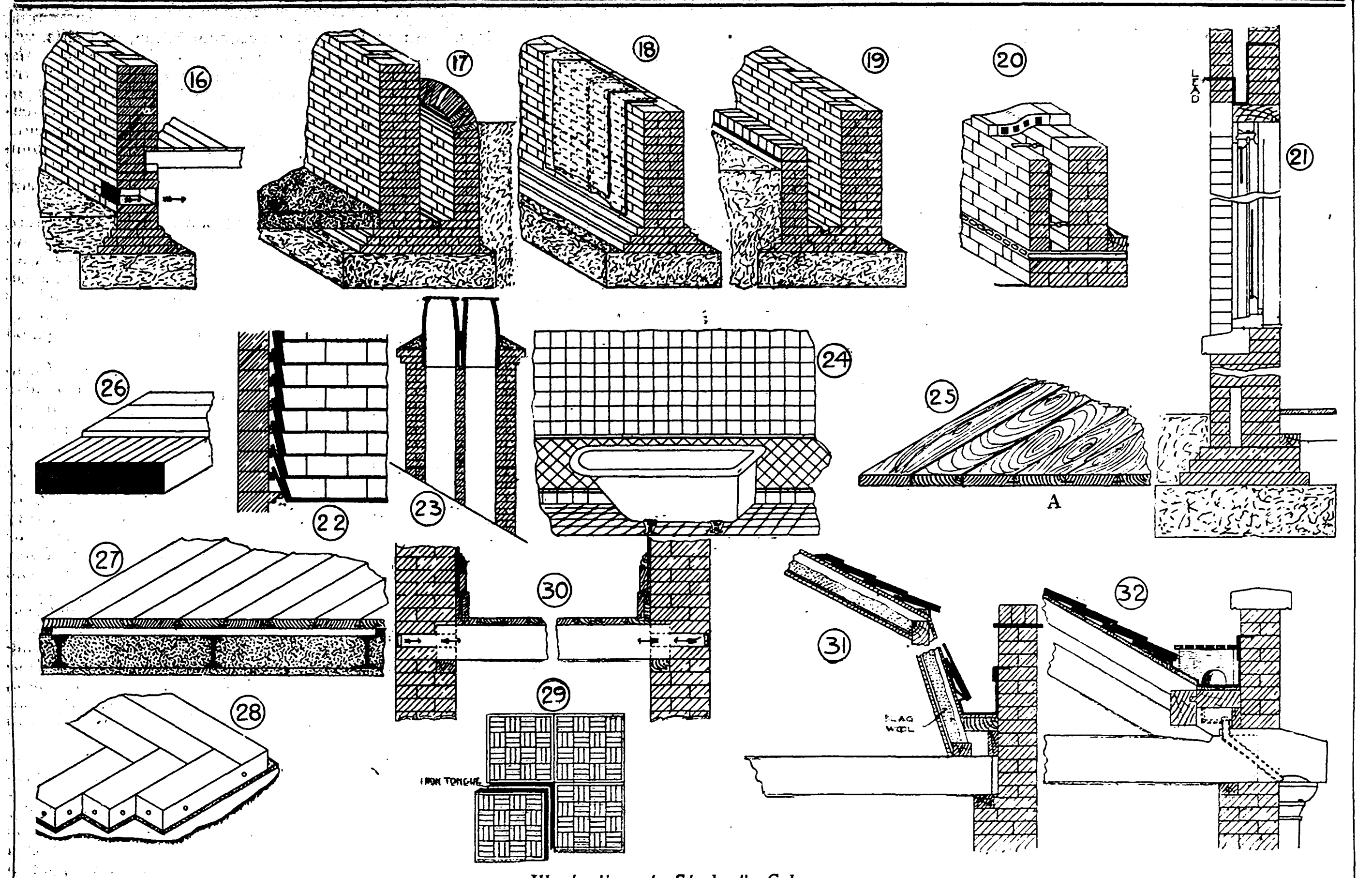
*Tile-hung walls*, as they are called, are often adopted for the same purpose, and form a well-protected surface on an exposed site. Fig. 22 shows one method of effecting this. Tile battens are plugged to the wall at the proper gauge, and to these the tiles, formed with projecting nibs, are hung. This method of roofing the walls, as it were, is very effective; a tilt is generally given to the bottom courses, so as to throw the rain falling on to it clear off the wall. By using Wright's fixing blocks, battens are dispensed with, the tiles being nailed direct to the blocks. The tiles may also be secured by being plugged direct into the joints of the brickwork.

Old, damp, and porous walls can often be treated with tile hanging, cheaply and effectively, for the prevention of damp.

*Chimneys* should never have less than one brick external walls above the roofs; they should be built in cement mortar, and provided with a slate in cement damp-proof course just above the roof level, so as to prevent rain water soaking into the roof timbers. Chimneys should be kept as much as possible together, and be as protected as may be, so as to ensure a good draught.

*Wall Coverings, Internally.*—An ideal wall covering is one which is impervious, and which, having a smooth surface, can be easily washed. In this respect *glazed tiles* are an excellent covering, and can be used in bathrooms, sculleries, water-closets, and such like places, and can be kept clean and sweet by frequent washing. Fig. 24 shows an application of ordinary plastering finished with a painted surface, which is cheap and effective; silicate paints being preferable to those containing lead. Zinc white should be used in preference to white lead, because it is not affected by sulphuretted hydrogen, and it is more healthy to work with. For bedrooms, distempering is even perhaps better than painting; it is cheaper, and can be executed frequently in bright and cheerful colours.

Ordinary pulp papers are not desirable as wall coverings; they are most unwashable, collect the dust, and are absorbent. To remedy this washable papers were introduced. Cheap papers may be varnished, and so rendered



*Illustrations to Student's Column.*

more wholesome. In no branches of house furnishing have so many improvements been introduced of late years as coverings. These are too numerous to mention, except that they are of the Lincrusta type, and as easily cleaned by washing, although most of them err in departing too much from a flat surface, for the raised patterns excel as dust and dirt catchers. Enamelled iron set in wooden frames is useful for restaurants and suchlike places, where continual cleansing is necessary. Ceiling coverings are made in the same kind of papers, but plastering is in general use, which, when whitewashed or distempered in colours, answers very well, and can be easily cleaned. Ceiling papers are bad, because of inaccessibility for cleaning, and their power of retaining and multiplying germs. The ordinary lime and hair *plastering* is to be deprecated on many grounds. The *Danville Asbestic* plastering, which has been much used in America and Canada, and is on the walls and ceilings of the Carlton Hotel, has much to recommend it. It is fireproof, having resisted tests up to 2,000° F., germ proof and sound proof; so that it is a material that can be advantageously used in many situations.

*Floors* may be considered under—

*(a) Ordinary.*
*(b) Solid.*
*(c) Floor Coverings.*
*(d) Ventilation.*

*(a) Ordinary Floors*, constructed with wooden joists placed one foot apart and covered with floor boarding, and ceiled with lath and plaster beneath, are unhealthy, because of the accumulation of dirt and dust which takes place. It has been so often pointed out that we cannot expect to know what "Home, sweet home" really means until the dust and vermin collecting cracks between floor boards and ceilings and behind skirtings cease to exist. Every time such a floor is washed it is only another addition to the accumulation of filth which passes through the open joints of the floor boards to rest on the plastered ceiling beneath, as shown in fig. 25. Whenever such a floor is used, it should be covered with grooved and tongued, or ploughed and tongued, boarding, so as to prevent the dirty water and dust from falling between the boards. This method is shown in the fig. at A.

*(b) Solid Floors*, of whatever form, should be used where possible in order to prevent the chance of dust and vermin being harboured in cracks and crevices. Ordinary wooden joists are sometimes used, placed side by side; this method was patented many years ago by Messrs. Evans & Swain (see fig. 26) for fire-resisting purposes. In this case the floor boarding is nailed direct to the upper surface, and the lower side of the joists have dovetailed grooves formed in them so that the plastering may have a better key, or the joists may be left exposed on the under side, a V joint being formed between the joists,

We have said that any system of solid fire-proof floor is preferable to the ordinary floor. It would be foreign to our purpose to enquire into these, but we may mention a system which is practically as good as any of them, and which costs little more than the ordinary combustible wooden floor. The system referred to is that in which steel joists, 5 in. or 6 in. deep, are placed, about 2 ft. apart, and the space between filled up with 6 in. or 7 in. of coke-breeze concrete (fig. 27), composed of coke breeze and Portland cement (about 4 to 1). The concrete is taken 1 in. below the bottom flange of the girders, so as to protect them from fire, and to enable the ceiling to be plastered. The floor-boards can be either nailed direct to the concrete or rest on fillets, about 3 in. by 2 in., laid flat, and fixed to the concrete. The space thus formed is useful for running gas and water pipes, &c. If the boards are nailed direct to the concrete, there is no space for collection of dirt; but in that case care must be taken that the concrete is thoroughly dry before laying the boards, otherwise dry-rot may set in.

(*c*) *Floor Coverings.*—The floors of bath-rooms, sculleries, water-closets, larder, lavatories, greenhouses, and sometimes of halls should be covered either with hydraulic pressed tiles, marble, mosaic, or some substance of a non-absorptive character, so that they may be washed down frequently. In the case of lavatories, bath-rooms, and sculleries the floors are best laid sloping, so that when washed down the dirty water may be led, by means of a duct pipe, into a rain-water head or to discharge over a gully trap.

Ordinary basement floors are best finished with solid wood blocks (fig. 28), laid either straight or herring-bone on a 6-in. bed of Portland cement concrete, and in some form of bituminous composition.

For ordinary rooms the best floor covering is either hard wood, such as oak laid in half-batten widths and beeswaxed and polished, or good selected deal, stained and well varnished, forms a good covering. The edges of the boards should be grooved and tongued.

Parquet flooring (fig. 29) may be laid over the whole surface in order to ensure an uniform and impervious surface without cracks in which dust may accumulate. It may be cleaned with a mixture of turpentine and beeswax.

*Carpets* should *never* cover the whole floor, but should be left with a margin of parquet or stained and varnished boards, so that the corners of a room, where dirt most readily accumulates, can be easily cleaned, and the carpet may be taken up and shaken without moving the furniture, most of which is usually placed against the walls.

(*d*) The *ventilation* of the space under floors is always necessary where there is a space between the floor boards and ceiling (see fig. 30), and when a wooden floor is placed over the concrete or other foundation laid on the ground. Otherwise dry-rot will set in, and the floor timbering gradually rots away and perishes. This ventilation is effected by means of perforated iron gratings or air-bricks built into the outer walls, and so arranged that cross ventilation is produced. In many old buildings, floors are continually having to be taken up because of this precaution having been neglected.

*Roofs and Coverings.*—Although attics with sloping ceilings are placed in the roof for economy, they are bad from a sanitary point of view, because of being extremely cold in winter and hot in summer. Care must, therefore, be taken to keep an air space between the ceiling of the room and the outer covering of the roof; or, if the whole of the room is in the roof, to fill in between the rafters with slag wool and to place roofing felt or Willesden paper under the slates or tiles (fig. 31). In all cases it is advisable to have rough boarding and not battens under the slates, the continuous wood surface forming a non-conducting material. The eaves of roofs should project so as to protect the wall from rain, and the latter should not be allowed to run down the walls and make them damp.

*Cornices* and all projections should be constructed to throw off the rain by means of "throating" and weathering.

*Rain-water Gutters* should have a sufficient fall to carrry water off quickly to the drain-pipes. *Lead gutters* behind parapets should be wide enough to walk along in (at least 12 in.), and should be provided with snow guards (fig. 32), so that when the thaw comes after snow the snow-water can drain away unimpeded by the bulk of the snow, otherwise it may block up the channel, finding its way through the tiles and slates of roof, and thus injure the ceilings and internal fittings beneath. These snow-guards are formed of transverse bearers, across which laths are nailed, ¼ in. apart, the bearers being arched to allow of the water passing along the gutter. As to the comparative advantages of different roof coverings a few remarks may be made.

*Tiles* are warmer in winter and cooler in summer, both important considerations, apart from their appearance. On the other hand, they are heavier than slates, and require stouter timbers, and the bad kinds are very absorbent. But there can be no doubt that, being non-conductors of heat, they are much to be preferred on houses in which the attics are utilised as bedrooms.

*Slates* possess the qualities of being non-absorbent and light, but they are good conductors of heat, which causes houses roofed with them to be cold in winter and hot in summer, and they are therefore objectionable. These remarks especially refer to the thin Bangor and Welsh varieties, and not so much to the heavy green Westmoreland slates, which are to be preferred.

Lead, zinc, and copper are all used for flat roofs; they are good conductors of heat, and, therefore, bad from this point of view, though their impervious qualities are good.

*Furnishing.*—The house being built, it is further evident that in furnishing woolly and fluffy materials are bad; heavy curtains to beds and windows, carpets which cover the whole room, and which are *nailed* to the floor, so as to prevent them being properly cleaned and shaken, are all unsanitary. Finally, all materials and fittings that will allow of the lodgment of dust, which absorb dirt in any form, and which on being shaken yield a harvest of dust, should not be used.

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## *OBITUARY.*

Mr. Harry Bates.—The sudden death is announced of Mr. Harry Bates, A.R.A., the well-known sculptor. It was in 1883 that Mr. Bates, who was born in 1847 at Stevenage, Hertfordshire, gained the Gold Medal and Travelling Studentship at the Royal Academy Schools, and since then he has contributed regularly to the exhibitions. Lately, the deceased sculptor completed an equestrian statue of Lord Roberts for India, and a statue of the Queen for Dundee. He was elected an A.R.A. in 1892. His model for an equestrian statue of Lord Roberts was exhibited in the courtyard, Burlington House, 1897, and a reduced replica was in the Sculpture Room of the Academy in 1898. His marble statue of "Pandora" is in the Tate Gallery. Amongst his works illustrated in our columns, we may cite: "Hounds in Leash," exhibited in the Royal Academy, *Builder*, June 6, 1891; three bronze panels, subjects from the "Æneid," exhibited in the Royal Academy, *Builder*, June 20, 1885.

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## *GENERAL BUILDING NEWS.*

Truro Cathedral.—The Earl of Mount-Edgcumbe presided over a meeting of the Truro Cathedral Committee on the 27th ult. The executive committee reported that they had received the estimate of Mr. Pearson, the architect, of the expense of the alternative plans of building the nave as a memorial to the late Archbishop Benson—(*a*) with the towers up to the level of the aisle roof, 36,000*l.*, and (*b*) with the towers up to the level of the nave roof, 41,000*l.* They were also informed that 30,000*l.* might be reckoned upon, and were of opinion that they would be justified in proceeding with the work if the contractors' tender does not exceed the estimate. The report was adopted, and it was decided that tenders for the work should be invited from certain selected firms.

Primitive Methodist Chapel, Grassmoor, Derbyshire.—A new Primitive Methodist Chapel has just been opened at Grassmoor. Messrs. Walker & Slater, of Derby, were the contractors, and Mr. J. Wills, Derby, was the architect. Messrs. W. Truswell & Son, of Sheffield, provided the heating apparatus.

New Church, Felixstowe.—The progress of additional work towards the completion of the new Church of St. John the Baptist, at Felixstowe, was signalised on the 26th ult., when the corner stone of the chancel was laid. The new work will consist of a chancel, 40 ft. by 25 ft.; a morning chapel for daily services on the north side, 30 ft. by 20 ft.; clergy and choir vestries on the south side, divided by a wooden partition which can be removed so as to form one large room, 35 ft. by 30 ft., for meetings, &c.; and an organ chamber over the choir vestry. The chancel will be divided from the nave by a low brick and stone screen, 4 ft. high, and the vestries and morning chapels will also be divided by screens. It is estimated that 250 additional seats will be provided, and that the cost will be 2,715*l.* The architects are Sir Arthur Bloomfield & Sons, and the building contract is in the hands of Mr. Fred C. Thurman.

Wesleyan Chapel, Stockport.—On the 26th ult. a new chapel in Wood-street, Stockport, belonging to the Wesleyan Methodists, was dedicated. The new chapel is situated near one of the entrances to Hollywood Park, and is of red brick, erected by Mr. Josiah Briggs, of Heaton Norris, from plans by Messrs. Hunt & Sons, Stockport. The seating accommodation is 240, and the cost about 2,000*l.*

New Established Church in Edinburgh.—At the Edinburgh Dean of Guild Court, on the 26th ult., plans were passed for the erection of a new church at Montpelier, Edinburgh, for the St. Oswald's congregation. The new building, which adjoins Bruntsfield Public School, has been designed by Mr. Henry F. Kerr, architect, Edinburgh. It will be seated to accommodate about 800 people, and the cost will probably be between 5,600*l.* and 6,000*l.*

Church, Dolphinholme, Lancashire.—The new church at Dolphinholme, dedicated to St. Mark, was consecrated recently. It consists of chancel, nave, transept, north aisle, organ chamber, and vestry. The chancel ls 34 ft. by 22 ft., and the nave 54 ft. by 36 ft. The vestry is 28 ft. by 10 ft. Rising above the building is a squat tower, which will be surmounted by a dolphin, and contains the belfry. The total length of the church is 88 ft. The sitting accommodation provided is for about 250 persons. Local stone has been used, the work being carried out in broken courses, and the interior is lined with red sandstones taken from the old church. The church is approached by a porch, and the roof is supported by a large chancel arch and two transept arches; whilst three Norman arches divide the nave from the north aisle, and have moulded capitals and bases; another ornamental arch divides the aisle and the north transept. The aisles and passages are flagged, and the chancel floor is paved with ornamental tiles. The contractors were Messrs. Hatch & Sons, of Lancaster; Messrs. Austin & Paley were the architects.

Free Church Extension, Northampton.—Adnitt-road Baptist Church, Northampton, was opened recently. The church has been built by Mr. A. J. Chown, of Kingsthorpe, from the designs of Messrs. Mosley & Anderson, of Northampton. It has cost 1,600*l.*, exclusive of the land on which it stands, and for which 632*l.* 10s. was given. It is in the Early Perpendicular style. It is of red brick, with dressings of yellow Weldon stone. At the rear of the church is the minister's vestry and a deacons' vestry. Under the minister's vestry is the heating basement.

Wesleyan Chapel, Wolverhampton.—The Building Committee of the new Weslyan Chapel, Darlington-street, Wolverhampton, have selected the plans of Mr. Arthur Marshall, of Nottingham. The sitting accommodation will be kept at 1,250.

Board School, Derby.—The new Board School at Pear Tree was opened on the 23rd ult. The new school is situated at the top of Portland-street. The building is of red brick, and when completed will contain several large schoolrooms. As the building now stands it is only a portion of the complete establishment it is proposed to erect. The block at present provides accommodation for 420 infants and 500 children in the junior mixed department. When the building has been finished, it will accommodate 1,800 children. It will be divided into sections of 440 boys, 440 girls, 500 mixed scholars, and 420 infants. The boys and girls' schools, therefore, remain to be erected. These departments will be placed to the right and left of the present structure, which is two stories in height, and is arranged with a large schoolroom in the centre of each floor, with classrooms opening out of it. It is also proposed to build separate schools for cookery and manual instruction at the rear of the site. The architects are Messrs. Naylor & Sale, of Derby.

Margate Cottage Hospital.—The New Margate Cottage Hospital was opened on the 19th ult. The first wing of the building, intended for the Lucas Ward, was designed by Mr. Drew years ago; and the second wing was designed by Mr. W. J. Mercer, in harmony with the existing wing. The present additions and alterations, forming the Diamond Jubilee Memorial, now follow on the same lines. By the successive additions which have been made, the original building which formed the Cottage Hospital is now surrounded on three sides with new premises. Mr. Mercer was the architect of the present work. The contract price was 1,620*l.*, and the work was carried out by Messrs. E. Padget & Sons, of Margate.

Factory, Bideford.—A new collar factory has just been built at Bideford by Messrs. E. Ellis & Son for Messrs. P. Cooper & Co., of London. The architects were Messrs. R. T. Hookway & Son, of Bideford. The building is 320 ft. long, with a gable and bell turret in the centre.

Proposed Additions to Leith Hospital.—The scheme to extend Leith Hospital in commemoration of the Queen's Diamond Jubilee is likely to take practical shape in the course of a few months. The extension is to take the form of an addition to the King-street pavilion, whereby the wards in the south end will be incorporated into the new building, and the present wards of six beds on each flat will be made wards of twenty beds. Day-rooms, bath and lavatory accommodation, and lifts will be provided at the end of the wards. The present north wards will be utilised for the administrative offices, doctors' and nurses' rooms, kitchen, &c., of the new wards. The extension will allow of an increase of twenty-seven beds in the King-street pavilion, and on completion the hospital will contain in all 102 beds, besides three isolation rooms. The elevation of the building shows a frontage to King-street on the lines of the existing elevation to that street, but it is treated in a less severe style, and terminates with an ornamental gable and oriel window with balustrading. The nurses' home will provide accommodation for nearly thirty nurses. The buildings will be connected with the hospital by a subway under King-street. The plans have been prepared by Mr. W. N. Thomson, architect, Leith.

New County Council Buildings for Edinburgh.—A special meeting of the Mid-Lothian County Council was held on the 25th ult. in the County Buildings, Edinburgh, for the purpose of receiving the report of a sub-committee on the question of the reconstruction or re-erection of the County Buildings. The sub-committee reported that after having fully considered the question of the reconstruction of the County Buildings, they were of opinion that the work should be proceeded with as soon as possible, and by a majority of five votes to four they recommended that there should be an open competition in the matter of the designs to be submitted for the proposed new buildings. The committee also recommended that powers should be given to them to advertise, inviting architects to send in plans, and also to draw up conditions for the guidance of competitors. Mr. Welsh, in moving the approval of this report, stated that there was a feeling in committee that to pull down and rebuild would be altogether the better and more satisfactory course to follow. The older members of Council would remember that Dr. Rowand Anderson advised the former committee, and prepared a set of plans for rearranging the interior of the buildings and for putting an elevation towards George IV. Bridge. When he submitted his plans Dr. Rowand Anderson gave in a report in which he said that the elevation to George IV. Bridge had given him some considerable anxiety, and that he had bestowed a great deal of care upon it. To his (Mr. Welsh's) mind, that elevation was not in keeping with the requirements of the site. They had one of the best sites for the County Buildings that could be found in the city of Edinburgh—they had a frontage of about 160 ft. to George IV. Bridge, and a frontage of about 80 ft. to High-street. The proposed new buildings would occupy a frontage to George IV. Bridge of about 100 ft. Mr. John M'Hutcheon Dobbie seconded. Mr. Wilkie moved an amendment to the effect that, while they might invite a few architects to prepare plans, it would be highly inadvisable and a great mistake to throw the matter open to public competition. To advertise for competitive plans would, he thought, deter the best men from coming forward. Mr. Maconnachie Wellwood, in seconding the amendment, also expressed the view that if they threw the designs open to public competition they would probably not get the very best architects to compete. He did not think they could get a more competent architect than Dr. Rowand Anderson. Mr. J. G. Stewart said that so far from feeling that open competition would deter the best architects from sending in plans, he thought the buildings were of such importance that success in competition would be regarded as a feather in any architect's cap. A division was taken, with the result that Mr. Welsh's motion approving the sub-committee's report was adopted by sixteen votes to eleven.

Enlargement of Bradfield College.—A new Boarding House erected on Hog's Hill, in connexion with Bradfield College, has been opened by Earl Stamford. The new building is within easy distance of the College. The architect was Mr. M. Macartney. The building is of red bricks, with stone dressings, and in the centre of the tiled roof is a clock-tower. The interior provides accommodation for fifty boys, and includes a dining-hall, class-rooms, bed-rooms, and all the usual offices. It is lighted by electricity, fitted by Messrs. Drake & Gorham, Westminster, whilst Messrs. Haden, of London, supplied the heating apparatus. The builders were Messrs. Foster & Dicksee, of Rugby.

Hotel, Durham.—A new hotel has been erected in Hallgarth-street, Durham, on the site (together with other land acquired for the purpose) of the old Victoria Inn. The architects were Messrs. J. Oswald & Sons, of Newcastle, and the builder was Mr. F. Caldcleugh, of Durham.

Campbeltown Public Library and Museum, Glasgow.—The ceremonies attendant on the gifting of Campbeltown Free Public Library to the town took place on the 20th inst. The buildings occupy a central site, having frontages to the harbour, St. John-street, and Shore-street. The building is a one-story structure of early Scottish Renaissance style. It is L-shaped, and has a frontage to the bay of 93 ft., and to St. John-street of 137 ft. The buildings are divided into a library or book-store 47 ft. by 24 ft., giving accommodation for over 10,000 volumes; a ladies' reading-room 24 ft. by 18 ft., occupying the corner of the site, and forming in its octagonal side the main decorative feature of the front to the bay; a general reading-room 37 ft. by 24 ft.; a museum or picture gallery 48 ft. by 24 ft.; and a general hall or news-room 36 ft. by 19 ft. This latter is the general vestibule, and gives independent access to each department. It forms the memorial hall of the building. Fronting Shore-street is an enclosure laid out as a garden to form an adjunct to the museum for the exhibition of archæological and other exhibits not requiring cover. The curator's house has its frontage to Shore-street and to the garden. The buildings have been erected from designs by Mr. J. J. Burnet, A.R.S.A., Glasgow.

Liverpool Stock Exchange Buildings.—Some extensive improvements have been effected at the Liverpool Stock Exchange. The Stock Exchange Buildings Company years ago recognised the desirability of getting an extension of their property, so as to have a frontage in Exchange-street East. For this purpose they obtained a narrow strip of houses and shops, about 200 ft. in length, and with a depth varying between 12 ft. and 20 ft., which lay between them and that street, and the preparation of the necessary designs and plans was committed by the company to Messrs. Grayson & Ould, architects, Liverpool. For the new elevation in Exchange-street East, Portland stone and local red sandstone have been used, and it is intended to tone down the Dale-street frontage by altering the windows, especially on the top story, and extensively using the red sandstone for mullions and transomes. The corner of the building at Exchange-street East and Dale-street is very effectively treated with oriel windows rising through several stories. The Exchange-street East elevation presents a rather fine appearance; seven pilasters connected by a frieze mark the extent of the building used for Stock Exchange purposes, and the most notable features are the two large windows flanked by bays. On the ground floor facing Exchange-street East are six or seven shops, where the tenants of the buildings formerly on this site find a fresh habitation. At the north-end of the Exchange-street East property Sainsbury's luncheon bar finds improved accommodation. The scheme of reorganisation provides two entrances, both from Exchange-street East, and these lead to lifts which will be available for the whole of the buildings. Entering by the doorway near the Dale-street, it is at once seen that the outer vestibule has been greatly improved by a window being pierced into the "well." The floor of the Stock Exchange Room itself remains about the same in area, but on the Exchange-street East side a gallery has been erected, with a smoking-room on one side and a reading-room on the other. The reading-room and smoking-room are divided from the main hall by glass partitions. For the lath-and-plaster walls of the Exchange Room glazed bricks have been substituted, without any attempt at ornate decoration. A telephone-room opens out from the Exchange Room. The telegraph office upstairs for the use of members has also been made more compact. The total cost of the alterations, which are being carried out by Messrs. Thornton & Sons, will be fully 20,000*l.* The carving has been executed by Mr. Griffiths, sculptor.—*Liverpool Courier.*

Derby Technical College.—The Derby Municipal Technical College, which was opened by the Duke of Devonshire on the 19th ult., occupies a site at the junction of Green-lane and Degge-street. The building is really a large extension of the School of Art, the foundation-stone of which was laid in 1876. When the Technical Education Act came into operation the Corporation decided to enlarge the building, and engaged the original architects (Messrs. Waller & Son, of Gloucester) to prepare designs, &c., for the work. The building is of Gothic design, and covers an area of about 17,000 square ft. It is rectangular on plan, and has four elevations. The two elevations facing Degge-street and Green-lane are of wall stone from the Riga quarries, with Hollington stone dressings. The porch forming the principal entrance is situated at the side, projecting from the main building about 6 ft. There are two other entrances. That for art students is on the east side, and that for science students on the south side. The walls of the corridors and staircase have a glazed brick dado, 5 ft. high. The corridors leading to the different rooms on the four sides of the building are lit from two open courts, the walls of which are faced with white glazed bricks. The several floors include a sub-basement, a basement, and first and second floors. The whole of the sub-basement is used for heating and ventilating (which is on the Plenum system, and has been carried out by Messrs. Ashwell & Nesbit, of Leicester). In the basement are the engine-rooms, plumbing shop, room for typography, and a large one for manual instruction, as well as a boiler for generating the steam for heating purposes. The ground floor contains a large art lecture-room, a physical laboratory, and several class-rooms, together with a committee-room, secretary's room, and office. On the first floor is an antique room for art purposes, and a lecture theatre for physical, chemical, and other demonstrations, with mechanical drawing-room. On the top floor are chemical laboratories, together with several class-rooms, and a room devoted to light-and-shade drawing. The floors are on Dennett & Ingle's system of concrete arches. The college will accommodate 1,500. The cost of the whole building has been about 30,000*l.* The contractor is Mr. Henry Vernon, of Derby, and the National Free Wiring Company, of London, have fitted the electric light apparatus.

## *SANITARY AND ENGINEERING NEWS.*

Refuse Destructor, Great Yarmouth.—Last week Mr. J. W. Cockrill, the Borough Surveyor of Great Yarmouth, reported to the Sanitary Committee that the cylinders necessary to form the foundations of the destructor and chimney connected therewith, had been satisfactorily sunk, filled with concrete, and tested. These cylinders are forty in number, are 6 ft. 10 in. and 6 ft. external diameter, built in concrete sections, and filled with the same material. After the concrete had set, each cylinder was weighted with pig iron ten per cent. heavier than the weight to be placed thereon. The cylinders all stood the test well, the average settlement not reaching one-eighth of an inch, and many cylinders not settling at all. The soil through which the cylinders were sunk was of the worst possible description, and so soft that nearly all the cylinders when they had entered it kept 5 ft. below the excavation.

The North British Railway Company's New Leith Line.—Since the North British Railway obtained possession, in May last, of the ground between the foot of Easter-road and the foot of Leith-walk, Leith, on which they purposed commencing operations in connexion with the construction of their new line between Edinburgh and Leith, considerable progress has been made. The first step in connexion with the work was the demolition of most of the property contained in the oblong area between Glover-street and the foot of Leith Walk, and from there to Whitfield-lane, and some property between Easter-road and Glover-street. To accommodate the tenants of the dwelling-houses demolished, large blocks of tenements of a suitable nature were erected at Halmyre-street and Lorne-street. Building at Easter-road in connexion with the laying of the new line (Contract No. 1) was commenced about the middle of July last, and is being pushed forward as rapidly as possible. The erection of the station buildings (Contract No. 2) is also making satisfactory progress. From the new corner at Whitfield-lane to the foot of Leith-walk, a space of about 192 ft. has been taken in, and from the corner of Leith-walk and Duke-street about 218 ft. of Duke-street has been taken in. The contractors for Contract No. 1 (the laying of the new line) are Messrs. Young & Sons, Edinburgh; and the contractors for Contract No. 2 are Messrs. Cousin, Edinburgh. Messrs. Blyth & Westland, C.E., Edinburgh, are the architects and engineers for both contracts.

Bridge, Doncaster.—A new bridge, constructed over the River Don at Doncaster, to replace the Corn Mill bridge erected in 1780, was opened on the 19th ult. Not only has the road been improved both in width and gradient, but the area of waterway for the passage of floods has been increased from 900 to 1,282 superficial feet. The bridge is not quite complete, but sufficiently so to enable the traffic to resume its old course along the Great North-road. Mr. Isaac Gould, of Leeds, was the contractor for the two 46-ft. spans, and the Corporation have, with their own workmen, done the rest of the work. Messrs. De Borgue & Co., of Manchester, were the contractors for the steel superstructure. The approximate cost of the whole work has been as follows:—West Riding County Council, half of joint bridge, 4,000*l.*; Corporation of Doncaster, 4,000*l.*; Corporation of Doncaster, for mill arches, old lock bridge, land, and sundries, 1,500*l.*; total, 9,500*l.* The design for the two-span bridge was by Mr. J. Vickers Edwards, the West Riding Surveyor, with whom Mr. W. H. R. Crabtree, the Borough Surveyor of Doncaster, has been associated for the purpose of the joint undertaking.

Drainage, &c., Brightlingsea (Essex).—The scheme of drainage and sewage disposal prepared for this district by Mr. J. J. Taylor, of Westminster, has been approved, and the work is to be proceeded with at once. The sewage-disposal plant is upon the "Ives" antiseptic patents for tidal waters.

Refuse Destructor, Lowestoft.—Lieut.-Col. Albert C. Smith, R.E., attended at the Town Hall, Lowestoft, recently, to hold a Local Government Board inquiry into the applications of the Town Council for the sanction of the Board to borrow 4,709*l.* for provision of a refuse destructor at the north-west corner of Smith's Marsh, and 2,100*l.* for the improvement of the North Parade. Mr. W. C. C. Hawtayne, electrical engineer, employed by the Corporation for the purpose of providing a scheme for the electric lighting of the borough, which scheme had been amalgamated with the erection of the destructor, said he had inspected several sites in different parts of the town, and had reported to the Council that the site on Smith's Marsh was the best. He was quite satisfied that there would be no nuisance. The Borough Surveyor (Mr. G. Hamby) also gave evidence.

Drainage, &c., Hungerford, Berks.—On the 19th ult. a Local Government Board inquiry was held by Mr. W. A. Ducat in respect of an application made by the Rural District Council for sanction to obtain a loan of 7,000*l.* for the purpose of carrying out a drainage and sewage disposal scheme prepared by Mr. E. W. Ives, C.E., of Derby.

## *STAINED GLASS AND DECORATION.*

The Joanna Baillie Monument, Bothwell.—This terra-cotta monument, 17 ft. high, containing four large panels of rich mosaics, was unveiled on the 12th ult. by Miss Hunter Baillie, the grandniece of the poetess. The design is early Italian Renaissance. On the corners of the scaled ogee roof rest four winged boys, representing Music, Poetry, Literature, and the Drama. This is supported by four enriched arches, with ornamental spandrels, frieze, and cornice resting on twisted columns at the corners, and enclosing a block containing the panels of mosaic. On the upper part of one panel is the portrait of the poetess; on the other three are Bothwell Castle, the Children of Bothwell, and the Apple and Plum Trees respectively, with quotations from Sir Walter Scott and Joanna Baillie below. The monument is the gift of Mr. James Donald, of Anerley Park, near London, a native of Bothwell. The entire work was carried out from the designs of Mr. F. Vincent Hart, of London. The mosaics were made by the Venice and Murano Glass Company, and the terra-cotta by Messrs. Doulton & Co., of Lambeth.

Windows, Ascomb Church, near York.—Two memorial windows have been erected in this church. One of two lights in the chancel represents the "Adoration of the Magi," with angels in tracery. The other, in the south transept, is a lancet light representing "The Virgin," under Early Perpendicular canopies. Both windows were designed and painted at the studios of Mr. J. W. Knowles, of York.

Memorial Window, West St. Giles' Meadows, Edinburgh.—A memorial window of stained glass has been placed in the gable of the western transept of West St. Giles'. The window is one of three lights, with tracery openings above, and the bulk of the space thus afforded for decorative treatment is occupied by a subject, "Christ Blessing Little Children," which fills the main portion of the three lights. A scroll with the text "Suffer the Little Children to Come unto Me" runs across the window immediately below the subject, and the heads and bases of all three lights are treated with canopy work. In the lower part of the centre light an inscription sets forth the object of the memorial. The principal panels in the tracery contain small figures of angels in attitudes of prayer and praise. The composition contains upwards of twenty figures. The work has been executed by Messrs. Barnett & Son, of Leith.

Window, St. Ann's Church, Wandsworth.—One of the aisle windows in this church has been filled with stained glass as a memorial to the late Vicar of this parish. The subject of the window is "Christ Feeding the Five Thousand." The work has been carried out by Mr. H. A. Hymers, of Chelsea.

## *MISCELLANEOUS.*

Professional and Business Announcements—Messrs. Dennett & Ingle have removed from 5, Whitehall to 24, Queen Anne's Gate, Westminster, S.W.——Mr. W. L. Trant Brown and Mr. H. H. Humphreys have resigned their positions as Chief Building Surveyor and Deputy Engineer respectively to the Willesden District Council, and are entering into private practice as partners.

Shrewsbury and District Master Builders' Association.—The annual dinner of the Shrewsbury and District Master Builders' Association was held at the Lion Hotel, Shrewsbury, recently. The President, Mr. W. T. Williams, was in the chair, and the Vice-President, Mr. H. Price, in the vice-chair. After dinner, the President proposed the loyal toasts. Councillor Gethin proposed "The Forces," and Mr. Boulton responded. Mr. Devonport proposed the toast of "The Mayor and Corporation," and Councillor Farmer responded. Mr. Peter M. Birrell proposed "The Town and Trade of Shrewsbury," and Mr. Bickerton responded. Alderman Blockley proposed the health of the President and Vice-President, to which those gentlemen responded. The toast of "The Visitors" was proposed by the Vice-Chairman, and responded to by Mr. H. Payne, Baschurch. Mr. Rhys proposed "Success to the Shrewsbury Master Builders' Association." The President, in reply, said though the Association had been in existence for a number of years, it was still practically in its infancy. They all knew the troubles and trials they had to contend with from their workmen, though he did not wish to say a word against their employés. The masters, however, had had some very hard battles to fight, and they could only win their battles by sticking together. They had had in that a lesson from the great strike of the engineers. In some towns the master builders had to put up with great tyranny from the men, and were, therefore, bound to do something to protect themselves and the interests of their customers. As masters, they were quite willing to pay the men fair wages, and all they wanted in return was fair treatment. He considered their Association was deeply indebted to their secretary, Mr. C. Morris, for its present high position was in a great measure due to his exertions.

Open Spaces.—The Willesden District Council have secured a three months' option of purchase in respect of the Dollis Hall Estate, ninety-eight acres, for which a sum of about 50,000*l.* is asked; they invite subscriptions towards that amount, with a view to acquiring the property, and dedicating it, as a public recreation ground, to the memory of the late Mr. Gladstone, who was a frequent visitor there of Lord Aberdeen.—The Hackney Vestry propose to purchase the ground at present occupied by the Ironmongers' Company's almshouses in Kingsland-road, which would prove a welcome boon to the closely populated neighbourhoods of Shoreditch and Hoxton.—Mr. H. Mitchell, of the firm of H. Mitchell & Co., brewers, has, we read, presented to the townspeople of Smethwick a recreation ground with football and cricket enclosures, and a drill-hall, the value of the gift being estimated at nearly 10,000*l.*—At a meeting held on the 22nd ult., under the auspices of the Selborne Society, on the top of Croham Hurst Hills, near Croydon, a resolution was passed calling upon the Croydon Corporation to secure the land in perpetuity for the benefit of the inhabitants, and strongly deprecating the present project to take it for building purposes. Croham Hurst, which, we are informed, belongs to the Whitgift Charity trustees, lies between South Croydon and Purley, forming part of the range of the Oldhaven Flint pebble beds, covered with shingle and gravel, wood, bracken, and heath, which, to the north-east, is known as the Addington Hills and Common, near Shirley.

The Martyrs' Memorial Church.—It is proposed to collect subscriptions for completing this church, which was built in 1870-1 in memory of the martyrs who suffered at West Smithfield. In June, 1871, were consecrated the nave, north aisle, and north transept; a south aisle has been built since, and the contemplated addition of a south transept and a vestry will cost, it is estimated, 3,000*l.* Mr. E. L. Blackburne was the architect of the church, which stands in St. John Street-road.

Westminster Abbey.—An important book upon the history and architecture of the Abbey is nearly ready for publication, in large imperial quarto size, and only 250 copies will be issued; the book will contain seventy-five collotype prints. Mr. J. T. Micklethwaite, F.S.A., architect and surveyor to the Dean and chapter, has written the architectural portion of the text, the historical account is by Mr. H. J. Feasey, and Mr. Edward Bell, M.A., F.R.S., supplies a description of the earlier sepulchral monuments and tombs. The publishers are Messrs. Bell.

Master Builders' Association, Weston-Super-Mare.—The annual dinner of the members belonging to the local Master Builders' Association was held on the 25th ult., the President, Mr. W. Dyer, occupying the chair. During the evening Mr. H. Butt proposed the toast of "Architects and Surveyors," and Messrs. H. F. Price, H. Dare Bryan, and H. Nettleton replied. Mr. F. G. Reed proposed "Visitors and Honorary Members," to which the Presidents of the Bristol and Bath Master Builders' Association and Mr. Lawrence Bowen responded. The last toast was that of "The President, Vice-President, and Secretary of the Master Builders' Association," which was submitted by Mr. E. E. Baker, and acknowledged by Messrs. W. Dyer, W. A. Keen, and W. H. Shorney.

Northern Counties Federated Building Trade Employers.—On the 24th ult. the annual meeting of this Federation of Building Trade Employers was held at the Royal Hotel, West Hartlepool. The President (Mr. Walter Lowry) presided. The Secretary (Mr. Wilton A. Ryecroft) presented the report, and the accounts for the past year were submitted and adopted. Mr. Lowry was unanimously re-elected President of the Federation, and Mr. Ranken was re-elected Vice-President. The business of the afternoon was afterwards transacted, at the close of which it was decided to hold the next meeting at Middlesbrough. The representatives were then hospitably entertained by the West Hartlepool Master Builders' Association. In the evening a meeting of the members of the affiliated associations took place, over which Mr. Walter Lowry presided. Amongst those present were Councillor D. Ranken (Sunderland), Messrs. J. Shewan (South Shields), J. Davison (Stockton), T. Dickinson (Middlesbrough), R. Watt (Hartlepool), J. W. White (Sunderland), T. Weatheritt (Newcastle), Alex. Pringle (Gateshead), Councillor Proud (West Hartlepool), Messrs. W. J. Robertson & J. S. Wilson (South Shields), S. F. Davidson (Newcastle), Councillor Atterby (Stockton), Messrs. R. Heslop (Newcastle), J. Howe (West Hartlepool), J. Elrick (Sunderland), Thomas Hunter (Washington), W. Wilson (South Shields), E. Moody (West Hartlepool), and others. The President said he would like to say a few words about the progress made by the Federation during the past year. The large increase in membership and the hearty support that the Federation was receiving throughout the North was most gratifying and encouraging. A short time ago he had represented the Federation at a meeting held at Leeds, the chief object of which was to form the Northern Centre of the National Federation of Building Trade Employers. This meeting was of a most successful nature, and they would gather some idea of how the Federation movement was growing when he informed them that the delegates at that meeting represented upwards of 3,000 employers in the North alone. As regards the other divisions of the Federation, the West of England, South Wales, and South-Western Counties were in good working order, and strong Federations were being formed in the Midland Centre and South-Eastern Counties, from which they would gather that the formation of the National Federation of Employers would soon be completed. At the last meeting it was mentioned that at Jarrow and Hebburn, and also in the Wallsend district, there were a good number of employers who had not an association of their own, nor were they connected with any association. Since then the secretary and himself had called together the employers of these districts, and explained to them the advantages of federation, with the pleasing result that a new association was being formed, viz., the Jarrow, Hebburn, and District Master Builders' Association. With regard to the Wallsend employers, they had decided to become incorporated with the Newcastle, Gateshead, and Tyne District Master Builders' Association. A general discussion then took place, in which, amongst others, the following matters were touched upon: Procedure in case of strikes or lock-outs; model by-laws relating to building and sanitary arrangements being framed by Corporations without co-operation of builders and architects; general form of contract between builders and architects, &c.

Changes in High Holborn.—Further rebuilding, and upon an extensive scale, is about to take place. On the south side, the block of houses Nos. 326-332, with Middle Row-place and Tennis-court, between the London and County Bank and the "Old Holborn Bars" public-house, No. 333, is to make way for an extension of the Birkbeck Bank, with an entrance on the site of No. 329, to be erected after Mr. T. E. Knightley's plans and designs. The new buildings will have a frontage along the west side, south portion, of Staple Inn-buildings. The houses on the east side of Staple Inn-buildings, together with the adjoining block, Nos. 334-6, High Holborn, are also being demolished, and, we are informed, the Prudential Assurance Company will construct a terrace-walk over their site, to pass along the side of the Inn and its garden, as a new thoroughfare between the main road and the east end of Southampton-buildings, where the (old) Birkbeck Bank now stands. The premises in High Holborn acquired for the Birkbeck Bank stand on the site of the (old) Temple, as sold by the Templars, after their migration in 1184 to Fleet-street, to the Bishops of Lincoln, and afterwards converted into Southampton House. In 1656 Southampton House was pulled down, and New Southampton-buildings, fronting Holborn, were erected on a part of its site; the present Southampton-buildings, to the south and west, occupy the garden ground of the earlier home of the Wriothesleys, whose property there ultimately passed, in 1727, to Sir Edward de Bouverie, and his brother Sir Jacob de Bouverie, afterwards Viscount Folkestone, whose son was advanced Earl of Radnor. The (old) Mechanics' Institute in Southampton-buildings was founded in December, 1823, by Dr. Birkbeck. Some years ago remains of the Templars' former church were found in the rear of the houses in High Holborn, and it is very likely they will again be brought to light when excavations for the new buildings are made round about the little courtyard which forms the south portion of Middle Row-place. In sinking a well for purposes of the bank, about 200 ft. deep, through the chalk, many interesting things, including various sea-fossils, have been recently found. The block of buildings, known as Middle-row, that stood in the street in front of the houses we mention, was pulled down about thirty-five years ago. On the north side of High Holborn, between Southampton-row and Southampton-street, new premises for Parr's Bank, Limited, with shops and offices, are being erected upon the site, about 15,000 ft. superficial, of Nos. 121-6, formerly occupied, in part, by the W.C. branch of the General Post Office. Messrs. Ford, Son, & Burrows are the architects. The contractors are Messrs. J. Simpson & Son, of Paddington-street, W.

Dangerous Street Hoardings.—At a meeting of the Vestry of St. Margaret and St. John, Westminster, held on the 25th ult., at the Westminster Town Hall, under the presidency of Mr. Hayter, the Works and General Purposes Committee brought up a report calling attention to the risks to which the public have been exposed during the recent high winds by reason of the excessive height of hoardings on the public highway. After discussion, a resolution was passed to the effect that it be a standing order of the Vestry that no hoarding upon or over the public highway be sanctioned under any circumstances of a greater height that 12 ft. without the previous sanction of the Works Committee; that every hoarding be required to be surmounted by a sufficient "fan," of such width and at such angle as will ensure the public safety, and that proceedings be forthwith taken against licensees in all cases of infringement of conditions and regulations upon which the licences are granted.

The Southampton Bargate.—At Southampton Town Council meeting on the 25th ult. the question of the Bargate and the traffic under it came up for discussion. The Council declined to allow any scheme of removal or mutilation, but referred the question of a circus around the Bargate to a committee, to report to a future meeting. The great objection to the Bargate at present is the fact that the trams, which are now the property of the Corporation, are to be worked by the overhead system of electricity, and a difficulty arose owing to the height of the middle arch. This has been overcome by a scheme for reducing the level of the roadway.—*Times.*

Leeds Builders' Exchange Club. — The seventh annual meeting of the Leeds Builders' Exchange Club was held on the 24th ult. in the Club-rooms, Boar-lane. Mr. S. Blunt presided. The report contained the following:—The finances of the club are still far from satisfactory. The fault lies not with the merchants connected with the club, who do their utmost for the welfare of the building trade in Leeds, but with the builders themselves, for whom your committee have done so much good. Anything appertaining to the building trade has been taken up by them in earnest, and they therefore ask for the support of every builder. During the year the Yorkshire Building Trades' Federation has been put on a firm basis, and a branch has been formed in Leeds. The whole of the members of the club had been enrolled, and their subscriptions paid out of the funds of the club. All builders or builders' merchants who now became members of this club will be enrolled as members of the Federation without additional cost of subscription. The objects of the Federation are well known by every business man, and the builders of Leeds will be able to appreciate the labours of the executive of the federation in case of any unreasonable demands being made upon them by the various unions of workmen, or in case of a strike.—There was a discussion on the report. The Chairman, replying to a question by Mr. W. Nicholson, said that, so far as his memory served him, they were not losing members to any considerable extent, and as a matter of fact the receipts during the past year had been greater than in 1897. The committee would be glad of guidance and assistance, and would welcome the co-operation of the Master Builders' Association. It was urged during further conversation that it was extremely important to get better premises for the club—premises which would afford them a good commercial-room and committee-rooms for each section of the trade. The report and balance-sheet were adopted. The officers were then appointed as follows:—President, Mr. Wm. Bower; vice-presidents, Messrs. C. F. Wilkinson, W. H. Vickers, J. Matthews, George Burnell, and J. Wilby; committee, Messrs. E. Umpleby, W. Lolley, I. Rishworth, J. N. Smith, A. Wheater, A. Lambert, and W. Nicholson; treasurer, Mr. Arthur Mountain; secretary, Mr. J. Jackson; and auditor, Mr. F. A. Holdsworth, chartered accountant.

Byron Statue for Aberdeen.—Mr. Pittendrigh Macgillivray, A.R.S.A., sculptor, Edinburgh, has reported recommending that this statue should be a bronze one. He estimates the total cost at 1,600*l.*

Appointments.—At a special meeting of Wishaw Commissioners on the 24th ult. Mr. W. R. Copland, C.E., Glasgow, was appointed engineer in connexion with the carrying out of the new Wishaw water scheme, in room of Mr. Tait, Burgh Engineer, whose death was recently announced. Mr. William Rodger, who has acted as assistant to Mr. Tait for about seven years, was appointed interim Surveyor of the Burgh.—At a meeting of the Ayr Works Committee of the Town Council on the 20th ult. it was agreed to recommend that Mr. John Young, C.E., Assistant Engineer, Burgh Engineer's Department, Edinburgh, be appointed Town Surveyor and Engineer of the Burgh of Ayr. Mr. Young was appointed Sanitary Engineer and Inspector of Drainage in Edinburgh eleven years ago, and was subsequently promoted to the position of Assistant Engineer.

Scottish Building Trades Federation.—The quarterly meeting of the executive of the Scottish Building Trades Federation was held on the 25th ult. in the Station Hotel, Stirling, Mr. James Leslie, builder, Aberdeen, President, in the chair. Members were present from Inverness, Aberdeen, Arbroath, Dundee, Perth, Edinburgh, Glasgow, Hamilton, Coatbridge, and Ayr. The secretary, Mr. James L. Selkirk, submitted a report dealing with the various matters remitted by the annual meeting in October last. These included (1) the formation of new branches, as to which encouraging progress was being made; (2) the issue of the monthly organ; (3) the operation of the Workmen's Compensation Act, 1897, the rate of premium to insure against which was generally recognised, in view of the working of the Act, as much too high, a committee being appointed to consider fully the whole question; (4) the proposed "general conditions of contract," which was still under the consideration of the various parties concerned, and which it was hoped would result in a mutually satisfactory arrangement; and (5) the formation of a special fund for the purpose of meeting exceptional requirements, besides a number of other matters on which there was a full discussion. Thereafter the half-yearly meeting of the Federation was appointed to be held in Dundee in April next.

Wakefield Master Builders' Association.—The first annual meeting of this Association was held at the Brunswick Hotel, Wakefield, recently, Mr. John Bagnall in the chair. Mr. Bagnall was re-elected President, Councillor Judge and F. W. Denholm, Vice-Presidents, and Mr. Denholm was elected as additional representative to the Executive Committee of the Yorkshire Federation of Building

Trade Employers. After the meeting, the first annual dinner was held. The guests were Mr. John Spink, of Sheffield, President of the Yorkshire Federation; Councillor Nicholson, of Leeds, Vice-President; and Mr. S. Hanson, of Halifax, Secretary.

CARPENTERS' HALL LECTURES.—A lecture was given at Carpenters' Hall on Monday last, the 30th ult., by Mr. J. Mansergh, entitled "The Bringing of Water to Birmingham from the Welsh Mountains." Our readers are aware that the lecturer is the engineer of the works, and he was, therefore, enabled to give many valuable statistics, and to deal practically with the engineering aspect of the scheme. The subject has been so frequently considered, however, that there was very little of novelty for Mr. Mansergh to dilate upon. Several photographs were thrown on to the screen, and if the optical lantern apparatus had been in working order, the audience might have appreciated them all the better—for these were evidently intended to be a strong point in the lecture. One of the best of these views was a bird's-eye glance, taken from a model, over the concession obtained by the Birmingham Corporation in the valleys of the Elan and its tributaries, whence the water is to be obtained. Sections through the walls of certain dams were also shown, and the lecturer explained each in detail. Most of the lantern slides were, however, of a more popular character, and we need not dwell upon them.

SALE OF MACHINERY AND PLANT.—The remainder of the plant used in connexion with the construction of the Burrator Reservoir has just been sold by Messrs. Parkhouse & Sons, of Plymouth. This was the second sale held since the completion of the works. Every lot offered was sold, and good prices were realised. A five-ton steam crane by Smith, of Rodney, realised 350*l.*, and a five-ton steam derrick crane by the same maker 160*l.* Dormitories and dwellings, trollies, hydraulic rams, tip wagons, and steel rails were disposed of at good prices.

NEWCASTLE AND DISTRICT BUILDING TRADES EXCHANGE.—The first annual dinner of the recently formed Newcastle, Gateshead, and District Building Trades Exchange was held on the 26th ult. in the Exchange Buildings, Grainger-street. Mr. J. G. Walker presided. After the loyal toasts had been duly honoured Mr. G. G. Laidler submitted "The Architectural Profession and the Building Trades." Mr. Laidler said that although not himself a builder, he took a very warm interest in the Building Trades Exchange. For many years he had been associated with architects and builders, and that association had been of the most pleasant character. He was perfectly sure that Newcastle was, in respect of these two professions, entering upon an era of prosperity, for they had only to look at the projects of railway extension which were being put forward by the North-Eastern Company, and the street improvements which were to be carried out by the Corporation, to find a guarantee of much work in the near future for both builders and architects. It was, he continued, a little too much to hope that another Richard Grainger would arise to complete the streets in the same style as Richard Grainger did, and to repeat his marvellous architectural achievements—achievements which could not but call forth their greatest admiration. One of the most important of the contemplated street improvements was, to his mind, the proposed extension from Grainger-street to New Bridge-street; and he hoped that whatever architects had charge of the elevations would endeavour to carry out the work on similar lines to Market-street at the present time. After remarking that there should be some effort made to discourage the litigation now so constantly occurring in the building trades, he said he would like to say a word with regard to the Compensation Act. That Act affected them to a certain extent, and he thought it was only fair that they should give it a reasonable term of trial. He thought that the small amount they had to pay for the insurance was not such a tremendous sum. He coupled with the toast the names of Colonel Haswell, Mr. W. H. Allen and Mr. R. H. Millican, who replied. The next toast was "The Exchange," proposed by Mr. J. S. Robson. Speaking of the necessity for such an institution, Mr. Robson said that though, with the exception of the great agricultural industry, the building trade was the largest in the country, though it did not appeal to their imagination in the same way as others of their staple industries, it employed the largest capital and the largest number of men. He trusted that the Exchange might prosper and extend its influence to the whole of the North-East of England. He should like to allude to the present-day system of contracting, which led, he alleged, to much friction and sharp practice on the side of both architects and contractors. He thought there might be surely some better method devised of letting contracts—a method which would be to the advantage of architects, builders, and contractors alike. The Chairman responded to the toast, and remarked that many architects had refused to join the Exchange, or, at any rate, had not availed themselves of the opportunity of joining it, from a mistaken idea that they might be drawn into trade disputes, or might, in some manner, be apt to compromise their clients. There were many ways other than those of making the institution of use. After other allusions to the work which the Exchange might do, the speaker went on to remark that though they had not yet arrived at that stage when they could call the venture a positive success, they would continue for a good while to endeavour to deserve it, and he had every confidence that they would eventually achieve this end. Mr. Wm. Sutton, jun., also responded and gave an account of the Exchange. They had now 170 members, though they required 200 at least before they could make it a financial success.

## *CAPITAL AND LABOUR.*

DISPUTE IN THE NORWICH BUILDING TRADE.—At a meeting of the Norwich Master Builders' Association on the 26th ult., held to consider the threatened rupture in the building trade with regard to the laying of Broseley tiles, the following letter was read from Messrs. Boardman & Son:—"Dear Sir,—In view of the disastrous effect that a lock-out of bricklayers would have on the coming season in the building trade, we think it advisable to make a suggestion that we hope will reconcile both sides. As we understand the question, the masters insist on the right to let out tiling to merchants who supply the tiles, thus ensuring a price to cover the laying. On the other side, the men insist that the laying of tiles is, and has been, bricklayers' work, and not slaters'. We can see no reason for a serious dispute in so simple a matter, and would suggest as a fair settlement that while the masters preserve their right to take an estimate from the merchants for supplying and laying tiles, they shall make it a condition with any firm undertaking this class of work that such merchants shall employ bricklayers to lay the tiles. We are sending a copy of this letter to the association of both masters and men, and trust that some settlement may be acceptable, and on our part we are quite ready to do anything we can to bring about a friendly understanding, and thus avoid much strife and mischief.—Yours faithfully, Edw. Boardman & Son. Mr. J. H. Hatch, Secretary Master Builders' Association." After considerable discussion, in which most of the builders present took part, it was decided to accept Messrs. Boardman's suggestion as a fair settlement of the question, and the following resolution was carried:—"That the letter received from Messrs. Boardman be accepted in its entirety as a settlement of this question, and that the best thanks of the Builders' Association be tendered to Messrs. Boardman for the opportune and friendly mediation which they offered." The members of the Association, however, felt that the time had arrived when this unfortunate dispute should be officially made public, and the officers of the Association were therefore instructed to communicate the result to the Press, and to particularly point out that the Builders' Association had all along been desirous of a friendly settlement. As far back as January 12 they had made an offer to the men to refer the whole matter to the decision of an arbitrator. But this offer having been declined by the men's Association, the matter had become very grave and threatening. Notwithstanding the refusal of their conciliatory advances, the Builders' Association in the same friendly spirit had now decided to accept the mediation of Messrs. Boardman & Son with a view to the speedy and final settlement of the dispute.—The threatened lock-out has been averted. The masters, it is stated, have conceded the point, and the men withdrawn will return to work.

ABERDEEN JOINERS.—The employers having declined to grant the rise of standard wages asked, viz., from 8d. to 8½d. an hour, though willing to make certain other concessions, the union men came out on strike on the morning of Wednesday, February 1. About 600 operatives are on the strike roll. The Scottish Building Trades Federation will support the Aberdeen master joiners in connexion with the dispute.

## *LEGAL.*

### CASE UNDER THE WORKMEN'S COMPENSATION ACT:

### WHAT IS "A SCAFFOLDING"?

A JUDGMENT of considerable interest and importance was delivered by Judge Stonor on the 27th ult. at Marylebone County Court, the case having been heard before him on December 16 and January 10. The applicant was a labourer, named James Stack, and he claimed damages under the Workmen's Compensation Act, from Messrs. Coulsell Bros., builders, London, for personal injuries sustained whilst in the respondents' employ. The important facts of the case were given in the judgment, which was to the following effect:—

The applicant was helping to lay a joist 25 ft. long. He had hold of one end, and a carpenter the other. The latter let his end fall, and the joist twisted and fell on the applicant's leg, injuring it considerably.

The defence was that the accident happened whilst the applicant was at work on a building which did not "exceed 30 ft. in height," and was not being "constructed or repaired by means of a scaffolding."

There was an ordinary dwelling house more than 30 ft. high, with a shop on the ground floor and a show room at the back, built over an addition to the original basement.

At the back of the show room, and over the projecting basement, the building was in the course of erection, and was much less than 30 ft. in height. It consisted of four brick piers, and of a roof resting solely on the four piers, and excepting the connexion of the piers with the adjacent walls, the same was a completely separate building, so that if the dwelling house and shop and basement had been taken down carefully, the building in question would have still remained. On the floor of the building in course of erection were two pairs of trestles, with two boards upon them, as a temporary scaffold to enable the men to work at the roof.

To bring the case within the Workmen's Compensation Act (Section 7), it must be shown that the accident occurred (1) "in, upon, or about a building 30 ft. high"; and (2) that such building was being "constructed or repaired by means of a scaffolding."

It was unnecessary for the Judge to decide as to the first point, as, with regard to the second point, he thought that the building was not being "constructed or repaired by means of a scaffolding."

He thought that the proper meaning of "a scaffolding" (at all events, for the present purpose) was that in which it was used by every one in common parlance, and as given in the "Glossary of Architecture," namely, "a temporary erection of poles, planks, &c., for the use of workmen in building walls, or erecting any work which they cannot otherwise reach." That seemed to imply something fixed and secured; not such a thing as two pairs of trestles with boards across them, unfixed and unsecured. There was strong argument in favour of attaching the meaning given by the "Glossary of Architecture" to the words under consideration, from its manifest restrictive intention and operation with regard to the building business. If the words were to extend to every unfixed and movable erection of trestles, boards, ladders, &c., they would be wholly nugatory, inasmuch as every building 30 ft. high must be constructed by such means, and the words "constructed or repaired by a scaffolding" would have no effect, restrictive or otherwise. Again, the position of this further restrictive provision coming immediately after, and in conjunction with, the restriction as to height, pointed, he thought, clearly to such "a scaffolding" as is used of necessity in the construction or repairing of buildings of that, or, at all events, of considerable height.

He therefore found for the respondents upon the second point, and dismissed the application, with liberty to appeal if necessary.

ANOTHER case under the Workmen's Compensation Act came before his Honour Judge Waddy, in Sheffield County Court on the 26th ult. The plaintiff, a bricklayer named Bernard Sharkey, of 26, Colliers-row, Park, brought an action to recover 1*l.* per week during total incapacity, and 10s. per week during partial incapacity, from William Kirkham, Attercliffe, contractor. The claim was made to obtain compensation for injuries received by plaintiff through the giving way of scaffolding while working for defendant at Huntsman's Works, Pothouse-lane, Sheffield, on November 3 last. Mr. A. M. Wilson represented plaintiff, and Mr. A. Neal appeared for defendant.

Mr. Wilson said that when the accident occurred the parties were employed on a furnace stack at Huntsman's Works. Plaintiff was at work on a scaffold, which gave way, and he fell to the ground, a distance of 10 ft. or 12 ft., sustaining serious injuries, including two broken ribs and four teeth knocked out. He was earning 2*l.* 15s. per week at the time, but he was only claiming 50 per cent. upon 2*l.*, and not upon the full amount. Plaintiff came within the scope of the Act, because at the time of the accident he was in or about a factory and on a building exceeding 30 ft. in height. The plaintiff was on a factory, but not on his master's premises. Mr. Wilson went on to say that he should incidentally get an expression from his Honour, first, whether the Act meant a workman should be on his master's premises; second, whether he need be on the premises at all; third, whether it was sufficient for him to be on the premises of a third person. The other points which would be raised were with respect to the height of the building, whether the building could be considered to end with the eaves of the building, whether the top of the roof should be considered as the top, or whether the furnace stack should be taken into account. Mr. Wilson contended that the top of the furnace stack was the top of the building, and that made it 36 ft. high. If he was not allowed to measure in the stack the building would only be about 25 ft.—(Mr. Neal: 18 ft.)—He urged that he could count in the top of the furnace stacks, and in support of this point quoted from the London Building Act of 1894, which stated that the chimneys could be considered in calculating the height of the building.

Bernard Sharkey, the plaintiff, corroborated Mr. Wilson's opening. The wall upon which he was working was about 35 ft. high.

Cross-examined by Mr. Neal, plaintiff said he was working on a scaffold on a wall about 4 ft. away from the smelting stack. The stack was not finished. He had been working on this particular wall for about half an hour before the accident occurred. He had not worked on the furnace after the foundation was put in. Previous to that morning the nearest point he worked to that place was 20 yds. away. Another workman called out to him to come and see what he was doing, and as he stepped forward to do so the scaffolding tipped up.

A labourer named John Conway said he saw plaintiff immediately after the accident. The wall was between 30 ft. and 40 ft. high. Witness left the job because incompetent workmen had put the scaffolding up, and he did not know when he might have to go on it.

William Kirkham (the defendant), in reply to Mr. Neal, said the highest point of the building, apart from chimneys or furnace, was 18 ft., and an additional 10 ft. up to the roof-tree. The highest point of the furnace stacks from the ground floor was 36 ft., of which about 8 ft. was the height of chimney above roof. On November 3 witness saw the state of the building within three-quarters of an hour of the time when the accident occurred. Plaintiff was working upon a partition wall dividing the pot house from the steel house, and this wall was about 3 ft. in height above ground level. It was not connected by underground foundation with the furnaces. There was a connexion overhead with the furnaces. The furnace stacks at the time of the accident were about level with the top of the roof —namely, about 28 ft. high. They were not above it. No part of the building—furnace stacks or anything else—was above 28 ft. high at the time of the accident.

Other evidence having been given, Mr. Neal addressed his Honour on behalf of defendant. Having pointed out that the highest amount that could be recovered was 1*l.* per week, and could not exceed five weeks, Mr. Neal discussed the meaning of the law with regard to the height of the building. He maintained that there was an absence of reliable evidence that the building exceeded 30 ft. in height at the time of the accident. It would not do to urge that the building would ultimately be 30 ft. high. That had been ruled by law. But, assuming that the chimney stacks were 30 ft. high, and upwards, the question was whether they could be counted in as part of the building at all. He contended that to count in chimneys as part of the building was stretching language to undue lengths, and was never contemplated.

Mr. Wilson, for the plaintiff, contended that his witnesses who were working on the building were more likely to be accurate in their opinion as to its height than defendant and his son, who had no data whatever to prove what the state of the building was. The building had been taken up 30 ft. when the accident occurred. Moreover, in this case it was not a chimney in the ordinary acceptation of the term; it was one long continuous furnace, and as much part of the building as any other. As to the proviso that a plaintiff must be "in or about a factory," this was a factory, and plaintiff was working there.

His Honour said the amount claimed was by no means unreasonable. These compensation cases were bringing forward principles the courts had to settle one after the other, and a nice job they had in prospect. In this case, whatever he thought about it, and he did not think very well about it, he was bound by the statute, although he must confess with a desire to find the other way, to give judgment for the defendant.—*Sheffield Telegraph.*

A CURIOUS point came before his Honour Judge Snagge at the Northampton County Court on the 25th ult., under the Workmen's Compensation Act. An engine-smith, named Edgar Stearne, sued his employer, Mr. William Allchin, Globe Works, Northampton, for compensation for injury to his wrist, which has totally incapacitated him for six months. The claimant was treated at the local hospital for three weeks. He then returned to work, but as soon as he began to use tools his wrist became exceedingly painful, and without strength. After ten days he told the foreman he could not stay there unable to do his work properly. He left, and a few days later sent in notice of claim for compensation. Mr. Ryland Adkin, barrister, took the preliminary objection that the notice was not delivered before the claimant had voluntarily left his employment. Mr. Phillips, for claimant, contended that as the man only left because of the pain in his injured arm and inability to work, his leaving could not have been voluntary.

His Honour said that the claimant thought at first that he was well enough to continue his work, and went back to his employment, but found himself in such pain that he could not keep on. He told the foreman so, and went away. If such going away was not voluntarily going he did not know what was. It was his own will and wish. No one told him to go, or attempted to prevent his staying. It was a point which did not seem to have been raised before, and it would be open to the claimant to go to a Divisional Court. His Honour held that notice in accordance with the Act had not been given, and, further, that the employer was prejudiced by the want of such notice. That being so, the action was barred.—*Daily News.*

## DISPUTE BETWEEN ELECTRICAL ENGINEER AND ARCHITECT.

THE case of Stegman *v.* O'Connor came before a Divisional Court of Queen's Bench composed of Justices Bruce and Ridley on the 24th ult., on the appeal of the plaintiff, an electrical engineer, from the decision of Mr. Verey, the Official Referee, on the ground that his decision was against the weight of evidence.

It appeared that the plaintiff, Mr. G. Stegmann, in 1898 contracted to erect an electric light installation at the defendant's house at Clapham for the sum of 76*l.* 10s., exclusive of the cost of certain fittings to be supplied by the defendant, and the work was to be done in accordance with specifications prepared by Mr. Harris, the defendant's architect, and to his satisfaction. Under the contract the plaintiff was to be liable to a penalty if the work was not completed within the time specified by the contract. Mr. Harris was not satisfied with the way in which the work was executed, and after certain correspondence had passed between him and the plaintiff he called in another electrical engineer to complete the work. The plaintiff, on the other hand, contended that the work was properly carried out by him, and that if it was not done within the time specified by the contract, it was the defendant's fault, and brought his action to recover the 76*l.* 10s., the amount of his contract. The Official Referee allowed the plaintiff a certain amount for the actual value of the work taken over by the engineer subsequently called in by the defendant, but mulcted the plaintiff in a penalty of 50*l.* for not completing the work within the time specified by the contract, the result being that judgment was entered for the defendant on the claim and counterclaim for 38*l.* 1s. Hence the present appeal of the plaintiff.

Mr. Tindal Atkinson apeared for the plaintiff; and Mr. Clavell Salter for the defendant.

At the conclusion of the arguments of counsel their lordships intimated that they would see the Official Referee on the matter and give judgment in a few days. It might, however, be necessary to send the case back to the Official Referee.

## THE PROPERTY IN SUB-SOIL:

### IMPORTANT CASE IN THE COURT OF APPEAL.

THE case of the Vestry of St. Mary, Battersea *v.* the County of London, and Brush Provincial Electric Lighting Company (Limited), came before the Court of Appeal, composed of the Master of the Rolls, and Lords Justices Rigby and Vaughan Williams, on the 30th ult., on the appeal of the defendants from a decision of Sir Francis H. Jeune, the President of the Probate, Divorce, and Admiralty Division, sitting as an additional judge of the Chancery Division in April last, granting the plaintiffs a mandatory injunction ordering the defendants to remove certain wires and mains which they had laid under the footway of Trinity-road, Battersea. The appeal raised the important question of whether the sub-soil in which the wires were laid formed the property of the Local Authority, or of the adjoining owner. It appeared that the defendant company held a provisional order to supply electric current within the district of Wandsworth. A portion of Trinity-road was admittedly in the parish of St. Mary, Battersea, within the area of supply of the Battersea Electric Lighting order. In October, 1895, the defendants broke up and laid their pipes in a certain portion of Trinity-road, and on October 29, 1895, a letter was written by the plaintiffs to the defendants' solicitor, complaining of this, and saying that the company had no right to do what they had done. On October 31 the defendants replied, expressing regret for what had taken place, and saying that their sub-contractors had laid a cable within the Battersea parish without any authority from them. The company in that letter asked permission to keep the cable where it was; but the Vestry declined to allow this, and the defendants took up the cable. In September, 1896, the defendants began to lay down their pipes at another point of Trinity-road, on the left of Cockerton-road, and for about 100 ft. it was admitted that the wires were in the soil of the parish of Battersea. On November, 1896, the Vestry, by letter, called upon the defendants to take up so many of the pipes as were in the parish of Battersea, and to restore the pavement within seven days. The defendants replied that they could not admit that they were acting without authority, or that they were not entitled to do what they had done. The plaintiffs thereupon brought the present action for a mandatory injunction calling upon the defendants to remove the wires in question. Sir Francis Jeune held that the Vestry had vested in them the area in question in which the wires had been laid, and that the defendants had no right to do what they had done, and gave judgment for the plaintiffs for a mandatory injunction, calling upon the defendants to remove the wires, but suspended the operation of the injunction pending the result of the present appeal.

Mr. Cripps, Q.C., and Mr. Shaw appeared for the defendants (the appellants); and Mr. R. Bray, Q.C., and Mr. Chubb, for the plaintiffs (the respondents).

Mr. Cripps, on behalf of the defendants, submitted that the plaintiffs were not entitled to a mandatory injunction, as on the authority of the case of Baird *v.* the Mayor, &c., of Tunbridge Wells, the sub-soil in which the wires in question were laid was not vested in the Vestry, but belonged to the adjoining owners. Therefore, though the defendants might have been trespassers *ab initio* in breaking up the street in the first instance, so far as the Vestry was concerned it was not a continuing trespass, and therefore the plaintiffs were not entitled to a mandatory injunction.

Mr. Bray for the plaintiffs argued that he could maintain the injunction, as though the Vestry might not have a statutory right of property in the sub-soil, they had statutory power of control over it.

At the conclusion of the arguments of Council their lordships held that on the authority of the case of Baird *v.* the Mayor, &c., of Tunbridge Wells, the Local Authority had only vested in it such property in the street as was necessary for its control, protection, and maintenance, and that, therefore, as what the defendants had done was not a continuing trespass the mandatory injunction could not be maintained. There was no order as to costs.

## DAMAGES AGAINST A BUILDER:

### AN INTERESTING POINT.

THE case of Smith *v.* Johnson, which came before Mr. Justice Bruce, sitting without a jury in the Queen's Bench Division on the 1st inst., raised a somewhat important point to builders as to the right of their clients to recover from them damages for expenses incurred by them by reason of defective materials used in building and not in accordance with the requirements of the London Building Act, 1894.

It appeared that the plaintiff, a lodging-house keeper in Whitechapel, employed the defendant, a builder and contractor, to build a dormitory to one of his lodging-houses, and contracted with the defendant to supply the mortar. The mortar was supplied and the building erected. After the building had been erected the plaintiff was served with a notice from the London County Council to pull down and rebuild, on the ground that the mortar was not composed of one part of lime to three parts of grit or sand, in accordance with the Act of 1894. The plaintiff, in accordance with the notice, pulled down and rebuilt, and brought his action to recover from the defendant the whole cost of pulling down and rebuilding, and also the loss of ground rent. It was proved that the mortar was defective, and his Lordship found that it was so supplied by the defendant. The plaintiff also proved that in a wet state the inferior quality of the mortar could not be detected.

Mr. Rufus Isaacs, Q.C., and Mr. Groser appeared for the plaintiff, and Mr. McIntyre for the defendant.

Mr. Rufus Isaacs argued that the damages were the natural consequence of the defendant's act and that the test was whether the defective quality of the mortar could have been detected before being used. He submitted that it could not and that the defendant was liable for what happened by its use.

On the other hand, Mr. McIntyre contended that the damages were too remote. He submitted that it could not have been in the contemplation of the parties that if the mortar was bad, the plaintiff would have to pull down and rebuild. If the defendant supplied bad mortar the plaintiff should have rejected it.

At the conclusion of the arguments of counsel, his Lordship, in giving judgment, said that the question was whether the plaintiff, by reasonable diligence, could have discovered the defects in the mortar before using it. He came to the conclusion on the evidence that he could not when the mortar was in a wet state before being used, and that the cost of pulling down and rebuilding could properly be recovered from the defendant, and he was also entitled to damages for loss of ground-rent.

Judgment was accordingly entered for the plaintiff for 101*l.*, with costs.

## STREET INSPECTION CHAMBERS:

### IMPORTANT DECISION.

AT the Southwark Police-court on Tuesday, Mr. Paul Taylor gave his decision in a case in which Mr. Bernard Dicksee, District Surveyor for the Newington District, summoned Mr. William Coat, Surveyor of Roads to the Vestry of St. Mary, Newington, for failing to give a building notice in respect to two structures under the footway in Newington Causeway. The Vestry of Newington is the authority empowered by Provisional Order to supply electricity in their district, and recently have been laying mains throughout Newington Causeway. At an interval of every 150 yards an inspection chamber is being constructed, and the question raised by Mr. Dicksee was whether he was entitled to a notice under the 145th Section of the London Building Act. In his evidence he stated that the inspection chamber was approximately 5 ft. 9 in. by 6 ft. 6 in., the walls being of 9-in. brickwork, the whole being covered in by a construction of wrought-iron joists and flagstones. The chamber was constructed of sufficient capacity to accommodate a man. Mr. Dicksee (who conducted his own case) contended that the inspection chambers, such as were being constructed, were "structures" within the meaning of the Building Act.

Mr. Ricketts, solicitor, who appeared for the defendant, said that, as guardians of the public way, the Vestry resolved to lay their mains underground, instead of carrying them overhead. He contended that the inspection chambers stood in the same position, legally, as those connected with the sewers. They were not "structures," he maintained, because in no sense could they be said to be connected with underground premises. It was clear that the work referred to by the 145th Section must be work in connexion with a building or structure. A large question was at stake, for, should the inspection chambers be declared to be "structures," the District Surveyor would be entitled to certain fees. Moreover, if every kind of work in the streets was to be subject to the supervision of the District Surveyor, then the Vestry's function, as the street authority, would become merely nominal.

Mr. Paul Taylor held that the chambers were covered by the words "building structure or works," contained in Section 145. He should, therefore, inflict the nominal penalty of 1s. and 2s. costs on each of the two summonses.

In reply to Mr. Ricketts, his Worship declined to state a case, on the ground that it was purely a question of fact.

## MEETINGS.

### Friday, February 3.

*Architectural Association.*—Mr. Christopher Whall on "Stained Glass"—with practical demonstration. 7.30 p.m.

*Royal Institution.* — Dr. Victor Horsley on "The Roman Defences of South-East Britain." 9 p.m.

*Sanitary Inspectors' Association.*—Sixteenth Annual Dinner, Holborn Restaurant. 6.30 p.m.

*Glasgow and West of Scotland Technical College (Architectural Craftsman's Society).* — Discussion on "Building Deficiencies," to be opened by Mr. Isaac Low. 8 p.m.

### Saturday, February 4.

*Architectural Association.*—First Spring Visit, to the Carlton Hotel, Haymarket. 3 p.m.

*British Institute of Certified Carpenters.*—Visit to Russell Hotel at 3 p.m. Meeting at 6 p.m., paper by Mr. J. D. Macnair on "Sound in Buildings."

*South Kensington Museum (Lecture Theatre).*—Dr. Lockyer on "Astronomical Instruments." II. 3.30 p.m.

### Monday, February 6.

*Royal Institute of British Architects.*—(1) To announce the name of the person the Council propose to submit to the Queen as a fit recipient of the Royal Gold Medal, 1899; (2) Mr. A. Hessell Tiltman on "Public Baths and Washhouses." 8 p.m.

*Royal Academy.*—Lectures on "Greek Architecture," by Professor Aitchison, R.A. III. 4 p.m.

*Surveyors' Institution.*—Adjourned discussion on Mr. W. Weaver's paper on "The London Building Act and the Official Supervision of Buildings." 8 p.m.

*Carpenters' Hall, London Wall (Free Lectures on Matters connected with Building).*—Professor Banister Fletcher on "Ornament." 8 p.m.

*London Institution.*—Mr. H. W. Handcock on "Every-day Applications of Electricity." Practical demonstrations. 5 p.m.

*Society of Engineers.*—The President for the past year, Mr. William Worby Beaumont, will present the Premiums awarded for Papers read during the year. The President for the year 1899, Mr. John Corry Fell, will deliver his Inaugural Address. 7.30 p.m.

*Society of Arts (Cantor Lectures).*—Dr. Samuel Rideal on "Bacterial Purification of Sewage." IV. 8 p.m.

*Leeds and Yorkshire Architectural Society.*—Mr. G. P. Bankart on "British Plaster Work: Its Past and Future." Illustrated. 6.30 p.m.

*Liverpool Architectural Society.*—Mr. E. Prioleau Warren on "Ideals and Realities of Modern Practice." 6 p.m.

### Tuesday, February 7.

*Northampton Institute, Clerkenwell.*—Lectures on Mediæval Architecture, by Mr. Francis Bond, M.A. V.—"Architecture in Syria and Southern France." 7.45 p.m.

*Institution of Civil Engineers.*—Mr. J. A. Jones on "The Waterworks of the Madras Presidency." 8 p.m.

### Wednesday, February 8.

*Society of Arts.*—Mr. James Swinburne on "Nernst's Electric Lamp." 8 p.m.

*Liverpool Engineering Society.*—Mr. W. H. Preece, C.B., F.R.S., on "Electricity at the General Post Office." 8 p.m.

*Northern Architectural Association.*—An evening of notes, with limelight lantern illustrations, by Mr. J. T. Cackett. 7.30 p.m.

*Edinburgh Architectural Association.*—Paper by Mr. T. A. Croall, F.S.A. (Scot.), entitled "Some Words about Edinburgh Architecture: (*a*) Placing of Buildings; (*b*) The Exits from Public Places." 8 p.m.

*St. Paul's Ecclesiological Society (Chapter House, St. Paul's).*—Mr. Philip M. Johnston on "Low Side Windows." Illustrated by Lantern Views. 7.30 p.m.

*Sanitary Institute.*—A discussion on "Supply of Water to London by the Welsh Scheme." To be opened by Mr. R. E. Middleton. 8 p.m.

### Thursday, February 9.

*Royal Academy.*—Lectures on "Greek Architecture," by Professor Aitchison, R.A. IV. 4 p.m.

*Institution of Mechanical Engineers.*—Annual General Meeting for the election of officers for ensuing year. The following papers will also be read and discussed: "Fifth Report to the Alloys Research Committee: Steel," by Sir William C. Roberts-Austen. "Machinery for Book an General Printing," by Mr. William Powrie; "Evaporative Condensers," by Mr. Harry G. V. Oldham. 7.30 p.m.

*Society of Antiquaries.*—8.30 p.m.

*Institution of Electrical Engineers.*—Continuation of discussion on: (1) "Rules for the Regulation of the Wiring of Premises for Connexion to Public Supply Mains," by Mr. J. Pigg. (2) "The Regulation of Wiring Rules," by Mr. C. H. Wordingham. (3) "The Institution Wiring Rules," by Mr. R. E. Crompton. If time permits, a paper will be read on "Electric Traction by Surface Contacts," by Mr. Miles Walker. 8 p.m.

### Friday, February 10.

*Institution of Junior Engineers (Westminster Palace Hotel).*—Joint meeting with the Discussion Section of the Architectural Association. Paper on "Factory Design," by Mr. J. H. Pearson. 7.30 p.m.

*Institution of Mechanical Engineers.*—Annual General Meeting (concluded). 7.30 p.m.

*Royal Institution.*— Professor H. S. Hele-Shaw on "The Motion of a Perfect Liquid," illustrated by experiments. 9 p.m.

*Institution of Civil Engineers (Students' Meeting).*—Mr. W. Middleton on "The Electrical Driving of Engineering Shops." 8 p.m.

### Saturday, February 11.

*Royal Institution.*—The Right Hon. Lord Rayleigh on "The Mechanical Properties of Bodies." I. 3 p.m.

*South Kensington Museum (Lecture Theatre).*—Mr. J. H. Pollen, M.A., on "Furniture." I. 3.30 p.m.

*London and Provincial Builders' Foremen's Association.*—Annual Dinner, Anderton's Hotel, Fleet-street. 6.30 p.m.

*Edinburgh Architectural Association.*—Visit to Cable Power Station, Tollcross.

## RECENT PATENTS:

### ACCEPTED SPECIFICATIONS.

*Open to Opposition until March 25.*

[1897.] 23,945, Wilcke & Karpan, Process for Ornamenting Finished Wooden Surfaces. 29,843, Smith, Production of Acetylene. ]1898.] 1,045, Stratford, Gas Meter Index Altered for Official Testing. 1,054, Legge & Cooper, Gas Burner for Acetylene Gas, &c. 1,236, Lynde, Baths, Lavatories, Basins, Sinks, &c. 1,389, Robinson, Forming and Jointing Sheet Metal Structures. 1,549, Davison & Lucas, Acetylene Lamps. 1,912, Andrews, Telephones. 2,015, Crocker, Incandescent Mantles. 2,454, Thorp, 5,701, Clayton & Steward, 5,941, Smith, and 7,521, Daix, Generators for Acetylene Gas. 2,749, Candy, Purification of Sewage and Polluted Waters. 3,525, Sims, Harrop, & Harrop, Syphon Flushing Cisterns and Tanks. 3,708, Marshall, Conduits. 4,274, Morrison, Road Breaking Machines. 4,663, McFarlane, Portable Gangways. 5,486, Jennings & Morley, Water and other Closets and Urinals. 5,867, Hitchin, Cord Holders for Blinds. 5,895, Ratel, Domestic Fire Grates. 5,986, Brindle, Plinths, Pedestals, &c. 6,350, Waddington, Carbons. 6.664, Jones, Combined Hydrant and Standpipe. 7,059, Russell & Cottrell, Road Scarifiers. 8,211, Arbenz, Knife Blades. 11,116, Kemp, Testing Drains and Soil Pipes with Chemicals. 14,402, Foster, Unions of Water-closet Basins with the Flushing Pipe. 17,095, Bynoe & Cubison, Means or Apparatus for Receiving and Delivering Gas. 19,623, Funnell, Heating, Ventilating, and Draught-regulating Apparatus. 19,855, La Soc. Roger et Rathier, Electrodes for Electrical Accumulators. 21,734, Williams, Central Draught Lamp Burners. 21,755, White, Electrical Meters. 21,894, Hutchison & Findlay, Earthenware Pipes. 23,573, Ewing, Earthenware Pipe Joints. 24,535, Shellhammer & Garner, Tool-holders. 24,795, Brandt, Insulating Conduit Tubes. 25.018, Hasselmann, Treating Wood and other Vegetable Fibres for Preserving Waterproofing, &c. 25,301, Spinette, Furnace Grates. 25,311, Carduck, Window Frames, Sashes, and Sash-bars. 25,711, Anderson, Urinal Stall. 26,067, Gover & Proctor, Holder for Electrical Glow-lamps. 26,068, Siemens & Halske, A. G., Electrical Glow-lamp Fittings. 26,690, Newton, Shakespeare & Hunt, Kettles, Bottles, Pots, Cans, and other Vessels having Spouts attached thereto.

### ABSTRACTS OF PATENTED INVENTIONS.

21,547.—Closet Seats and Hinges: *T. R. Kay.*—To retain the seat normally in a raised position the action of a compressed spiral spring is used to operate upon a part of the hinge. The back half of the seat is fastened by pivotted eccentrics, which engage with the basin's rim or recesses made in the basin.

21,561.— Step-Ladders: *R. W. Vaughan.* — The ladder, adapted for outdoor use, has its upper end pointed, and rests against a back-strut, whereon is a cross-bar to bear against the back edges of the two side-pieces. The end of the strut rests against a metal plate recessed in the front of the step next above it.

21,570.—Ball and Float Valves: *O. H. Jones.*—Through the valve-casing projects a spindle, whose end engages with the end of the float-lever, which is supported by a pin upon two guides. The other end of the spindle carries a checking piston within a chamber, to prevent noise as the valve closes in cutting off communication between the outlet and the supply. In a modified adaptation a plunger takes the place of the piston, and the valve spindle is fixed horizontally.

21,627.—Coupling of Pipes, Conduits, &c.: *S. O. Kjellström.*—For coupling cement pipes or conduit blocks, used for conveying water, carrying electrical cables, and so on, the inventor adopts a pair of metal bars, which he secures to each block. The hooked ends of the bars are embraced by straps, and the straps are tightened with wedges. By another method of coupling iron rods are secured with cement in holes that are formed in the blocks.

21,628.—Sash Lines and Pulleys: *U. G. McQueen.*—The pulley casing is formed with an extension that is seated in a recess made in the lintel of the window frame, and is screwed thereto, and the casing fits within a slot in the lintel, the casing also has an extension that hangs down and fits into a notch in the pulley-stile.

21,680.—Bolts for Hand-rails, Mouldings, &c: *H. Foster, J. Hayes, and F. T. Greenwood.*—Two wings are made upon the bolt, they are forced into the wood, and answer the purpose of dowels, the wings are tapered and stepped, whilst the nuts are serrated so that they may be driven on.

21,718.—Pigments: *R. Strobentz & J. Fried.*—For the manufacture of black pigments from carbonaceous materials, such as, for instance, lignite; the material is first finely ground, and then treated with a solution of chloride or sulphate of iron, whereby a black pigment is obtained; by a variant process the carbonaceous substance is treated with a solution of tannic, gallic, or pyrogallic acid before it is mixed with the salt of iron in solution.

21,758.—Cranes: *J. Campbell.*—The inventor has sought to improve upon the invention No. 23,280, of 1896; the car-wheels run upon rails carried by trestles, and a boom, mounted upon the car, has a slot lengthwise, and rails for a trolley which carries the shovel; two sheaves in the trolley are provided for the lifting and lowering rope, and the closing and opening rope, respectively, of the shovel, the former rope runs up from the trolley to between two sheaves at the top of the crane and thence to the winding-drum of the engine for the shovel, and the latter rope is adjusted in a similar way; the shovel guy-rope is passed from the top of the crane over pulleys attached to a weight and at the end of the boom; one part of the trolley-rope goes round a sheave in the end of the boom, thence to another sheave near the boom's middle point, and thence to the trolley-engine; the other part is connected likewise to the trolley's other end; the car may be fitted with a hopper for the discharge of its contents into a railway waggon below.

21,784.—Iron Fencing: *S. Bayliss & J. Sadler.*—The standards and vertical bars are made of T or angle-iron, with flanges perforated for the horizontal bars, whereof each is made in two parts set at right angles—the one part that projects is passed through the holes in the vertical bars, engaging therein by notches; when the vertical and horizontal bars are thus adjusted together, wedges are driven in, or a locking-bar is put through the holes. The horizontal bars are scarfed or lapped together, or jointed at the standards, for expansion through heat or for adaptation to inequalities of the surface; thus the component parts can be readily separated and made up into bundles.

21,790.—Lamps and Stoves for Lighting and Heating: *H. S. Bishop & C. Salmon.*—Gas is enabled to pass from a lower chamber, by means of nozzles and tubes, into the mixing chamber; between the two parts of the (Bunsen) burner is inserted some insulating packing, and a spring maintains the portion of the burner which carries the mantle.

21,811.—Pile Drivers: *W. Drähl.*—To effect automatical lifting and release of the ram-block it is provided that—we will suppose the block is falling—a rod within the block shall be driven upwards, when the pile is reached, and shall so turn an arm mounted above the block that the arm shall be held between two under-cut jaws that will close over it; the arm's outer end engages with the chain (which moves continuously), and the block is lifted until a wedge above it strikes an adjustable stop and so opens the two jaws, whereby the inner arm resumes its former place in order that the block may fall.

21,826.—Chimney Tops: *A. R. Roe.*—Two side outlets are made in the straight outlet, which is closed at its top, one outlet being uncovered, and the other having guards which open on either side, the outlets are enclosed by a skirt which rests by means of lugs upon the guards.

21,831.—Acetylene Lamps: *Wizard Manufacturing Company.*—A central conical socket, having a conical plug and a clamped pad of filtering material, is fitted on to the carbide chamber, whose cover is screwed in by means of a handle, the conical plug surrounds a threaded valve-casing which bears against a spring washer tightly, and also encloses a screw-valve; complete combustion is provided for by a lava gas-tip, having side air-holes, that is placed upon the casing, the screw-valve passes through a slot in the combustion chamber; another pad, to act as an absorbent, is supported by wire netting within the carbide chamber, and a valve regulates the passage of water through the pad, upon which a spring presses a block of carbide; a spring safety-valve is fitted on to the carbide chamber, and an indiarubber non-return slit valve admits air into the water-chamber.

21,856.—Water Heaters: *G. Shrewsbury.*—A bath "geyser," or similar heater, has its casing fitted with a heater and gas-burner, the water circulating in sections of the heater and passing through the surrounding jacket. The water as it flows is heated by the gases from the burner which escape through the cover.

21,838.—Lift Valves for Taps: *S. & H. Richards.*—This contrivance comprises an elastic seat or valve fitted beneath the holder, which has a guide or extension to prevent any upsetting of the valve. When the valve is pressed downwards, the rubber or other elastic material presses against its ring-seat. The action is obtained, by preference, from a screw-down spindle, and that the flow of liquid may keep the valve clean, a syphon-shaped passage is adopted.

21,909.—Joints for Drain and Sewer Pipes: *A. Johnson.*—An annular recess is fashioned around the tapered spigot end of one pipe, and a similar recess is fashioned for the socket end of the other pipe, the two recesses are to be filled with cement.

21,921.—Boards for Light Waterproof and Fireproof Structures: *C. W. Luther.*—These are made by superposing (crossed grainwise) sheets of veneer and fastening them together with an admixture of casein or similar substance, about 60 per cent., slaked lime, 15 to 40 per cent., and water. The boards are made to be fixed to wooden—though preferably iron—rafters and posts; a preservative composition for outward application can be obtained by adding from 5 per cent. to 30 per cent. of coal tar to the dry cement.

22,028.—Dividers and Compulsory Scales: *R. F. Oswald.*—A series of parallel scales to show lengths, squares, cubes, areas of circles, and so on, is marked upon the half-rounded legs of the dividers, and a link is pivotted to one leg and to a sliding index upon the other leg; if the dividers are openen to measure any particular distance, that distance, or its square cube, and so on, may be read upon the scales opposite the index; the instrument whe closed will serve as a holder for a pen, pencil, &c.; a cap being fitted upon its points.

22,090.—Waste Water-closets and their Flushing: *J. & S. H. Dibble.*—The invention affects waste water-closets of the kind described in Nos. 18,086 and 26,102 of 1896. The novel arrangement provides for the discharge of the sink into a tipping basin, which is emptied by means of a pipe into a trapped receptacle fixed above the flushing syphon of the water-closet. In another form the sink may be fitted beneath, with an extended trap, shaped troughwise, and having a dip plate.

# COMPETITIONS, CONTRACTS, AND PUBLIC APPOINTMENTS.

## COMPETITIONS.

| Nature of Work. | By whom Advertised. | Premiums. | Designs to be delivered. |
|---|---|---|---|
| *Additions to Town Hall | Shoreditch Vestry | 50l. and 25l. | Mar. 22 |
| *House | Doncaster Grammar School Trustees | do. | Mar. 30 |
| *Market Hall and Shops | Leeds Corp. | 150l.; 100l.; and 50l. | June 1 |
| *New Board Room, Offices, &c. | Wandsworth&Clapham Union | 100l. 60l. and 40l. | No date |

## CONTRACTS.

| Nature of Work or Materials. | By whom Required. | Forms of Tender, &c. Supplied by | Tender to be delivered. |
|---|---|---|---|
| *Cast Iron Pipes and Special Castings | Cork Corp. | H. A. Cutler, Town Hall | Feb. 6 |
| Alterations to Station, Chippenham | G. W. Ry. Co. | G. K. Mills, Paddington Station, W. | Feb. 7 |
| Railway Bridge, Bathampton, Somt. | do. | do. | do. |
| Engine House, Shed, &c. Sunbridge-road | Bradford Corp. | J. H. Cox, City Surv. Town Hall | do. |
| School, Abbey Hulton | Stoke-on-Trent Sch. Bd. | R. Scrivener & Sons, Archt Hanley | do. |
| Main Sewer, Bank Hall Lane, Hale | Bucklow R.D.C. | J. M'Kenzie, Surv. 7, Market-st. Altrincham | do. |
| House, Liverpool-road, Walmer | Walmer Estate Co. | Hinds & Sons, Archt. Deal | do. |
| Seventeen Houses, Haugh Shaw, Halifax | | M. Hall, Archt. 29, North-gate, Halifax | do. |
| Additions to Hollowgates, Sackville-street, Barnsley | | H. Crawshaw, Archt. 13, Regent-st. Barnsley | Feb. 8 |
| Vicarage, St. John's, Newcastle, co. Down | | J. Russell, C.E. 16, Waring-st. Belfast | do. |
| Villa, Blackwood, Mon. | G. W. Cooke | T. Rowland Archt. Market-bldgs. Pontypridd | do. |
| Six Houses, Town-st. Bramley, Leeds | A. Bolland | F. Wilkinson, Archt. 35, Park-square, Leeds | do. |
| Five Cottages, Hawthorne-avenue, Hull | N. E. Ry. Co. | W. Bell, Archt. York | do. |
| Twenty-four Houses, Parkwood Springs, Sheffield | | E. Winder, jun. Archt. Wharf-st. Sheffield | do. |
| Power House, &c. | Swansea Tramway Co. | Jones & Rowlands, Archt. 58, Wind-st. Swansea | do. |
| Lodge, Entrance Gates, &c. Newland-lane | Normanton U.D.C. | Surveyor, Council Offices | Feb. 9 |
| Four Shops and Houses, Exmouth | W. J. Sellers | P. Kerley, Archt. Exmouth | do. |
| Stores, Manningham-lane, Bradford | Prov. Indus. Soc. | Rycroft & Firth, Archt. Bank-bldgs. Bradford | do. |
| House, James-st. Buckpool, N.B. | | J. Perry, Archt. Buckie | do. |
| Additions to Chapel, Clifton-street, Cardiff | | Habershon & Co. Archt. Pearl-st. Cardiff | do. |
| Church, Tayvallich, N.B. | | N. Gillies, Archt. Lochgilphead, N.B. | do. |
| Board Room, Pleck-road | Walsall Union | H. E. Lavender, Archt Bridge-st. Walsall | do. |
| Stabling, &c. Bruntcliffe, Leeds | | J. Jackson, Archt. Barry-st. Bradford | Feb. 10 |
| Granite Setts (1,000 tons) | Hull Corp. | A. E. White, City Engr. Town Hall | do. |
| Cattle Lairs, Sumner-street | Blackburn Corp. | W. Stubbs, C.E. Victoria-st. Blackburn | do. |
| Sewers, &c. | Pudsey U.D.C. | J. Jones, Surv. Council Offices | do. |
| Additions to Infirmary, Enniskillen | Governors | C. Wilson, The Infirmary, Enniskillen | do. |
| Villa, Arnside, Knott, Kendal | T. Taylor | J. Stalker, Archt. Kendal | do. |
| House, Stable, &c. Wigton-rd. Carlisle | | A. W. Johnston, Archt. 81, Castle-st. Carlisle | do. |
| Hall and Two Houses, Charles-street Dorchester | Oddfellows Soc | A. L. T. Tilley, Archt. 26, South-st. Dorchester | do. |
| Road Metal | Wetherby (Yorks.) R.D.C. | Mr. Wiseman, Surveyor, Wetherby | Feb. 11 |
| Street Works | Swindon R.D.C. | H. J. Hamp, Surv. Council Offices | do. |
| Public Convenience, Grand-parade | Eastbourne Corp. | R. M. Gloyne, C.E. Town Hall | do. |
| Mortuary Extension | Cardiff Union | E. Seward, Archt. Cardiff | do. |
| Villa, Northallerton | C. Alexander | W. Perkins, Archt. Bishop Auckland | do. |
| Farmhouse, Brynn, Cornwall | | S. Hill, Archt. Redruth | do. |
| Rebuilding "Foresters' Arms" Inn, Swindon | T. & J. Arkell | W. Drew, Archt. 22, Victoria-st. Swindon | do. |
| Road Materials | Blackburn Corp. | W. Stubbs, C.E. Municipal Offices, Blackburn | do. |
| *Hospital, Liscard | Liscard Cent. Hospital Com. | Hurrell & Taylor, 6, Stanley-st. Liverpool | Feb. 13 |
| *Materials, &c. (various) | Hendon U.D.C. | S. S. Grimley, Public Offices, Hendon, N.W. | do. |
| Two Roads, Heswall, Cheshire | Land Co. Ltd. | Beloe & Priest, C.E. 13, Harrington-st. Liverpool | do. |
| Hospital, Liscard, Cheshire | | Maxwell & Tuke, Archts. 41, Corporation-st. Manchester | do. |
| Additions to Public Hall, Lime-st. | Preston Corp. | Borough Surv. Town Hall | do. |
| Paving Works, Ley-st. &c. | Ilford U.D.C. | H. Shaw, C.E. 7, Cranbrook-road, Ilford | do. |
| Road and Viaduct | Kirkcaldy T.C. | W. D. Sang, C.E. Kirkcaldy, N.B. | do. |
| *Show Yards | Somt. Cty. Agric. Ass. | A. Cottom, Bridgewater | Feb. 14 |
| *Supplies (various) | Cty. Boro. of West Ham | See Advt. | do. |
| Church Works, St. George's Church, Leeds | | H. Walker, Archt. 8 Upper Fountaine-st. Leeds | do. |
| Sewer Extensions | Barton-on-Irwell R.D.C. | C. C. Hooley, C.E. Council Offices | do. |
| Drainage Works | Cirencester U.D.C. | T. Hibbert, Surv. Cirencester | do. |
| *Extension of Public Offices | Willesden D.C. | O. C. Robson, Offices, Dyne-rd. Kilburn, N.W. | do. |
| *Road Making and Paving | do. | do. | do. |
| *Widening Road | do. | do. | do. |
| *Works and Materials (various) | do. | do | do. |

## CONTRACTS—*Continued.*

| Nature of Work or Materials. | By whom Required. | Forms of Tender, &c. Supplied by | Tenders to be delivered. |
|---|---|---|---|
| *Road Making (Honor Oak Park) | Lewisham B. of W. | Surveyor's Dept. Town Hall, Catford | Feb 14 |
| *Road Making (Westwood Park) | do. | do. | do. |
| *Works and Materials (various) | Hammersmith Vestry | See advt. | Feb. 15 |
| *Works and Materials | Hampstead Vestry | Surveyor, Vestry Hall, Hampstead | do. |
| Granite Kerbs, &c | Birkenhead Corp. | C. Brownridge, C.E. Town Hall | do. |
| Brick Groyne, Walton-on-Naze | | H. W. Gladwell, Surv. 5, Crescent-rd. Walton | do. |
| Stables, &c. Illingworth, Yorks | Indus. Prov. Soc. | M. Hall, Archt. 29, North-gate, Halifax | do. |
| Drainage Works | Gorton (Lancs.) U.D.C. | C. J. Lomax, C.E. 37, Cross-st. Manchester | do. |
| Additions to Home, Huddersfield | | J. Kirk & Sons, Archt. Huddersfield | Feb. 16 |
| *Erecting Workhouse Buildings | Hastings Union | Jeffery & Skiller, 5, Havelock-road, Hastings | do. |
| *Electric Lighting, Heating, Hot-water Supply, Laundry Fittings and Kitchen Fittings | Southampton Corp. | Municipal Offices, Southampton | Feb. 17 |
| Street Works | Bexhill (Sussex) U.D.C. | G. Ball, C.E. Town Hall | do. |
| Additions to Lodge, &c. | Ipswich Burial Board | H. J. Wright, Archt. 4, Museum-st. Ipswich | Feb. |
| Pier Improvements | Eastbourne Pier Co. Ltd. | M. N. Ridley, C.E. 11, Dartmouth-st. S.W. | do. |
| Cottage Homes | Stockton Union | J. Rodham, 16, Finkle-st. Stockton-on-Tees | do. |
| Additions to Museum, Gaol-lane | Dover T.C. | H. E. Stilgoe, C.E. Town Hall | Feb. 21 |
| *Works and Services (various) | Battersea Vestry | J. T. Pilditch, Vestry Hall, Lavender Hill, S.W. | do. |
| *Foundations for New Central Savings Bank, W. Kensington | Commrs. of H. M. Works, &c | The Sec. Office of Works, Storey's Gate, S.W. | do. |
| Schools, Knaresborough | Govrs. of King James' Grammar School | Barrowcliffe & Co. Mill-st. Loughborough | Feb. 22 |
| Granite Setts (950 tons) | Clayton-le-Moors U.D.C. | A. Dodgeon, Surv. Council Offices | do. |
| Additions to Buildings, Sewage Outfall Works | Gorton (Lancs.) U.D.C. | C. J. Lomax, Engr. 37, Cross-st. Manchester | do. |
| Broken Granite (10,000 tons) | Holland (Lincs.) C.C. | B. C. Johnson, Sessions House, Boston | Feb. 23 |
| *Works and Materials (various) | Islington Vestry | Vestry Hall, Upper-st. N. | do. |
| Three Shops, Fletton | Peterborough Co-op. Soc. | Townsend & Fordham, Archts. Cross-st. Peterborough | Feb. 24 |
| Cottage | Workington Brewery Co. Ltd. | J. Howes, Archt. 23, Curwen-st. Workington | do. |
| Sewers, &c. | St. Annes-on-Sea U.D.C. | H. Bancroft, C.E. 88, Mosley-st. Manchester | Feb. 25 |
| *Gas Fitters' Work | Commrs. H.M. Works | Office, Storey's Gate, Westminster | do. |
| *Works and Repairs | do. | do. | do. |
| Waterworks | Wakefield Corp. | C. C. Smith, C.E. Town Hall | Feb. 28 |
| *Exhibition Buildings | Glasgow International Exhibition | F. A. Healey, 141, Buchanan-st. Glasgow | Mar. 15 |
| *Works and Materials (various) | Westminster Vestry | G. R. W. Wheeler, Town Hall, Caxton-st. S.W. | See advt. |
| *Painting and Decorating | Trustees Grand Stand, Ascot | W. Menzies, Englefield Green, Surrey | No date |
| Extension of Weaving Sheds, Earlsheaton, Yorks | | F. W. Ridgway, Archt. Borough-chmbrs. Dewsbury | do. |
| Twenty-nine Houses, Old Jail, Southampton | | W. B. Hill, Surv. Southampton | do. |
| Primitive Methodist Church, Bentley | | Athron & Beck Archt. Dolphin-chambers, Doncaster | do. |
| Additions to Schools, Ashton-under-Lyne | | Burton & Percival, Archt. 150A, Stamford-st. Ashton | do. |
| Block of Buildings, Annfield Plain, Durham | | T. E. Crossling, Archt. Stanley, Durham | do. |
| Three Houses, Higham Ferrers | W. Spong | H. Admitt, Archt. High-st. Rushden | do. |
| Ten Houses, Holbeck, Leeds | T. Cromack | F. W. Rhodes, Archt. Upper Wortley, Leeds | do. |
| Villa, Odsal, Yorks. | | W. H. Sharp, Archt. 239, Rooley-lane, Bradford | do. |
| Pair Villas, Heysham, nr. Morecambe | | Walker & Collinson, Archt. Market-st. Morecambe | do. |
| Two Houses, Clarendon-rd. West End, Morecambe | J. Porter | Marshall Bros. Archt. Back-crescent, Morecambe | do. |
| Two Shops and Houses, Halifax-road Dewsbury | | F. W. Ridgway, Archt. Dewsbury | do. |
| Additions to Napier Villa, Fordingbridge, Hants. | W. King | F. Bath, Archt. Salisbury | do. |
| *Two Shops | | Jane, 17, Market-place, Reading | do. |

## PUBLIC APPOINTMENTS.

| Nature of Appointment. | By whom Advertised. | Salary. | Application to be in. |
|---|---|---|---|
| *Clerk of Works | Islington Vestry | 4l. 4s. per week | Feb. 6 |
| *General Foreman | Poplar B. of W. | do. | Feb. 7 |
| *Borough Surveyor | Hemel Hempstead T.C. | 150l. per annum | do. |
| *Engineering and Surveying Assistant | Huddersfield Corp. | do. | Feb. 10 |
| *Engineer and Surveyor | Harrow-on-the-Hill U.D.C. | 160l. rising to 200l. per an. | Feb. 13 |
| *Inspector of Nuisances | do. | 130l. per annum | do. |
| *Inspector of Roads | Islington Vestry | 2l. 10s. rising to 3l. per week | do. |
| *Foreman (Hardwood Paving) | Hackney Vestry | 3l. 5s. per week | do. |
| *Building Inspector | Willesden D.C. | 150l. rising to 200l. per an. | Feb. 14 |
| *Building Inspector | Tottenham U.D.C. | 150l. per annum | Feb. 20 |
| *Superintending Architect | L.C.C. | 2,000l. per annum | Feb. 25 |

*Those marked with an asterisk* (*) *are advertised in this Number.* *Competitions, p.* iv. *Contracts, pp.* iv. vi. viii. x. & xxi. *Public Appointments, pp.* xix. & xxi.

## SOME RECENT SALES OF PROPERTY:

### ESTATE EXCHANGE REPORT.

January 7.—By ELWORTHY & SON (at Wisbech).

| | |
|---|---|
| Wisbech St. Peter, Cambs.—White Hall Farm, 36 a. 1 r. 10 p. | £3,180 |
| Four enclosures of pasture, 43 a. 3 r. 27 p., f. | 3,140 |

January 18.—By BEARD & SON.

| | |
|---|---|
| Bayswater.—228, Westbourne-grove, u.t. 45 yrs., g.r. 7l. 7s., r. 55l. | 520 |

By C. RAWLEY CROSS & CO.

| | |
|---|---|
| South Kensington.—25, Edith-grove, u.t. 74 yrs., g.r. 7l. 10s., e.r. 75l. | 625 |
| Chelsea.—13a and 14a, Ashburnham-rd., u.t. 79 yrs., g.r. 13l., r. 78l. | 750 |
| Kensington.—Addison Gardens, f.g.r. 30l., reversion in 98 yrs. | 875 |
| Addison Gardens, f.g.r. 10l., reversion in 98 yrs. | 290 |

By FOSTER & CRANFIELD.

| | |
|---|---|
| Clapham.—13, Richmond-ter., u.t. 29¼ yrs., g.r. 7l. 10s., e.r. 50l. | £310 |

By W. MARTIN & CO.

| | |
|---|---|
| Walthamstow.—26, Copeland-rd., u.t. 77 yrs., g.r. 6l. 6s., r. 34l. | 295 |
| Copeland-rd., f.g.r. 12l. 12s., reversion in 77 yrs. | 335 |
| Dulwich.—177, East Dulwich-rd., u.t. 65 yrs., g.r. 12l., r. 52l. 10s. | 510 |
| 18, Elsie-rd., u.t. 73½ yrs., g.r. 7l. 10s., e.r. 36l. | 320 |
| 110, Melbourne-grove, u.t. 76½ yrs., g.r. 6l. 10s., r. 28l. | 285 |
| 10, Ashbourne-grove, u.t. 71 yrs., g.r. 6l., r. 28l. | 300 |

January 19.—By DANIEL WATNEY & SONS.

| | |
|---|---|
| Shadwell.—294 and 296, Cable-st., f., r. 56l. | 920 |
| 1 to 9, 11 to 14, 22, 23, and 24, Albert-st., f. | 3,440 |
| Albert-st., f.g.r. 32l. 16s., reversion in 4½ yrs. | 2,840 |
| High-st., f.g.r. 5l., reversion in 23½ yrs. | 155 |
| High-st., two corner building sites, f. | £425 |
| Cable-st., &c., f.g.r. 50l., reversion in 64 yrs. | 1,320 |

By J. G. DEAN & CO.

| | |
|---|---|
| Balham.—1, Marius-rd., u.t. 92 yrs., g.r. 10l., r. 52l. | 530 |

By H. J. BLISS & SONS.

| | |
|---|---|
| Walthamstow.—14 and 16, Suffolk Park-rd., f. | 725 |
| Victoria Park.—67, Strahan-rd., u.t. 51 yrs., g.r. 5l. 10s., r. 28l. | 300 |
| Edmonton.—1, 3, 5, and 7, Exeter-rd., u.t. 83 yrs., g.r. 11l. 10s. | 250 |
| Clapton.—83 and 89, Clifden-rd., f. | 835 |
| Hackney.—40 to 52 (even), Boston-st., f. | 1,500 |
| Hoxton.—21 to 27 (odd), Hobb's-pl., f. | 1,100 |
| Limehouse.—43, 45, and 47, Church-row, c. | 400 |
| Wapping.—4 and 6, Red Lion-st., f. | 150 |
| Mile End.—44, West-st., f., r. 15l. | 230 |
| Victoria Pk.—74, Sewardstone-rd., u.t. 58 yrs., g.r. 4l. 10s. | 360 |

| | |
|---|---|
| Hackney.—36, Pritchard-rd., u.t. 20 yrs., g.r. 4*l*. | £155 |

By WORSFOLD & HAYWARD (at Dover).

| | |
|---|---|
| Dover, Kent.—Snargate-st., a bonded vault and yard, u.t. 17 yrs., g.r. 6*l*. | 350 |
| Snargate-st., f.g.r. 18*l*., reversion in 17 yrs. | 294 |
| Strond-st., "The Ship Hotel," u.t. 70 yrs., g.r. 4*l*. 6s., r. 80*l*. | 1,500 |
| 10, Albert-rd., u.t. 66½ yrs., g.r. 2*l*. 10s., r. 24*l*. | 325 |
| 12, Woolcomber-lane, f. | 240 |
| 16, Oswald-rd., f. | 205 |

By HADDON & TURNBULL (at Hawick).

| | |
|---|---|
| Minto, Roxburghshire.—The estate of Hassendeanburn, 666 a. | 16,200 |

January 23.—By F. VARLEY.

| | |
|---|---|
| Battersea.—Falcon-grove, i.g.r. 19*l*. 2s., u.t. 52 yrs., g.r. nil | 350 |
| Finsbury Pk.—49, Wyatt-rd., u.t. 71½ yrs., g.r. 5*l*., r. 28*l*. | 310 |
| 34 and 36, Ambler-rd., u.t. 65 yrs., g.r. 6*l*., r. 64*l*. | 780 |

January 24.—By DAVID BURNETT & CO.

| | |
|---|---|
| Chelsea.—68 and 70, Beaufort-st., u.t. 15 yrs., g.r. 8*l*., r. 50*l*. | 300 |

By WILLIS & CROUCH.

| | |
|---|---|
| Kingsland.—34, 35, 36, and 37, Lee-st., ut. 20 yrs., g.r. 12*l*. | 800 |
| Marylebone.—119, Seymour-pl., u.t. 6½ yrs. g.r., 9*l*., r. 55*l*. | 130 |

By FLEURET, SONS, & ADAMS (at Masons' Hall Tavern).

| | |
|---|---|
| Hampstead Heath.—North End, "The Old Bull and Bush" p.-h., u.t. 56½ yrs., r. 135*l*., with goodwill | 20,200 |

By J. & W. JOHNSON & CO. (at Masons' Hall Tavern).

| | |
|---|---|
| Newington Butts.—"The King and Queen" p.-h., u.t. 33 yrs., r. 175*l*., with goodwill | 8,900 |

By JONES, SON, & DAY (at Masons' Hall Tavern).

| | |
|---|---|
| Victoria Pk.—Hewlett-rd., "The Lord Palmerston" p.-h., u.t. 58 yrs., g.r. 50*l*. 5s., with goodwill | 8,100 |

January 25.—By MANSELL & ROWE.

| | |
|---|---|
| Norwood.—Anerley-rd., Howard House, u.t., 65 yrs., g.r. 13*l*. 15s., e.r. 75*l*. | 630 |

By E. W. RICHARDSON & SON.

| | |
|---|---|
| Mile End.—51, Willow-st., u.t. 31½ yrs, g.r. 5s. | 260 |

By DOUGLAS YOUNG & CO.

| | |
|---|---|
| Old Kent-rd.—No. 118, f., r. 80*l*. | 1,600 |
| Clapham.—106, Lansdowne-rd., u.t. 43½ yrs., g.r. 10*l*., e.r. 80*l*. | 650 |
| Kennington.—66 and 68, Henry-st., u.t. 9 yrs., g.r. 6*l*. 6s. | 160 |
| Teddington.—Verona-villas, f.g.r. 5*l*. 10s., reversion in 81 yrs. | 118 |

By SWAN WOODCOCK (at Stratford).

| | |
|---|---|
| Stratford.—25, Gurney-rd., f., e.r. 30*l*. | 495 |

January 26.—By A. ALDRIDGE & CO.

| | |
|---|---|
| Victoria Pk.—56 to 64 (even), Victoria Park-rd., u.t. 55 yrs., g.r. 4*l*. (lease renewable at 3 per cent. on rack rentals), r. 216*l*. | 2,470 |
| Westminster.—9, Great Peter-st., f.g.r. 81*l*. 5s., reversion in 79 yrs. | 1,970 |
| Margate, Kent.—1 and 2, Second-av., f., r. 240*l*. | 3,780 |

By EVES & SONS.

| | |
|---|---|
| Enfield.—1, 2, 3, and 4, London-rd., f., r. 230*l*. | 4,575 |

By C. C. & T. MOORE.

| | |
|---|---|
| Whitechapel.—74, High-st., f. | 4,500 |
| Commercial-rd. East.—35, Caroline-st., f. | 600 |
| St. George's, East.—84, St. George's-st., f., r. 33*l*. | 600 |
| Limehouse.—16, Three Colt-st., f. | 515 |
| 6 to 16 (even), St. Anne's-row, u.t. 54½ yrs., g.r. 30*l*. | 275 |
| Leytonstone.—270 and 274, High-rd., u.t. 85½ yrs., g.r. 11*l*. 10s., r. 60*l*. | 550 |

By NEWBON, EDWARDS, & SHEPHARD.

| | |
|---|---|
| Caledonian-rd.—30, 37, 44, and 45, Edward-sq., u.t. 41 yrs., g.r. 20*l*., r. 135*l*. | 960 |
| Marylebone.—40, Beaumont-st., u.t. 26 yrs., g.r. 30*l*., r. 90*l*. | 825 |
| 11, Buckingham-st., u.t. 13 yrs., g.r. 30*l*. | 330 |
| Barnsbury.—27 and 28, Offord-st., u.t. 39½ yrs., g.r. 6*l*. | 425 |

By STIMSON & SONS.

| | |
|---|---|
| Walworth.—70, Villa-st., u.t. 52 yrs., g.r. 11*l*. 15s., r. 52*l*. | 420 |
| 74, Westmoreland-rd., u.t. 50 yrs., g.r. 6*l*. | 385 |
| 161, South-st., u.t. 63 yrs., g.r. 7*l*. | 265 |
| Southwark.—39, 40, and 41, Great Suffolk-st., f., r. 96*l*. 6s. | 1,220 |
| Camberwell.—1 and 2, Padfield-st., u.t. 67 yrs., g.r. 9*l*. | 505 |
| Battersea.—66, 68, and 70, Shelgate-rd., u.t. 83 yrs., g.r. 21*l*. | £855 |
| Tooting.—Burntwood-lane, "Tregadra" and "Tregonhay," u.t. 81 yrs., g.r. 12*l*., r. 64*l*. | 525 |
| Wimbledon.—24, Southey-rd., f., r. 36*l*. | 520 |
| Lambeth.—109, Oakley-st., f., e.r. 40*l*. | 515 |
| Kennington.—129 and 130a, Prince's-rd., u.t. 10 yrs., g.r. 13*l*. 8s., r. 87*l*. | 265 |
| Peckham.—Reynold's-rd., &c., a corner plot of land, f. | 220 |
| 38 to 72 (even), Cator-st., u.t. 63 yrs., g.r. 66*l*. | 4,040 |
| Dulwich.—Dunstan's-rd., four plots of building land, f. | 900 |

January 27.—By E. H. HENRY.

| | |
|---|---|
| Clapham Common.—28, Orlando-rd., u.t. 71½ yrs., g.r. 9*l*. 10s., e.r. 60*l*. | 540 |

By J. HIBBARD & SONS.

| | |
|---|---|
| Hoxton.—39, Felton-st., f., r. 33*l*. 16s. | 335 |
| Barnsbury.—115, Offord-rd., f., r. 38*l*. | 605 |
| Finchley.—1, Torrington-pl., f., r. 55*l*. | 630 |
| Hackney.—200 and 202, Well-st, u t. 46 yrs., g.r. 12*l*., r. 120*l*. | 1,350 |
| Notting Hill.—16, Tobin-st., u.t. 30 yrs., g.r. 3*l*. 10s., r. 40*l*. | 315 |
| 29, Tobin-st., u.t. 31 yrs., g.r. 3*l*. | 290 |
| Stoke Newington.—102, Mildmay-rd., u.t. 52½ yrs., g.r. 7*l*., r. 40*l*. | 390 |

*Contractions used in these lists.*—F.g.r. for freehold ground-rent; l.g.r. for leasehold ground-rent; i.g.r. for improved ground-rent; g.r. for ground-rent; r. for rent; f. for freehold; c. for copyhold; l. for leasehold; e.r. for estimated rental; u.t. for unexpired term; p.a. for per annum; yrs. for years; st. for street; rd. for road; sq. for square; pl. for place; ter. for terrace; cres. for crescent; yd. for yard, &c.

## PRICES CURRENT OF MATERIALS.

| | | |
|---|---|---|
| TIMBER. | | |
| Greenheart, B.G. ton | 8/0/0 | 0/0/0 |
| Teak, E.I....load | 10/10/0 | 15/10/0 |
| Sequoia, U.S. ft.cu. | 1/9/0 | 2/0/0 |
| Ash, Canada, load | 3/17/6 | 5/5/0 |
| Birch, do. | 3/0/0 | 5/0/0 |
| Elm, do. | 4/12/6 | 5/15/0 |
| Fir, Dantsic, &c. | 2/0/0 | 4/0/0 |
| Oak, do. | 3/5/0 | 3/15/0 |
| Canada | 4/0/0 | 6/0/0 |
| Pine, Canada red | 0/0/0 | 0/0/0 |
| Do. yellow | 4/7/6 | 6/5/0 |
| Lath, Dantsic, fath | 4/10/0 | 5/10/0 |
| St. Petersburg | 4/0/0 | 6/10/0 |
| Wainscot, Riga, &c., log | 3/15/0 | 5/15/0 |
| Odessa, crown | 3/15/0 | 5/15/0 |
| Deals, Finland 2nd & 1st std. 100 | 9/15/0 | 10/5/0 |
| Do. 4th & 3rd | 9/15/0 | 10/5/0 |
| Do. Riga | 8/5/0 | 9/5/0 |
| St. Petersburg, 1st yellow | 11/15/0 | 14/5/0 |
| Do. 2nd yellow | 10/15/0 | 12/5/0 |
| Do. white | 9/15/0 | 11/15/0 |
| Swedish | 9/15/0 | 16/15/0 |
| White Sea | 10/15/0 | 18/0/0 |
| Canada, Pine 1st | 18/15/0 | 25/5/0 |
| Do. do. 2nd | 13/15/0 | 17/0/0 |
| Do. do. 3rd, &c. | 6/0/0 | 10/0/0 |
| Do. Spruce, 1st | 8/10/0 | 10/10/0 |
| Do. do. 3rd and 2nd | 7/5/0 | 8/10/0 |
| New Brunswick | 7/5/0 | 8/0/0 |
| Battens all kinds | 5/0/0 | 16/0/0 |
| Flooring boards, sq., 1 in., prep. 1st | 9/6 | 16/3 |
| Do. 2nd | 8/0 | 13/3 |
| Other qualities— | 6/3 | 7/0 |
| Cedar, Cuba, ft. | /4 | /4½ |
| Honduras, &c. | /3¾ | /4½ |
| Mahogany, Cuba | /5½ | /7 |
| St. Domingo, cargo av. | /5 | 1/3 |
| Mexican, do. do. | /3¾ | /4 |
| Tobasco, do. do. | /4 | /6½ |
| Honduras, do. | /4 | /6 |
| Box, Turkey, ton | 4/0/0 | 15/0/0 |
| Rose, Rio | 7/0/0 | 14/0/0 |
| Bahia | 6/0/0 | 12/0/0 |
| Satin, St. Doming. | /5 | 1/0 |
| TIMBER *(continued)*. | | |
| Satin, Porto Rico | 0/0/9 | 0/2/0 |
| Walnut, Italian | 0/0/3 | 0/0/7 |
| METALS. | | |
| Iron—Pig, in Scotland ....ton | 2/14/5½ | 0/0/0 |
| Bar, Welsh, in London | 6/0/0 | 6/5/0 |
| Do. do. at works in Wales | 5/15/0 | 5/17/6 |
| Do. Staffordshire, in London | 6/5/0 | 7/10/0 |
| COPPER—British cake and ingot | 73/15/0 | 74/5/0 |
| Best selected | 74/5/0 | 74/15/0 |
| Sheets, strong | 77/0/0 | 79/0/0 |
| Chili bars | 69/13/9 | 0/0/0 |
| YELLOW MTL. lb. | 7d. | 7½d. |
| LEAD—Pig Spanish ....ton | 15/10/0 | 0/0/0 |
| English com. Brands | 15/15/0 | 0/0/0 |
| Sheet, English 6 lbs. per sq. ft. and upwards | 16/15/0 | 0/0/0 |
| Pipe | 17/5/0 | 0/0/0 |
| ZINC—English sheet....ton | 29/10/0 | 0/0/0 |
| Vieille Montagne | 30/0/0 | 0/0/0 |
| Spelter | 26/2/6 | 26/7/6 |
| TIN—Straits | 111/10/0 | 0/0/0 |
| Australian | 112/0/0 | 112/10/0 |
| English Ingots | 114/10/0 | 115/10/0 |
| Banca | 0/0/0 | 0/0/0 |
| Billiton | 0/0/0 | 0/0/0 |
| OILS. | | |
| Linseed ....ton | 17/10/0 | 0/0/0 |
| Cocoanut, Cochin | 27/15/0 | 0/0/0 |
| Do. Ceylon | 24/10/0 | 0/0/0 |
| Palm, Lagos | 21/15/0 | 0/0/0 |
| Rapeseed, English pale | 23/5/0 | 0/0/0 |
| Do. Brown | 21/15/0 | 22/0/0 |
| Cottonseed ref. | 15/0/0 | 16/0/0 |
| Oleine | 17/0/0 | 18/0/0 |
| Lubricating U.S. | 0/5/3 | 0/7/6 |
| Do. Black | 0/5/0 | 0/6/6 |
| TAR—Stockholm barrel | 1/5/0 | 0/0/0 |
| Archangel | 0/18/0 | 0/0/0 |
| Turpentine | 32/0/0 | 32/5/0 |

## TO CORRESPONDENTS.

C. C. H.—J. L.—H. G. S. (Amounts should have been stated).

NOTE.—The responsibility of signed articles, letters, and papers read at public meetings, rests, of course, with the authors.

*We cannot undertake to return rejected communications.*

Letters or communications (beyond mere news items) which have been duplicated for other journals are NOT DESIRED.

We are compelled to decline pointing out books and giving addresses.

Any commission to a contributor to write an article is given subject to the approval of the article, when written, by the Editor, who retains the right to reject it if unsatisfactory. The receipt by the author of a proof of an article in type does not necessarily imply its acceptance.

All communications regarding literary and artistic matters should be addressed to THE EDITOR; those relating to advertisements and other exclusively business matters should be addressed to THE PUBLISHER, and *not* to the Editor.

## TENDERS.

[Communications for insertion under this heading should be addressed to "The Editor," and must reach us *not later than* 10 *a.m. on Thursdays.* N.B.—We cannot publish Tenders unless authenticated by the name and address of the sender; and we cannot publish announcements of Tenders accepted unless the amount of the Tender is given, nor any list in which the lowest Tender is under £100, unless in some exceptional cases and for special reasons.]

BEXHILL-ON-SEA.—For erecting residences and shops at Bexhill-on-Sea:—

| | |
|---|---|
| Shillitoe & Son | £53,000 |
| Braid, Pater & Co. | 49,667 |
| F. Brettan | £46,000 |
| F. G. Newton | 43,120 |

BOLTON.—Accepted for the execution of sewerage works (two contracts) for the Little Hulton Urban District Council. Mr. C. C. Hooley, C.E., Council's Offices, Little Hulton:—

*No. 1.*

| | |
|---|---|
| J. & M. Hawley, Stoneclough | £2,312 12 1 |

*No. 2.*

| | |
|---|---|
| W. Snape & Sons, Eccles | £836 5 |

BURTON-ON-TRENT.—For the execution of sewerage works, Castle Gresley, for the Repton Rural District Council. Mr. A. Moseley, Surveyor, Ashby-de-la-Zouch:—

| | |
|---|---|
| C. Davis | £218 8 |
| H. Simpkin | 212 15 |
| W. Wood | 215 0 |
| T. Perkins, Egginton, near Burton* | £200 0 8 |

* Accepted.

CROYDON.—For additions, &c., to laundry buildings at Infirmary, Mayday-road, Thornton Heath, for the Croydon Guardians. Mr. F. West, architect, 23, Coombe-road, Croydon. Quantities by the architect:—

| | |
|---|---|
| Marriage & Co. | £690 |
| F. W. Sedgwick | 679 |
| J. Smith & Sons | 664 |
| J. M. Card | 642 |
| W. Smith & Son | 640 |
| W. Pearce | £632 |
| W. Roberts | 562 |
| Huntley Bros.* | 559 |
| A. P. Maeers | 552 |

* Accepted.

HUDDERSFIELD.—For the erection of twelve houses, Calmlands, for the Meltham Industrial Society, Limited. Mr. J. Berry, architect, 9, Queen-street, Huddersfield:—

| | |
|---|---|
| *Masonry.*—James Earnshaw & Sons, Meltham | £2,880 |
| *Joinery.*—Garlick Bros., Meltham | |
| *Plumbing.*—John W. Kaye, Meltham | |
| *Plastering and Slating.*—James Wilkinson & Sons, Meltham | |
| *Painting.*—Joseph Preston & Sons, Meltham | |
| *Concreting.*—John Cooke, Little Royd | |

LEYTON.—For electric wire factory, Leyton. Mr. W. W. Hudson, architect:—

| | |
|---|---|
| W. Shurmur | £10,475 |
| F. & F. H. Higgs | 10,285 |
| S. Goodall | 10,147 |
| H. Brown | £9,979 |
| S. J Scott | 9,868 |

LITTLE ILFORD (Essex).—For the erection of school buildings, &c., Bessborough-road, for the School Board. Mr. S. Jackson, architect, 65, Fenchurch-street, London, E.C. Quantities by Mr. Walter Lawrence, 13, Hart-street, Bloomsbury, W.C.:—

| | |
|---|---|
| W. J. Maddison | £24,8[illegible]7 |
| Shelbourne & Co. | 24,663 |
| G. Sharpe | 22,490 |
| F. Britton | 22,275 |
| Chessum & Sons | 21,097 |
| Harris & Wardrop | £21,295 |
| W. Shurmur | 21,062 |
| Perry & Co. | 20,925 |
| Gregar & Son, Stratford, E.* | £20,336 |

* Provisionally accepted but subject to approval of Education Department.

LONDON.—For pulling down and rebuilding the "British Queen," Old Kent-road:—

| | |
|---|---|
| W. Shurmur | £2,552 |
| W. Rowe | 2,253 |
| G. Barker | 2,060 |
| W. Smith | £2,030 |
| H. Hood* | 1,872 |

* Accepted.

WOODFORD (Essex).—For making up of Private Streets and Street Improvement Works, for the Woodford Urban District Council, Mr. J. Elliott Smales, Surveyor.

| — | Trevor Road. | Stoneycroft Road. | Gainsborough Road. | Radley's Lane. | Street Improvement Works. |
|---|---|---|---|---|---|
| | £ s. d. | £ s. d. | £ s. d. | £ s. d. | £ s. d. |
| Geo. Bell | 476 0 0 | 476 0 0 | 450 0 0 | 203 0 0 | 390 6 0 |
| W. Glenny | 459 6 4 | 428 2 8 | 442 3 10 | 195 16 8 | .. |
| W. Wadey | 345 0 0 | 327 0 0 | 368 0 0 | 180 0 0 | 321 11 8 |
| Grounds & Newton | 315 5 0 | 315 0 0 | 320 0 0 | 150 0 0 | 248 10 11 |
| Constable & Co. | .. | .. | .. | .. | 300 6 0 |
| W. & C. French, Woodford | 300 0 0* | 295 0 0* | 298 0 0* | 127 0 0* | 245 8 7* |
| Surveyor's Estimate | 306 10 8 | 294 17 7 | 306 0 0 | 134 7 0 | 279 7 0 |

*Accepted.

AYLESBURY.—For the construction of sewage disposal works, &c., for the Aylesbury Urban District Council (Contracts Nos. 1 to 7). Mr. J. H. Bradford, Engineer and Surveyor to the Council:—

| | General Conditions. | Pump, Well, &c. | Precipitating Tank. | Filter Beds. | Irrigation Field. | Buildings. | Chimney Shaft. | Pipes and Valves. | Printing and Lithography. | |
|---|---|---|---|---|---|---|---|---|---|---|
| | £ s. d. | £ s. d. | £ s. d. | £ s. d. | £ s. d. | £ s. d. | £ s. d. | £ s. d. | £ s. d. | £ s. d. |
| Meredith | 466 8 0 | 3,368 4 1 | 1,344 15 0 | 4,144 11 10 | 2,765 18 9 | 984 2 7 | 1,167 0 0 | 1,015 13 0 | 50 0 0 | 15,300 0 0 |
| B. Cooke & Co. | .. | 2,710 1 5 | 1,381 1 9 | 4,528 2 7 | 2,983 3 9 | 1,003 11 0 | 1,100 8 5 | 1,111 4 6 | 50 0 0 | 14,817 13 5 |
| Wilkinson Bros. | 123 3 0 | 1,939 17 6 | 1,128 0 3 | 4,583 13 5 | 3,777 10 3 | 951 2 5 | 836 2 9 | 1,178 13 0 | 50 0 0 | 14,568 0 0 |
| Wingrove & Stanley | 316 0 0 | 1,772 19 11 | 1,070 17 7 | 4,023 8 2 | 2,721 1 11 | 954 3 2 | 943 19 1 | 1,004 9 0 | .. | 12,806 18 10 |
| Siddons & Freeman | .. | 2,623 0 0 | 1,139 0 0 | 3,580 0 0 | 2,451 0 0 | 914 0 0 | 910 0 0 | 1,000 0 0 | .. | 12,617 0 0 |
| G. Bell | .. | 2,322 0 4 | 1,156 9 1 | 3,855 17 6 | 2,214 18 4 | 937 1 4 | 853 8 9 | 1,250 18 3 | .. | 12,398 2 0 |
| Clift Ford | .. | 2,216 14 7 | 1,138 9 0 | 3,421 8 1 | 2,574 11 3 | 1,029 11 11 | 977 11 9 | 975 19 2 | .. | 12,334 5 9 |
| Lee & Son | .. | 1,847 18 9 | 1,291 3 1 | 4,277 9 2 | 2,252 18 5 | 829 10 5 | 1,029 2 3 | 778 0 0 | .. | 12,306 1 1 |
| W. Y. Green & Co. | .. | 1,913 7 4 | 1,090 3 8 | 3,847 6 1 | 2,491 17 9 | 938 9 3 | 926 8 0 | 995 3 0 | 50 0 0 | 12,253 15 1 |
| Mackrill & Son | .. | .. | .. | .. | .. | .. | .. | 1,063 16 6 | .. | 1,063 16 6 |
| Webster & Cannon | 163 10 0 | 1,696 6 5 | 1,047 18 0 | 3,799 9 4 | 2,451 0 0 | 844 11 5 | 914 0 1 | 922 3 9 | 50 0 0 | 11,888 0 0 |
| Batchelor & Snowden | .. | .. | 1,598 10 0 | 3,371 16 4 | 2,947 14 6 | .. | .. | 900 6 0 | .. | 9,308 6 10 |
| G. H. Gibson | 470 0 0 | 1,329 0 0 | 1,073 0 0 | 3,042 0 0 | 2,430 0 0 | 810 0 0 | 905 0 0 | 875 0 0 | 50 0 0 | 10,982 0 0 |
| Merredew & Wort, Stevenage and London* | .. | 1,528 2 6 | 989 3 2 | 3,140 10 11 | 2,317 0 9 | 901 5 9 | 1,004 10 6 | 935 13 9 | .. | 10,816 2 4 |

* Accepted conditionally.

LONDON.—For additions and alterations at 22, Stockwell-road, S.E.:—

| | | | |
|---|---|---|---|
| Mallet | £730 | G. Barker* | £655 |
| Rice | 695 | | |

* Accepted.

LONDON.—Accepted for new bar-front, &c., at the Vine Tavern public-house, Broad-street, Ratcliff, E., for Messrs. Holt & Co. Mr. Fred. A. Ashton, architect, 177, Romford-road, Stratford, E.:—

A. E. Symes ........ £300

LONDON.—For the supply of gas engines, &c., required in connexion with the electric lighting of the Victoria Embankment, for the London County Council:—

| | | | |
|---|---|---|---|
| J. Taylor & Sons, Ltd. | £3,457 | Premier Gas Engine Co., Ltd. | £2,260 |
| Fielding & Platt, Ltd. | 2,378 | Campbell Gas Engine Co., Ltd. | 2,176 |
| Crossley Bros., Ltd. | 2,300 | J. E. H. Andrews & Co., Ltd. | 1,900 |
| Safety Concentric Wiring Co., Ltd. | 2,260 | | |

LONDON.—For the supply of dynamos, &c., required in connexion with the electric lighting of the Victoria-embankment, for the London County Council:—

| | | | |
|---|---|---|---|
| Electrical Co., Ltd. | £6,877 0 | Crompton & Co., Ltd. | £4,949 0 |
| Safety Concentric Wiring Co., Ltd. | 5,625 0 | Mather & Platt, Ltd. | 4,600 0 |
| Electric Construction Co. Ltd. | 5,535 0 | McClure & Whitfield | 3,725 5 |

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| F. Valler | 6,051 | Dearing & Son | 5,735 |
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| Patman and Fotheringham | 5,928 | | |

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| | | | |
|---|---|---|---|
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| Thomas Roper | 789 0 | Abey & Son | 722 18 |
| Martin & Hughes | 755 0 | A. Turner | 691 0 |
| H. Laidler | 733 0 | B. Powell, 36, Wath-road* | 685 10 |

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|---|---|---|---|
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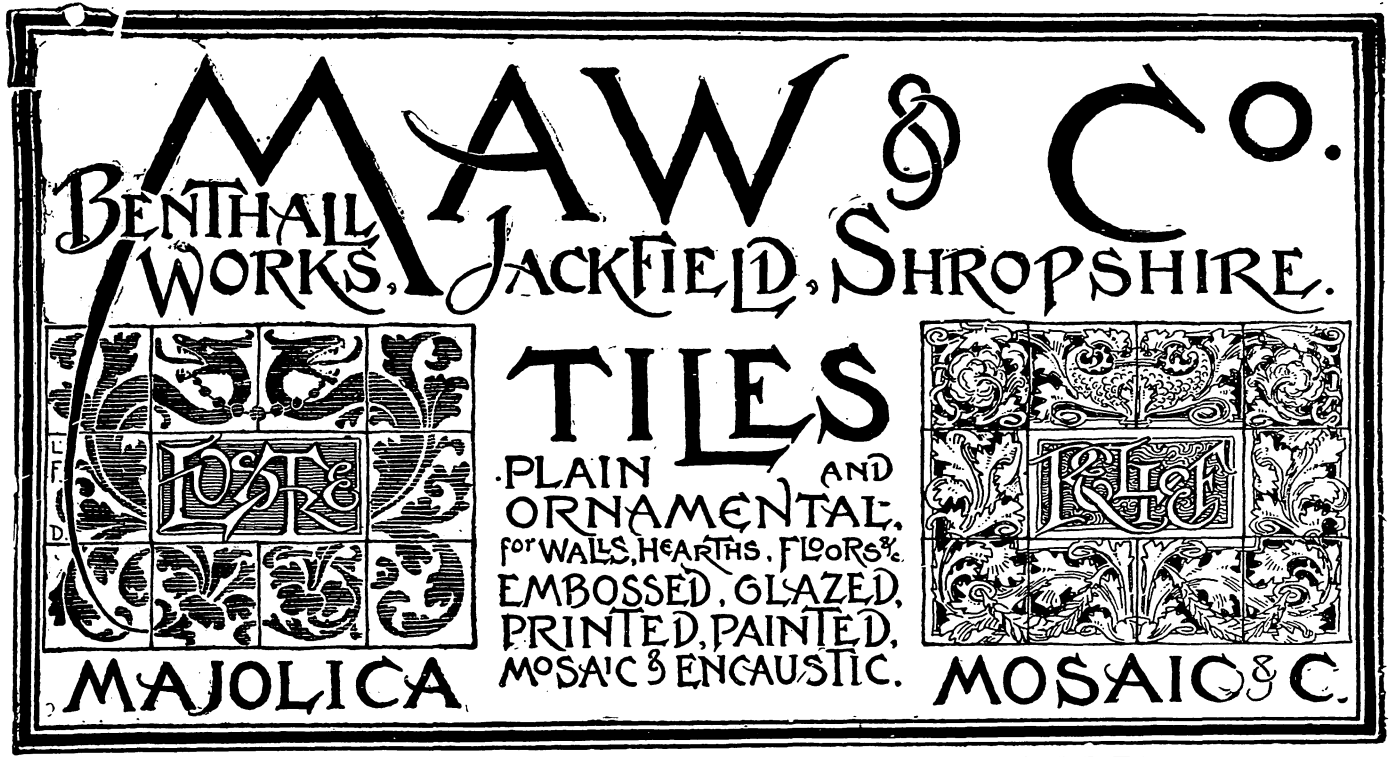

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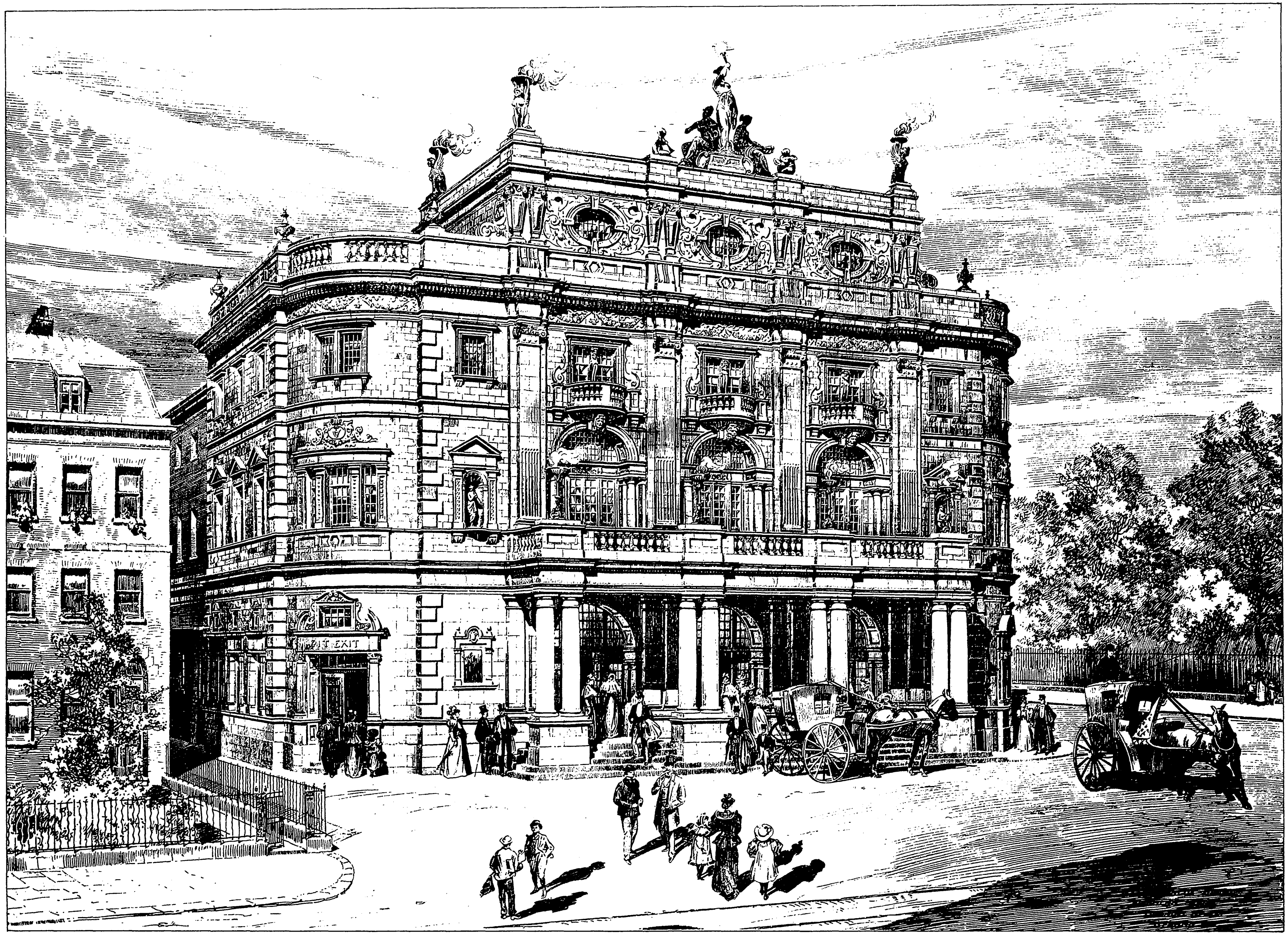

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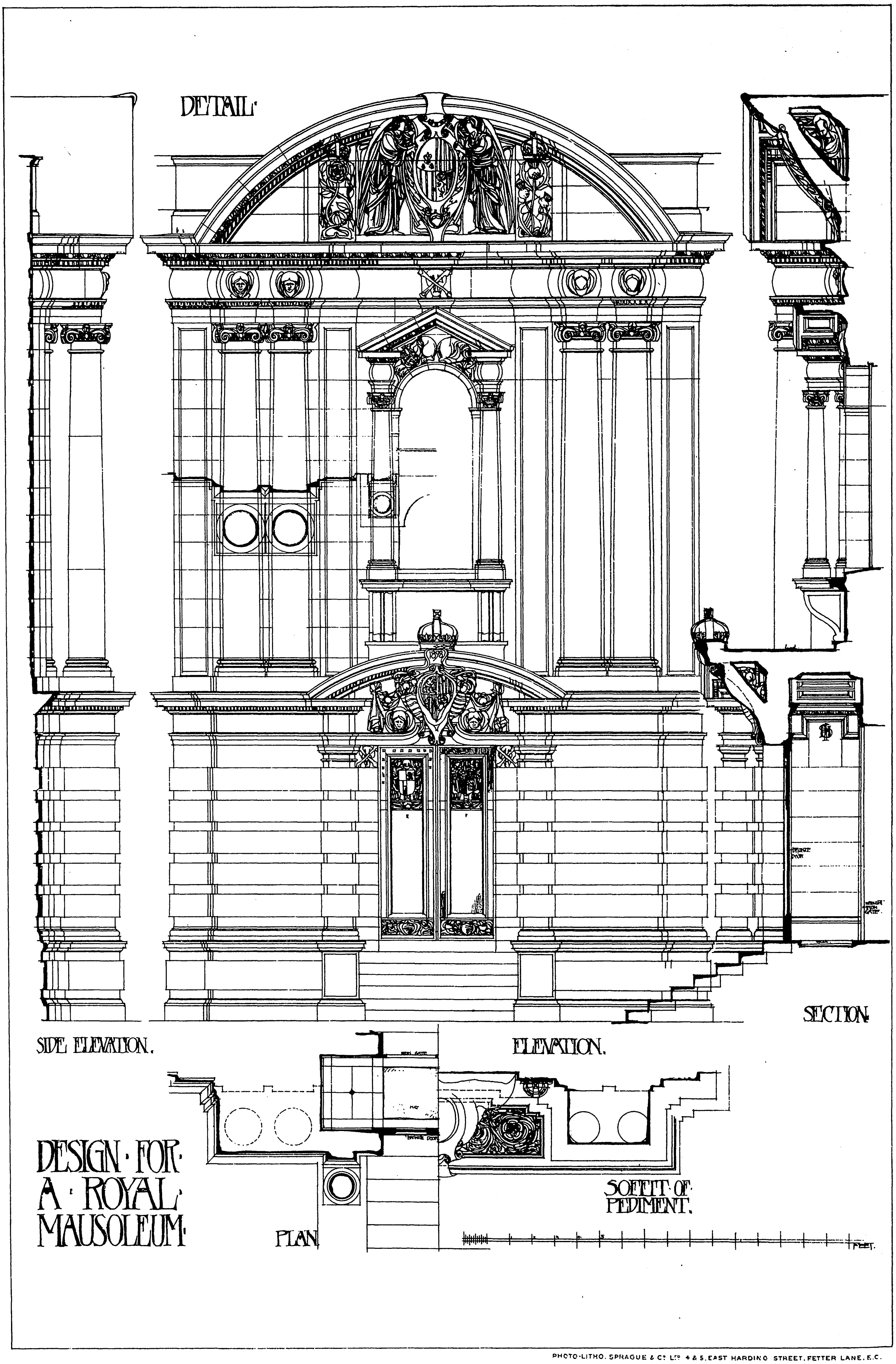
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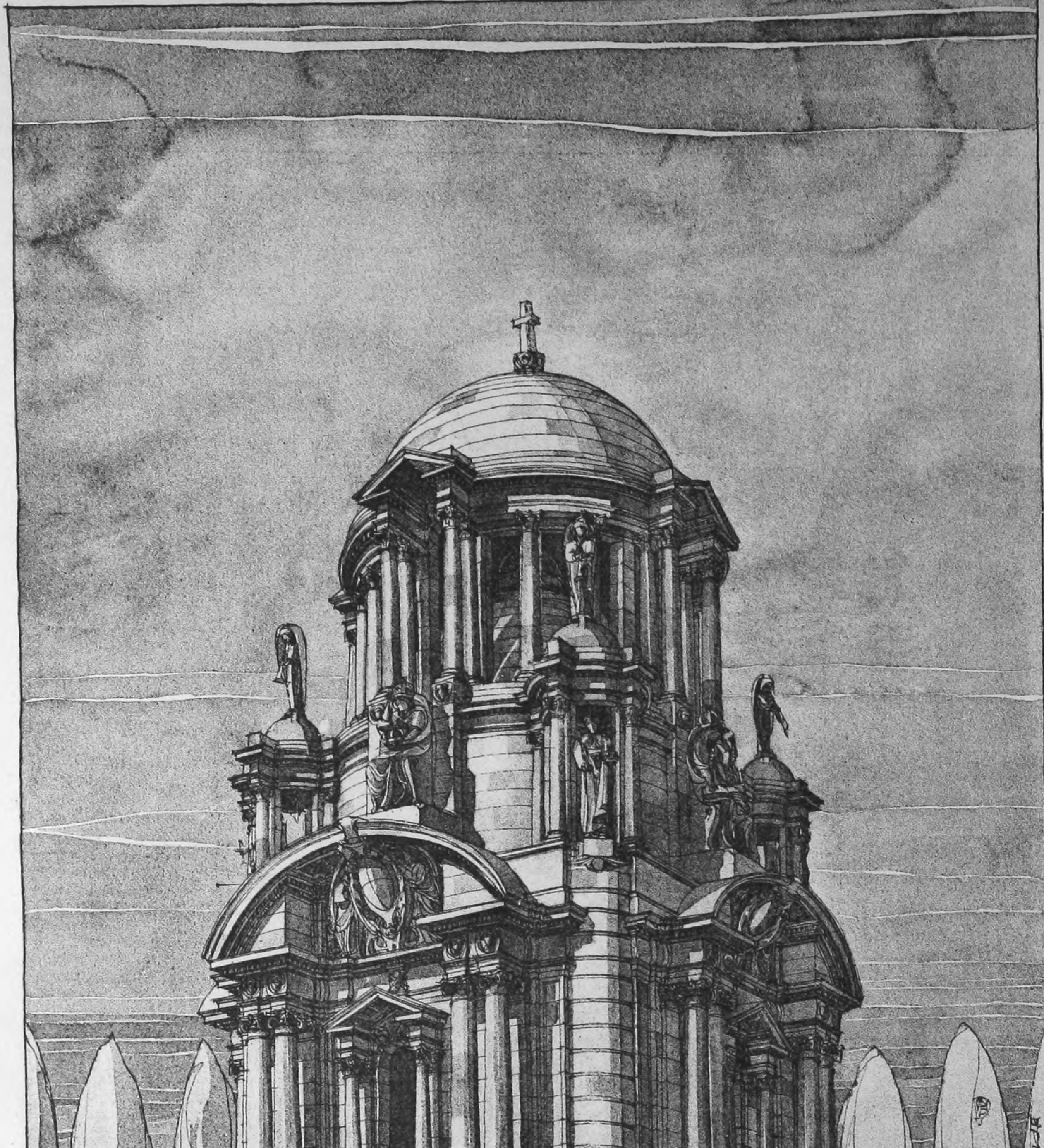

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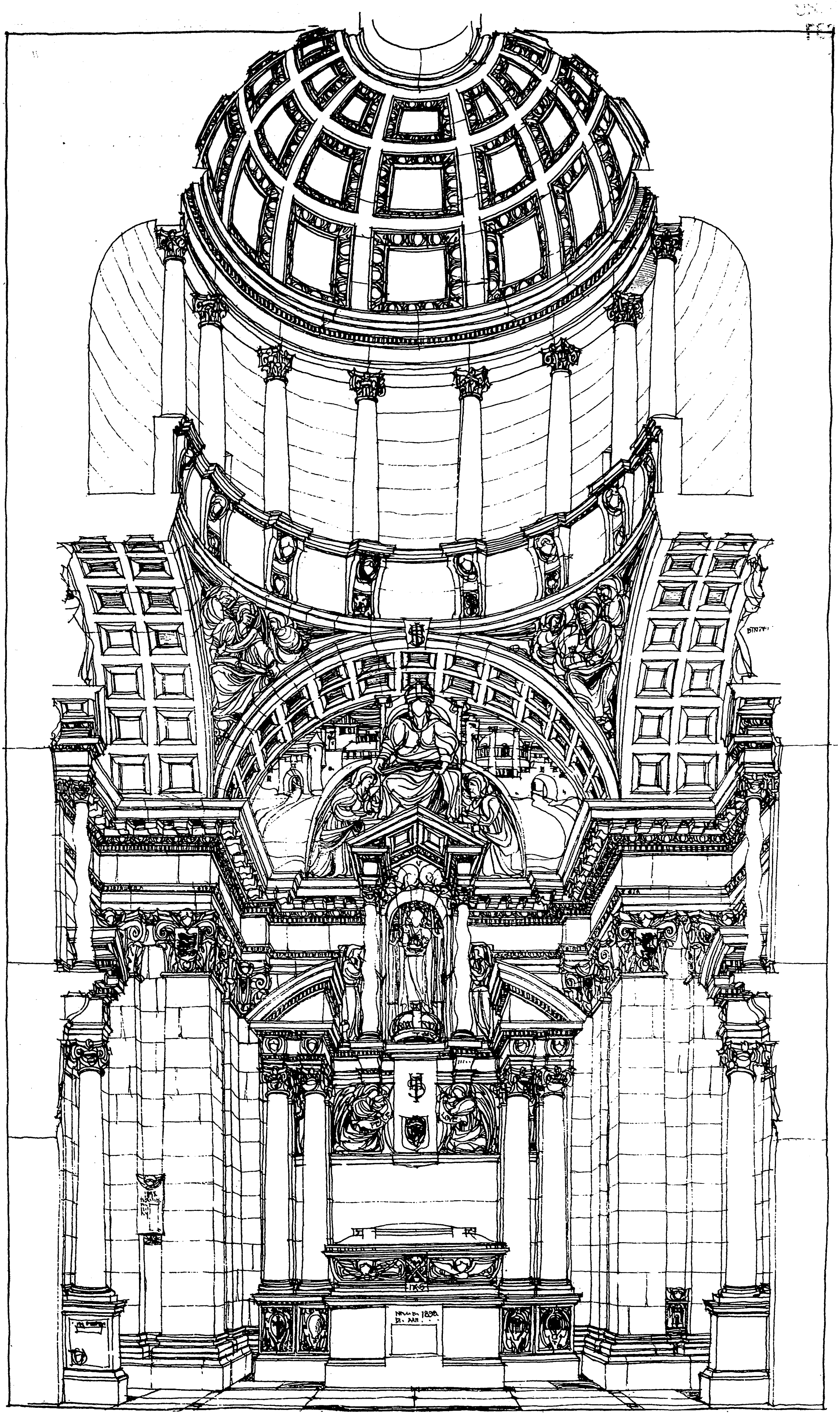

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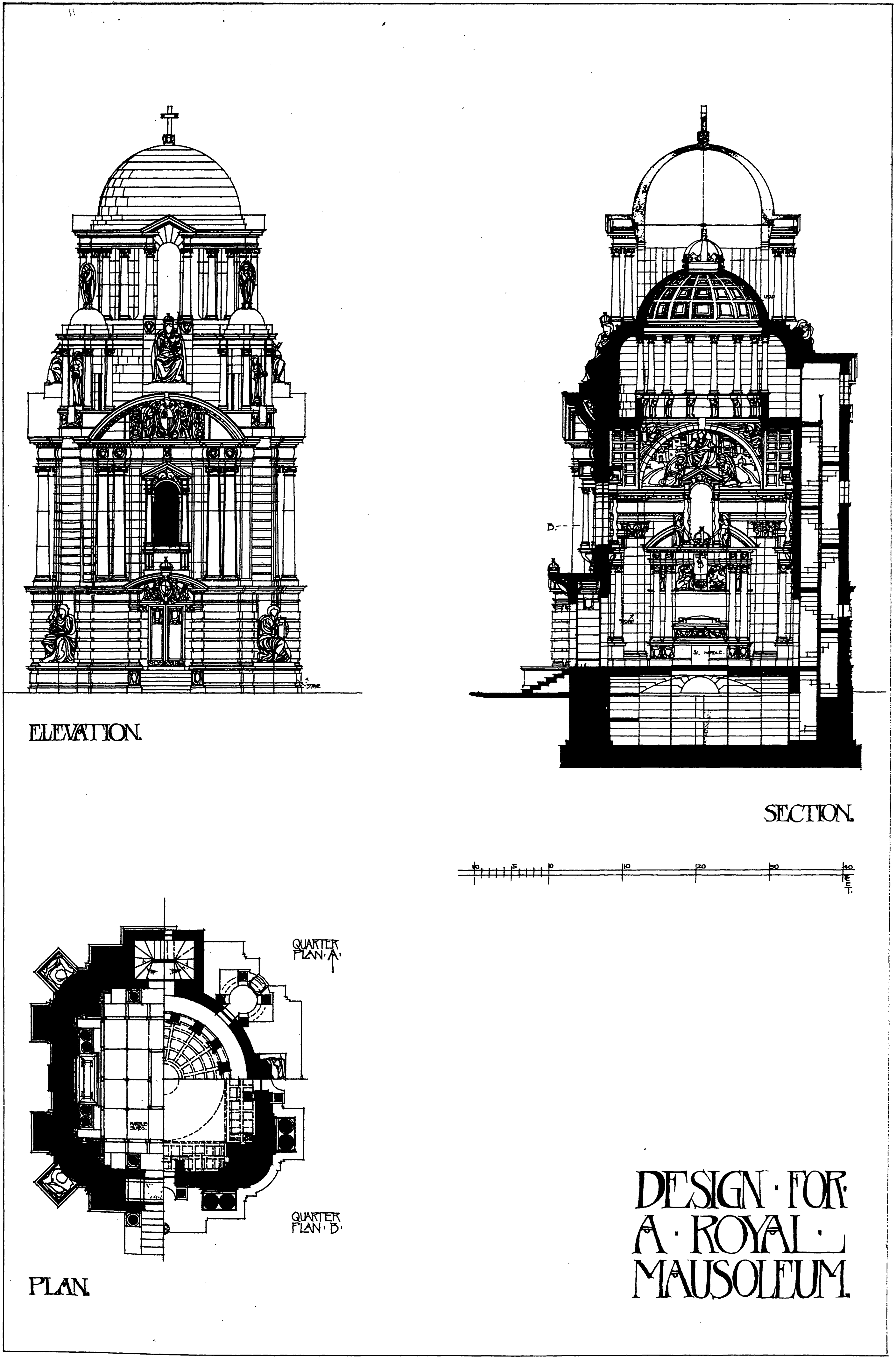
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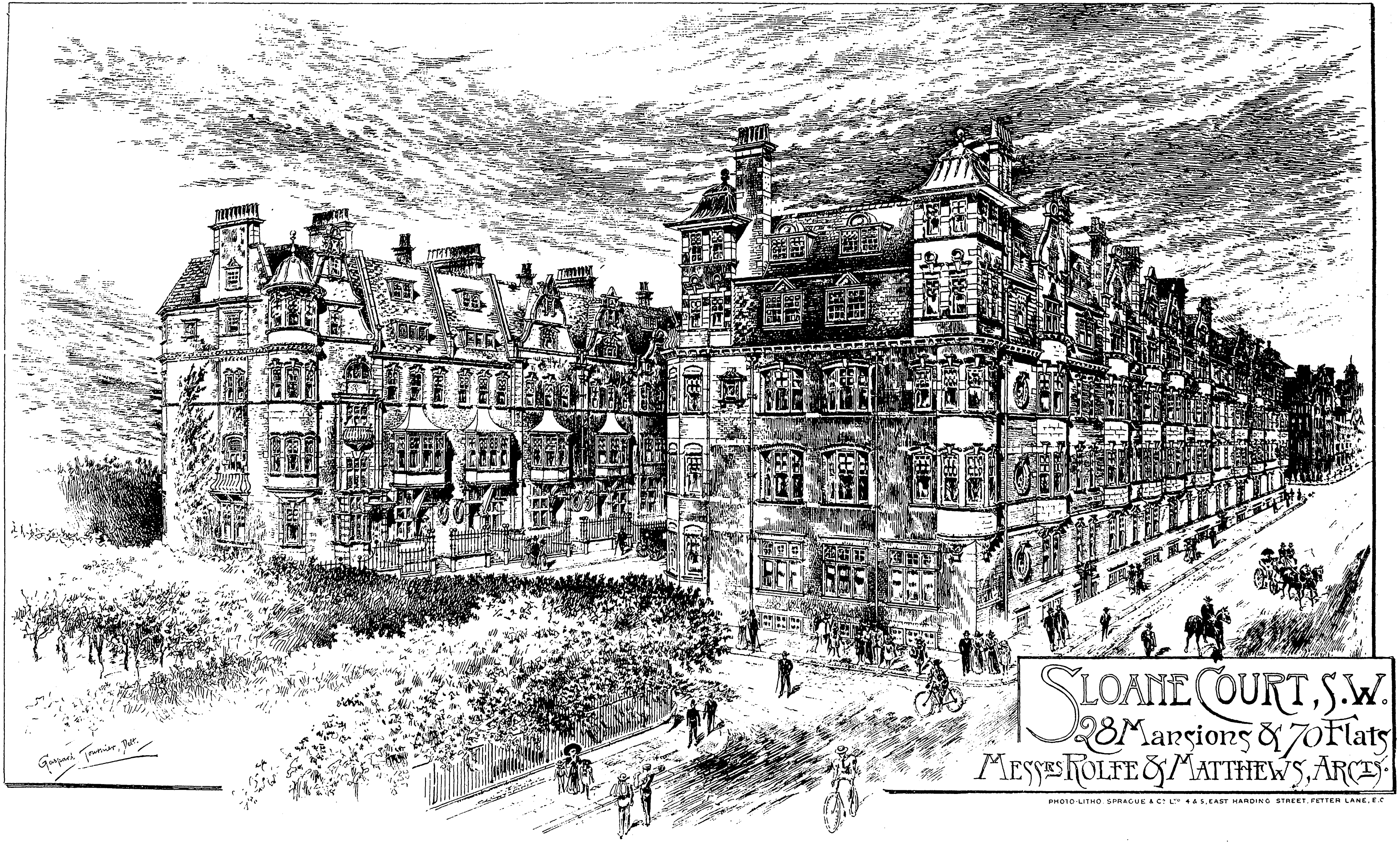
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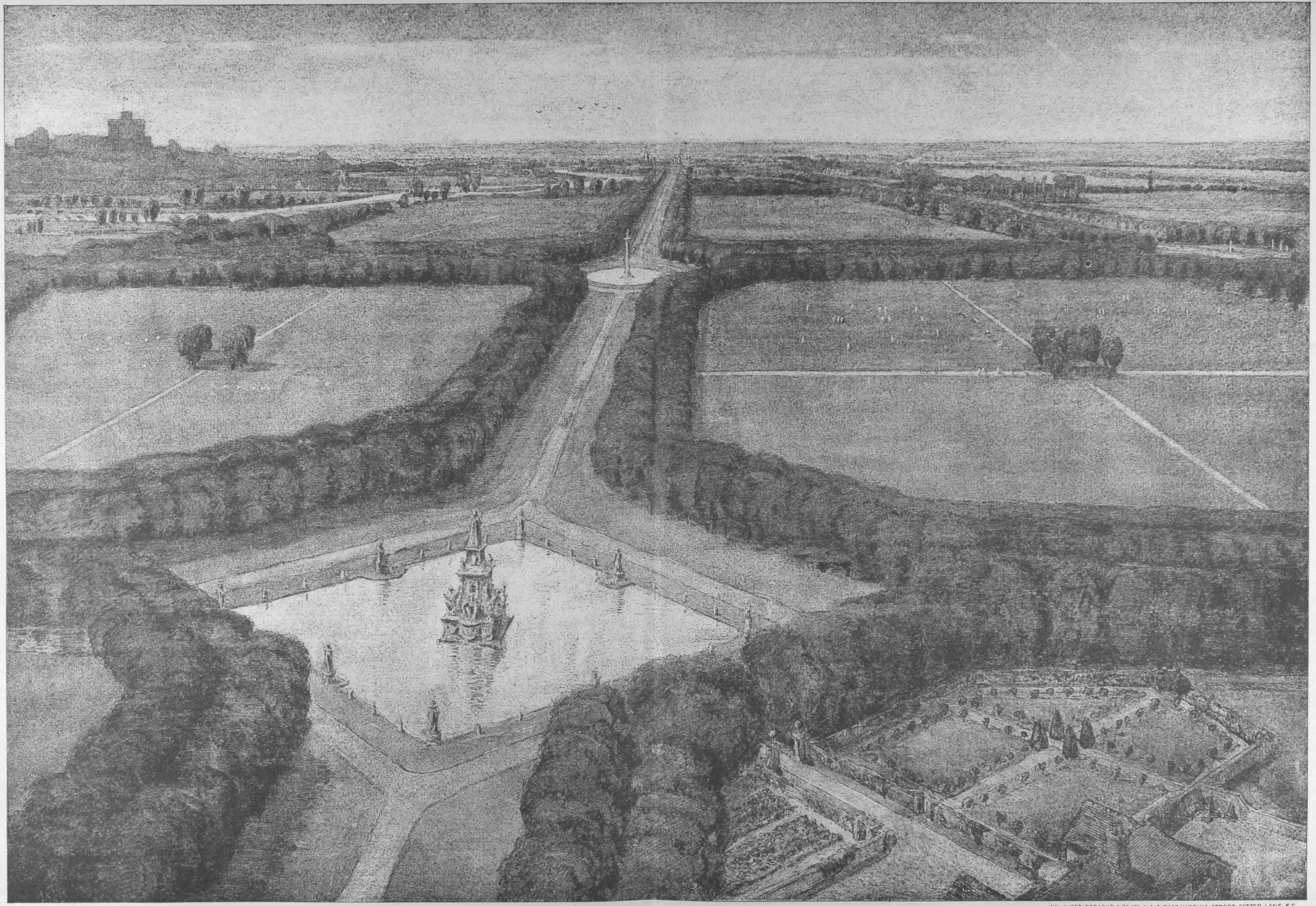

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SCHEME FOR THE NEW PLAYING-FIELDS, ETON COLLEGE.—By Mr. F. Inigo Thomas.

# The Builder.

VOL. LXXVI. No. 2923. FEBRUARY 11, 1899.

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Details of West Door, Chartres.—Drawn by Mr. E. Bennett ........ *Double-Page Ink-Photo.*
"Brahan," Perth.—Mr. F. W. Bedford, A.R.I.B.A., Architect ........ *Double-Page Ink-Photo.*
Study for New Church in South London.—Mr. C. A. Nicholson, Architect ........ *Two Single-Page Ink-Photos.*

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### *Tests with Fire-Resisting Materials.*

THE systematic testing of fire-resisting materials is a subject which calls for attention, seeing that the information available as to the resistance of special materials or systems of construction is as yet so very incomplete. The most conflicting theories are constantly being put forward; fires show very different results under identical circumstances; and rival patentees put forward the most anomalous claims. Reliable data are almost unobtainable, and unless the architect or engineer has really made a special study of fire-protection and fire-proofing materials, he is scarcely at present able to conscientiously advise his client. With the present year the question of systematically testing the fire resistance of materials and methods of construction promises, at last, to be practically dealt with at the testing-station of the British Fire-Prevention Committee, near Regent's Park, briefly described in our last issue.

Taking the Committee's programme into consideration, it may be well to point out what has been done outside our own country in fire tests of this description. Unfortunately, however, even the field abroad is often but a small one, for though we should have expected a country like Germany to have taken up the subject with that seriousness that is characteristic of the Teuton, very little has been done there; and even in the States, where the subject of fire protection takes a leading position in technical science, the question of independent investigation has almost been neglected. Nevertheless, Germany affords us three highly instructive series of tests—minor investigations though they may be—one at Berlin and two at Hamburg; whilst the United States can boast of three series of experiments carried out respectively at Denvers, Brooklyn, and New York, which each have merits of their own. The first of these tests is the series at Denvers in 1890, the last those at New York in 1897.

As a matter of fact, the tests at Denvers form that stepping stone towards independent investigation which is so much wanted. Though not absolutely independent tests, or even official tests, they rank very nearly as such, inasmuch as they are competition tests between rival makers carried out before a fairly independent tribunal. The rival makers were competing for an order; the makers, the client, and his professional advisers were well represented, and the results were carefully recorded. Tests of this description are known in the States as "competitive" or "comparative" tests, and several minor ones have taken place since those at Denvers; but speaking generally, the latter take the most important position of any investigations of that kind, both in respect to reliability and as a stepping stone to better work.

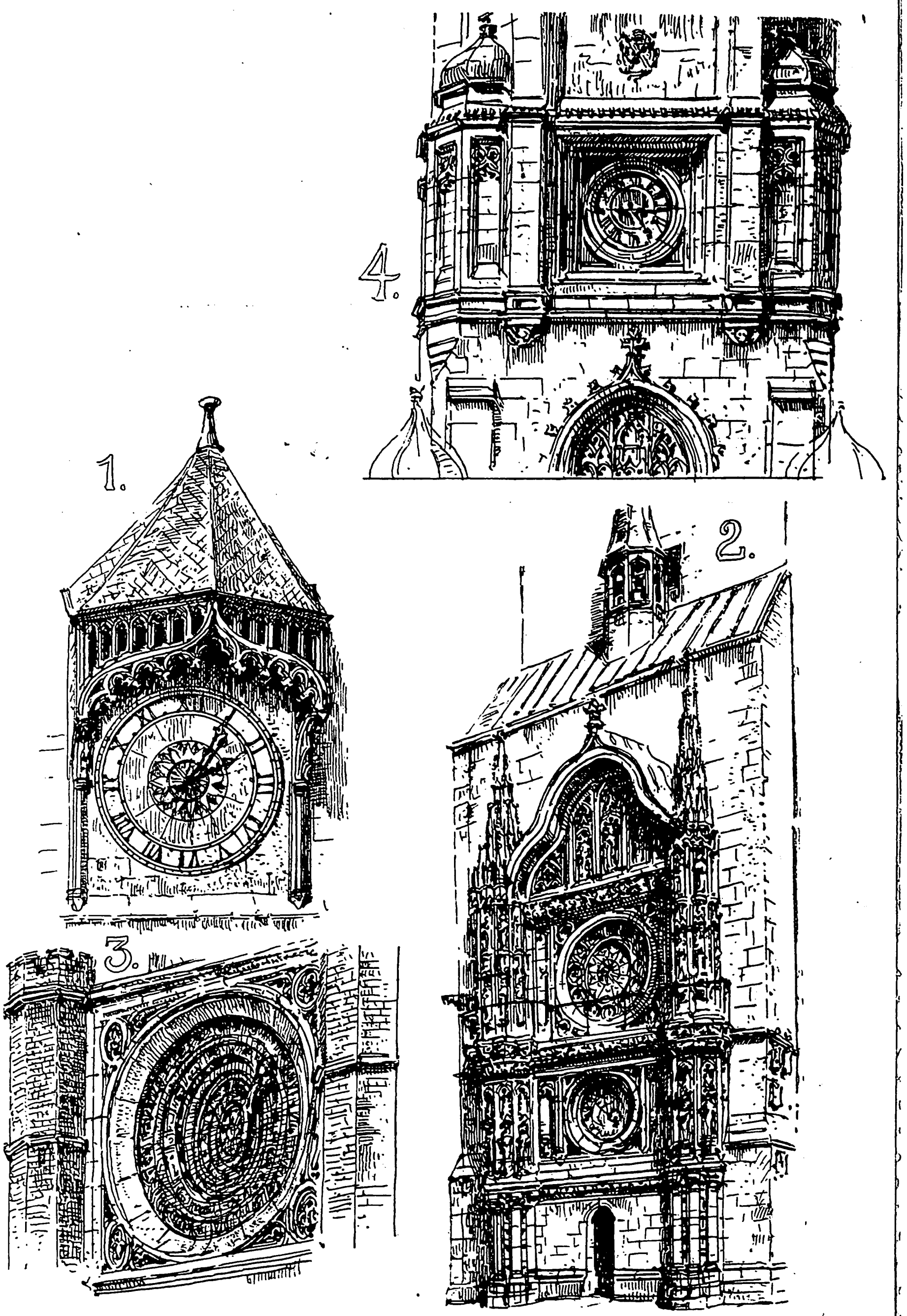
Next we have, early in 1893, certain experiments at Berlin which have been duly reported in our columns. Here, again, the competitive element is somewhat as before, inasmuch as the tests were held with the view of allotting certain prizes presented by the underwriters of Germany in connexion with the Accidents Exhibition. It had happened in this exhibition that a special group had been allotted to fire protection, and this group had been sub-divided into three sections. The first of these dealt with the extinguishing of fire, the second with the limitation of fire, and the third with the prevention of fire. As prizes could not be awarded to exhibits in the last two sections without some suitable test having been made, a special committee was formed to attend to these tests and award the prizes, and this committee was thoroughly representative of the local architectural and engineering societies, the insurance companies, the municipality, and the fire brigade.

The third series of tests to which we would here refer was undertaken in the same year at Hamburg, under the auspices of the Hanse authorities. In this case, again, a special committee had charge of the matter; but as the experiments were carried out with the aid of public funds, the members of the committee were (somewhat unwisely) selected only from among the public officials. The works and engineering boards of the city, the fire brigade, and the municipal insurance fund were represented. Here we have a case where the tests were carried out with the specific purpose of obtaining certain results, to be applied in the construction of certain public works; the individuality of the maker, the nature of the material, or the character of the patent were minor considerations, the sole object being to discover materials or systems of construction best adapted to fulfil certain local purposes. If anything, these investigations were more of the character of a private client's test, the client in this case being an official body. They can scarcely be termed independent, as neither the architect nor engineer in private practice were in touch with the matter, and the whole investigation was treated in a somewhat democratic spirit. The fourth series was similarly carried out at Hamburg by the same committee in 1895, when further data were required regarding methods of construction to be locally adopted.

Next we have the series of tests carried out at Brooklyn, U.S.A., commencing in 1896. In this instance the work was done by an independent committee comprising representatives of the Architectural League, the American Society of Mechanical Engineers, and the Insurance Tariff Association, and we find that happy combination of architects, engineers, and the representatives of the commercial interests which is so desirable. The thoroughly scientific and independent character of the Brooklyn work merits all praise, but, unfortunately, owing to internal dissensions, little progress has as yet been made, and, in fact, only one report has so far been issued.

The last of these investigations which calls for notice is that of New York, where the Superintendent of Buildings undertook a series of tests. The arrangements, as at Hamburg, were here again in the hands of certain officials, and there was no representation of the technical and insurance interests. The purpose in view was to obtain certain data for the local building regulations. These investigations, by the bye, have been looked upon rather doubtfully, owing perhaps to the not enviable reputation of the Building Authorities of New York. But for all that they appear to have been carried out in a very business-like manner, and a number of valuable data are available from the results.

It will thus be seen that such of the foreign investigations as call for attention have either been independent ones or official ones. Further, that the official ones have



[See next page.

*Architectural Treatment of Clock Faces.*

1. Würzburg. 2. Prague. 3. Hampton Court. 4. Christ Church, Oxford.

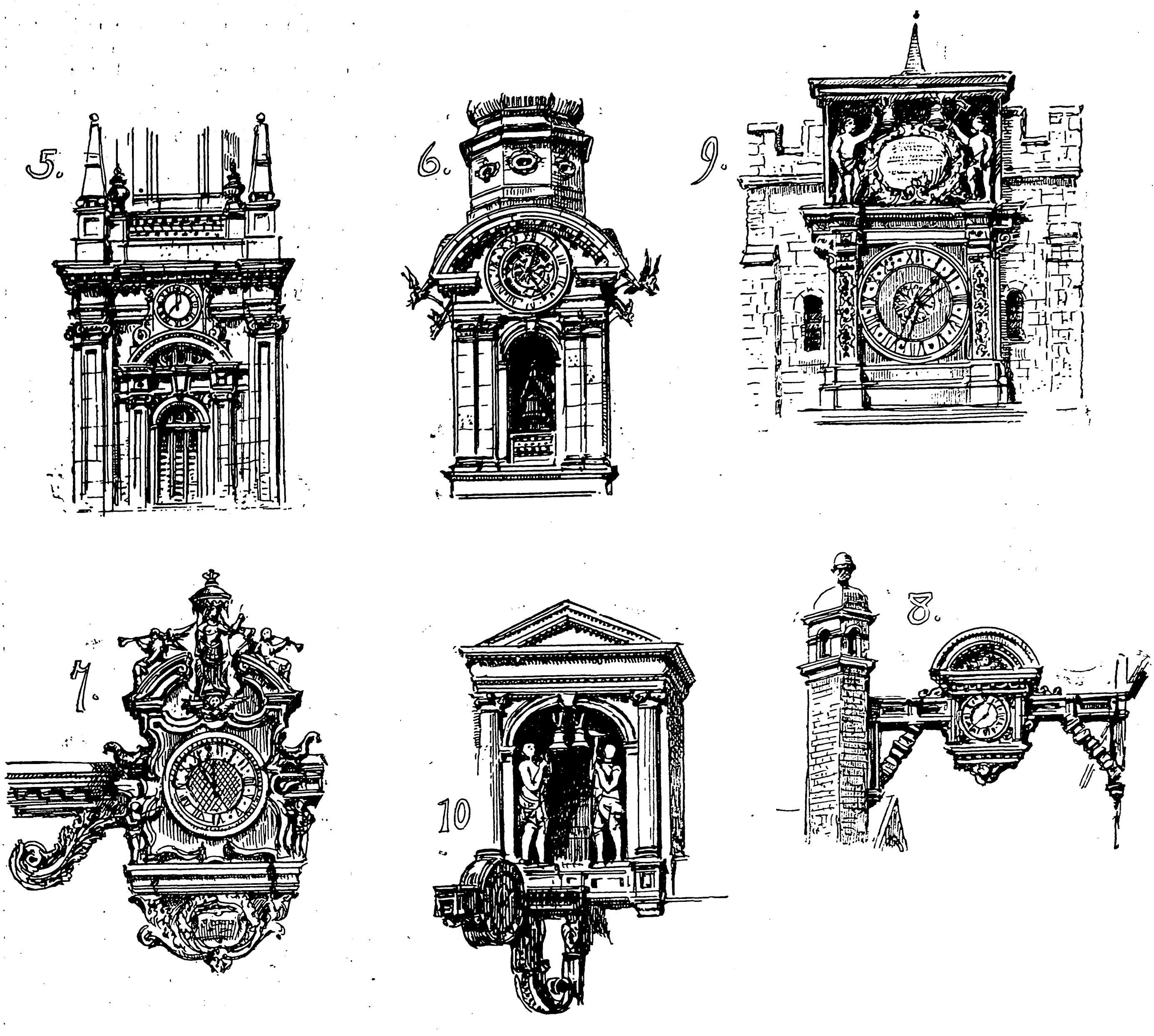
generally been arranged with some specific object in view, and solely in the interests of the Public Authority undertaking them, while the independent tests were arranged in the interests of science, before men representative of the various interests affected. Their character was essentially one of general utility.

Some particulars as the methods employed may be of interest. For the Denvers tests, which were comparative investigations, a number of small huts were erected with a view of testing small sections of flooring only. We might in fact say that a number of miniature furnaces were erected which were stoked with the ordinary heat-generating materials. At Berlin, an old house was adapted for the purposes of tests, each room being dealt with in a different manner by the various patentees, and fires were lit in rotation, under conditions which would resemble those of an actual outbreak. Floors, columns, partitions, doors, and in fact a most varied assortment of building materials, &c., were thus tested in a rough-and-ready fashion. At Hamburg the resistance of upright supports and stanchions alone was under consideration, and here we find a special cylindrical gas-oven, which was so constructed as to enclose a few feet of the column or stanchion. The data thus obtained were no doubt of a scientific character, and absolutely reliable; but whilst Berlin was extreme in its rough-and-ready practical representation of fire, the conditions under which the supports were tested at Hamburg were entirely different from those likely to occur in actual fires, and the results obtained will be of more use in the laboratory than in the architect's office. At Brooklyn, the stanchion and column alone has so far been under investigation, but the data are of far greater practical value than those last referred to, as the conditions were essentially similar to those of an actual fire. Whole columns and whole stanchions were tested in a large testing chamber. Gas, it is true, was used, but here in a manner that was thoroughly practical. At the New York tests floors alone were under investigation, numerous special huts being built for the purpose, but the firing was with ordinary combustible material, which does not allow of an exact regulation of temperature.

Altogether, with the exception of the Brooklyn tests, the work so far done abroad has been of a somewhat inappropriate character; and though we must, of course, be grateful to those who have obtained the few data available for us, a great deal of the labour involved seems to have been misplaced, and better results should be obtainable from all the expenditure of time and money involved. Entirely irrespective of reliability, the independence of the investigations has so far been doubtful excepting at Berlin and at Brooklyn. The official tests have suffered from red-tape and onesidedness.

What now appears to be of importance, when the British Fire Prevention Committee is starting its first series of investigation, is that besides assuring an absolutely independent trial before representatives of the professions primarily interested, none of the extremes should be entered into that might tend to make the results unserviceable. The essentially practical but rough-and-ready test is quite useless, but the scientific laboratory test, in which practical conditions are ignored, is similarly valueless. We desire to know, reliably and from an independent source, what certain materials and certain methods of construction will do under the normal conditions of an outbreak of fire, and we must have a plain record of what those normal conditions were, with the temperatures gauged to a nicety, and loads, pressure, application of water, and even wind and weather, clearly notified. At the same time it should be added that we do not require the opinions of those undertaking the tests. A plain statement of facts, without any opinion or criticism, is what should be attempted; and the Report which gives the conditions and results concisely, and in such a manner that any architect, engineer, or insurance inspector can apply the results to the special building he has in mind, will be the most serviceable. In other words, we require a practical investigation, conducted and recorded on thoroughly scientific lines, and it will then rest with the architect to decide whether Mr. A's or Mr. B's floor is most suitable for the tenement house he is building in the suburb, or for the bonded warehouse in the dock district. He will know if Mr. C's or Mr. D's door is most suitable to meet the requirements of the Building Act for houses in which there are both tenements and business premises, or for the proscenium wall which stands between the stage and the auditorium of a theatre.

When we can have such reports drafted in a practical and concise manner, regarding the principal building materials, &c., used in the United Kingdom, we shall not so often find fire-resisting construction misapplied as it is at present: flats, for instance, divided from one another by floors which in costliness and weight are suited to the warehouse class only; and the warehouseman thinking himself absolutely safe in a building where the floors would not stand for thirty minutes under the high temperatures generated by his stock, though they might last for hours in a tenement house, where there is only the ordinary furniture to burn. And in other respects the result should be a boon, not



*Architectural Treatment of Clock Faces.*

At Würzburg 6. At Innsbruck. 7. St. Magnus, London Bridge. 8. St. Peter le Poor. 9. Rye Church. 10. St. Dunstan, Fleet-street.

only to professional men and their clients, but also to the fire-proofing patentees and manufacturers, who would at last have some hall-mark for their goods.

* * *

## ARCHITECTURAL TREATMENT OF CLOCK FACES.

AS clocks form very important features in our public buildings and churches, it seems strange that, too often, no provision is made for them, and that sometimes, after the tower or front of the edifice has been completed, a hole has to be cut through the wall and a dial planted on in such a way as to be a great disfigurement to the architectural elevation. We were looking at a new church a few days back where this operation had been carried out with the worst possible effect. The tracery of the belfry-window had been blocked up and painted black, and on to this had been fastened a skeleton iron dial. The effect was like the face of a man who had a black eye, protected by one of those gauze "goggles" which are occasionally worn when the eye has been seriously injured; and it is quite remarkable what a dissipated, almost disreputable expression it gave to the tower. Another very disfiguring method of applying a clock-face to a building is to block the lower portion of a window or a pair of windows with a round-headed panel, to which the dial is affixed, or upon which it is pointed. Arcades are sometimes cut away and mutilated to make space for the clock, or bulging excrescences provided on either side of a pinnacle. In fact, it would seem as if every ugly expedient which perverted ingenuity could devise had been had recourse to, in order to make this feature a disfigurement to buildings instead of a point of interest.

Probably most of these ugly make-shifts arise from the fact that clocks are often "after-thoughts," and are not set up until long after the building has been completed, so that the architect has no voice in the matter, and the clock-maker, working upon his own initiative, simply considers the question of how to fix "the face" where it can be seen to the best advantage, irrespective of its effect upon the building.

Architects, however, are sometimes to blame. What could, for instance, be more clumsy and ugly than the position and design of the clock at St. Anne's, Soho? The lozenge-shaped enclosure to the dial which some Gothic architects adopt, is certainly unsatisfactory, as it gives a restless appearance, especially when, as we have sometimes seen, the lowest point of the lozenge comes just above the head of a pointed-arched window. Another disagreeable appearance is given by having a clock face on one side of the façade of a building, matched by a glazed circular window on the other; the two never look the same size, and it gives an absurd impression of the building winking at you. These defects should always be most carefully avoided, because all good architects know that every building has a distinctive expression, like a human countenance (of course, some more and some less, but the expression should be there or the design will be without life or interest); some architectural designs give an impression of cheerfulness, others of gravity, sometimes even of sadness—some buildings frown, others smile. Now it is quite evident that a winking or wriggling clock may convert the whole into ridicule.

Well-designed clock faces and "houses" are to be found of almost every date, and though few mediæval examples have come down to our time, yet some of them are of great beauty. That which we give from "Graf Eckert's tower," at Würzburg, in Bavaria, is a remarkably elegant example (fig. 1). It probably dates from the close of the fourteenth century. The canopy is of wood covered with lead and roofed with slate. The sumptuous example from Prague (fig. 2), though a beautiful work, is scarcely so applicable to modern requirements, as it is erected so low down in the tower and has two faces, one above the other, the lower one being "an astronomical dial." Both are surrounded with enriched mouldings, and are divided from each other by a gallery adorned with carving. Two lofty tabernacled buttresses flank the structure, adorned with niches filled with statues. The clock-house is a plain structure, projecting a few feet in front of the great tower, and furnished with a *flèche* containing the bell.

The well-known astronomical clock at Hampton Court Palace (fig. 3) presents a less architectural appearance than the two last-named examples, but the dial is highly ornamented. It was made for Henry VIII. in the year 1540. Mr. Law thinks that it is the work of Nicolas Cratzer; probably, however, the architectural frame-work which encloses it is of somewhat earlier date. The next example is the clock face in the "Tom tower" at Oxford (fig. 4). This is a work of Sir Christopher Wren, erected in completion of the gateway tower commenced by Cardinal Wolsey. We see here an example of an excellent arrangement for clock faces, frequently adopted by Wren; it consists in placing immediately beneath the lantern a kind of low storey or "attic" for the accommodation of the clock dial, a plan which was afterwards frequently adopted by Hawksmoor and Gibbs, and forms one of the best features of their striking steeples. St. Martin's and St. Giles are good examples.

Not unfrequently the clock face is inserted above the belfry window, and although it is somewhat difficult to make it combine gracefully with the architectural lines of the tower in such a situation, it has been done effectually, as is shown in the examples we give from Würzburg and Innsbruck (figs. 5 and 6); the latter especially has a very picturesque appearance. St. Olave's, Southwark, is a less pleasing attempt. Hawksmoor has, in his fine church at Limehouse, adopted a scheme which may be regarded as a combination of the two previous ideas; the clock is placed over the belfry window, but the pinnacles are grouped together in such a way as to suggest a lantern above the tower.

The plan so frequently followed in London City churches of corbelling out the clock at right-angles to the wall or tower of the building is a common-sense and pictureque contrivance, as it enables those passing along the streets to see the dial very distinctly and from a distance, and is capable of very attractive treatment. Bow Church, in Cheapside, and St. Magnus, at the foot of London Bridge (fig. 7), present good examples. Unfortunately, the last-named church has had its clock mutilated some years back by the removal of the figures which formerly adorned it; in our sketch, however, we have attempted to restore them from a drawing made of the church by Cole about the middle of the last century. Several views are in existence showing the old Church of Saint Peter-le-Poor, in Broad-street. The clock here is shown suspended upon a beam (fig. 8), in form like a bridge, spanning the street and sustained by a turret rising from the east end of the church, on one side, and the wall of a house on the other; this is by no means a bad idea, but can only be carried out where the street is narrow.

That curious class of clocks which work mechanical figures seems to have been known in quite early times. That in the north transept at Wells Cathedral is one of the most ancient examples we know. It is said to have been brought from Glastonbury Abbey, and does not in its present condition exhibit much in the way of architecture. Strasburg is the most elaborate specimen of the kind. The architectural portions are late third pointed work and Renaissance of various dates; the Gothic part bears some resemblance in arrangement to the fine example at Prague, but is later and less magnificent. It is, however, an interesting, though somewhat questionable article of Church furniture; too much of the "puppet-show" order; the cock which flaps his wings and crows with a wooden tone of voice might be more appropriately perched outside the sacred edifice. Probably he is not a portion of the original design, as the structure upon which he roosts is later in style than the main body of the work.

English examples where the figures strike the bell are not uncommon. At Rye Church (fig. 9) the curious clock possesses two such figures, and the whole design is not unpicturesque. Perhaps the most celebrated example in London was formerly at St. Dunstan's, Fleet-street, and is now partly preserved in the Regent's Park (fig. 10). It is by no means a handsome object; the "shrine" for the figures is far too like a summerhouse. It would be by no means judicious to revive these acrobatic clocks in our public buildings at the present day, and we cannot regard them as appropriate features in churches. A modern example in the City is too well known to need description. But it would certainly be well to give more attention to the clock faces of our public buildings than is usually done. In one case, at least, we have achieved a marked success—the finely designed clock face of the Palace of Westminster.

## NOTES.

**The Workmen's Compensation Act.**

There seems to be some kind of idea prevalent that the session will see some amendment made in the Workmen's Compensation Act. We do not think that this is likely. We have insisted frequently that the limitation in regard to the buildings in which workmen who are employed in them may obtain compensation should be abolished. It would be an easy and simple alteration. But any other legislation seems yet to be premature. Much inquiry as to the financial working of the Act would be required before it can be altered, and sufficient time has not yet elapsed to form a fair judgment on it. The coming into working order of such a statute is necessarily a cause at first of inconvenience. It disturbs the existing order of things. Besides, Parliament has many urgent calls on its time. It has done something for working men, and it will not be in a mood to touch this question again at present.

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**London (Welsh) Water Supply.**

The proposition of the London County Council to supply the Metropolis with water from Wales was very severely criticised in a paper by Mr. R. E. Middleton, C.E., read before the Sanitary Institute on Wednesday last, the 8th inst. The majority of the arguments used are worn threadbare by continual reiteration, and the paper might well have been written thirty years ago, except for the excerpts from the Report of the Royal Commission of 1892 and some well-timed observations in reference to the East London Water Company and the recent drought. Still, no one is better qualified than Mr. Middleton to represent the present position of the water companies and their sources of supply, and his case against the Welsh scheme is undoubtedly a very strong one. It is well that both sides should be heard. Briefly put, the author urged that the Balfour Commission showed that there is a superabundance of water in the Thames Valley, which actually comes down the river, for the supply of London for any reasonable future period. But, owing to the fact that the volume per diem is extremely variable, it is necessary that the water should be stored at seasonable periods. Further, that much of the water stored, as in the Staines reservoirs now under construction, was obtained at an advantageous point, inasmuch as it was captured higher up the river. Under the circumstances there was no necessity to go to Wales for water, the Welsh scheme being much more costly. Moreover, the quality of the water proposed to be obtained from Wales left much to be desired. The water of a Welsh stream in flood is "the colour of porter, and contains far more vegetable matter than does Thames water." In reference to the demand that the Londoner should refuse to pay his water bill, when he does not get the water through drought or what not, the author asks, pertinently enough, whether the Londoner would be let off were the supply in the hands of a public authority. On the contrary, he would not only have to pay as usual, but would contribute his share in rates for any improvement that may be effected in the supply. We do not agree with much that Mr. Middleton expressed—the statistics given are very curious; at the same time, wholesome criticism is always useful. And, whilst few would endorse the statement that Welsh water in the Yrfon or other valleys, coveted by the County Council, is of such a deep tint as suggested by the author, nobody who has seen the streams would say that the water is fit to drink as it is. There is, however, a difference between vegetable and animal organic pollution, and visible pollution is not always the most dangerous. Mr. Middleton distinctly scores in saying that should the London County Council become the water authority, they would still continue to utilise the present sources of supply in addition to that from Wales; for the Council has said so. Those who regard the present sources of supply from a sentimental standpoint will do well to remember that.

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**Covent Garden Theatre Improvements.**

Some little time back we expressed the opinion that the change in proprietorship at Covent Garden ought to lead to the material improvement of its equipment. We have now been given to understand that the new owners, *i.e.*, the Grand Opera Syndicate, have decided to thoroughly overhaul the house and bring it into accordance with modern requirements. Numerous improvements are under consideration, and the post of permanent technical adviser, which has so far only been known in the grand opera houses of the Continent, has been created, and Mr. Edwin O. Sachs invited to fill that position. Seeing the enormous difficulties under which Covent Garden has always laboured in stage mechanism, storage, and lighting, we have every reason to hope for a better tradition in opera when the establishment has been better equipped in a more modern manner. Among the works already in hand is the entire re-lighting of the theatre, which is being carried out in accordance with the comprehensive scheme originally prepared for the former owner, Mr. Faber. A full programme of the proposed works is to be shortly issued.

**Applications of Electricity.**

ON Monday afternoon, at the London Institution, Mr. H. W. Handcock gave an interesting lecture on "Everyday Applications of Electricity." Starting with the electrolysis of brine, he showed how this simple experiment has led recently to great industrial developments in the manufacture of caustic soda and bleaching powder. A possible further development is also the making of "electrozone," which is used for sterilising and deodorising purposes. The extensive scale on which electrolysis is used in the arts he illustrated by saying that the bulk of the copper used in this country had been refined electrolytically. A novelty shown was the telescriptor of Mr. Shepherd. It is practically a printing telegraph which can be used as an adjunct to the telephone. When switched on to the circuit instead of the telephone a printed message can be sent, and a record of it is made at each end. It should prove very useful for confirming orders by telephone, or for switching into the circuit during temporary absence from the telephone. In this country there would be legislative difficulties in the way, owing to the Government monopoly; but abroad it would have a wide field. Mr. Handcock mentioned how the electric motor was causing a revolution in engineering practice, and how extensively it was used in naval warfare for working turret guns, gatling guns, Brennan torpedoes, &c. An interesting exhibition was given of the useful applications of electricity to book-binding, workmen showing how rapidly lettering, embossing, and gilding could be done by electrically-heated tools. A Thomson welding machine also was shown at work, and the ease and startling rapidity with which difficult welds were made by it were well illustrated. Numerous other applications were shown, some accidental, illustrating fire risks, as when an electric brander set fire to a sheet of brown paper, and a roburite fuse nearly set fire to the lantern screen; but the lecturer, although perhaps he attempted to give too much in the time at his disposal, gained the closest attention of his audience from first to last.

**Hospital at Bry-sur-Marne.**

ON Saturday last the President of the Republic opened the new Departmental Hospital at Bry-sur-Marne, an admirably planned and constructed building which does the greatest credit to the architect, M. Jacques Lequeux, already known as the architect of a number of buildings—barracks, schools, hospitals, &c., in the suburbs of Paris. Unfortunately the President, while conferring numerous "récompenses" on persons quite unconnected with the design or execution of the work, omitted either to reward or congratulate the architect—an omission certainly not usual in France, and more in accordance with English habits in this respect.

**The Kent Martyrs' Memorial.**

WE noticed the other day a paragraph in a daily paper referring to the intended erection of a memorial to the martyrs of Kent, in the Martyrs' Field at Canterbury, in which it was stated that "the widespread interest which has been aroused throughout the county in the movement to perpetuate the memory of the martyrs who were burnt at Canterbury is shown by the gratifying response which has been made to the appeal of the Committee." As usual in English newspapers, no mention was made of the nature of the design, or of the designer's name. On inquiry we find that the design is by the City Surveyor of Canterbury, who is an engineer, and the result of course is a mere engineer's design—a stele in two heights, defined by wretched mouldings, and crowned by a coarse and common-place cross; the base of the whole resting on a heap of artificial rock-work: another example of the way these things are done in England. It appears that the Dean of Canterbury is the prime mover in the matter. One cannot perhaps expect very much from Dean Farrar's æsthetic perceptions, but surely it might have occurred to him to get an artist to make something beautiful and expressive, instead of putting up a monument destitute of originality and beauty, and only noteworthy for its size and material—35 ft. of coarsely treated granite.

**The Pastel Exhibition.**

THE first exhibition of the Pastel Society, at the rooms of the Institute of Painters, in Piccadilly, is an interesting event in the Art-world, and we hope it is the precursor of many similar exhibitions. Pastel is a beautiful and suggestive medium of which the modern French school long ago found out the value, but which has not been very much cultivated in this country. But we are a little disappointed with the exhibition nevertheless. Pastel, like etching, we had always regarded as an art for the comparatively rapid expression of artistic ideals; figure studies, first studies of landscape effect, &c. There is a little too much here of mere realistic picture-making, such as does not specially represent the qualities of pastel. There are, however, some very interesting works. Some of the French exhibitors are naturally among the best. M. Besnard exhibits a capital figure-study, "After the Bath" (155), and M. Levy-Dhurmer's "La Cruche Cassée" (1) is a good figure study in a very different manner. How well the art lends itself to portraiture is shown in Mr. Watts's beautiful portrait of "Lady Mount Temple" (155) and Mr. Boughton's charming profile half-length (15), and one or two others. Mr. Holman Hunt sends a characteristic study of the head of "An American Pilgrim" (98), far more pleasing in tone and texture than most of his oil-painted heads. Among other figure subjects are Mrs. Deric Hardy's "Winter Sheltering Sleeping Spring" (94), a pretty fancy; Mr. Rolshoven's very well executed but rather vulgar nude under the title "La Venere Bruna" (295), and some clever studies of labourers in an iron foundry by M. Josselin de Jong (189 to 191). Among the landscape studies which have character and originality Miss Anna Nordgren's "Clouds" (13), Mr. Edward Stott's "A Willow Pond" (115), two small landscapes by Mr. Onslow Ford the sculptor (151, 152), M. Lhermitte's "Entrance to Village" (197), and M. Fritz Thaulow's studies of river-side scenes in snow, which are very clever but a little mannered—all a repetition of the same effect.

**The Water-Colour Society Art Club.**

THE Royal Water-Colour Society Art Club, which appears to be a society chiefly of amateurs, held a conversazione at the Rooms of the Society of Painters in Water-colours, on Wednesday evening, and the collection of drawings there has been on view for the remainder of this week. The prominent features in the exhibition were two small collections of works by J. F. Lewis and J. D. Harding, which are of special interest. The work of Harding carries some of us back to the recollection of our early drawing lessons from Harding's series of lithographed sketches of subjects arranged in progressive order; and some of the beautiful studies of trees, in black and white, exhibited on this occasion, are the same kind of work in a more elaborate form. Harding's fine qualities as a sketcher are admirably shown in the slightly-executed but artistic view of "Acqua Morte, Verona," in pencil on brown paper touched with white. The central large drawing, in finished water-colour, is a fine and characteristic example of the water-colour landscape art of Harding's period, with a beauty and completeness of its own, though in what now appears a very conventional style. The Lewis drawings include a splendid finished work, but the chief interest of the collection lies in the sketches, which show the serious and painstaking spirit in which Lewis laid the foundation for his work. The remainder of the collection exhibited, numbering about 350 drawings, shows a remarkably good standard of (mostly) amateur work. Among the drawings specially worth notice are Mr. G. F. Glennie's four landscapes (13-16), Miss Sophia Boycott's sketches in Durham and Ely Cathedrals, Mr. Harding Smith's "Seaton Bay" (26), Miss Maud Glennie's "Study of a Birch Tree' (27), Miss Every's "Kersey Church" (29), admirable as a landscape composition; Mr. Hallam Murray's drawings at Rothenberg (46, 47), Miss McCracken's "Canal, Dordrecht" (78) and a number of other sketches; and Mr. Phené Spiers's collection of drawings of architectural subjects, the quality of which is well known to our readers.

**Messrs. Dowdeswells' Gallery.**

AT Messrs. Dowdeswells' Gallery in Bond-street a painting by M. Eugène Burnand is being specially exhibited; "The Man of Sorrows," one of those rather sentimental conceptions of the figure of Christ which appear meant to appeal rather to the religious than the artistic perceptions; it is a pleasing work enough, but not equal to the subject. Some black-and-white illustrations to the "Pilgrim's Progress" by the same artist are of more interest; his "Giant Despair" is an admirable conception, but he wants imagination for such a subject as Bunyan's allegory; his "Evangelist" is only a preacher "of I know not what sect of dissidents," as the Comte de Florac expressed it, and the "Palace Beautiful" merely suggests a suburban villa at Auteuil, and comes too near turning the allegory into mere prose.

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**Minor Exhibitions in Paris.**

THE exhibition of the "Cercle de l'Union Artistique" has just opened in the Rue Boissy d'Anglas, Paris, and will remain open till March 9. This year's exhibition is a very interesting one, and includes some really remarkable works. M. Roybet's "Ruy Blas" is a piece of executive work of the first order, and M. Detaille is represented by a splendid battle picture of the time of the First Empire, entitled "Le Victoire est à Nous." M. Cazin's "La Plateau" is a very fine landscape. There are some fine portraits by MM. Benjamin-Constant, Bonnat, Carolus-Duran, Chartran, and Humbert, as well as the "Derviches Hurleurs" by M. Gerôme. In sculpture special mention should be made of the works of M. Raoul Verlet and M. Puech. As to the Annual Salon of "Femmes Peintres et Sculpteurs" at the Galerie des Machines, it consists as usual of a collection of many mediocre works, relieved in this case by one fine picture by Mdlle. Rosa Bonheur, "Le Troupeau de Bisons." There are about thirty works in sculpture, all hopelessly commonplace.

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**Mr. Ruskin's Birthday Honours.**

ALTHOUGH we cannot endorse entirely the sentiment embodied in the address presented to Mr. Ruskin on his eightieth birthday by the Ruskin Society of London—"the books you have written contain principles of truth applicable to every branch of art, including the art of Life"—inasmuch as we think the said books contain much that is palpably untrue both in regard to art and life; yet Mr. Ruskin merits the recognition he has received for two reasons at all events—he is a writer of the first order in a literary sense, and he has been all his life an enthusiast, in a time when there has been little tendency to enthusiasm. Many of his opinions on art will not find permanent acceptance; but he has incited people to think that art is something worth caring about, and that is much in these days.

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## GREEK ARCHITECTURE.*

### GREEK ARRANGEMENT OF TEMPLES, &C.

I WILL for the present set aside Pelasgic architecture, as it seems to have had so slight an influence on the subsequent architecture of Greece, except in the shapes of doors and windows, and in the knees of the door and window architraves. I must, however, mention that Herr Puchstein considers that the plinth, torus, and moulding that have so long done duty as the base of the columns in the Treasury of Atreus are early forms of the Doric capital, and certain palm trees get bigger as they get further from the root. I must also beg for a certain indulgence; the new enthusiasm for Greek architecture and archæology has overturned the old edifice of architectural lore. The Temple of Jupiter Olympius, at Athens, turns out to be octastyle, and terra cotta seems to have been the precursor of stone, or used with it. The early examples of Greek art are now sought for in Cappadocia and Pontus, and the Clithonian, or earth deities, are a new Avatar of the old gods and goddesses we learnt about in our youth; a temple to the Καβειροι has been lately found near Thebes, and these earth deities threaten to take much greater importance in ancient worship than heretofore.

I will, however, go at once to the architecture of the Dorians and Ionians. The first thing that strikes us in studying their architecture is its type, the house.

It is to be supposed that the original was conical, with or without a central post; but when I speak of the house, I mean when it had taken a square or oblong form, with vertical walls and a span roof. The house seems to have consisted of a single chamber, or sometimes of two; a long one in the front and a short one behind, with a recessed porch in front extending across the whole building, the lintel supported at each end by the side walls and by two or more pillars between them. It was covered by a low-pitched roof in one span, with projecting eaves, and had two gable ends; sometimes there was a recessed porch at the back, too; afterwards it was found convenient to put an open verandah in front, and then one at the back as well. It appears that the roof trusses bore at each end on the walls—I call them walls though they were probably of wood; these ends of the trusses became the triglyphs. Fergusson suggests that the trusses were made of planks with the ends chamfered, *i.e.*, one for the tie-beam and two for the principals, with the king-post and strutts between them, and the whole pinned to the templates with trenails from the bottom, these features forming the tenia and guttæ.

This theory is ingenious, but unless the early Greeks were short of wood and had saw-mills, the most obvious thing seems to square a tree, for a tree can be squared with an adze or axe, and unless the Greeks were fonder of labour than we are, sawing a tree into planks with a rude hand-saw must have been no inconsiderable task, though they must have had planks for their ships.

Vitruvius says the ends of the trusses looked unsightly, so the early Greeks grooved a piece of board, pinned it on, and painted it blue; and to me this looks a more probable solution than Fergusson's, though in all probability both theories are wrong. This is, however, evident, that the contrast of these vertical grooves with the long horizontal lines of the architrave and cornice, supplied an æsthetic want, which the Greeks and their successors never found any better way of solving, for not only did they use triglyphs to the sides of their peristyles, even after any semblance of framing from the walls of the cella to the peristyle was omitted, but they also used the triglyphs at the gable ends as well. Now if the original truss was put flush with the gable end, as it was, no cross trusses could ever have been used on the angles of the fronts. In the Temple of Theseus there is a continuous sculptured frieze on the walls of the naves through which the trusses would have run, and at the Parthenon there is the pan-athenaic frieze. Here, however, the regula and guttæ are worked on to mark the places where the beams would have come.

The spaces between the trussss were left open for light and air, and were called metopes, according to Vitruvius, though the word does not, I believe, occur in the Greek authors. In Euripides' "Iphigenia in Tauris" (line 110 to 114) Orestes is told by Pylades how he may get into the temple through one of the metopes: "Then when black night has come on, we must try to get the image out of the temple by any scheme we can devise. . . Then will be the time to let down our bodies inside the triglyphs, where there is a vacant space."

From this expression, "inside the triglyphs," we might infer that they were shutters to window openings, and the passage quite justifies Vitruvius' indignant protest (Lib. 4 cap. 2), "Hence we have the imitation of the earliest works to account for the Doric triglyphs and mutules, and not, as some have erroneously said, from the circumstance of triglyphs being introduced as windows, which could not be the case, inasmuch as they are placed on external angles and immediately over columns, in both which situations windows would be absurd in the highest degree, for the tie at the angles of buildings would be entirely destroyed if occupied by windows, and, therefore, the dentils of the Ionic orders might as properly be seen to occupy the places of windows, if the spaces occupied by triglyphs have an origin of such a nature."

Eventually the house was surrounded by an open verandah, built with one row of pillars, afterwards with two rows, and sometimes with the outer row only, and a space between them and the wall, equal to a double row. No sooner was the verandah put all round than there was no means of lighting the house in the old way, for if the metopes or spaces between the trusses were left open they only lit the open verandah, leaving the house in comparative darkness. The method of lighting the house, after the adoption of a verandah all round, shall be investigated hereafter.

Fergusson in his "Principles of Beauty in Art" (1849), and afterwards in his "History of Architecture" (1874), denied that the Greek columns took their rise from wood. I here give you the extract from the first work:—

"I feel quite certain that the modern theory, or that which derives the form of the Doric column from that of the trunk of a tree, first assumed to have been used to support the roof, is quite untenable. No carpenter, then, or even now, could be so absurd as to place an unsquared trunk on a stone step, and then, instead of framing it into the epistylia, place an abacus on it, so as entirely to disconnect it from the thing it supported, and render the whole arrangement so constructively absurd that the first breeze of wind must have unroofed the temple, and blown down the columns. Had the whole been of wood, the pillars would have been squared if the epistylia were, or both would have been left rough; or, at all events, the pillar would have been let into the ground, and framed into the thing it supported as it was at Persepolis, not separated from it by an unmeaning and worse than useless member; and we should now, in the stone copy, have been able to trace this framing together of the parts, as we do in the Lycian and Indian rock-cut examples, which retain their wooden forms for centuries after they had been copied in stone. This we are now able to do in the roof which is, undoubtedly, a copy of a wooden construction; and it is this, apparently, that has misled architects. They have not sufficiently distinguished between the roof, which was of wood, and the support which, like the walls, must either originally have been a brick or rubble pier."

But Pausanias (lib. 5, cap. 20) tells us that when the house of Ænomaus was destroyed by lightning one wooden column remained, which was kept at Olympia as a holy relic; and in lib. 5, cap. 16, speaking of the Heraion or Temple of Juno at Olympia, he says, "The Temple is built after the Doric fashion, and is on all sides surrounded with pillars; in the back part of the Temple one of the pillars is made of oak.

In his "Eliacs," lib. 6, cap. xxiv., he writes as follows:—"In the market place of Elisis, I saw another structure: it was in the form of a low temple, without walls, the roof being supported by oaken pillars."

In his "Arcadics" (lib. 8, cap. x.) he says, speaking of a temple to Poseidon, built by Hadrian, on Mount Alesius, between Mantinea and Vegea:—"He ordered the workmen, too, to build the new temple entirely round the old one; but the ancient temple of Poseidon is said to have been raised by Agamedes and Trophonius from pieces of oak aptly joined together."

Pausanias lived in 174 A.D., during the reigns of Antoninus Pius and Marcus Aurelius. It is as fortunate as it is surprising that these relics of an almost mythical period should have been preserved to confute modern theorists.

I merely mention this to show how much stranger truth is than fiction, for almost every word that Fergusson says is a reasonable hypothesis.

I cannot say what ancient Greek carpenters might have done, and the column has all the appearance of having had its origin in brick, rubble, or stone. All timber forms that have not been perpetuated in stone have naturally perished. We have only a rude representation of the recessed porch, and its pillars in the François vase, one with two pillars and one with three. I must, however, remark that we still put wood posts on stone steps, and tenon the wood into the stone.

When we discuss the orders, we will go more minutely into this question.

When we examine those buildings which have come down to us, and restore on paper those of which we have but ruins, we find the type of "the house" persisted in, not only in small and unimportant buildings, but in those on which the greatest expense has been lavished, that were enriched with every ornament that genius could devise, skill execute, or riches purchase, and dedicated to the highest use, viz., to the service of their deities. Such is the persistence of this type that, with the exception of a few structures that we should now call monuments : every covered building seems to have been confined to it, for whatever purpose the building may have served.

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* Professor Aitchison's second Royal Academy lecture, delivered on Thursday, February 2.

As the architectural proverb says, "It is the roof that makes the house (ware)," I shall not now dwell on open theatres, open market places, or other buildings open to the air.

The odéum or concert-room at Athens, now destroyed, was roofed ; as Plutarch tells us in his Pericles :—

"The odéum or music theatre, which was likewise built by the direction of Pericles, had within it many rows of seats and of pillars ; the roof was of a conic figure, after the model (we are told) of the King of Persia's pavilion. Cratinus therefore rallies him again in his play called "Thrattæ :"

> As Jove, an onion on his head he wears ;
> As Pericles, a whole orchestra bears ;
> Afraid of broils and banishment no more,
> He tunes the shell he trembled at before !"

Although the names of buildings and their parts have nothing really to do with architecture, still it is useful to understand the technical names you find in books, and as it is considered in a "gentleman at ease" a mark of neglected education to be ignorant of the ordinary technical words of classic architecture, it must be a reproach to those who are architects by profession.

The Romans for the most part adopted the names of the architectural styles, and of their parts, from the Greeks. I shall therefore not hesitate to give those names to the various structures and parts, by which they are commonly known, noting the cases in which the Romans substituted their own names in place of the Greek. I find too that when Thomas Sandby was Professor of Architecture he must have treated on this subject, for my father copied a drawing illustrating the subject by him. A copy of my father's drawing, by one of his pupils, is exhibited to-night. The house with its recessed porch, or at least when raised to the dignity of a temple, and executed in stone or marble, is called in Greek "Naos en parastasi" *i.e.*, a temple in or between pilasters ; or in Roman "Ædes in Antis."

The Temple of Themis at Rhamnus, near Marathon, is an example of this ; Amphi-antis is a name that is not used ; but the Temple of Artemis Propylæa at Eleusis exemplifies its occurrence.

When the temple has an open verandah in front, and in advance of the wall, or of the open porch, is is called prostyle. The Erechtheum may serve as an example, and the portico of the Temple of Athené Polias in the same building, and the Temple of Demeter at Eleusis.

When the temple has the same feature at both ends it is called amphi-prostyle, of which the temple on the Ilissus is a familiar example, and the Temple of Niké Apteros, or wingless victory, is another. While the Greeks called the back chamber "opisthodomos," the Romans called it "posticum," and the back front, or the back door, the same.

When the temple has an open verandah all round, it is called peripteral, as the Temple of Theseus at Athens ; according to Vitruvius, this should have six columns in the porticoes and eleven on the flank, or one less than double the number of the front portico ; but it was the Greek custom to put one more column in each flank than twice the number of columns in the portico ; this temple, for example, has thirteen, for the Greeks, from being an artistic people, admired a greater length of flank ; besides they thought more of the look of their buildings than of their rules, while Vitruvius, typifying the Romans, thought more of their rules, or convenience of the building than of its appearance ; for we cannot suppose that it was always convenient to make the length of the nave in one regular and definite proportion to its width. The Greeks not unfrequently deviated from their usual custom.

At the Temple of Apollo Epicurius (Apollo the Helper) at Bassæ in Arcadia, which is hexastyle, there are fifteen on each flank. When there are engaged pillars all round, it is called "pseudo-peripteral," as at the Temple of Zeus Olympios at Acragas, called by the Romans "Agrigentum" and now "Girgenti."

When the temple has a verandah all round, with two ranges of columns, it is called "dipteral," and, according to Vitruvius, should have eight columns in the portico, as the Temple of Artemis at Ephesus.

When the space between the walls and the outer row of columns is equal to that of a dipteral building but is without the second row of columns, it is called "pseudo-dipteral." The Temple of Apollo Smintheus in the Troad is an example, and the great Temple of Selinus, according to Hittorf ; but if Wilkins be correct, this temple must have been dipteral. Vitruvius tells us they should have eight columns in front and rear and fifteen at the sides. This temple at Selinus has seventeen, but the Smintheus only fourteen. There is a pseudo-dipteral building at Posidonia (Pæstum) but it has nine columns in its portico.

There is also a temple called "hypæthral," which may mean open to the sky, or may mean one possessing an hypæthros ; and about the meaning of this expression much ink has been spilt and much bad blood engendered. According to Vitruvius it has ten columns in the portico.

The front recessed porch in a temple is called the "pronaos ;" the temple, or the first chamber of the house, is called the "naos," and in Latin "cella" ; and the back room "opisthodomos," in Latin "posticum," and this chamber was mostly used as a treasury and sometimes as a habitation. Demetrius Poliorcetes, when he freed Athens, was lodged in the opisthodomos of the Parthenon, and it was his behaviour when lodged there that so disgusted the Athenians with him, that, after all the benefits they had received from him; they deserted him in his adversity.

Vitruvius tells us "The length of a temple must be twice its width, the cella itself is to be in length one fourth part more than the breadth, including the wall in which the doors are placed. The remaining three parts run forward to the antæ of the walls of the pronaos."

Temples are designated by the number of columns of the front verandah or portico ; distyle, or with two columns, are always *εν παραστασι* or in antis. The pseudo-dipteral temple at Pæstum has three columns, *εν παραστασι* in the pronaos, always supposing that it be a temple.

Tetrastyle, or of four columns, and prostyle, as the temple on the Ilissus ; hexastyle, or six columns, as at the Temple of Thesus at Athens; octastyle, or eight columns, as the Parthenon, and the Temple of Zeus Olympios at Athens ; decastyle, or ten columns, as at the Temple of Apollo Didymæus, not far from Posidium and Miletus in Caria; and dodecastyle at the Temple of Demeter at Eleusis.

A few temples or buildings have an odd number of columns ; that of Zeus Olympios, at Acragas, has seven columns, and might be called "heptastyle," and the pseudo-dipteral building at Pæstum has nine columns in front and back, and might be called "enneastyle."

We owe a double debt of gratitude to the Dilettanti Society, first for starting a fund for the exploration of the ruins of Greek buildings, for without its aid Stuart and Revett, Gandy, Bedford, Mr. Penrose, and others might never have been able to gratify our eyes, and improve our taste and knowledge ; and, secondly, for thus trying to open the eyes, and actually opening the purse-strings of the Government, to whose aid we owe the labours of Layard, Newton, Pullan, and Wood. We owe an equal debt to those who, without its aid, have found temples for us, and published illustrations of them, such as Professors Cockerell and Donaldson, Kinnaird and Railton, Fellowes and others ; and we owe no less a debt to those who have tried to discover them, amongst whom I may mention that erudite, travelled, and indefatigable architect and archæologist, Falkener, who has done so much by his writings and illustrations to improve our knowledge of Classic architecture. We, unhappily, know that Loftus was stopped by want of funds from discovering the Palace of Darius at Susa, whose remains, thanks to the energy and perseverance of Mme. and M. Dieulafoy, now enrich the galleries of the Louvre.

No architect can hear the name of Wood mentioned without a warm feeling of gratitude for his long, patient, and persistent efforts in discovering the site of the Artemision, and so showing us what the *columnæ celatæ* of Pliny were, which has joined his name to those of the great discoverers, Belzoni, Layard, Fellowes, Newton, Schliemann, Beulé, M. and Mdme. Dieulafoy, and Mr. Penrose ; but as we have no perfect plan to a good scale of what Wood actually found at Ephesus, with the exact site of each fragment, and its actual dimensions, we cannot say whether Fergusson's solution has any foundation, but if it have, the back front of he Temple of Diana at Ephesus would be enneastyle too. Mr. Murray, of the British Museum, had a striking restoration of this famous temple.

The whole arrangement of Greek temples was so simple and restricted that they, or the Romans, not only gave a name to every sort, from the number of columns in their porticos, but made a species from the proportion of their intercolumniations to the column itself. Temples were certainly called by the Romans pycnostyle, = thick-set, when the space was equal to one and a half times the diameter of the columns, and the bulk of the Greek Doric temples did not vary much from this.

Systyle, or close set, when equal to two diameters ; diastyle, or open set, when the space equalled three diameters ; aræostyle, or wide set, four diameters ; and Vitruvius tells us this was only used when the architraves were of wood. That which was most approved, according to Vitruvius, was the eustyle, or well set, when the space was equal to two and a quarter diameters ; and he instances that of Bacchus at Teos, believed to have been built in Roman times, which is scarcely more than systyle, the intercolumniations being 2·165 diameters. His reasons for this name are absurd : he says, it has not only a beautiful effect, but is convenient from the unobstructed passage it affords to the door of the temple, and the great room allowed for walking round the columns. He thought a temple looked better when slender columns were used, whose height was from eight and a half to ten times their diameter : at the Parthenon the spaces are but one-third more than the lower diameters of the columns ; and at Athené Polias at Priene, also supposed to be of Roman times, the spaces are but one and three quarter times the bottom of the columns, and the projection of the plinths, as the order is Ionic, leaves the bases and the "going" practically equal. The doors have, of course, more space if three diameters are left, but this is diastyle and not eustyle ; and he tells us, under the head of diastyle, that the architraves frequently fail from their bearings being too long. The actual space for walking round the ambulatory depends on the diameter of the columns.

The name eustyle was doubtless owing to it having been found a safe distance for a marble architrave to carry, proportioned as this was in depth to the diameter of the column.

I must here remind you that the first treatise on architecture that has come down to us is that of Vitruvius, who is supposed to have been born in 80 B.C., and as he mentions many of the Greek treatises on architecture that have all perished, we suppose he had studied them and adopted their method ; but this is a pure hypothesis. All the written information we can get about the principles followed in Greek architecture is from him and from a few incidental passages in the Greek writers, who were writing on other subjects.

Vitruvius says he was a practising Roman architect, and consequently we may conclude that he gave us the rules then in force, unless in such cases as he expressly states to the contrary. Professor Ussing has lately published a pamphlet telling us Vitruvius lived in the fourth century and was no architect.

We can deduce principles from the Greek ruins themselves, and we can see if they have any relation to those Vitruvius describes. We can weigh the deductions made by other investigators, and we can use our own reasoning and intelligence to draw deductions from all these sources. Watkiss Lloyd was the great English investigator of Greek proportion, with whose name you are familiar, and M. Aurès is the French investigator, some of whose works are in the British Museum.

There is one consideration we should never allow to be absent from our minds in any of our investigations, and that is that the Greeks possessed the most perfect intellect the world has yet known, that by their contemporaries they were supposed to possess the wisdom of the serpent, and not a little of its subtilty, and that therefore what we ourselves might consider as folly, or a bungle, is less likely to have been perpetrated by them.

Plutarch tells us that, when Themistocles was brought before Xerxes after he had given himself up to that monarch, a Persian commander named Roxanes whispered to him, "Thou subtle Greek serpent, the King's good genius has brought thee hither."

One great advantage of studying the Classics, even if we became but poor scholars, is the mental training we get by it ; we must think and reason, however bad may be our school-masters, for we know that the writers meant something, and we have to find out their meaning; and it makes us less like the beasts that perish, by making us acquainted with past times.

The study of Greek architecture, in like manner, has the same indirect advantages, as well as other direct ones.

Charles Garnier makes the following eloquent appeals in his book, "A Travers les Arts," in favour of the study of Greek architecture and of measuring and restoring ancient ruins.

"Whatever be the future personality that may proceed from the architect, the study of Greek architecture should make a part of his first education; it will show him with what simplicity of means great effects are sometimes produced, it will point out to him the laws of proportion and of opposition—the fundamental laws of the beautiful in the Arts; but this study, completely æsthetic, will never teach him to make a copy. Greek is admired, but it ought not to be reproduced. It raises the intellect, it points out the way, but it is not to be copied."

Speaking, too, of the study and measurement of ancient ruins and their restoration, he says:—"A thousand voices say, 'What use is it?' Why, churlish and unjust souls, it is useful to the history; to the palpitating life of the Arts; it serves to compare the past with the present; it serves above all things, for that is its end, the artist who has worked at it! Do you believe that the time he has passed in measuring these fragments, in cross-questioning these remains, in giving them their place and their employment—do you believe that this time has been wasted by the artist? He has familiarised himself with the primitive notions of art and construction; he has lived the life of other times; he has brought together the history of men and the history of stones; he has learned to study, to compare, to reason, which he must do later on when he builds for you; he has, in short, learned the alphabet of architecture; whatever may be his ideas in the future, he will know how to express them.

If his colleagues have already done similar work, is that a reason why he should not do it too? If my college neighbour has translated Virgil or Cicero, is that a reason why I should not translate them in my turn? Does one man's education give education to another? Do not laugh, then, at these ignorant attacks: it is noble self-denial to employ one's youth in studying one's art, with the hope of becoming later a master in one's turn."

In Bacon's "Essays on Studies," he remarks:—"Read not to contradict and confute, nor to believe and take for granted, nor to find talk and discourse, but to weigh and consider," and this is especially applicable to Greek architecture.

To resume, Vitruvius shows us how the proportioning was effected when the eustyle was used. He says:—(Lib. iii., cap. 3) "The extent of the front being given, it is if tetrastyle to be divided into 11½ parts, not including the projection of the bases and plinths; if hexastyle into 18, if octostyle into 24½ parts; one of these parts, whether it be tetrastyle, hexastyle, or octastyle may be taken, and it will be the module; the thickness of the columns will be one of these modules." This is a very simple arithmetical problem for us, but possibly in those days arithmetic was not so common an acquisition, for to take the octostyle we have

6 spaces at 2¼=13½
1 „ at 3 = 3
8 columns at 1 = 8
24½

Vitruvius goes on to tell us how the diameters of the columns are to be got when the height and not the width is given; he says:—"In systyle let the height be divided into 9½ parts, one of which is the diameter of the column; in pycnostyle one tenth, in eustyle and diastyle 8½ parts." He tells us that columns at the angles must, on account of the unobstructed play of air round them, be one-fiftieth part of a diameter thicker than the rest. In the Parthenon the angle columns are about one-forty-third part larger, and there the intercolumniation is narrower at the angles in the proportion of about 23 to 32, so as to get the metopes nearly alike. He goes on to say the diminution of columns from the base to the neck should be one-sixth for columns under 15 ft. high, from 15 ft. to 20 ft. two-thirteenths, from 20 ft. to 30 ft. one-seventh, from 30 ft. to 40 ft. two-fifteenths, from 40 ft. to 50 ft. one-eight, and for greater heights in proportion; and he also tells us that, though the bulk of the columns are to be set upright, in those at the angles and flanks the sloping faces of the inner faces of the columns are to be parallel to the upright face of the naos.

The pediment was commonly called fastigium in Latin, though Vitruvius mostly used fastigium for a gable, and tympanum for a pediment. The pediment was only permitted by the Romans to be used as an ornament to the temples of the Gods until the time of Julius Cæsar, when the Senate ordered one to be put to his house, as described by Plutarch. Vitruvius tells us the height of the pediment is to be equal to one-ninth part of the extent of the corona measured from one extremity of its cymatium to the other.

The corona is the main dripstone of the cornice, and the cymatium is its crowning member, and not the crowning member of the inclined parts of the pediment, which was called sima.

"If the temple be broader than 20 ft., two columns are interposed between the two antæ, to separate the pteroma from the pronaos..... If the width be greater than 40 ft., columns opposite to those which are between the antæ, are placed towards the inner part of the same height as those in front; but their thickness is to be diminished as follows:—If those in front are an eighth part of their height in thickness, these are to be one-ninth; and if the former are a ninth or a tenth, the latter are to be proportionately diminished, for where the air does not play round them the diminution thus made will not be perceived. Lest, however, they should appear slenderer, when the flutes of the external columns be twenty-four in number, these may have twenty-eight, or even thirty-two. Thus what is taken from the absolute mass of the shaft will be imperceptibly aided by the number of the flutes, and though of different thicknesses, they will have the appearance of being equal. This arises from the eye embracing a greater number of surfaces, and thence producing on the mind the effect of a larger body. For if two columns equally thick, one of them without flutes and the other fluted, are measured round with lines, and the line is passed over the flutes, and their fillets, though the columns are of equal thickness, the lines which girt them will not be equal, for that which passes over the fillets and flutes will, of course, be the longest. This being the case, it is not improper in confined and enclosed situations to make the columns of slenderer proportions, when we have the regulation of the flutes to assist us."

This passage is not very clear, but I think by "pteroma" he there means the two side passages of the pronaos.

"If there be nothing to prevent it, and the use of the edifice allow it, the temples of the immortal gods should have such an aspect that the statue in the cell may have its face towards the west, so that those who enter to sacrifice, or to make offerings, may have their faces to the east as well as to the statue in the temple" (generally speaking, the fronts of temples are to the east). "Thus suppliants and those performing their vows seem to have the temple, the east, and the deity, as it were, looking on them at the same moment. Hence all altars of the gods should be placed towards the east; but if the nature of the place do not permit this, the temple is to be turned as much as possible, so that the greater part of the city may be seen from it. Moreover, if temples be built on the banks of a river, as those in Egypt, on the Nile, they should face the river. So, also, if temples of the gods be erected on the roadside, they should be placed in such a manner that those passing by may look towards them, and make their obeisance."

The Temple of Apollo Epicurius lies north and south, with the entrance facing the north, and the statue of the god in the chamber behind the naos faced the east.

I think I have now given you the main features of the Greek structure, reserving the parts for subsequent lectures, and I have done so to show that amongst the ancients the whole structure was arranged in those definite proportions that experience had taught them would look well.

The late Professor A. De Morgan had an aphorism that "rules were excellent things for those who could do without them," and this is quite as true of architecture as of algebra.

It is, I believe, undoubtedly the case that architecture in all great epochs of building had rules, not only for the proportioning of the parts and the fronts, but also for proportioning the whole building. Cæsare Cæsariano tells us that it had been the custom before his time to arrange the plan, elevations, and sections into definite proportions by means of circles, squares, or triangles, and calls it the German method, and shows us how Milan Cathedral had so been set out.

When there was much work to be done rapidly, there was no time to fumble after the right proportions. The architects got out the general proportions by these rules, and altered them, if they were geniuses, to suit their particular cases, wants, and tastes.

I have had plans of most of the Greek buildings and ruins that remain drawn out to one scale to show their variety in size, and their comparative uniformity of arrangement.

In studying and practising architecture, besides native genius, which no one can give himself, the most important thing is to use one's brains. When we look at the plan of a building, it ought to suggest to us why it was so made, not only for its direct purpose and for its appearance, but for the peculiarities of its construction; and if we want to improve our faculties as architects, we should never leave off considering a plan so set before us, until we have cleared up all the doubtful points to our own satisfaction; we can never tell that we may not have that very problem to solve, and if we never have, we shall not on that account have lost our labour.

All great men have felt that to let their faculties slumber was the surest way to ruin them. The great financier that Napoleon I. locked up in a dark cell felt this, and got a paper full of pins, counted them carefully, scattered them in his cell, and never left searching till he had found the last one. A civil engineer I have often travelled with on long railway journeys always carried a book of acrostics in his pocket, and when he had rested his mind sufficiently with conversation or a novel he kept his brain at work by solving acrostics from the book; and the great Mr. Sponge used to keep his faculties from rusting by calculating the cross cab fares from Mogg's Guide.

You see before you a plan of the Temple of Apollo Epicurius at Bassæ. It has received the attention of the late Professors Cockerell and Donaldson, and that of Fergusson, but the cause of its constructive peculiarity seems to have struck none of them. Why did Ictinus, for it was no less a person than the architect of the Parthenon who is said to have built it, attach the columns to the walls of the Cella? And why did he join the end ones diagonally?

It seems obvious to me that it was to resist some thrust. Fergusson had a most acute mind, knew most of the buildings of the world, but he was not an architect, besides he had a passion for timber roofs. He bitterly complained of your late Professor, the lamented G. E. Street, for putting an incombustible roof over the hall of the new Law Courts. He tells us this Temple roof was doubtless carried on timbers; but I think I may say with the utmost confidence it was not. It was a sloping roof of marble, hipped at the south end, and the marble panelling of this part was carried on the hips because the chamber of the god was behind it, so that the architect could get no abutment there. What does Pausanias say? "In it there is a place called Bassæ, and a Temple of Apollo the helper, the roof of which is of stone. This temple surpasses all the temples in Peloponessus except that which is in Tegea, for the beauty of the stone from which the roof is built and the symmetry of its construction." (Lib. 8, Cap. 41, Arcadies). And Pausanias generally used the word stone when he means marble; as Pope does,

> "That live-long wig, which Gorgon's self might own,
> Eternal buckle takes in Parian stone."

(Moral Essays, Epistle 3, line 295.)

This passage of Pausanias has probably been quoted hundreds of times, but so convinced were the architects and critics that the Greeks only used timber for their roofs, that neither the particular mention of the marble roof, nor the peculiar construction of the temple could remove their prejudices nor allow them to use their reasoning powers on the subject. Professor Donaldson, curiously enough, states: "In no single edifice of the ancient Greeks, the remains of which have been hitherto examined, are to be found so many varieties of lacunaria as in this temple." But though he quotes the passage from Pausanias, he never mentions the cell, but denotes the different patterns he found to the porticoes, pronaos, peristyle opisthodomos, and the space behind the Corinthian column.

Fergusson, in his "Parthenon" (page 80), also quotes Pausanias about the stone roof, and says, "There would be no constructive difficulty involved in this suggestion; these rafters are only 8 ft. in length, and there were roofing stones found in the lacunaria, both of the pronaos and posticum which exceed 12 ft." It is extremely improbable, however, that the Greeks should have employed stone for so essentially a wooden form of construction; and, if they had, it is almost impossible that some fragment should not have been found on the floor of the temple among the ruins."

So that, in spite of the extraordinary number and patterns of the fragments, in spite of the testimony of the eye-witness, in spite of the constructive peculiarity which purely points to thrust, nothing but wood would serve his turn; and yet a little further study of Pausanias might have, perhaps, altered his opinions, for in describing Megalopolis Pausanias says (Arcadies, Lib. 8, Cap 30): "Near this porch is the Temple of Hermes Acacesius, of which nothing but the stone roof remains." I presume Pausanias did not mean that it was, like Mahomet's tomb, hung up in the air, but that all the columns and slabs had gone, and nothing remained but the walls and roof. My experience of ruins is that if there is timber it will be taken, for, if it is good for nothing else, it is good for fuel; but, as they could not burn the stone roof, they let it stand.

## ROYAL INSTITUTE OF BRITISH ARCHITECTS:

### PUBLIC BATHS AND WASH-HOUSES.

AN ordinary meeting of the Royal Institute of British Architects was held on Monday evening, Professor Aitchison, R.A., presiding.

### *Royal Gold Medallist.*

The Secretary (Mr. W. J. Locke), announced that the Council had decided to nominate Mr. G. F. Bodley as the Royal Gold Medallist for 1899.

The Chairman remarked that they were unanimous in welcoming such an admirable architect and so excellent a man as Mr. Bodley as the Gold Medallist of the year. The paper of the evening, in which public baths and wash-houses would be dealt with, was by Mr. A. Hessell Tiltman. That gentleman was, however, suffering from deafness, and the paper would be read by the Secretary.

Mr. Locke then read the paper, which opened with an expression of the author's personal views upon the ordinances which should govern the arrangement of baths and wash-houses in the future, and their influence upon the arrangement and details of their various departments. The Baths and Washhouses Act, 1846, was passed "to encourage the establishment of public baths and washhouses." Under this, and amending Acts, a large number of these establishments had been erected. The Municipal duty, however, of providing facilities for the cleansing of the bodies and linen of the poor had not been adequately performed. Statistics showed that only a small proportion of the class for which these establishments were chiefly intended availed themselves of the opportunities offered. The reasons for this partial failure the author considered were—first, that the initial distribution and classification of the establishments were frequently at fault; secondly, sufficient effort was not made to educate the masses as to the necessity and benefits of the bathing habit. The bathing community to be catered for consisted of the middle-class, the working-class, and the very poor. A great initial blunder was committed in associating these, in large proportions, for all purposes of swimming, bathing, and washing in almost every establishment. The remedy lay in the practical adoption of some system of central and branch establishments, classified and distributed to suit the special needs of each district. Ablutionary baths and public wash-houses should be decentralised and located at much more frequent intervals throughout those districts requiring them, forming a series of branch establishments; whilst swimming baths should constitute centralised establishments at one or more points, equally dividing up the whole district. The author then enumerated the requirements of the suggested establishments. The central establishment should be the chief and most attractive. The branch establishments should consist of two types, (1) baths and wash-houses; (2) people's baths. Either type could be put upon the site of from two to four *small* houses in a by-street, which would be neither costly nor difficult to acquire. In extending the provision of baths and wash-houses the authorities should consider the advisability of doing so in the direction of branch rather than central establishments. The author had visited and inspected a very large number of baths and washhouses throughout the United Kingdom, and in France, Belgium, Germany, Austria, and Hungary. In Germany he had found much to admire in the arrangement and administration of those institutions by the State, and the true spirit and intention of the Baths and Washhouses Acts would be much better carried out if part of the German system were adopted. A committee of medical and other experts in New York, after careful investigation, had reported their preference for the arrangement and administration of the new form of German and Austrian "People's Baths." The distinguishing features and hygienic advantages having been fully explained, the author went on to describe the plan and arrangement of each of the three classes of typical establishments advocated by him. The Central Establishment site should have a superficial area of from 30,000 to 40,000 sq. ft., be in a prominent position, and easily accessible from all parts of the town or parish. It should admit of the perfect drainage of all portions of the establishment without necessitating an expensive treatment of levels of the building generally. Much saving may be effected by having only a small frontage towards the main thoroughfare. A good site may often thus be secured, carrying with it sometimes sufficient frontages to back streets, where minor entrances may be provided. In baths carried out for the Islington Vestry the author had adapted the quadrangular system to such a site as that described with excellent results. The water supply must be abundant, pure, and soft. It should be sufficient to meet the largest demand and include a storage for some 15,000 to 20,000 gallons. Ponds of very large size are not advisable. It is better to increase their number rather than their dimensions when the latter exceeds 90 ft. by 30 ft. Five is a useful number for central establishments; two for each of the sexes, and a fifth or small pond to be used alternately for both sexes, principally as a teaching pond. In England swimming baths were usually closed during six months of the year, but with adequate warning and other arrangements—as in Germany, where, though much colder, swimming baths were open all the year round—swimming clubs would gladly use them throughout the winter months. The arrangement of one of the swimming baths during the winter months for public entertainment purposes was next considered, and the best means of meeting the County Council requirements in the matter of exits, &c. Taking into account costly sites, the extra space secured, the advantage to exterior architectural grouping, the author preferred to distribute the baths between the ground and first floors, and if proper lighting can be obtained, the basement as well. Much accommodation is lost, and convenience sacrificed by keeping all the slipper baths upon one floor. The location of hot-air baths, laundry, boiler-house, and engine-rooms, apartments for superintendent and engineer, &c., having been indicated, the author went on to deal with the details affecting the various departments, viz., swimming baths for both sexes, douche or cleaning-rooms, slipper and rain-douche baths, hot-air baths, the establishment working department, boiler-house, engine-room, accumulator-room, receiving-room, wash-house, drying-room, folding and distributing storerooms, mess-room, engineers' workshop, and the administrative department.

A defect requiring correction in English swimming-baths was the insufficiency of dressing-box accommodation in proportion to the superficial area of pond surface. The almost universal arrangement of placing the dressing-boxes down two sides, and possibly one end of the hall, must be improved upon. This might be done by adopting the Continental method of placing an equal proportion of the dressing-boxes or places upon the gallery floor, or by arranging them in a series of transeptal bays upon one or both sides of the bath. The pond should be rectangular in shape, and in the proportion generally of length to width as three to one. Steps to the water should be of wood and made removable. An open self-draining channel, close to the top of the pond and running continuously round it, serves as a scum-overflow and spitting-trough; and a suitable height above the water-line an iron or copper safety rail should run all round the pond for the use of tired swimmers. At the shallow end a portion of this rail is usually converted into a spray pipe, extending the whole width of the pond. By raising or depressing the direction of the perforations in this, a useful and pleasant means of freshening and clearing the top surface of the water is obtained. Further points considered in this connexion were the depth and temperature of the water, gangways round the ponds, flooring materials, dressing-boxes and their fittings. An important feature of the swimming bath should be the douche or cleansing room. This is almost unknown in this country in connexion with swimming baths, but it is a universal provision of the German baths, and used by every bather as a matter of necessary routine, it being understood that, before entering the swimming pone, he should, out of consideration for his fellow bathers, undergo a thorough cleansing process.

Hot-air baths should be upon the lines of the improved form of the Anglicised Turkish bath, consisting of three rooms, viz., the Tepidarium, 140 deg. Fahr.; the Calidarium, 180 deg.; and the Laconicum, 250 deg.; together with a combined cooling and dressing-room, and a shampooing and douche-room. For the second-class hot-air baths the author recommended the system suggested in Metcalfe's "Sanitas Sanitatum et Omnia Sanitas," which consists of a combination of hot-air rooms of the Turkish bath with a system of warmed lavatories in lieu of the shampooing process and plunge bath. This modification of the Turkish bath, for ordinary purposes of ablution, would be perfectly effective, less provocative of colds, and more economical than the ordinary warm slipper bath.

In considering the second part of his subject, "Public Washhouses," the author said that their present arrangement required complete overhauling. Full details of a small installation were given as an indication of the line modification should take. The following rooms were described and illustrated:—Public wash-houses, mangling-room, waiting-hall, cloak and bonnet room, crèche, ticket-office.

Reverting to bathing establishments, the author explained that the smaller type of his branch establishments—viz., people's baths—was intended to meet, in the cheapest and simplest manner, the needs of the very poor for cleansing facilities. It consisted of very small establishments of rain douche-baths, built at very frequent intervals in the poor and populous districts, after the manner of the Germans and Austrians. These establishments could be made so small and compact as to permit of their erection under our streets in a manner similar to our underground lavatories and conveniencies.

Finally, the author touched upon construction and architectural treatment. Construction should be of such a character as to resist the action of water in every form, whether from carelessness, or from the necessities of frequent cleansing. It should be easily kept clean, free from vermin, and especially so with respect to the transfer of contagious matter. As to external architecture the design of the building should clearly express its purpose, quite apart from all questions of style. It should appear exactly what it is, and not ape the dignity and expression of the modern town hall. In the treatment of the natural outcome of the plans there are infinite opportunities for original and distinctive treatment. The paper was illustrated by a large collection of plans of baths in England and on the Continent, including the Kennington-road baths (of which photographs of the interior were shown), Hornsey-road baths, Tibberton-square baths; river and public baths at Hamburg, and "People's Baths" at Hamburg and Vienna.

Mr. W. Emerson, in moving a vote of thanks to Mr. Hessell Tiltman, said there was one point he would have liked to have heard more about—that was the method of constructing large swimming baths.

Mr. H. L. Florence, in seconding the vote of thanks, remarked that if there was any hesitation to criticise the paper it was because it was so full of information that they were unable to master their points. For himself, however, he did not quite understand the arrangement of the rain douches. It seemed to him that if they were to be introduced they would involve a revolution in the baths as they now existed. The dressing-boxes should be in direct communication with the douches, whereas, as the baths were at present constructed, they were in direct communication with the swimming baths. Without dressing-boxes close to the douches there would be no guarantee that bathers would take the douches before they entered the bath. To introduce dressing - boxes next to the douches would necessarily involve the provision of more space. He had no doubt the introduction of douches would be of great advantage to the populace if the latter could be induced to take kindly to such a novelty. He scarcely felt inclined to agree with Mr. Tiltman in advocating the laying of York paving for the floor of the landings around the baths. In his experience he had always found slate a very much more pleasant material, and more easily kept clean.

Mr. A. T. Bolton remarked that the gentleman who had just spoken was the architect of one of the oldest baths in London—a bath, too, that had proved self-supporting. This latter fact arose, he considered, from the circumstance of the adequate size of a well patronised first class swimming bath. Mr. Tiltman had deprecated the architecture of swimming baths being designed to suggest that it was a Town Hall. It happens, however, sometimes that the baths have to do duty as Town Hall. In the West End parish with which he was acquainted the baths were practically the Town Hall, and their use in the winter for entertainments constituted one of the difficulties of management. Many superintendents would be only too glad to have baths used only for bathing. Mr. Tiltman, too, had deprecated dressing boxes in the gallery because he conceived that the County Council would not approve of the use of staircases for bathers to ascend to them. In the particular baths he had referred to this was one of the points that the County Council did not object to, although they were very excessive in their requirements when application was made for the building to be licensed for music and dancing. Mr. Tiltman incidentally mentioned the excessive noise arising from a swimming bath, but did not point out that this arose from the large amount of glass in the roof. Glass was a very bad material from an acoustic point of view, every splash creating a noise which was not always pleasant. He suggested that if the glass area was restricted, or confined to a cove, there would, he thought, be very much less noise. He considered that the Westminster Baths provided excellent fittings, though the water shoot was a perfect terror to bathers. It was on account of this objection that it was not introduced into a bath that he knew of. In the same way the authorities did not approve of another feature—the sprinkler from the centre of the roof, which had the effect, when used, of cooling the atmosphere. Swimmers seemed to be very sensitive in regard to this sprinkler, and many objected to it. In the baths he was referring to there was a large waiting-room behind the front hall, which had the effect of putting the first class bath nearly 50 ft. back from the street. This was not used, and was now converted into a vestibule. Some baths were finding it a great economy to have only one ticket box approach for either side. Sometimes they found a distinct ladies' entrance which was disused on account of the saving that could be effected. He thought the provision of a refreshment room might be of considerable convenience to the bathers, and profit to the management.

Mr. A. Saxon Snell said that no one who had had the privilege of going over the new swimming baths at Shoreditch could fail to be struck with the great strides that were being made towards the ideal; and they could not but feel glad that at last imagination was beginning to get hold even of their vestries and municipalities. When our rulers and clients were beginning to "dream dreams" it was good for the architects. With regard to small bathing establishments, he thought economy would be effected if used on alternate days by the sexes. This could be done very easily, for women, as a rule, preferred the morning for bathing, and men the evening. In one borough where he was building baths, it was proposed to erect three or four small establishments, spreading the attendants over them as required. Mr. Tiltman's description of the shower or rain douche bath was very interesting, and would, no doubt, be followed by an increase in their numbers in London, because they could be made so cheaply. He had some idea that the system had been introduced somewhere in the North of England. He thought it was done by a manufacturer for his workmen, who found that such baths could be built and maintained at a very small cost. With regard to entrances he was inclined to go one step further than Mr. Bolton and altogether abolish separate entrances for each sex. They were a nuisance in planning and a great expense in administration. Why should it be necessary to have a separate entrance for women when every railway station in the kingdom only possessed one entrance for the two sexes? They were told that women would have reason to object to the language used by lower class men. To that he would reply, that they had to face the same difficulty in the railway station and the train. With regard to the maximum size of a bath he regarded 100 ft. by 35 ft. as a reasonable size—100 ft. being a very good racing length. The placing of slipper baths on the first floor was a very practical arrangement, but he did not agree that they should be placed on more than one floor, because the management would be at greater expense in the matter of attendants. He was surprised to hear Mr. Tiltman object to the internal angles of the swimming bath being rounded, unless he referred to angles of large radius, to the interference of racing, and as to dressing boxes he preferred woodwork and doors, because the latter ensured more privacy. As to the objection that water deteriorated the wood, he would remind them that there were now on the market paints that rendered wood absolutely impervious to wet, and when the necessity for cleaning arose the hose could be turned upon the woodwork without injury to it.

The Chairman, in bringing the discussion to a close, said he hoped most ardently that the slipper-baths and all other such abominations would be done away with as soon as possible. The one great purpose of ablutions was cleanliness. The prevalent system seemed to be for bathers to wash the dirt off their bodies and then wash themselves in it. The shower and rain baths, however, would do away with that. Let them all do what was in their power to discourage the old and exploded system. One of the first men connected with the introduction of Turkish baths, Mr. Urquhart, M.P., once declared that there was no sense of cleanliness among Europeans. They should learn the lesson in cleanliness from the East, that the body should be washed with clean water, which, when soiled, should immediately run away.

The vote of thanks was adopted, and Mr. Tiltman made a brief acknowledgment. He expressed regret that his affliction of deafness prevented him from dealing with the criticisms of the speakers or of undertaking to answer questions that evening.

The President announced that the next ordinary meeting would be held on February 20, when papers on "Public Libraries" would be read by Messrs. J. M. Brydon and F. J. Burgoyne.

## THE ARCHITECTURAL ASSOCIATION:

### STAINED GLASS.

THE usual fortnightly meeting of the Architectural Association was held on Friday, the 3rd inst., in the Meeting-room of the Royal Institute of British Architects, No. 9, Conduit-street, Regent-street, Mr. G. H. Fellowes-Prynne, President, in the chair.

The minutes of the last meeting having been read and confirmed, the following gentlemen were elected members of the Association:—Messrs. F. J. Palmer, J. H. Taylor, and A. S. Vernon.

The Chairman then called on Mr. Christopher Whall to deliver a lecture on "Stained Glass."

At the outset, the lecturer explained that he came before them without a written paper, a corollary of which would be an unpremeditated discussion. Working, as he did, from eight to ten and sometimes twelve hours a day at stained glass, he had the subject so intimately in his mind that it would be very much his fault if he could not put it before them without much preparation. He found that he could explain processes and first principles more practically and simply when he had his audience before him and was able to get into touch with them. What he proposed, then, was to have a regular work-bench talk.

What did they want to know about stained glass, and why did they want to know about it? They were curious questions to ask, perhaps, but he put them because on the last occasion when he was present at a meeting of the Association, when Mr. H. Wilson read a paper on the "Arts and Crafts,"* a gentleman, Mr. Blashill, whose opinions seemed to have much weight with them, took exception, in the course of the discussion on the paper, to the line and the general drift and conclusions of the lecturer. According to the *Builder*, Mr. Blashill said:—

> "He should not like to take the responsibility of suggesting to them that the road they were pursuing, under all the sanctions of the past and the present—the Institute and the Association, for instance—under the sanction of almost every one who had spoken or written on the subject, was the wrong road. To tell them that if they were to follow some trade one in forty would perhaps become an architect, was not very hopeful reasoning. If they were to follow such advice, and were to sacrifice their careers, they would be just as dissatisfied with everybody and everything. What they had heard was the view of the pessimist, and it was partly a constitutional view. It might be the result of the national food, or national pastimes. Architecture was the profession they were all following, and they must make the best they could of it. He did not see why a man was less likely to succeed as an architect than a sculptor or painter. He failed to see the evidence for it, though he saw that their masters were wrong in being driven into copyism so much. But surely, sooner or later, they would evolve something in the shape of invention on their own account, and in his opinion there was no reason for discouragement."

That, he thought, was a rather exaggerated criticism of what was itself, perhaps, rather exaggerated. Although there were certain curiously strong remarks in Mr. Wilson's paper—such as "getting rid of the architect," and so forth—he did not gather that there was anything in Mr. Wilson's attitude as a craftsman (and Mr. Wilson was also an architect and a practical man) incompatible with the ordinary curriculum which they went through in offices under their architect-masters; he understood Mr. Wilson to advocate the adding of practice to theory, not the exclusion of the latter. He (the lecturer) thought that they might do something that night to bring closer together the two points of view which no doubt existed, and that was always his object when addressing an audience on the subject of the arts. It had become a serious question to ask at the outset the reason why, and the degree in which, they should interest themselves in the crafts. He was present that evening to interest them in one of the crafts, and he proposed to show them briefly how it was practised; then, how far it was in their power to gain a practical knowledge of it without "sacrificing their career"—that terrible alternative which had been held up to them—and by that time he hoped they would be sufficiently in touch with one another, and with him, for the remainder of the meeting to take the form of question and answer and explanation.

As to the actual production of a stained glass window, the first thing, and a very agreeable thing, was a letter from a would-be client. That always took one form; the client wished, very properly, for a sketch, and it had to be sent. Suppose the preliminaries settled, the artist, already having in his mind a conception of the work in small, had to turn it into full size, and he therefore made a cartoon. The cartoon should always be made by a craftsman: that was the essential point. It should always be made—and it was almost never made—by a man who was intimately connected with all the processes of stained glass, and had them at his fingers' ends. The reason for that was that when the cartoon came to be translated into glass, the whole thing should have been previously seen mentally in glass by the man who designed it, in order that he might make the best use of the materials and bring out its strong points and its best qualities. A mere draughtsman, a man who had gone from South Kensington to the Royal Academy, and had been through all the training of a draughtsman—necessary and valuable as that was—was not in a position to take up work of that kind. He could make a beautiful drawing, no doubt—and after seven years at the Academy, if he could not, he could not be up to much—but that was not enough; he had not yet got into touch with his material nor realised that to make a beautiful drawing for a canvas picture was a very different thing from making a drawing which was to be cut up into pieces of glass with $\frac{1}{4}$-in. black leads between them. Therefore the cartoon should be made by a man who had been trained as a practical stained glass worker. The rule he adopted in his work—and he superintended the actual production of the glass in all its stages—was to make as beautiful drawings as he could and to mark even at this stage the chief working lines: those which tied the rest of the glass together were not shown. He had conceived the lines in his mind from the beginning, for he knew at starting what he was going to do.

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* See the *Builder* for November 19, 1898.

The next step was to make an actual working drawing—a tracing of the whole thing, showing the lead lines only, by means of which the whole work of the window was carried out. The glass was laid on the tracing horizontally and cut as desired, but $\frac{1}{16}$ short of the actual size, so as to make allowance for the lead.

The next stage was the painting of the glass. The pieces of most importance—the head, hands, &c.—were laid upon the cartoon horizontally, and traced with the pigment, which consists of metal with some flux. When the pieces were all traced with such outline as the artist intended, the pieces were waxed up on a piece of glass, and the actual painting commenced.

Mr. Whall then gave a practical illustration of the manner in which the brush was used. The pigment was laid on in what was technically known as mat—an even surface very much like the ground in a mezzotint, *i.e.*, the ground being brought as a rule to a perfectly even and smooth consistency, and gradation of light and shade, lights being taken out of it with various tools. There were three ways in which the shading was done. What he was doing then was stipple, by which the glass could be worked in the wet stage up to a very high degree of finish. A very even finish and a very perfect ground could be got in that way, and skilful workers were able to produce beautiful examples at this stage, but the difficulty was to keep the pigment wet long enough. After it was dry and when it no longer yielded to this treatment, most beautiful and finished lights could be taken out of it with other tools.

Before the painting stage was reached, there was a practice which, he thought, was peculiarly his own, and one which, he thought, was very useful, though others might think it unnecessary—that was the making of a sketch to scale, or whatever size they pleased, in the material itself; in glass instead of on paper. He had brought down several sketch models; they were not to show the client, but more to guide him (the lecturer) towards the realisation of the work before undertaking the larger scheme. That gave a lot of trouble and he did not always do it now, although he used to do so, but he always planned out the work roughly.

After the work had been painted on the glass, it had to be fired. The pieces were taken off the plate, the wax chipped away from the edges, and the pieces were then put into the kiln and brought almost to a white heat—at all events to a heat which softened the glass to the extent of letting the pigment into it. That raised the important question of permanency in stained glass work, which was a most important matter, though not strictly an artistic one. He believed that the controversy as to the value of this and that pigment for permanency was a mistake and that the whole question turned upon the very vital point of whether the work was sufficiently fired or not. Some firms of stained glass makers fired high and some fired low. Those who fired high, for the sake of permanency, made allowance for the loss of colour in the kilns, for the colour, when the work was done in this way, fired off. In his own work, which he naturally wished to be permanent, he made such an allowance; his colours were always darker before the work was fired than he intended them to remain. But the loss of colour necessitated a second working, and the work had to be touched up where the colour had become too faint. When that was done, the work was finished, with the exception of the yellow stain—an invention of the fifteenth century largely used and drawn upon ever since for effects in windows. It was hardly necessary for him to tell them that the quality of stained glass did not consist in anything that was put on to the surface, with the exception of the shading. The colour virtue of stained glass came wholly from the glass itself, with this one exception of yellow stain. In the fifteenth century it was discovered that there was a perfectly permanent pigment by which stained glass of any light colour could be brought to a yellow of almost any depth. It was a preparation of silver, and by it one could paint on anything from a primrose to a ruby colour by the action of the fire. That was the last stage of the window before the workman's stage of leading up. It was a good rule to be careful in the use of stain; it might make a window look rather bilious when used too freely.

As to the use of white glass, the pigment with which the stained glass artist shaded was rather a warm colour—a reddish pigment. The most satisfactory of all pigments as a working material was that which approached nearest to the colour of red lead; but it was unsatisfactory as a colour on glass. There were two ways out of the difficulty: one was to use greyer pigments, which were quite as permanent, though less satisfactory because they fired away a great deal; and the other was to use a bluish or greenish glass to neutralise the pigment. There had during the last thirty years been produced a lot of windows the highest lights of which were of a cold green grey. In such windows they lost the beautiful quality of pearly white which was the glory of the late fifteenth century glass. He would rather make any sacrifice almost than give up the use of pure white glass. It was a most essential thing, and it made every colour in a window take its proper place.

After the window was painted and fired it was leaded up. All the pieces were laid down on the bench and they were put together like a child's puzzle. The lead was put round each piece of glass, and kept in its place by nails; each piece of glass being forced well into the lead. As soon as the glass was in position the joints of the lead were soldered off. After that, the only thing was to cement the whole.

There were several practical questions in regard to stained glass which would appeal to his audience as architects. He had not brought any specimens of his own glass, but he was showing several samples of the work of his pupils at the Central School of Arts and Crafts in Regent-street. That school was not a school of theoretical design, and all the specimens he was showing were the work of his pupils. He did not mean to say that the pupils had designed them all, for many of those pupils were too young for that sort of thing yet; but what he meant was that those who previously had been taught merely to paint a thing from the cartoon were required, at the School, to go through a process which, while not at once making them master-craftsmen, would teach them cutting, leading, and painting in stained glass, and give them a sympathetic knowledge of the craft. It was not masters' work, but it could not fail to have a good effect upon pupils. He thought that was very much an answer to the question: How far is it possible for an architect, with so many calls upon his time and with the exigencies of his training, to take up any craft to a useful end.

If it were demanded that an architect should take up a craft so as to become master of it, that would in these days, he thought, be impracticable; but there was a very great deal to be learnt in a short time. The mere touch of the material gave a man a fresh view of work with it. Craft work exercised a vital influence upon the designs of those who had practised it. It was not architects alone who benefited by this craft-knowledge, but those who carried out work according to old traditions; and what he desired was that they should get to know of the craft conditions of materials. Owing to the present system of sub-division of labour, stained glass windows were almost entirely produced by labour so divided that not one of those engaged upon any portion of the work could carry out a finished work in its entirety. It seemed to him that whatever might be the architect's position of director in the matter, it was a good and proper thing that those who actually produced the thing should know how to do the whole of it themselves. That was what they were endeavouring to do in the Central School, *i.e.*, to make them masters of the whole of the subject, so as to be able if need arose to lead up a window, as well as paint it.

In addition to the cartoons and models previously referred to, Mr. Whall showed a portfolio of designs made by his pupils at the Central School—designs for details of stained glass work. What he particularly felt about those who made those designs was that they were fortunate in learning the design in connexion with the craft. This method had had influence on the work and had brought out a good deal of originality.

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The Chairman, in opening the discussion, said they had had just the sort of theory-and-practice lecture they wanted now and then—the more they had of them the better. If there was one subject more than another that architects, as a body, really knew very little about, it was, he thought, that of glass painting. Many architects who were supposed to supervise glass painting work in their buildings showed great ignorance of the whole matter, and their supervision was often very detrimental to the work itself. This was simply due to the fact that they had not grasped the craftsman's side of the work. Architects were not altogether to blame because so many glass-painting firms now were merely firms and not craftsmen themselves. Over and over again one found that some men who were able to make good sketches of glass painting were not able to work out the designs satisfactorily in actual glass. Architects, he might say, did wish to study the crafts, but what they lacked was the opportunity of getting into touch with the crafts. That was what the Association was seeking, and he thought that in time they would get what they wanted. It was one of the objects they had in view in seeking for new premises, viz., the opportunity for getting a thorough practical training in the proposed demonstration workshops—not as master craftsmen, as Mr. Whall had said—not of stained glass work only, but of the other trades—masonry, carpentry, &c. They felt the need of being more in touch with those trades than at present, though in stained glass there was so much more that appealed to an architect on artistic grounds than in the more practical trades. Glass painters had different ways of going to work. For instance, one said he would not use stippling on any account—that stippling was to be avoided to the utmost, because the one idea was to get the stain in the glass itself, and to have very little painting in it to do; another glass painter would state that he depended a good deal more upon modelling the painting on the glass; and another, in complete contra-distinction, he thought, to Mr. Whall, preferred to use his light greens instead of pure whites. So well-known a glass painter as Mr. Kempe used his light greens to a greater extent than his whites in some of his recent work. Glass painters seemed to go through certain evolutionary stages in this matter: one practice seemed to grow into another. While he thoroughly appreciated the importance of getting the full value of whites, as Mr. Whall suggested, yet he found it hard to condemn Mr. Kempe and others in their use of light green tones. One valuable suggestion Mr. Whall made was as to working up a small sketch in glass. It would be very useful to the client to have such a sketch of a proposed window, showing the arrangement of the lines and the disposition of the colour, for it would give him a better idea of what the window would look like when finished. As architects, they had a right to complain of bad cementing in glass. The weather often came through the glass on account of this bad cementing.

Mr. Francis Bond said he spoke as an outsider, never having designed a stained-glass window or made one; but he had had an opportunity of seeing more of the really best old glass than many of them, perhaps. He sympathised with Mr. Whall rather than the Chairman as to sickly green glass. In most recently erected windows this abominable green had been substituted for the beautiful pearly white which ought to be used. It was not merely Mr. Kempe, but people who ought to know better. At Mansfield College, Oxford, the windows had been filled with glass from Burne-Jones' cartoons, and the background was an unpleasant green; and at Mr. Sedding's Church of Holy Trinity, Sloane-square, the great window was nearly all green. He could not imagine how this use of green had crept into stained-glass windows. In the very early beginnings of stained glass, in the thirteenth century, a sort of horny white, or pea-soup white, was used; but they kept it to itself, and did not mix it up with ruby, blue, &c., while as time went on they got rid of green altogether, and gave up the grisaille windows as well. We ought to copy fifteenth-century glass rather than go back to the very archaic stuff produced at the beginning of the thirteenth century. The type of work that gave him the most pleasure was in the windows of the ante-chapel of All Souls, Oxford, or the east window at St. Mary's, at Ross, although the white there was perhaps overdone. It was delightful to see a window nearly all pearly white, and he was extremely sorry that we were having little but greens now. He had the opportunity of seeing lately a large amount of the later glass used in France just before the Renaissance glass came in. He had seen it in abundance both at Rouen and Troyes, and in those windows there was far too much colour. In the fifteenth century in England—not in France—we had pearly white glass, with as little colour as possible; the object appeared to be to get a stained glass window, if possible, without stained glass: with just a little patch, perhaps, of ruby or blue. That was the kind of window he would like to see revived. As far as he knew, the most beautiful windows to be seen were those he had referred to at All Souls' College, Oxford. They were most beautiful in colour and drawing. He thought it was an utter mistake to have whole scenes or views represented in stained glass windows. There was plenty of precedent for it, of course, and at the beginning of the thirteenth century little mosaic figures, about the size of soup plates, were introduced one above the other. They were perfectly illegible, and the whole thing was wrong. To try and get the conditions of canvas painting in stained glass was a mistake.

Mr. Hampden W. Pratt, in proposing a vote of thanks to the lecturer, said that he believed that, so far as architects were concerned, craftwork could be carried too far. It did not appear to be regarded as part of the architect's training or work to make the cartoons for stained glass windows, and it seemed to him to be a little questionable how far a knowledge of the craft was of any service to an architect if he was not going to carry it out in any way; though an architect, in practising in the craft, might, of course, acquire a certain amount of information which might be of use to him in designing any geometrical work. Where a practical knowledge of stained glass was useful to an architect was in the introduction of figure subjects in his buildings, or in a scheme of colour. As far as he understood it, in a craft school, where only elementary work was gone through, a student could not get very far on those lines. For instance, the colour question hardly entered into the teaching he would get in such a school. That was all very well for young fellows who were being brought up to stained glass work, but the training did not appear to go beyond the elementary stage, and did not touch more elaborate work which had to be carried out. One very noticeable point in the cartoons before him, without any painting on them, was the lines which the lead took; it afforded a lesson to architects who might be designing figures for glasswork, which could not be called geometrical figures, but which had some form about them. The leads in a particular cartoon he was looking at followed so much the whole design and treatment of the thing that it suggested that in such designs it ought to be considered that the lines of the figures in windows to be placed in churches and other buildings might, to some extent, counteract the architectural treatment of the window. A tracery window, for instance, was influenced for good or bad by those lines, and therefore, he thought, the architect and stained glass designer and worker should work together so as to produce the best result. He did not think that the training in stained glass work an architect would get in a craft school would be a very great help to him in carrying on his profession, because he would not have much to do with the practical carrying out of the work; but, on the other hand, a practical knowledge of carpentry or masonry, for instance, would be of much advantage to an architect. He would be glad if Mr. Whall could tell them how to obtain that streaky, cloudy effect which was often seen in painted glass. Some lovely effects could be got by the use of it. He would also like to know to what extent Mr. Whall thought it desirable to use glass with an irregular surface. In old examples some good effects were got by its use.

Mr. Francis Hooper, in seconding the vote of thanks, said that the title of Mr. Whall's lecture was "Stained Glass," but they had heard more about painted glass; that might raise the question as to how much painting was desirable. He was not able to admire some of the cartoons made by Mr. Whall's pupils which were before him, and he did not think that some of the designs could be worked out satisfactorily. As to the use of white glass, he believed that in the best period of English stained glass work, two-thirds of the glass was white. White glass seemed to be a rather appropriate glass to use for the background, as most windows were intended for the admission of light. Very beautiful effects could be obtained without painting at all. Many architects had very good ideas as to the possibilities in stained glass, and his belief was that it was not so difficult to find architects who understood stained glass as stained glass artists who properly understood it. In some of the drawings before him the leads were so shown that it would be impossible to carry out the design and he did not think that students should be allowed to work in that unworkmanlike manner.

Mr. Arthur S. Flower said that unfortunately most stained glass windows had to be protected by wire, and he would like to know if Mr. Whall knew of any method of safely dispensing with the wire, which not only spoilt the window but the tracery as well. Was it possible to strengthen the glass, or to put an outer glazing so as to protect the window and do away with the wire? It would be interesting to know how wide the leads of a window could be made. In St. Anselm's Church, Davies-street, the effect of the windows seemed to be due to the width of the lead. He differed from the Chairman on the question of green *v.* white glass. There was some fine fourteenth century glass to be seen at New College, Oxford, which had a full proportion of white. In the church of Holy Trinity at Goodramgate, York, also (which had been shut up, perhaps to save the authorities the trouble of pulling it down), there was some fine white glass to be seen. The green phase, which he hoped was a passing one, seemed to have originated with the Burne-Jones' windows at Oxford. But it was as well to bear in mind one point as to the use of white glass in a church; it was possible to overdo white glass in an east window where the congregation faced it; it was possible to get a glare which was undesirable. Light was wanted in side and clearstory windows, and these windows were often made too dark, while the east window was of dazzling brightness.

Mr. D. F. Fyfe asked Mr. Whall if he could give them any information as to the limitation of colour as applied to stained glass.

Mr. Matt Garbutt said that he felt about the green in Burne-Jones' windows what he felt about the women that that artist had drawn—it would be pretty if it was not so sickly. It should not be forgotten that glass was used for the purpose of allowing light to illuminate the interior of a building, and anything darker than white would limit the transmission of the light. The desirability of securing the widest range of colour consistent with free transmission of light should secure the retention of some actual white. As to painting on glass, most windows which had appeared to him to be really satisfactory would, he had felt, have been satisfactory without any of the painting at all. He would like to ask Mr. Whall how far the tie lines across large masses of one colour and of simple shape were necessary in stained glass windows. As to the general knowledge of crafts that an architect should have, he felt that Vitruvius was theoretically right in saying that an architect ought to know everything about everything; but as it was unfortunately impossible to know everything, they ought to get as near as they could to it. For a man to pretend to superintend a craft about which he knew nothing, was the height of bumptiousness. As Mr. Whall had said, with an amateur knowledge of a material, an architect was likely to do better than without it.

Mr. Geoffry Lucas said that surely the use of white or green glass depended upon whether the principal colour decoration was put on to the walls of a church or in the windows. If the decoration were put upon the walls, a white light was essential. In his opinion it was necessary that an architect should know something of the practical points of stained glass work, for one could not always rely upon instinctive knowledge in such matters. He would like to ask Mr. Whall if, when a stained glass artist got a commission, before he prepared a design he went to see the site of the work? He supposed it was necessary to do that, in order to get the right tone for a window; but perhaps it was not often done—which might account for a good deal.

The Chairman, in putting the vote of thanks to the meeting, said his previous remarks had been misunderstood. He did not advocate strongly the use of green glass. He said that Mr. Whall had taken a very strong view as to white glass, and he thought that there was room for another opinion, especially as such a man as Mr. Kemp and other stained glass artists used green glass effectively. Moreover, colour often looked patchy on a pure white ground. In some of the York churches, and in a good many other buildings, surely green-toned glass had been used satisfactorily. He confessed that his sympathies were in the direction of the use of a delicate green glass. Many architects felt that the Burne-Jones treatment of stained glass was not the proper treatment. He felt that until he went to the Church of St. Philips at Birmingham and saw the window of the Annunciation. That astounded him, for he had never had any idea that such a beautiful picture in glass existed—not that he thought it was the right treatment; it was more of a mosaic treatment, but the result was a dream of beauty and colour. He was much struck with the work he saw at the Central School on a recent visit. Mr. Hooper had somewhat severely criticised some of the specimens of glass and sketches exhibited. But it should be remembered that most of the specimens Mr. Whall had exhibited were merely students' work in various stages.

The vote of thanks having been put to the meeting and heartily agreed to,

Mr. Whall, in reply, said, as to an architect's wish to know about stained glass and his opportunity for learning about it, he thought the opportunity presented itself in technical schools and in visits to workshops—not only to learn about the way of working, and the proper use of glass, but also in all other materials which an architect had anything to do with. He should get into touch as much as possible with all the crafts. It was not for him to say what were the opportunities, but he thought that architects should avail themselves of every opportunity which did present itself. As to what the Chairman said about firms, one must not cast blame anywhere for the condition of any particular art; we were all more or less the victims of a phase of feeling which had preceded us and had taken the form of a great deal of false teaching. What he meant was this: the Gothic revival was to a large extent a theoretical and academic thing, and unfortunately it produced, on a large scale, what he considered was a very defective system of art education—viz., the entire disassociation of design from the crafts, which was embodied in the system known as the South Kensington system. That was changing, fortunately, but they were all the victims of it, and one of the things they were suffering from most was the sub-division of labour in the actual carrying out of craft work, which certainly lowered the quality of much modern work. That system required a strong effort to break through, a certain amount of artistic heroism to try and educate the worker to take up the whole of his craft. If they were able to work their way out of that system, well and good. He was glad that his remarks about white glass had given rise to so many interesting opinions. The Chairman had exaggerated him if he understood him to say that he desired to discard the use of green "whites." That was not so; what he pleaded for was the use of pure white in the highest light of windows. He used green whites very largely himself, but it was a mistake to make green the *key-note* of the windows, for it gave a window a dingy, bilious effect; whereas, a very moderate amount of white would make it pearly and sparkling—it was a matter of discretion how much to use. He had a great admiration for Mr. Kempe's work, and that gentleman used pure white glass to a large extent. As to the present tendency for green, he thought the tide was turning in the opposite direction. Burne-Jones, whose work he greatly admired, used green and white to a large extent. He did not consider the window in Holy Trinity Church, Sloane-square, successful as stained glass—there were curious defects in it from a craftsman's point of view. The window at St. Philip's Church, Birmingham, which the Chairman had referred to, was a glorious inheritance for the nation, and he hoped it would exist for a thousand years. As to Mr. Bond's remarks that it was wrong to introduce whole scenes into a window, that was becoming more and more his view, but he did not think it advisable to lay down a hard and fast rule; yet if the limitations of the craft were observed, that would sufficiently neutralise any realism, and make it a proper form of decoration. As to Mr. Pratt's remarks, he (the speaker) felt that as an architect directed stained-glass work, he ought to know all about its production. There were all sorts of architects and all sorts of glass painters, and it was a matter of detail how far it was desirable to direct a stained-glass artist or let him alone. As to the stained-glass artist, if he were a craftsman he would instinctively use the lead lines of his window in harmony with the architecture, and would at once perceive that he had not an open field to work in. The more of a craftsman he was, the more he would respect the conditions; he would know his own craft and would respect the architect's. As to streaky or cloudy glass, a great deal of it was the result of age, and it could not be imitated; the surface of the glass became corroded, and gave a beautiful cloudiness which could not and should not be imitated. But there was what was known as streaky glass, which was made streaky partly on purpose, and partly by accident. When glass was made in the pots it was coloured by the mixture of powders—the oxides of various metals—and as the bottom of the pot was reached there was more and more powder, and the glass became more and more streaky. This was a valuable resource to the stained-glass artist, and sometimes the streaking was exceedingly beautiful. He thought it was quite permissible to use such glass, as well as glass with an irregular surface. As to Mr. Hooper's remarks, what that gentleman had been criticising was students' work, which should always be treated with some indulgence. As to stained *v.* painted glass, there were many opinions as to how much glass should be painted. Mr. Prior, who was a great purist in the matter, held that no mat should be put on the glass. Given a particular kind of glass, there was a good deal to be said for that. Mr. Prior had for years been trying to improve the manufacture of the raw material, and with much success, as the examples he (the speaker) was showing would prove. They were a revelation to one who had never been accustomed to anything but the ordinary material. With such glass (which was very costly), and a good deal of time to deal with it, he thought that painting could be dispensed with. To use plain glass only would narrow one's range a good deal, but a slight film of colour was often sufficient to bring glass into harmony. On the other hand, there was a great danger in over-painting. His rule was to keep clear glass for the bright lights. As to leading, there were certain parts which must be leaded: where there were different colours leading had to be employed; but it was a nice point what to do with the parts when they were not compelled to lead. If they leaded up everything, as was done in the thirteenth century, they would have to limit themselves to a very elementary form of glass treatment. In the thirteenth century the eye was even leaded up. The question arose: How and where should they lead? He had found it a good rule to distribute leading fairly over the whole area of the window. As to the use of wire for the protection of windows, he cordially disliked it, but its use was often necessary where boys and stones were found. It was not possible to increase the thickness of the glass, or the substantiality of the lead. In a public school where he had placed a window, a boy recently kicked a football through both wire and window. One might resort to plate glass, and in the great east window at York it had been used. The effect was disagreeable, and in his opinion it was better to use the wire guard, which showed more of the window. The wire was an eyesore from the exterior mainly; there was not much to be seen from the inside where good glass was used.

The Chairman: Copper is the best material to use, I think; it takes a nicer colour.

Mr. Whall, continuing, assented, but said that both zinc and copper got very black. As to the thickness of lead, it could be made as thick as one liked, but the ordinary leads did not run to more than ½ in.; that was wide enough practically. In St. Paul's, Sir W. Richmond had used extraordinary leads with the glass in the windows; but he, the speaker, thought it must be only an experiment. The churches in York were a mine of beautiful stained glass. It was difficult to say much at that time that would be useful as to his views about colour, but he might say that, supposing he was using blue, he liked to use a large number of blues rather than to get his effect out of one single piece. The magnificent fourteenth century window at Gloucester was treated in that way; there were hardly two pieces of blue alike in it. He did not limit his range of colour at all; if he liked a colour he used it—but it needed discretion to use a wide range of colour. Given a proper, sympathetic treatment of white, they could do almost what they would if they were colourists. There was no particular limitation. As to tie-lines and how far they were necessary, that was a practical craftsman's matter. There were different features in a design, and they had to be leaded. When all that was necessary to get a colour effect had been put in, it would be found that few tie lines were necessary. As to other questions, glass took about ten minutes to fire when it was once in the kiln. Before he concluded his remarks, he wanted to say a word or two as to their position as architects in relation to craft work. He would take a simile from music; no composer was ever educated as composer only. All the great composers had been practical musicians; and in schools of music it was a *sine quâ non* that the learners of theory—those who were ambitious to become composers—should not only take up their own instrument, but also one of the instruments of the orchestra, so as to get in sympathy with the whole. He thought that was a lesson for other artists. If they learnt one craft fairly well they would be more in sympathy with all. He cordially welcomed any members of the Association who wished to see the actual glass (which was for Gloucester Cathedral) of some of the cartoons he had been showing them, to call at Messrs. Lowndes & Drury's, 35, Park-walk, Chelsea, on the 18th and 19th of this month, from 2 to 5 p.m., while any architect who wished to watch the craft of stained glass in actual progress could do so by visiting the Central School of Arts and Crafts, 316, Regent-street, any Tuesday, Wednesday, or Thursday evening between seven and nine.

The Chairman announced that the next meeting will be held on the 17th inst., when Mr. Cole A. Adams will read a paper on "Colour Decoration."

The meeting then terminated.

## THE ARCHITECTURAL ASSOCIATION.

### FIRST SPRING VISIT: THE CARLTON HOTEL.

ON Saturday, February 4, the Spring visits of the Architectural Association to works in progress commenced with an attendance of about one hundred members at the Carlton Hotel, now being carried out at the corner of the Haymarket and Pall Mall.

This building, which forms part of the block including the recently-erected Her Majesty's Theatre, was commenced under Mr. Phipps, the architect of that building, but on his death the work was undertaken by Mr. L. H. Isaacs and Mr. H. L. Florence, who are now completing it. At the time at which the latter took up the work, the walls were only a little above the ground floor level, and since then the plans have undergone considerable modifications.

Mr. Florence received the visitors and conducted them over the building, pointing out the various features of interest in the construction. The foundations are not more than about 16 ft. below the levels of the streets, and no great difficulty was experienced with their formation. Owing to the shallowness of the sewers in the district some difficulty was experienced in arranging the drainage, but this has been effectually got over, a sump having been provided which can be pumped out if at any time a high tide in the river causes a flood in the sewers.

The plan of the building consists of a simple hollow square. The large central area is surrounded in the main by an outer and inner series of rooms divided by a central communicating corridor, which runs round the whole building. At the ground floor level the central area is to be formed into a very spacious conservatory, roofed in at about the first floor level with an iron and glass roof. Above this roof the area is lined entirely with ivory white glazed bricks between the stone dressings of the windows and the stringcourses. The height of the area from ground floor to parapet is perhaps twice its diameter, and the light seems very satisfactory.

There are nine stories in the building, including the basement, and there are about five hundred rooms, over three hundred being bedrooms. The roof is flat, except that portion facing the Haymarket and Pall Mall, which is steep and covered with slate, but the whole roof is of iron and concrete, including the steep part. The flat is covered with asphalte. The whole construction of the building is fireproof, except as regards joinery, and the walls are plastered with asbestic plaster, which is said to be fireproof, and which is certainly stronger and tougher than ordinary plaster.

A specially noteworthy feature was the first floor over the great restaurant, which has been inserted in a very ingenious way by slinging the new floor up to the heads of the steel columns originally provided for the support of the floor above only. The reason for the insertion of this floor was that more accommodation was required on the first floor and the height of the great saloon was such that this could be done without making the latter too low.

A special feature of the hotel will be the great space allotted to the restaurant on the ground floor, the great *salle à manger* being 130 ft. by 45 ft. The glazed courtyard can also be used for suppers, &c., and two large rooms are provided for private dinners, while a spacious grill-room is placed in the basement.

The bedrooms are arranged in suites, many of which include a bath-room and water-closet, the good execution of the plumbers' work in connexion with which was particularly noticed.

The building at present has not arrived much beyond the carcase stage, and if the Association could be allowed to have a second visit to see the fittings and decoration it would doubtless be esteemed a great advantage. Numerous sheets of drawings showing the decoration about to be carried out by Messrs. Waring, and also the plans and constructive details of the building, were displayed for the visitors' inspection. While the latter were partaking of tea, hospitably provided by the architect, a vote of thanks was proposed by the President of the Association to Mr. Florence for his kindness in allowing the visit, and in conducting the party over the building, and for his hospitality. This was carried with hearty acclamation.

## *ARCHITECTURAL SOCIETIES.*

THE EDINBURGH ARCHITECTURAL SOCIETY.—The opening lecture of the session of this Society was held on the 1st inst., when Mr. A. Lorne Campbell occupied the chair. As the new President, he opened the season's work with some brief remarks, in the course of which he referred to recent successes of members in the R.I.B.A. studentship competitions. Mr. J. Edwin Forbes then read a paper on the "Abbeys of the Stewartry of Kirkcudbright," which was illustrated with limelight views.

LEEDS AND YORKSHIRE ARCHITECTURAL SOCIETY.—A lecture on "British Plaster Work: its Past and Future," was delivered by Mr. G. P. Bankart, of Leicester, before the Leeds and Yorkshire Architectural Society in their rooms, Park-street, on the 6th inst. The lecturer said that plaster work was an art-craft of very ancient origin. In the fifteenth century, after having apparently lapsed, it came again into practice. Lime of the best quality was chopped up, beaten with sticks, and subjected to three courses of preparation, ending with an admixture of marble dust to get the hardness and whiteness of the original stucco duro. The application of this was so far successful as to be greatly favoured by the Venetians and Mantuans, from whom the practice was handed on, *viâ* France, to England, whose monarch (Henry VIII.) imported workmen for the adornment of his house of Nonsuch, now lost to sight. The Italian art thus introduced into this country soon gave way to a coarser style of work. In the place of figure drawing, an arrangement of panels appeared, with patterns of small area that would repeat with ease. The Fish Room at Audley End was a capital example of this Early English school. Subsequently the size of the subdivisions expanded until it became the habit to divide ceilings into quarters. This ultimately led to the abandonment of the strict geometrical system. In executing the type of plaster work seen at Holyrood and other places, the design was drawn upon the ceiling, the stems and leaves employed being modelled in situ, with the details added as required. A company of gentlemen modellers was formed, who did much to preserve the best traditions of the art, which about the time of the Restoration acquired a new vitality. Later on the art again declined, texture was lost, and instead of showing individual feeling, plaster craftsmen came to resemble so much machinery made for working purposes. The lecture was illustrated by a large number of photographs and limelight views.

### *ARCHÆOLOGICAL SOCIETIES.*

ROYAL ARCHÆOLOGICAL INSTITUTE.—On the 1st inst. a general meeting of this Institute was held, when Mr. Emanuel Green presided. Mr. F. Peacock, F.S.A., exhibited two Dutch or Flemish tobacco-boxes, and Mr. Hilton, Hon. Treasurer, added to the exhibition twelve other brass and wooden tobacco boxes of very elegant and varied design. Dr. A. C. Fryer contributed a paper on "Christian Symbolism in St. David's Cathedral." He treated in detail the several emblems depicted on the monumental effigies, sculptures, carvings, and fresco paintings, most of which bear the date of the thirteenth and fourteenth centuries. Mr. Walter Cave read a paper on the Saxon crypt discovered in September, 1898, at Sidbury Church, Devon. In making excavations for some heating pipes traces of walling below the Norman foundation of the north wall of the chancel were found, which, being further exposed brought to light the outlines of the Saxon crypt. The crypt is practically a square chamber within the lines of the original Norman chancel with an entrance in the west wall and a flight of steps leading up into the nave. These steps are placed 2 ft. 8 in. north of the central line drawn through the church from east to west, the reason being that the steps leading to the presbytery would probably be placed as nearly central as possible, and, therefore, the steps down to the crypt would have to be on one side. Hence Mr. Cave concludes that before the Norman church was built there existed on the same site a small Saxon church with a nave and narrow presbytery and crypt below, the latter arranged in a manner that differs from all known examples.

BRITISH ARCHÆOLOGICAL ASSOCIATION.—At the fifth meeting of the current session of this Association, held at the rooms in Sackville-street, Piccadilly, on the 1st inst., Dr. Winstone in the chair, Mr. Joseph K. Aston exhibited, through Mr. Blashill, hon. treasurer, a number of objects found in excavating for the foundations of new additions to the Bounty Office, Dean-street, Westminster. The new building fronts on Great Smith-street, and the site is probably on the margin of Thorney Island, on which Westminster Abbey was founded. The objects exhibited included a perfect specimen of a Bellarmine bottle, or "Greybeard," and fragments of English and Dutch pottery, with eighteenth century china; several copper coins of George II. indicate the age of the stratum through which the excavations were carried. Three Nuremberg tokens of the sixteenth century were also found. Amongst numbers of bones of animals that were met with were several skulls of the wild boar and bones of the ox, possibly of the wild ox. Mr. Gould exhibited the rim of a vase found at Chigwell, Essex, interesting as showing the survival of ornaments of the Bronze age. Mr. Earle Way brought for exhibition a collection of Roman pottery from Southwark consisting of Samian and Upchurch ware of the best period, also some small glass bottles and a bone needle, with coins of M. Agrippa, Claudius, and Nero, and a Roman lady's hair pin of bone nicely carved and terminating with a crown. He also submitted a Greek coin of Alexander the Great in fine condition, and a rosary of polished stone beads from Burmah. The Roman remains were found on the site of a pile dwelling near Southwark-street, at the depth of 14 ft. from the surface, the hair pin at the depth of 9 ft.—The paper of the evening was by Mr. C. H. Compton, V.P., and formed the second part of a paper upon the Welsh Marches, read by him on December 7, last, in which the history of the Marches was brought down to the conquest of Wales by Edward I. Since that time the kings of England controlled the Lords Marchers by the exercise of their prerogative which grew from the necessities of government until it developed into a Court of a President and Council of Wales and the Marches, and as such was established by statute in the reign of Henry VIII., when Wales was united to the Kingdom of England. Some writers say that Edward IV. established this court, but a careful examination of the authorities shows that though that was his intention when he sent Prince Edward to Shrewsbury under the guardianship of Earl Rivers and tutelage of the Bishop of Rochester, the latter of whom was deputed President of the Prince's Council, he died without having constituted a Court of the President and Council of Wales and the Marches, such as was confirmed and established by Henry VIII. The jurisdiction of this court and its subsequent history was traced until the abolition of the feudal tenures in the reign of Charles II., and the abolition of the court in the reign of William and Mary.—Before the meeting separated a vote of congratulation to the Mayor and Corporation of Southampton upon the preservation of the Bar Gate was unanimously passed and directed to be transmitted to the Town Clerk by the honorary secretaries.

## Illustrations.

### WEST DOOR, CHARTRES CATHEDRAL.

THE two drawings which illustrate this celebrated doorway, as a whole, and the detail of the sculpture and ornament on a larger scale, are by Mr. E. Bennett, and are two of the drawings which obtained for their author the medal of merit for the Pugin Studentship. As before remarked, they are in our opinion the finest of all the drawings sent in for the Pugin Studentship, though the total of Mr. J. H. Rutherford's work rightly claimed the first place in the competition.

In regard to the work Mr. Bennett remarks, "The sculpture is of a warm-coloured stone, more plastic than the hard purplish grey stone of the general structure, against which it is detached in charming contrast of colour and shadow."

### "BRAHAN," PERTH.

THE illustrated drawings form part of the contract drawings of a house near Perth, for Mr. R. D. Pullar. These drawings were, however, set aside, and the building has been carried out from different plans.

Grange stone was intended to be used for the walls and green Westmoreland slates for the roof. The chief rooms were to have oak floors and panelled walls, and the ceilings of hall and dining-room were to be formed of oak beams. Over the washhouse and servants' hall wing was a billiard-room, 45 ft. 4½ in. long and 22 ft. wide, with daïs at end and barrel-vaulted plaster ceiling.

The drawing was exhibited at last year's Royal Academy.

### STUDY FOR A CHURCH IN SOUTH LONDON.

THE drawings here published are preliminary sketches for a new church for a Public School Mission. The site is a small triangular plot of land between the present mission chapel and a large club-house, with only one street frontage. The church is, therefore, planned with two naves converging in a chancel, and is designed to be built in red brick with stone dressings, and plastered inside. The neighbourhood being smoky and squalid, an effect of height and complexity is aimed at in the interior; the details, however, are kept severely simple. As there is no immediate prospect of the church being built, the design has not advanced beyond the initial stage of a first sketch. In execution it would probably be modified in many respects.

CHARLES A. NICHOLSON.

### *COMPETITIONS.*

PUMP-ROOMS, HARROGATE.—The Harrogate Corporation recently invited competitive plans for a new pump-room and alterations to the present structure. Mr. George Corson, architect, of Leeds, who was the assessor, has made his awards as follows:—For new pump-room —(1) 50*l.*, Mr. F. Anderson, London; (2) 30*l.*, Mr. A. A. Gibson, Harrogate; (3) 20*l.*, Messrs. Eade and Johns, Ipswich. For an altered and enlarged building—(1) 30*l.*, Mr. F. Anderson, London; (2) 20*l.*, Mr. W. E. Jenkinson, Cardiff; (3) 10*l.*, Messrs. Hunt and Shield, London.

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STUDENT'S COLUMN ARTICLE.—Owing to pressure of other matter in this issue, our Student's Column article on "Architectural Hygiene" is held over until next week.

### THE SURVEYORS' INSTITUTION:

#### DISTRICT AND VESTRY SURVEYORS.

A MEETING of the Surveyors' Institution was held on Monday in the temporary premises, Savoy-street, Victoria Embankment, W.C., Mr. Robert Vigers, President, in the chair.

The minutes of the last meeting having been read and confirmed, and some donations to the library and the library fund having been announced, the hon. secretary read the result of the Students' Preliminary Examination. The list of successful candidates appeared in our last issue.

Mr. E. W. Hudson then resumed the discussion on Mr. W. Weaver's paper on "The London Building Act and the Official Supervision of Buildings."* It was natural, he said, that District Surveyors should feel that they were, to some extent, on their defence, and that their statements should seem to be of an *ex parte* character. He thought it might well be asked: What is the need of so drastic an alteration as that which was proposed? Who was asking for it, and who was to benefit by it? He thought that in attempting to remove certain evils they might fly to others they knew not of. Certain events had clearly been leading up to some alteration in municipal government, and to the introduction of some change for the glorification of the Vestries. By all means let the Vestries be glorified; but who wanted this change in building supervision as an item in that glorification? The public were satisfied with the manner in which the building law of London was carried out, and they would not gain by having one official to do the work at present in the hands of the two officials—the District Surveyor and the Vestry Surveyor. Neither architects nor large builders desired the change, though the speculative builder would probably prefer Mr. Weaver's ideas, as he would be enabled to put the cost of supervision on the shoulders of the ratepayer. But was it fair to take such a burden from the profit-maker and put it upon those who already suffered from the delinquencies of those gentlemen? Where was it possible to get plans passed by one official? Even on building estates belonging to the Office of Works there were the Crown Surveyor, the District Surveyor, and the Vestry Surveyor to deal with. Mr. Hudson then referred to the provincial method in regard to the sanctioning of plans—a method which invariably resulted in serious delay. There was, in his opinion, one and only one anomaly in the system appertaining in London, viz., the non-correspondence of boundaries—the rectification of which was not a great difficuly. From the map just issued by the *Builder*, it would be seen how great was this overlapping. Supposing the change advocated by Mr. Weaver carried out, where could be found the forty or fifty *rara aves* for the new positions? If they were found, as he believed they might be, they would not have time to perform their duties, and the inspection of plans, probably, would be left to deputies. He felt that District Surveyors ought to be retained; that there should be a rectification of boundaries; that the respective offices of the District Surveyor and the Vestry Surveyor should be contiguous, and that matters of joint interest should receive joint approval.

Mr. W. Eve said that he had been reminded, in listening to the discussions which had taken place on Mr. Weaver's paper, of an incident that occurred 1800 years ago at Ephesus. Demetrius and his fellow craftsmen were very much annoyed at the possibility of the goddess Diana being overthrown, though they were candid about it and admitted that if that happened they would have no more shrines of the goddess to make. They were not so much concerned about the goddess as about the shrines. He ventured to suggest that the District Surveyor had rather taken up that position. For two hours Demetrius and his friends had cried out, "Great is Diana of the Ephesians," and for about the same time the District Surveyors had cried out, "Great is the District Surveyor of London." The mistake that had been made by those who attacked Mr. Weaver was in thinking that it was sought to do away with the office of District Surveyor. That was not so; what Mr. Weaver desired was, first of all, that the District Surveyor should be under control, and that conflicts between authorities should be avoided. If District Surveyors were injuriously affected by the change, should it take place, he saw no reason why they should not be compensated. As to the objections raised to the proposed change, he thought that the first objection was a sound one, viz., the delay which occurred in getting plans passed outside the metropolis; but there was no reason why the law should not be changed on that point, and a limit put within which approval or objection should be made. At the present time in London there was a limit as to the approval of or objection to plans for drains, and he did not see why that should not apply to plans for buildings. Another objection was as to the cost, but he did not see why the change would necessarily result in the cost of building supervision falling upon the ratepayers. In West Ham, Eastbourne, and other places, the authorities had power to charge fees as in the Metropolis at present, and those fees would go towards paying the official who performed the duties of the District Surveyor.

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* See our issue for December 17 last for a report of the meeting at which the paper was read, and January 14 for a report of the continued discussion.

Major Isaacs said that for forty-three years he had been Surveyor to the Board of Works for the Holborn District and having been professionally educated in the office of a District Surveyor he felt he was well versed in the duties of both District Surveyors and Vestry Surveyors. The fact that he was Surveyor to the Holborn Board did not prevent him carrying on practice as an architect and surveyor, as he had done during the whole of that time. He generally approved of the conclusions to which Mr. Weaver had arrived. The present system of giving notice to both Vestry and District Surveyors was an absolute waste of time for the public, which should be prevented by the Legislature. The time, also, of the building public was wasted in the "reverse double process" as to depositing plans referred to by Mr. Weaver—a system which was absolutely ridiculous in the opinion of all men of business capacity. There were also other matters in which the two officers were continually overlapping in the discharge of their duties. It was the practice to put in front of a house, under the public footway, the vaults which received coal, &c., and the two officers supervised such work, which was manifestly the work of one man. Major Isaacs mentioned other matters of the same kind, and proceeding, said that the greatest blot on the present system in his opinion was as to the payment of District Surveyors. Could anything more ludicrous be conceived than that the man who was watched by the District Surveyor to see that he did not contravene the law should be approached at the end of the business for a fee which the Legislature had said should be his reward for the trouble he had taken in the matter? It was wrong in principle, and it was degrading to the District Surveyor. In some east end parishes where the speculative builder abounded there was a tendency on the part of that gentleman to haggle with the District Surveyor, and sometimes, where there were a number of houses being erected, the District Surveyor took a little less than his full fee, whilst at other times he lost his fee altogether where the builder proved to be a "bolter." Surely such a state of things should be terminated. As regards dangerous structures, the Local Surveyor was just as capable of dealing with them as the District Surveyor. In the case of public building, however, he agreed with the observations which had been put forward as to the necessity of a skilled architect being in control of those structures. As to the argument that District Surveyors were practically responsible to no one, surely such an anomaly should be discontinued. It seemed incredible that gentlemen receiving in fees 47,000*l.* per annum should be responsible to no one. If that was really the position of affairs, the sooner it was ended the better. There was a great deal in the position and in the duties of District Surveyors that could not raise the office in public estimation, or increase the professional status of those officers, and it would be a good thing for District Surveyors if the proposed change came about. If the change were made, he thought that District Surveyors would, in many instances, have the best chance of succeeding to the position of the new official.

Mr. A. W. Tanner said that as District Surveyors they had not been impeached, but they could not fail to see that there existed a strong opinion that a change should be made in the present system. Speaking of the fees of District Surveyors, he said that there were sixty-five District Surveyors at the present time, and if they were paid by salary he thought the number would have to be doubled. He could not agree with all the deductions of Mr. Weaver, but he agreed with the sentiment which had prompted him to write his paper, viz., that the proposed new municipalities in London should have proper dignity given to them, and proper additions made to their duties.

Mr. A. A. Hudson said that what had to be considered was the interests of London as a whole in regard to the proposed change, and in his opinion district surveyors performed duties which could not be carried out by parish surveyors. It seemed to him that, for the benefit of the whole of London, some central authority should deal with roads, sewers, frontage lines, and open spaces; those matters affected the welfare of the whole community. As far as he could see, the anomalies referred to by Mr. Weaver were very few and not serious; no one had suggested that district surveyors should be abolished on the ground of want of performance of duties. What was wanted in the administration of the Building Act was elasticity, and he thought that powers of dispensation might be given to a central authority somewhat on the lines of the Tribunal of Appeal. He took a great interest in that Tribunal, because it was a pet scheme of his to see technical tribunals established in London, for he felt that they were wanted. Somebody should have a dispensing power in dealing with this very hard Building Act, in order to make it applicable to the great variety of building and conditions which must exist in a great city like London.

Mr. F. Wallen said that under the Building Act of 1844 the streets and sewers were controlled by the central and local authorities and the houses by the District Surveyor, a plain line of demarcation being drawn at the front of the house, and the District Surveyor having the supervision even of the sanitary arrangements of it; but this had been altered by more recent legislation, and it might be desirable to return to the former legislation in that respect. Mr. Weaver's suggestion that the Local Authority could by periodical inspection discover violations of the law was inapplicable because neither the Local Authority nor the District Surveyor has any power to enter upon buildings for that purpose, and he quoted the recent decision of the High Court in the case of the St. Pancras Vestry *v.* The North London Collegiate School for Girls in proof of his statement. The County Council could direct where the office of a district surveyor should be. He did not think the Council had considered the desirability of making a district co-extensive with that of the various local authorities, but he thought it would be a good thing if they did so. There was a fallacy in Mr. Weaver's paper as to the approval of plans; neither the Local Authority nor the District Surveyor had power to require the deposit of plans; all they could do was to insist upon notice being given, but in regard to public buildings there was a by-law of the Council that plans must be deposited. In the case of private buildings the District Surveyor might require to inspect the plans, but he had not the power to approve them; his duty was to visit the buildings continuously and prevent any infringement of the Building Act.

Mr. W. Weaver, in reply, said he felt amply rewarded for any trouble he had taken in the preparation of his paper by the evidence shown during the discussion that he had dealt with a subject of great interest to surveyors. Before dealing with the arguments and statements advanced in opposition to his proposals, he might explain that in the preparation of the paper he had endeavoured carefully to avoid using any words likely to wound the feelings of the district surveyors in the metropolitan area, and he confessed to being considerably surprised and a little pained to find that a paragraph in the paper was thought to be open to be construed in a different sense from that in which he wrote it. He alluded to the observation that "the office of district surveyor was formerly sought, not so much on account of the direct income attaching to it, but for the opportunities afforded for enlarging the private practice of the official." What he had meant to convey was that, as he believed, many persons having no preference for any particular architect would naturally employ the district surveyor, first on account of the responsibility of his official position being a fair guarantee of his integrity and skill, and secondly on account of his thorough knowledge of the Building Act, which enabled him to deal economically with his client's money. He would be sorry if his remarks were misunderstood, and he took this earliest possible opportunity of removing any false impression which his words might have conveyed. About twenty speakers had taken part in the discussion of his paper, and of that number ten were men who filled or had filled the position of district surveyor. In the first place he might point out that many of the speakers' arguments were founded on the erroneous assumption that he proposed to transfer the duties of the present district surveyors to the present parish surveyors, many of whom, it was alleged, were unfitted by training to undertake the duties of the first-named officials. But he had not recommended any such transfer. What he did clearly advocate and recommend was the amalgamation of the two offices; that one competent engineer and surveyor should be appointed in each of the proposed new metropolitan districts to discharge the present dual (and to some extent conflicting) duties now carried out by the two officials. He had, moreover, pointed out the necessity of proper skill and knowledge on the part of the new official, which might be ensured by making the appointment subject to the passing of technical examinations. Very few appointments of town and borough engineers or surveyors were now made without the candidate being subject to such examination, and in view of the extensive growing use of iron and steel in modern building construction, it was a question whether even more importance should not be assigned to the constructional branch of the examination than was afforded even by the qualifying syllabus of the Royal Institute. Apart from legal knowledge, the examinations for district surveyor and for building surveyor were almost identical, and there was nothing requiring the district surveyor to be a skilful architect with a knowledge of styles, architectural decoration, and so forth. As stated in the paper, it appeared to him unreasonable to appoint an architect to the position of district surveyor on account of his architectural skill, the non-user of which was a condition of his employment. It would be very much like employing skilled artists to execute house painting. With reference to another general contention raised by the district surveyors, viz., that their present official independence was preferable, from a public point of view, to service under the control of a council or corporation, he was willing to admit the weight of the argument. On the one hand there was the risk always attendant upon an official whose comfort and advancement—to a large extent of his personal interests—depend on his popularity, rendering him hard of hearing to the strict call of duty; and on the other hand there were a body of officials appointed by the County Council, but not responsible thereto, and carrying out their duties uncontrolled except by judicial authority. No one is over-fond of being supervised, but the best of us were the better for being looked after a little, and even in the case of the district surveyors the supervision of a district authority might prove a healthy stimulus to exertion. Balancing the advantages and disadvantages of the two systems, he was of opinion that supervision under the authority was preferable to the present irresponsible supervision, though he should like the officer of the former to have a right of appeal against unjust treatment, as in the case of poor law officials. In concluding his remarks on the general criticism of the district surveyors, he would point out that as his recommendations proposed the diversion from their coffers of a gross income of about 48,000*l.* per annum, it was not to be expected that as a body they would receive his proposals with favour, and this consideration must not be lost sight of in weighing the arguments. Coming now to some of the special points raised by individual speakers, he found that Mr. Blashill stated that there were only one or two unimportant matters in buildings not covered by the district surveyor's duties. In reply he would point out that the sanitary arrangements and water supply of buildings under the Public Health Act and Metropolis Local Management Acts, with which the district surveyors had no concern, were important features in a building, and that under the district surveyor and Building Acts a building might be erected which has afterwards to be altered to meet the requirements of the parish surveyor and the Public Health Act. Only recently, in Kensington, in a row of twelve business premises, of a rental value of from 400*l.* to 500*l.* each, the whole of the ranges of basement water-closets were found to be gross infringements of the latter Act, although not contrary to any provision of the Building Act. A large outlay had to be made in altering them, and the result was only a botched job, whereas if the plans had been submitted to the surveyor before building, they might have been altered, and a much better result attained, probably at less expense. Again, in many instances of large blocks of flats, he had found, when the drainage plans had been submitted, that the provisions as to light and air to water-closets and as to access from living-rooms, &c., had not been complied with, and alterations in the building had to be made to meet these omissions. The question of provision for adequate water supply involved considerable supervision and a knowledge of the supply to the district, and whether there were intermittent or constant pressure. He had recently supervised a block of flats where the supply to the upper stories had to be assured by a pump in the basement worked by an electric motor, and in many cases the Vestry had had to compel the removal of cisterns fixed in most unsanitary positions. With reference to the question raised by Mr. Blashill as to the method of supervision, it could, he thought, be solved by following the practice of the large towns of providing qualified building inspectors, working under the advice and supervision of the chief engineer and surveyor. With regard to dangerous structures, Mr. Blashill stated "that he hardly knew an instance of an accident having happened through any negligence of the district surveyor." He did not allege any negligence; but he thought that, as a rule, the duty of the district surveyor relative to dangerous structures only commenced when his attention was called to them. It was not his duty to perambulate the streets and look for defects. In his own experience at Kensington he could call to mind some half-dozen cases of buildings collapsing, but in none of them could he attribute the slightest negligence to the district surveyor, nearly the whole of the cases being attributable to building too fast or in bad weather. His contention was that the Local Authority which is now vested with power to enforce precautions for the public safety whilst buildings are being *pulled down* should have equal rights while they are being *put up*, and during their existence. In the cases of fees paid to district surveyors in relation to new streets, vaults, and projections, the public was really paying twice, as the duties are also, and must necessarily be, discharged by the parish surveyor. He thought he had generally met Mr. Payne's remarks, but one or two points were raised which had not been specifically dealt with, first as to legal proceedings, and secondly as to private practice. With regard to the first, it was, he thought, very desirable when a case was taken into court that it should be conducted thoroughly, and he feared that in some cases conducted by district surveyors an adverse decision had been given when perhaps legal skill would have scored success, and this adverse decision was afterwards quoted as a precedent. He saw no reason why the County Council legal staff should not conduct the building cases of the District Councils, but he thought it would be better still to invest the present Tribunal of Appeal with power to determine finally all questions arising out of the Building Acts. The Tribunal should, he held, be made a much more influential and important body, armed with full powers to deal with this distinct class of subjects. Under the present system a magistrate, after dealing with the ordinary charges of a police-court, must often give his mind to the solution of questions requiring technical skill which he could not be expected to possess. The question of private practice Mr. Payne and other speakers appeared to regard as very important, while, on the contrary, Mr. Blashill attached little importance to it, or at any rate to the private work arising in the surveyor's district. But he still held to the opinion that it was unwise to allow a public official to practise privately, and he thought the London County Council had acted wisely when they introduced the prohibition. Some of the speakers, including so competent an authority as Mr. Collins, saw no objection to the duties of architect, surveyor, and building surveyor being fulfilled by one individual—perhaps not in London, or more especially in the City. With regard to the observations of more than one speaker as to the impossibility of the amalgamated official being able to give personal attention to the combined duties, he would point out that under the present dual system delegation of work to assistants must of necessity exist, and, given the right man at the head of affairs, no disadvantage to the public need arise therefrom; but, on the other hand, by a skilful and judicious dovetailing of the different duties, effective and economical results were attained by having the various branches of the work controlled and directed by one competent chief. It was said by Mr. E. W. Hudson that builders were perfectly satisfied with the present state of things, and this might possibly be taken as an argument in favour of divided supervision. Mr. Hudson anticipated extreme difficulty in finding suitable men to discharge the amalgamated functions as suggested in the paper, but he did not think there need be more difficulty on this head in London than was experienced in the large provincial towns. He agreed with Mr. Eve that there would be no difficulty, should the proposed change be made, in making it compulsory that assent to or dissent from plans should be stated within a given time, as is the case now with reference to drainage plans, which must be refused within seven days, or otherwise consent is implied. As a district surveyor Mr. A. W. Tanner admitted that there was a public demand and necessity for an alteration in the present system, and alluded to the ignorance on the part of the general public with regard to the individuality of the district surveyor. He could entirely endorse that statement, for he (although a vestry surveyor) continually received letters addressed to the district surveyor calling attention to matters within the sphere of the district surveyor's duties. This was a clear indication of the public impression that the district surveyor at the district town hall was such an official as he had recommended in his paper. The desirability of securing the independence of the supervising official was strongly urged by Mr. A. A. Hudson, who supported his argument by instancing the position of an architect in relation to a building contract, but he (Mr. Weaver) ventured to say that the instance did not greatly help his argument, as every architect was generally very well looked after by his employer, and indeed, in a recent case, a public body had been officially censured for not looking after their architect sufficiently. The elasticity advocated by Mr. Hudson should, he thought, be secured by appeal to the special tribunal in large matters, while in small matters the local surveyor would decide. With regard to the question of fees *versus* salary, he was of opinion that under the present system of building supervision fees were to be preferred to a fixed salary for work varying greatly in quantity, although he agreed with Mr. Wheeler, Q.C., that it was wrong in principle to receive fees from the builders whose work was supervised. Under the change advocated in the paper the chief surveyor would, of course, be paid by fixed salary, and his staff would be increased or reduced to suit the variation in work. Whether fees should be charged to builders or not was also a question of argument, but he thought it mattered little which course was adopted, or whether the fees were covered by the rent or by the rates. No argument had been advanced which had shaken his conviction that the local work of the Metropolis should be vested in the District Councils or Corporations managing the several areas into which so vast a city as London must of necessity be divided; that such local work should include the duty of seeing that safe, properly built, and efficiently sanitated and healthy buildings were erected and maintained in the district, and that able and efficient officers should be appointed by such District Councils or Corporations to discharge the duties connected with such work. As to the conditions of such appointments, various views might fairly be taken, but personally he was of opinion that the appointment and dismissal of the surveyor and engineer of each Council or Corporation should be subject to the approval of the Local Government Board, as was the case at present with respect to medical officers of health and poor law officers. This course would insure the appointment of competent men at proper salaries, and would safeguard the officials against the risk of unjust treatment.

It was announced that the next meeting will be held on the 20th inst., when a paper will be read on "The Management and Valuation of Brickfields."

### *Country Meeting at Bristol.*

It has been decided, on the invitation of the Somerset, Gloucester, and North Wilts Provincial Committee, to hold the next Country Meeting at Bristol, on April 26 and 27. The first day will be devoted to papers and discussions, with a dinner in the evening; the second day to excursions to various places of interest in Bristol and its neighbourhood.

## MAGAZINES AND REVIEWS.

THE *Art Journal*, having completed fifty years of consecutive monthly publication this year, is celebrating its jubilee in a very interesting manner, by issuing, during the course of the year, twelve extra numbers consisting of reprints from the early volumes. Here we have the old decorative head piece with the three female figures representing Sculpture, Painting, and Architecture, amid a selection of quasi-classic bric-à-brac, such as was in vogue in those days. We recognise in the first number many illustrations once familiar to us, the style of which speaks of the change in taste and in the manner of engraving since that day. This partial republication forms an interesting standard of comparison. In the regular issue of the *Art Journal* the articles on "The Architecture of the London Clubs" are continued, and the Reform Club, the work of a great architect, affords more excuse for these articles than the illustrations of some other clubs which have appeared in the series. In the same number Mrs. Bruce Clarke commences a series of articles on the fascinating subject, "Jewels, Ancient and Modern."

The *Magazine of Art* has as frontispiece a chromo-lithograph from a study by Millais for his early picture "The Ransom"—said to be a study for the head of a little girl, but looking more like that of a woman. The number includes an article on Mr. Abbey and his work—it seems every one must have articles written about them in their lifetime nowadays; we think the practice tends to insincerity of criticism, as the writer cannot really go freely into the merit of work when the criticism (?) may be read by the artist, who is perhaps a personal friend of the writer. The symposium on the subject "Is Photography among the Fine Arts?" is continued by Herr Khnopff, who we are glad to see inclines to the negative view (no pun was intended), and winds up with a salutary quotation to the effect that "photography has every right to be itself without attempting to ape anything else. . . . . It must not sacrifice what ought to be its very essence, its life, its one superiority over every other work done by hand—that is, its literal truth." That is common sense and good criticism, and we commend it to the attention of those photographers who try to be "artistic" by taking blurred photographs. There is an interesting article on a modern Italian painter, Ricciardi Meacci, the illustrations from whose works, however, strike us as mere revived Renaissance, and therefore of doubtful value. "The Van Tromp pictures of Turner," by the Curator of the Holloway College Gallery, deals with a special subject of some interest both from a natural and an artistic point of view.

The *Artist* contains an article, with some illustrations, on the subject of some modern German sculptors, and a series of illustrations of "A Scheme of Design for a Dining-room" by Mr. A. H. Baxter. We do not care much for the general elevations of the walls, but the smaller details are piquant and original.

The *Architectural Review* (Boston), vol. vi., No. 1, contains among its illustrations a very "severe" Greek façade of the Pawtucket Free Public Library—purely scholastic architecture, but at all events very good of its kind; Messrs. Cram, Goodhue, & Ferguson are the architects. The Post Office and Court House, San Francisco, is a piece of official Treasury architecture, broader and simpler in treatment than official architecture generally is in this country, but not first-class. The main article is one by Mr. Blackall on "Good and Bad Colonial Architecture," with a number of small illustrations of buildings, by way of distinguishing between what to admire and what to condemn.

The *Studio* (January 16) devotes considerable space to an article by M. Gabriel Mourey on the works of M. Cottet, whose striking picture, "Ceux qui s'en vont et celles qui restent," was mentioned in our notes on last year's Salon. He bids fair to fill an important place among the modern French painters of peasant life. "Textile patterns from Suffolk rood screens" is an interesting subject treated by Mr. E. F. Strange, with a good many illustrations of detail from these works. Among the other subjects treated and illustrated are the works of Mr. Thayer, the American painter, and "Modern Lithography in Germany."

In the *Architectural Record* (quarterly) the problem of the American tall building is treated by Mr. Montgomery Schuyler, under the title "The Skyscraper Up to Date," with a number of illustrations of New York tall buildings. Mr. Schuyler seems to think that the Bayard Building, by Mr. Louis H. Sullivan, solves the architectural problem best. Here the piers between the windows are accentuated and continuous right to the top of the building, where they are connected by an arcade, with a frieze with figures of angels above. The angels are all very well, but the treatment with continuous vertical piers is to our thinking rather a warehouse than an apartment-house treatment. In the same number is an illustrated article on the Alcazar, Seville, and one on Palladio and his work by Professor Melani. We fear there is rather a tendency, after the opprobrium cast on the memory of Palladio during the Gothic revival period, to go to the other extreme and raise him again into a "cult," which will be a mistake. Mr. J. B. Robinson continues his suggestive articles on "Principles of Architectural Composition."

The most interesting communication in the *Antiquary* is that of the Rev. W. Falkiner on an Irish Crannog or lake house found beneath what is now dry land but was once a lake—"Lough-a-trim," "The Lake of the elder trees." A section is given of the erection as it once was, the piles on which it rested still existing *in situ*. On the ancient refuse heap, which was reached in excavating, numerous objects were found—bones of oxen, wild-boar jaws with tusks, a whet-stone, part of a grindstone, bronze pins, several horn hair-combs, &c. The remnant of one of the latter implements is figured.

The *Edinburgh Review* includes a weak article on "Burne-Jones: His Ethics and his Art," which is merely a repetition of the present popular feeling about this artist, in whose work we should say that "ethics" is just the element the painter studiously avoided. The article is not up to the level of some of the art-criticism which has appeared in this review, and is in fact a direct contradiction of the tone of articles which appeared not long since in its pages, so that there seems to be under the present management a lack of continuity and principle.

In the *Quarterly* a short article on "Stained and Painted Windows" is given in the guise of a review of Mr. Day's recent book, of which the writer takes a very favourable view, and from which, to say truth, he seems to have borrowed most of his ideas.

*Moring's Quarterly* has an essay on the subject of the Tanagra terra-cotta figures, partly with the view of arriving at some definite conclusion as to their meaning and origin. The essay (which is illustrated) is to be continued in future numbers.

The *Contemporary Review* contains an article, by Mr. Shaw-Lefevre, on "London Street Improvements." His opinion on such a subject has no particular weight, except in regard to the financial and what may be called political aspects of the question; but we concur in thinking that what is wanted more imperatively than widening existing streets, is the formation of new and wide streets through districts at present occupied by inferior property; though the process of widening the old ones should be kept in view as every opportunity occurs.

The *Century* contains an article by Mr. F. Courtland Penfield on "Harnessing the Nile," a popular article on the reservoir system. The writer gives full value to the protests which were made against the destruction of Philæ. There is an article by Miss Marie L. Van Vorst on the M. Boutet de Monvel, the French painter, and a short critical estimate (a very fair one) of Opie, accompanying an engraving of one of his pictures.

*Harper* contains an article on "The Astronomical Outlook, as Related to the Perfection of our Instruments and Methods of Observation," by Mr. C. A. Young. He seems to think there is room to hope for much greater powers in future telescopes than are now available; but then there is always the question of this troublesome atmosphere of ours, and its distorting and obscuring effects, which must increase with every increase of optical magnifying power. The article is worth attention, however.

*Scribner* is entirely devoid of artistic or scientific contributions except the usual "Field of Art" article, dealing this month with "Æsthetics in our Universities," by Mr. H. R. Marshall, who appears to think that "university teaching in æsthetics is in no respect developed in correspondence with that in other departments of human interest:" a complaint which may surely be echoed in the Old Country.

In the *Revue Générale* M. Arnold Goffin continues his illustrated articles on the history and art of Florence, of which the third number is given in this month's issue.

The *Pall Mall Magazine* gives some illustrations of monuments to naval men, as accompaniments to an article on "Naval Heroes at Westminster Abbey."

The *Gentleman's Magazine* includes an article of some interest, by Mr. Percy Fitzgerald, on "The First Printed Book and its Printers"—to wit, that known as the Mazarin Bible.

We have received also the *Genealogical Magazine*, the *English Illustrated*, *Knowledge*, *Timber* and the *Quarry*, for the current month; and the *Indian Engineer* for December.

## SANITARY INSPECTORS' ASSOCIATION:

### SIXTEENTH ANNUAL DINNER.

THE annual dinner of this Association was held on Friday last in the Venetian Salon, Holborn Restaurant, when nearly 200 guests sat down, the company including Sir John Hutton, who presided, Sir Douglas Galton, representing the Sanitary Institute, Sir James Crichton Browne, Sir H. Gilzean Reid, Dr. Farquharson, M.P., Mr. Preston, the Master of the Carpenters' Company, Professor Banister Fletcher, Venerable Archdeacon Sinclair, Venerable Archdeacon Stevens, Mr. T. McKinnon Wood, Chairman of the L.C.C., Mr. Russell Spokes, of the L.C.C., Mr. H. Lovegrove, Mr. J. Brydone, Dr. Shirley Murphy, Dr. Lewis Thomas, Dr. Milsom Rhodes, &c. After the President had proposed the loyal toast, Archdeacon Sinclair gave that of the Houses of Parliament.

Dr. Farquharson, in reply, pointed out the difficulty of getting sanitary questions properly considered in the House of Commons. They had very few enlightened sanitarians in the House.

Sir John Hutton then proposed "The Sanitary Inspectors' Association," which, he said, was making satisfactory progress, and was growing in numbers and in experience, but for the complete accomplishment of their aims and the further extension of the Sanitary Inspectors' Association they required from each member a good deal of individual effort. It was disappointing to find that the reasonable claim of the Association to be represented on the new Examination Board for Sanitary Inspectors was still resisted. Why sanitary inspectors should be the only persons excluded from an examining board which would decide upon the qualifications of sanitary inspectors, passed his comprehension. They would certainly not rest satisfied until some sanitary inspector had found a seat at that board. Referring to the precarious tenure of his office by the sanitary inspector, the President pointed out the difference in the status given to the Medical Officer of Health and the other sanitary officers by the Public Health Act. Article 9 provided that until a medical officer died or resigned, or was removed with the consent of the Local Government Board, he shall retain his appointment, but Article 10 did not make any such provision for the sanitary inspector. A change in the law was needed here, which they must set themselves to accomplish. On the question of the remuneration of sanitary inspectors, the President advocated an increase of the minimum salary. A man fit to occupy the position could not be properly paid with a miserable pittance of 70*l*. a year; the minimum ought to be at least 150*l*., with a right to periodical increases. In conclusion, he referred to the scheme of superannuation, by which the sanitary inspectors desired to make provision for themselves by their own subscriptions. The London County Council had made a similar arrangement at the Blackwall Tunnel, the dangers incurred in the construction of which were of a special character and required a special provision, that could not have been made without a considerable subsidy from the Council.

Mr. T. J. Moss Flower, C.E., the Chairman of the Council of the Association, responded to the toast. Referring to the remarks of the President on the hoped-for increase in their numbers hundreds and thousands, the Chairman said the Association had achieved a good measure of success. If they could not boast of thousands of members, they had something like 700, and there might be hundreds and hundreds more. In their ranks they had not only the sanitary inspectors of London, but some of those from various parts of the United Kingdom. It was an object to be aimed at to have one association for the whole United Kingdom, instead of—as was actually the case—one association in Scotland, another in the North-western district, one in the South-western district, and another in South Wales. To secure this did not seem possible at present, but if they put their shoulders to the wheel they might yet be able to bring about this desirable result. The Chairman then referred to a recent case which had come under his own knowledge that illustrated the evils resulting from the insecurity of the sanitary inspector's tenure of office. An inspector had received a notice from a person who had found that a drain from a neighbour's house ran under the floor of his own house. The inspector ascertained that the house complained of belonged to a friend of the Chairman of his Council. The inspector tactfully wrote a polite letter to, and called upon, the Chairman's friend as well as upon the Chairman himself. The latter declared his intention to back up his friend: he would himself fight the inspector over the matter, and would advise his friend to fight the case too. That man was no longer a sanitary inspector; rather than submit, he resigned his post. "Until we are made responsible only to some central authority," continued the Chairman, "we cannot always do our duty. We want an alteration in the law in many things."

Two members of the Association, who had rendered great services to it, were now called up to receive at the hands of the President testimonials subscribed for by their comrades and illuminated certificates setting forth their services. The first called upon was Mr. G. T. Dee (Westminster Board), the late Chairman of Council, who, said the President, besides charging himself with the direction of the finances of the Association since 1891, had during his year of office almost lived in the lobby of the House of Commons for the purpose of explaining to members of that House the provisions of the Private Bill to provide a scheme of superannuation for sanitary inspectors, which the Association is promoting. The testimonial to Mr. Dee consisted of a timepiece and illuminated address. The second testimonial, a tea service in silver, was presented to Mr. E. Tidman, C.E., the Hon. Secretary of the Association and Editor of the monthly journal. When Mr. Tidman became Hon. Secretary, the membership of the Association was 299; at the present it was 700. The testimonial was the result of subscriptions from every member of the Association. An illuminated address, which accompanied the present, was read, and Mr. Tidman briefly replied.

Sir Douglas Galton proposed the next toast, "Local Government," prefacing his remarks by declaring that with regard to the constitution of the new Examination Board, the Sanitary Institute had never opposed the admission of the sanitary inspectors. They had not been consulted, and therefore were not able to express an opinion. The proposal to admit them would have been welcomed by the Sanitary Institute.

Mr. McKinnon Wood (Chairman, L.C.C.) said he had been much astonished to learn that it was the practice to appoint sanitary inspectors for only a single year. He could only account for that fact by supposing that the distinguished men who formed the Local Government Board were overworked and had not had time to remove the blot. The sanitary inspector ought to be able to command a reasonable security in his appointment. He was doing useful work, and was of service to his country.

Sir Hugh Gilzean Reid said he was glad to have heard, since the visit of the sanitary inspectors to Belgium, that it had added considerably to the knowledge of the sanitary engineers of Belgium, and that in some instances that knowledge was being reduced to practice.

Mr. Russell Spokes also responded to the toast on behalf of the London County Council, and then that of "Science and Art" was proposed by the Master of the Carpenters' Company, the first portion of the toast being responded to by Sir James Crichton Browne, and the second by Professor Banister Fletcher.

Professor Banister Fletcher, in responding, disclaimed, as a member of the Examining Board and on behalf of the body he represented, any opposition to the admission of sanitary inspectors. They had had nothing to do with the exclusion of any other body. The sanitary inspectors had made a great advance, and he hoped the House would soon come to their help to make their position what it ought to be, and give them security of tenure.

The Rev. J. W. Horsley proposed the toast of "The President."

Sir John Hutton having briefly responded to the toast, Dr. Milsom Rhodes (hon. member), proposed "The Visitors," to which the Ven. Archdeacon Stevens replied; and Mr. H. Lovegrove proposed "The Press," to which the representative of the *Builder* was called upon to respond.

## *ENGINEERING SOCIETIES.*

SOCIETY OF ENGINEERS.—The first ordinary meeting of the Society of Engineers for the present year was held on Monday evening, at the Royal United Service Institution, Whitehall. Mr. William Worby Beaumont, the President for 1898, occupied the chair, and presented the premiums awarded for papers read during that year, viz.:—The President's Gold Medal to Mr. William Fox for his paper on "Reservoir Embankments, with Suggestions for Avoiding and Remedying Failures." The Bessemer Premium to Mr. Sherard O. Cowper-Coles for his paper on "Protective Metallic Coatings for Iron and Steel." The Rawlinson Premium to Dr. J. C. Thresh for his paper on "The Protection of Underground Water Supplies," and a Society's Premium to Mr. George Thudichum for his paper on "Bacterical Treatment of Sewage." Mr. Beaumont then introduced the President for the present year, Mr. John Corry Fell, to the meeting, and retired from the chair, receiving a unanimous vote of thanks for his services during the past year. Mr. Fell then proceeded to deliver his inaugural address. After thanking the members for having elected him to the chair, the President referred to the present satisfactory position of the Society and the work of the past year. He regretted to say that during the past year they had lost by death no fewer than six of their honorary members, namely, Sir William Anderson, Sir Henry Bessemer, Sir James N. Douglass, Sir John Fowler, Lord Playfair, and Sir Robert Rawlinson. The Society, however, was honoured by having the vacancies thus created filled by Sir John Wolfe Barry, Sir Albert John Durston, Sir David L. Salomons, Prof. A. B. W. Kennedy, Mr. W. H. Preece, and Mr. Alexander Siemens. Turning next to the question of the protection of inventions by patent in engineering practice, the President pointed out that it was a curious fact that civil engineers availed themselves less than any other members of the profession of the privileges accorded to inventors by patent, designs, or copyright protection. This, he said, was perhaps due to the circumstance that civil constructive engineers took a higher professional standpoint, and considered that the credit attached to their designs, however useful or beautiful, was a sufficient reward without seeking to retain a monopoly in them by patents, even for a time. This view, he said, did not extend to the mechanical branches of the profession, where every little detail improvement in machinery was protected, and a commercial end thus served. He did not, however, see why the same principle should not be observed by the civil engineer in regard to bridges, roofs, girders, and the like constructive details. As regards invention as represented by nationalities, the President observed that it had been said that the British nation was less inventive than the American. Prior to 1883 that view appeared to be supported by the number of patent applicants in the United States as compared with those in Great Britain, which in 1883 was over 30,000 for the United States, and barely 6,000 for Great Britain. This discrepancy appeared to have been accounted for by the high rate of Government fees in Great Britain, which were much in excess of those in the United States. Upon a reduction of the fees in 1883 the applications rose from 5,993 in that year to 17,110 in 1884, and they had now reached over 30,000 per annum, and Great Britain now took a foremost place in the inventive world. Taking an average of the last ten years, about half the applications come to completion. About 20 per cent. of the completed or 10 per cent. of the applications are renewed up to seven years, and 5 per cent. of the completed or 2½ per cent. of the applications are maintained to fourteen years. With regard to successful invention, the President observed that the conditions should be the result of analysis or synthesis, not mere chance dashes into an unknown field. The method of analysis may be defined to be first an appreciation of a want to be met, with which the inventor is familiar, and then by a laborious selection from what is known, the development, by successive efforts, of a combination of suitable means to meet the want. The President then went on to point out the necessity of having a special Court for the trial of patent actions. He had for long past been of opinion that such a Court should be established, and of late the Lord Chancellor and other judges had expressed the same views. They had publicly attributed the block in the Law Courts to the increasing number of patent cases, and the inordinate time many of them occupied. So serious was the condition of matters that the Lord Chancellor upon one occasion intimated that it might be necessary to hand over to a special tribunal the trial of cases for which the ordinary method of procedure appeared to be inapt. Mr. Justice Romer, too, who has had very considerable experience in trying patent cases, has also expressed the opinion that it was a great hardship that the proper business of the Court should have to wait for the trial of prolonged patent actions. The President pointed out that the remedy undoubtedly was the establishment of a Patent Court presided over by a judge possessing the necessary qualifications for dealing with patent actions, and whom it would not be difficult to find. The President then proceeded to give a short summary of the advances made of late years in various departments of engineering, in which he first referred to the increase in horse-power in engines which was obtained from a minimum of dead weight of material, and he explained the way in which it had been effected. In steam boilers, too, great advances had been made by the development of the water-tube system. He then referred to the progress made in electric lighting and in the application of electricity to the driving of machinery, especially in its use on railways. In this latter connexion he described the recent development of the electric railway system in the metropolis. Improvements in gas lighting and the progress of acetylene as an illuminant were then discussed, and, finally, the latest phases of naval construction, including submarine torpedo boats, were considered. At the close of the address, a hearty vote of thanks was accorded to the President.

## THE BUILDING TRADE DISPUTE.

WE understand that the vote of the Plasterers' Union, in regard to the dispute as to foremen, has gone largely in favour of withdrawing the resolution which laid down that all foremen should become members of the Association. Mr. Benjamin J. Greenwood, the President of the Central Association of Master Builders, has issued the following circular:—

> "It is one of the most inexplicable phenomena of our times that some employers in the building trades should be content to stand selfishly aloof from any trade organisation, and idly watch the rising tide of trade union intolerance, which threatens to overwhelm all private enterprise, and reduce employers to a state of abject submission
>
> Surely if ever there were need for all employers to stand shoulder to shoulder in the defence of their rights it is at the present moment. The present revelations as to the outrageous demands of the National Association of Operative Plasterers have come as a shock to the public, who evidently have no conception of the state of things existing in the building trade. Moreover, the Press, with a voice of unprecedented unanimity, have condemned the wanton aggression of the Plasterers' Union.
>
> Whilst the workmen do not hesitate to make great sacrifices for the advancement of their welfare, and their discipline and unanimity is remarkable, is it not absolutely culpable that the Central Association of Master Builders should be weakened by such firms as yours? If your apathy brings about a further surrender of employers' independence, you will incur a responsibility that may justly bring upon your head the reprobation of those who may follow you in your business.
>
> I may state that our association wages no warfare with trade unionism in its legitimate sphere, but is organised for the benefit and protection of trade interests, and for resistance to the intolerable demands that are put forward under the guise of trade unionism.
>
> At the meeting of the members of the building trades on the 24th inst. (January), there was a unanimous decision to take prompt measures to deal with the National Association of Operative Plasterers, and a large fund was raised spontaneously at the meeting for the purpose, but you must surely realise that, whilst this association represent the great bulk of the trade, yet the firms that fail to come into union with us become, *nolens volens*, a source of weakness to the movement.
>
> I shall esteem it a favour if you will give the situation your careful consideration, and fill up and return the enclosed form of application for membership, in which case I shall be pleased to propose your election."

Accompanying this circular is another, signed by Mr. T. Costigan, the secretary of the Central Association of Master Builders, in which he says.—

> "In the interest of the Strike Fund, which was spontaneously and handsomely started at the meeting on January 24, I venture to ask you to show your loyalty to your own interests, and to those engaged, like yourself, in the building trades, to contribute to it as handsomely as you can."

## THE LONDON COUNTY COUNCIL.

THE usual weekly meeting of the London County Council was held on Tuesday, at the County Hall, Spring-gardens, Mr. McKinnon Wood, Chairman, presiding.

*Loans.* — On the recommendation of the Finance Committee it was agreed to lend the Hammersmith Vestry 12,785*l.* for street improvements; the Hampstead Vestry 2,560*l.* for electric lighting purposes; the St. Pancras Vestry 30,000*l.* for electric lighting works; the Shoreditch Vestry 14,375*l.* for various works; and the Wandsworth District Board 2,000*l.* for street improvements.

*Combined Drainage.*—The Parliamentary Committee recommended, and it was agreed, "That the Metropolitan Sewers and Drains Bill in the form agreed to by the conference of local authorities be introduced into the House of Lords during the ensuing Session."

*Metropolis Acts Amendment Bill.*—The same Committee recommended, and it was agreed, "That the Metropolis Management Acts Amendment (By-Laws) Bill, in the form passed by the House of Lords in the Session of 1898, be re-introduced in that House during the ensuing Session."

*London Street Improvements.*—The Committee also recommended, and it was agreed, "That the Street Improvements (London) Bill, prepared to give effect to the Council's resolution on January 9, 1896, with such amendments as may be necessary to carry out the instructions of the Council on June 1, 1897, be introduced into Parliament during the ensuing Session.

*Places for Cremation.*—The Committee recommended—"That the Metropolitan Burial Boards (Cremation) Bill be not further proceeded with."

Sir A. Arnold moved an amendment to refer the recommendation back, and protested against such an important sanitary question being shelved by the Council. There were 130,000 deaths in London per annum, and only 640 acres of burial-grounds available, which meant that the whole space might be occupied within five years. On the other hand, crematoria were being extensively adopted in various parts of the provinces, and he had received from the Local Government Board very important information on that subject.

Mr. Cornwall, on behalf of the Committee, said they understood there was no probability of getting the Bill passed during the present session; but if the Council desired it the Committee were quite willing to proceed with the Bill. He therefore consented to the report being referred back.

The amendment was thereupon agreed to.

*District Surveyors' Returns.* — The Local Government and Taxation Committee reported as follows, the recommendation being agreed to:—

> "In our report to the Council on the resolutions passed by the conference on transfer of powers, we

stated that we would bring up recommendations as to supplying the Local Authorities with the first part of the monthly return made by each District Surveyor in London. Every District Surveyor, under Section 160 of the London Building Act, 1894, is required to make this return to the Council each month. The return consists of three parts. The first gives a list of all building operations of which the District Surveyor has had notice, or which he has discovered; the second gives a list of all the works, &c., which are finished, with the fees chargeable; and the third gives the fees actually received and those which are irrecoverable. We believe the vestries desire to have the first part of the return, and we are of opinion that it should be furnished to them. We have communicated with the Building Act Committee, who have informed us that they see no objection to the proposal, but that as it would entail considerable clerical labour to the Council, a small charge (not necessarily the whole cost) should be made to the vestries who may wish to have copies. We recommend—That Part I. of the monthly return prepared by each district surveyor under Section 160 of the London Building Act, 1894, be supplied to such Local Authorities as desire copies, at a charge to be fixed by the Building Act Committee; and that it be referred to that committee to make the necessary arrangements."

*Band-stand, Victoria Embankment-gardens.*—The Parks and Open Spaces Committee recommended, and it was agreed, that the Council do approve the estimate of 650*l.*, submitted by the Finance Committee, and do authorise the construction in the Villiers-street section of the Victoria Embankment-gardens of a permanent band-stand in accordance with the design prepared by the architect; that the tender of Messrs. McDowell, Stevens, & Co. to execute the ironwork of the superstructure as specified for the sum of 314*l.* be accepted; and that the Parks and Open Spaces Committee be authorised to obtain tenders for the construction of the foundations and platform and the painting work.

*Proceedings in the High Court as to the Formation of Openings in the Party Wall between Nos. 45a and 46a, Basinghall-street, E.C.*—The Building Act Committee reported as follows:—

"The Council, on October 25, 1898, directed the solicitor to take the necessary steps for obtaining the decision of the High Court upon the question raised with reference to the formation of openings in the party wall between Nos. 45A and 46A, Basinghall-street. The case came before the Divisional Court on January 20, when the Court delivered a written judgment dismissing the Council's appeal on behalf of the District Surveyor. It may be remembered that the Alderman who heard the summons taken out by the Council at the Guildhall, held that the respondents had committed no offence in making an opening on the first floor in the party wall between Nos. 45A and 46A, Basinghall-street, such buildings being not wholly in one occupation, on the ground that as the buildings were originally constructed with an opening on the ground floor (long since bricked up) which rendered them when originally built available for one tenant, they came within the exemption specified in section 77 (1) of the London Building Act, 1894, which states that buildings shall not be united except where they are wholly in one occupation *or are constructed or adapted to be so.* The buildings had, in fact, not been at any period of their existence wholly in one occupation. The Council's contention was that the words 'or are constructed or adapted to be so,' did not mean originally constructed, as the Alderman had held, but constructed at the time of uniting. The High Court held that the Council was right in this view, and that the buildings were not within the exemption specified in the Act; but that the making of the openings complained of did not in fact unite the buildings, because they were already united by an existing opening on the second floor. The Court overruled the Council's contention that, as the second floor opening had been illegally and surreptitiously made, it could not be taken advantage of by the respondents. It is unsatisfactory that the Council should lose on such a point a case in which its contention on the main issue was upheld. The question of the irregular uniting of buildings is a very important one from a fire-risk point of view, and we propose, as the Council cannot appeal further in this case, that the question should be raised again at the earliest favourable opportunity."

Having transacted other business, the Council adjourned.

## BOOKS RECEIVED.

LANDMARKS IN ENGLISH INDUSTRIAL HISTORY. By G. Townsend Warner. (Blackie & Son.)

A COURSE OF INSTRUCTION IN WOOD-CARVING ACCORDING TO THE JAPANESE METHOD. By Charles Holme. (Offices of *The Studio.*)

THE HOMERIC PALACE. By N. Morrison Isham. (Preston & Rounds Co., Providence, U.S.A.)

ENGLISH CATHEDRALS, ILLUSTRATED. By Francis Bond, M.A. (Geo. Newnes)

## APPLICATIONS UNDER THE LONDON BUILDING ACT, 1894.

AT the meeting of the London County Council on Tuesday, the Building Act Committee brought up the following list of applications under the 1894 London Building Act. Those applications to which consent has been given are granted on certain conditions.*

### *Artisans' Dwellings—Peabody-buildings, Roupell-street, Lambeth.*

*Lambeth, North.*—(*a*) That the resolution of the Building Act Committee of August 30, 1898, acting on behalf of the Council, with regard to the application of Messrs. W. Cubitt & Co., for the trustees of the Peabody Donation Fund, for sanction to the erection of two blocks of artisans' dwellings on the north side of Roupell-street, Lambeth, be rescinded. (*b*) That the Council do make an order as follows:—Whereas Messrs. W. Cubitt & Co., of 258, Gray's Inn-road, London, on July 28, 1898, under the provisions of Section 42 of the London Building Act, 1894, delivered, on behalf of the trustees of the Peabody Donation Fund, at the County Hall, plans of two blocks of intended dwelling-houses to be inhabited by persons of the working class, and proposed to be erected, not abutting upon a street, on a site on the north side of Roupell-street, Lambeth. . . . The Council, in the exercise of its powers under Section 42 of the said Act, but in no way otherwise than under such Section, does by this order sanction the said plans. . . .—Agreed.

### *Dwelling-houses on Low-lying Land.*

*Plumstead.*—That the Council, acting on the decision of its Chief Engineer, given under the provisions of Section 122 of the London Building Act, 1894, do refuse permission for the erection of a house next Wood Villa, Station-road, Plumstead (Mr. J. O. Cook for Mr. A. Martin).—Agreed.

### *Lines of Frontage.*

*Kensington, South.*—That permission be given to Mr. A. A. Dixon to retain a projection (an illuminated sign) at the "Old George" public-house, Church-street, Kensington, extending beyond the general line of buildings in that street, on condition that he do remove such sign at the expiration of one year from February 7, 1899.—Agreed.

*Strand.*—That permission be given to Mr. G. J. Taylor to retain projections (illuminated signs) at the "Star and Garter" public-house, 62, Poland-street, St. James's. extending beyond the general line of buildings in that street, on condition that he do remove such signs at the expiration of one year from February 7, 1899.—Agreed.

*Kensington, North.*—That permission be given to Mr. A. C. Payne to retain a projection (an illuminated sign) at the "Portland Arms" public-house, Portland-road, Notting Hill, extending beyond the general line of buildings in that street, on condition that he do remove such sign at the expiration of one year from February 7, 1899.—Agreed.

*Newington, West.*—A boundary wall on the south side of Manor-place, Walworth, adjoining the London, Chatham, and Dover Railway (the Vestry of Newington).—Consent.

*Hoxton.*—That the application of Mr. J. E Saunders for an extension of the period within which the erection of a building on the site of five houses, with forecourts, on the east side of Clifton-street, Shoreditch, between Worship-street and No. 9, Holywell-row, was required to be commenced, be granted, upon condition that the building referred to be commenced within nine months from May 3, 1899.—Agreed.

*Lewisham.*—A house on the west side of Perry-rise, Lewisham, to abut upon Queenswood-road (Messrs. Eastman Brothers).—Consent.

*Hampstead.*—Houses with shops on the western side of South-end-road, Hampstead, and also the erection of houses with bay windows on the south side of John-street (Mr. C. J. Bentley for Mr. F. T. Binington).—Refused.

*Islington, North.*—A theatre on the north side of Rock-street, Finsbury Park (Messrs. Murray & Foster for Theatre Sites, Limited).—Refused.

*Clapham.*—One-story shops on part of the forecourts of Nos. 79, 81, 83, and 83A, Battersea Park-road, Battersea (Mr. H. Bignold).—Refused.

*Hampstead.*†—A block of residential flats on the northern side of Finchley-road, Hampstead, at the corner of West Hampstead-avenue (Mr. J. Reynolds).—Refused.

*Lewisham.*—Two houses with shops on part of the forecourt of No. 27, London-road, Forest Hill (Mr. G. Tolley for Mr. A. J. Dorrell).—Refused.

*St. George, Hanover-square.*†—An iron and glass shelter at the Dover-street entrance to the Avondale Hotel, No. 68A, Piccadilly (Mr. H. Gascoigne for the Directors of the Avondale Hotel and Restaurant, and Hatchett's Restaurant, Limited).—Refused.

*Walworth.*—Five houses with bay windows on the site of Nos. 19, 21, 23, 25, 27, and 29, Dean's-buildings, Flint-street, Walworth (Mr. A. Romain for the Rev. E. St. John).—Refused.

### *Width of Way.*

*Westminster.*—A building on the western side of St. Ann's-lane, Great Peter-street, Westminster (Messrs. Wilson & Pilcher, Limited).—Consent.

*Islington, West.*†—Buildings on the site of Nos. 78 and 80, York-road, and No. 11, Crinan-street, King's Cross (Messrs. Waterman & Lewis for Mr. B. Bridgwater).—Consent.

*St. George-in-the-East.*—The rebuilding of No. 54, Tait-street, Commercial-road, St. George-in-the-East (Mr. H. Moon for Earl Winterton).—Consent.

### *Space at Rear.*

*Paddington, South.*—An addition on a portion of the open space at the rear of the "Mitre" public-house, No. 13, Edgware-road, Paddington, at the corner of Seymour-street (Mr. G. G. Pye for Mr. W. T. Ecclestone).—Consent.

*Westminster.*—A two-story stable in a yard approached from Causton-street, Vauxhall Bridge-road, Westminster, with an open space about such stable (Mr. W. H. Hills for the London Omnibus Carriage Company, Limited).—Consent.

### *Lines of Fronts and Width of Way.*

*Southwark, West.*—An addition to a one-story factory about to be rebuilt on the west side of Harrow-street, St. George-the-Martyr, Southwark (Messrs. Hazeldine Brothers).—Consent.

### *Line of Fronts, Width of Way, and Artisans' Dwellings.*

*Camberwell, North.*—Two blocks of buildings on the south side of New Church-road, Camberwell, between No. 52 and Edmund-street, with the boundary fence next Edmund-street (Messrs. N. S. Joseph, Son, & Smithem for the Four per Cent. Industrial Dwellings Company, Limited).—Consent.

### *Line of Frontage and Construction of Building.*

*Southwark, West.*—An iron gangway across The Grove, Southwark (Messrs. J. D. Mathews & Son for Messrs. Barclay & Fry).—Consent.

### *Line of Frontage and Temporary Building.*

*Hammersmith.*—A temporary office building in the area of No. 49A, Sulgrave-road, Hammersmith (Mr, R. Cotter).—Consent.

### *Width of Way and Construction of Building*

*Limehouse.*—A temporary wood and iron room in the yard at the rear of the Friends' Mission Institute, Commercial-road East, Limehouse, at less than the prescribed distance from the centre of Hilton-street and Dorset-street (Messrs. E. Saunders & Son). Refused.

### *Line of Frontage and Space at Rear.*

*Hackney, South.*—Additions at the rear of No. 71, Chatsworth-road, Clapton, to flank upon Blurton-road (Mr. H. Dearsley for Mr. H. Lunken).—Refused.

### *Formation of Streets.*

*Haggerston.*—That an order be issued to Mr. B. Crewe, sanctioning the formation or laying-out of a new street for foot traffic only, to connect Cotton's-gardens with Hudson's-court, Kingsland-road, Shoreditch (for Mr. J. Weibking and Mr. H. S. Parker). That the name Cotton's-gardens (in continuation) be approved for the new street.—Agreed.

*Stepney.*—Widening and adaptation throughout of Romford-street, Commercial-road East, as a street for carriage traffic (Mr. R. Plumbe for the Chairman and House Committee of the London Hospital).—Consent.

*Hampstead.*—A variation from the plan sanctioned by the late Metropolitan Board of Works on April 24, 1885, for the formation or laying-out of Fordwych-road, Hampstead, so far as relates to an alteration in the outlet of that road into Richborough-road (Messrs. Tuckett & Son)—Consent.

*Islington, North.*—That an order be issued to Messrs. Wootton & Green, sanctioning the formation or laying out of a street for carriage traffic, to lead from Highcroft-road to Crouch Hill, Islington. That the name "Heathville-road" be approved for the new street.—Agreed.

*Lewisham.*—That an order be issued to Mr. H. A. Rawlins, sanctioning the formation or laying out of a street for carriage traffic, to lead from Stanstead-road to Marler-road, Catford (for the trustees of the late Mr. M. David). That the name "Northwood-road" be approved for the new street.—Agreed.

*Lewisham.*†—That an order be issued to Messrs. Herring, Son, & Daw, refusing to sanction the formation or laying out for carriage traffic of three new streets on the Park House Estate, on the west side of Ravensbourne Park, Catford, and the widening in connexion with the proposed streets, of a portion of a street leading out of Blythe Hill.—Agreed.

### *Means of Escape from the Top of High Buildings.*

*Strand.*—That Messrs. Saville & Martin be informed that the Council, in the exercise of its powers under Section 63 of the London Building Act, 1894, is prepared to grant a certificate in respect of the means of escape in case of fire to be provided for the persons dwelling or employed on the fifth and sixth floors of the Hotel de Paris, Nos. 7 and 9, Leicester-square, St. Martin-in-the-Fields (for Mr. R. Baker).—Agreed.

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* Names of applicants are given in brackets. Buildings are new erections unless otherwise stated.

### *Width of Way and Height of Dwelling.*

*Finsbury, East.*—Additions at the rear of a warehouse on the west side of Golden-lane, St. Luke's, to abut upon Bayer-street (formerly Turk's Head-court) and Basterfield-street (formerly French-alley (Mr. L. Solomon for Mr. C. Bayer).—Consent.

*The recommendations marked † are contrary to the views of the Local Authorities.*

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## GLASGOW SCHOOL OF ART.

THE last of a series of lectures on "The Architecture of the Renaissance in France," by Mr. W. J. Anderson, A.R.I.B.A., was delivered on February 6, having for its principal subject the Roman revival of Napoleon and the Empire styles, but treating also of the work of the present day, and the ever-fresh manifestations of the vitality of the Renaissance in France. From the foreign character, the sinuous unconstructiveness of the graceful art of Louis Quinze, there took place before the end of his reign a decided reaction, which had, at least, greater structural fitness and tradition to recommend it, while its materials were enriched by the contemporary Pompeian discoveries. Some of the interiors of Gabriel, such as the Salon des Marechaux, mark this return to the straight line, and illustrate the Transition and the Louis Seize, which in such works as the Salon de Reception of the Petit Trianon, developed a style of much dignity, simplicity, and elegance. Various interesting tendencies in figure sculpture and in applied metal decoration were noticed. It was remarkable that the great Revolution with its terrific ùpheaval hardly rippled the stream of artistic tradition. While Napoleon's ambition after a new Roman Empire, with Paris as the capital, rendered it appropriate to seek architectural expression after the manner of the Romans in Heröons like the Madeleine, triumphal arches and columns like those of the l'Etoile and the Vendôme, the direction of the movement had already been prepared, notably by David and his school in their antiquarian paintings prior to the Revolution. The natural decline of this Roman revival followed the deposition of Napoleon, and left behind it a weak academic school, satisfied with the past, to whose unfruitful teaching was soon opposed the theory and practice of the romanticists or revivers of mediævalism, and the more vigorous intellectual opposition of the rationalist school, sometimes distinguished as "Neo-Grec," though its principles do not involve any reaction of past styles. Owing to the lack of breadth in architectural education, any corresponding school was at the time impossible in England, and its principles still fight for acceptance, even in France. Examples of the thoughtful work of Duban, L. B. Duc, and Ballu are shown in the Palais de Justice, the Ecole des Beaux Arts, and the Church of La Trinite. After illustrating some of the other works of the Second Empire, and of the period succeeding the Russian war, the lecturer, in conclusion, spoke of our debt to France, which of all modern civilisations had kept most brightly aflame the sacred lamp of art, and diffused its light abroad. The infinite advantage of a sound educational tradition in art was proclaimed by the very outward aspect of Paris, which by this cause chiefly had become the best type of the modern city, reflecting in its varied architectural monuments the many-sided aspects of present-day civilisation, yet in such a way as to constitute a distinctive and highly significant style of modern art.

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## Correspondence.

*To the Editor of* THE BUILDER.

### CEILING FUSES.

SIR.—I notice, in your remarks upon the discrepancies which exist among insurance companies in regard to electric lighting, that reference is made to ceiling fuses, some of the companies insisting upon them, and others regarding them as unnecessary.

It appears to me that, from one point of view, they are very undesirable, especially in a lofty room; as, should a fuse be burnt, it is absolutely inaccessible except by the introduction of a telescopic ladder or scaffolding.

As a case in point, two ceiling fuses were burnt last week in a very lofty dining-room, during a ball, in the residence of a nobleman, and two out of six clusters of lights were consequently extinguished. Had the fuses been accessible, they could have been replaced in a few minutes, an electrician being on the premises for the purpose; under the circumstances, however, he could only regard anxiously the remaining lights, and devoutly hope that they might not share the same fate.

The wires in the residence in question are led through iron piping, and I am informed by experts that when this is the case ceiling fuses are unnecessary. If this be true, they should surely be abolished, as it is obviously undesirable that the supper-room at a large entertainment should be suddenly plunged in darkness.

LUX IN TENEBRIS.

## *OBITUARY.*

MR. T. C. HINE.—We much regret to record the death of the veteran architect Mr. T. C. Hine, of Nottingham, at the age of 85. Mr. Hine was born in 1813, and was in course of time articled to Mr. Habershon, the architect, who was in partnership with Mr. Patterson, the builder. In those days it was a common occurrence for architects and builders to be associated as partners. When Mr. Hine attained his majority (Mr. Habershon having retired) Mr. Patterson took him into partnership. They were together for about fifteen years, doing a great deal of work in the city and county and the neighbouring counties. During this time he built the house in which he died. In 1849, on the dissolution of partnership, he commenced practising on his own account and soon had a large practice in Nottingham and the Midland counties. He erected and restored nnmerous churches and vicarages, and built most of the principal warehouses and factories in the Lace Market at Nottingham. In 1854 Mr. Hine was appointed surveyor to the Newcastle estates, and subsequently laid out the Nottingham Park estate, designing and erecting most of the houses upon it. He also built, for the Duke of Newcastle, the collieries church at Shireoaks. In 1867 Mr. Hine took into partnership his eldest son, Mr. George Thomas Hine, and they continued a large practice until the year 1890, when Mr. Hine, sen., retired from practice. In 1876 Mr. Hine suggested to the Corporation of Nottingham the idea of leasing the Castle from the Duke of Newcastle's trustees and converting it into a museum of arts. The work of restoration was carried out under his direction. Mr. Hine was also architect of the Great Northern Railway Station in Nottingham. Mr. Hine was an indefatigable worker, and after his retirement occupied himself with water-colour drawing and sketching. His house, designed by himself, as before observed,had a drawing room ofthe height of two of the stories, with an open timber roof. He was a most hospitable and genial man, full of interesting conversation and reminiscences, and with a great variety of interests in life. Mr. Hine leaves three sons and four daughters. The name of one of the sons, Mr. G. T. Hine is well known to our readers in connexion with his large practice as the architect of asylums and buildings of that class.

M. ALFRED SISLEY.—We have to record the death of M. Alfred Sisley, the painter, who was one of the most important artists of the modern French Impressionist school. He was an Englishman by birth, and in his early years lived at Hampton Court; but for a long time past he had taken up his residence at Moret, near Fontainebleau, where he found the subjects or suggestions of a good many of his landscapes. Along with de Nittis, Claude Monet, Pisaro, and Renoir, he contributed largely to the evolution of the new school of painting, and was a powerful landscape-painter with a style of his own. He has left a considerable number of works, but, except in the Caillebotte collection at the Luxembourg, they are not at present to be found in any of the public galleries of France.

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## *GENERAL BUILDING NEWS.*

CHURCH, BLAIR'S COLLEGE, ABERDEEN.—Contracts have been entered into for the building of a Collegiate Church at St. Mary's College, Blairs, near Aberdeen. The church is 120 ft. long and 35 ft. wide, having side chapels 22 ft. long and 17 ft. wide. The choir will seat 150 students, and the church is divided by an oak screen, and accommodation provided for 150 people. The tower and spire will be 150 ft. high. The church will be built of grey granite, with freestone tracery. The internal fittings are composed of oak and pitch pine, carved oak stalls and screens, with an open timbered roof. The church, when completed with stalls and fittings, &c., will cost upwards of 12,000*l.* The architect is Mr. Robert Curran, of Warrington.

CHURCH, VICTORIA, EBBW VALE.—The foundation stone was laid on the 23rd ult. of St. Mary's Church, Victoria, in the parish of Ebbw Vale. The church will consist of a nave, chancel, and south porch, with small vestry on the north side of the chancel. The style is of Early English character. The general walling is of local grey stone. The roof, of deal, is open-timbered and covered with green slates, finished by a red terra-cotta ridge and gable crosses. The interior affords accommodation for 256 persons, with deal open seats, stalls, and pulpit. Mr. Bruce-Vaughan, of Cardiff, is the architect, and the contract has been taken by Mr. T. T. Davies, of Ebbw Vale.

PRIMITIVE METHODIST CHAPEL AND SCHOOL, BIRTLEY, NORTHUMBERLAND.—The memorial stone has just been laid of this building. The new chapel will occupy a site in the Station-road, Birtley, and it will have sitting accommodation for 300 persons, while the school behind will be sufficient for 250 children. There will also be vestries above the school-room. The estimated cost of the building is 2,750*l.* The architect is Mr. Eugene E. Clephan, of Newcastle; and the contractors are Messrs. Davison & Bolam, builders, of Blaydon and Birtley.

RESTORATION OF LITTLE TORRINGTON CHURCH, DEVON.—This building has just been reopened after restoration. About a year ago, some apprehension being felt as to the condition of the tower, Mr. Harbottle Reed was called in to examine it, and his report upon its dangerous state was verified in the operations which have just been brought to a conclusion by the contractor from the architect's plans and specifications and under his supervision. The upper stage and pinnacles have been rebuilt, a portion of the buttresses renewed, and the fractured walling strengthened and made sound. The west gallery has been removed, and a new floor placed in the tower. A traceried oak screen is to be executed from Mr. Harbottle Reed's design. In addition to the work on the tower, the arrangement of the choir has been remodelled, new oak platforms have been formed for future choir stalls, and the aisle laid with encaustic tiles and new Portland stone steps. The pulpit has been reconstructed by Mr. Boundy.

RESTORATION OF TREGONY CHURCH, CORNWALL.—The Church of St. Cuby, Tregony, has just been reopened after restoration. The roof has been lowered to the former height, the arcades have been replaced, two of the original pillars have been discovered and put into position, a double roof has been constructed, granite windows have been inserted in place of wooden frames, the gallery has been removed, the tower opened out into the church, and the whole building reseated and refloored. Messrs. St. Aubyn & Wadling, of London, were the architects, and Edwards & Son, of Praze, the contractors.

SCHOOLS, DUBLIN.—On the 28th ult. the Archbishop of Dublin laid the memorial stone of the new National Schools at present in course of erection in Lower Sherrard-street in St. George's Parish. The plan takes the form of a Greek cross, the greatest length and breadth of the building being internally 124 ft. and 46 ft. respectively. It will consist of a single story. There are two main entrances from Sherrard-street, leading through porches, to the boys', and girls' and infants' schools respectively. The number of children to be provided for is 500. The contractor for the whole work is Mr. R. Farquharson, and the architect, Mr. W. M. Mitchell, R.H.A., both of Dublin.

FLOUR MILLS, BIRKENHEAD.—Messrs. W. Vernon & Sons have just opened their new flour mills, Birkenhead. The buildings are four stories high, and have been built from designs by Mr. John Clarke, architect, of Liverpool.

BEDFORD PALACE OF VARIETIES, CAMDEN TOWN.—On the site of the old Bedford Palace of Varieties, Camden Town, a new building has been erected from the plans of Mr. Bertie Crewe. The building has a frontage to the High-street.

PALACE OF VARIETIES, KILBURN.—A new Palace of Varieties is to be erected on the site of the existing Theatre Royal and the adjoining properties, which will form a corner block. The building will be without columns, and an uninterrupted view of the stage will be given from all parts of the auditorium, which will accommodate 1,500. The style adopted by the architects, Messrs. Palgrave & Co., is a free rendering of French Renaissance; the exterior principal front will be in glazed terra-cotta faience work by Burmantofts, Limited. The estimated cost is about 30,000*l.*, apart from the various properties to be acquired. It is expected that the new building will be ready for opening in the late autumn. Messrs. Wylson & Long are acting as consulting architects.

EMPIRE THEATRE, BRADFORD.—The new Empire Palace of Varieties at Bradford was opened on the 30th ult. The site of the new music-hall is in Horton-road, and the principal entrance is made through what was the Alexandra Hotel. Two towers, 100 ft. high, are placed at each corner of the frontage, and are surmounted by upper domes, each capped by a miniature cupola. A colonnade has been arranged on the ground floor, on passing through which one enters a vestibule, and thence into a crush-room, an apartment about 45 ft. square. The auditorium measures 80 ft. from the curtain line to the back wall of the pit, with a clear width of nearly 60 ft. At each side of the auditorium, on the balcony level, hanging side balconies are schemed. The electric light supply is derived from a complete electric plant at the rear of the building. The building is constructed of concrete and steel. The heating throughout is by low-pressure hot-water pipes and radiators. Large saloons are provided on every tier. The cost of the building is about 30,000*l.* Mr. W. G. R. Sprague, of London, was the architect.

ADDITION TO PEMBROKESHIRE INFIRMARY.—An operating theatre has just been built in connexion with this infirmary, with rooms for the nursing staff. The cost of its erection has been about 1,200*l.* The architect was Mr. D. Edward Thomas, of Haverfordwest, and the builder was Mr. Joseph Lewis, of the same town.

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## *SANITARY AND ENGINEERING NEWS.*

TESTING OF HOUSE DRAINS, &C.—A debate was opened by Dr. Mansel-Howe on Friday last week at King's College on "The Testing of the House Drain and Stack Pipes; their Cleansing and Disinfection after Illness," in connexion with the classes of instruction for plumbers and sanitary inspectors conducted at the College. He showed by lantern illustrations some of the ordinary means adopted by plumbers for examining the reliability of pipes, viz.

the water test, the smoke test, and the various odour tests. He also illustrated and considered the testing of pipes by compressed air and the use of the mercury gauge, and of rarefaction of the air in conjunction with the vacuum gauge, claiming for these tests greater simplicity, efficiency, and the lesser liability of damage to property than by the use of the water test. The cleansing of the house drain and shaft pipes was advocated as a wise and sanitary operation to be followed from time to time, independent of sickness; but after many illnesses it should be insisted on by the public Sanitary Authorities. At the present time, when so many house drains were provided with inspection, ventilating, and disconnecting chambers, it was comparatively easy to thoroughly brush out and scour this channel; and in like manner the fittings and traps in association with the stack-pipes, were provided in all better-class plumbing work, with inspection and cleansing eyes, in order that the curves and bends of the pipes in these fittings might be cleansed. Unfortunately, these inspection eyes were rarely employed for cleaning purposes pure and simple, and were only made use of when some temporary stoppage or lodgment in the pipes necessitated immediate attention. When, however, the house-drain and stack-pipes had been treated mechanically by means of brushes, &c., it was recommended that all these pipes should be subjected to the disinfecting properties of chlorine gas, for the destruction of all pathogenic germs that were lingering in the inaccessible parts of the pipes, and in the meshes of the hemp too frequently found in the many unions of the house drain pipe.—In the discussion which followed, the opinion was expressed that hemp might be very readily dispensed with in the uniting of iron drain pipes, and that when the house drain was constructed of stoneware pipes hemp should never be employed.

LUMLEY BRIDGE, CHESTER-LE-STREET.—A new bridge, over the River Wear, has just been opened near Lumley Castle. The bridge consists of a centre span of 120 ft. and two side spans each 37 ft. long. The main and approach girders are of mild steel lattice work, the bottom flanges being efficiently wind-braced and the top flanges supported with struts and overhead arches. The flooring consists of creosoted timber with water boards at each side. The piers are each composed of four large wrought-iron piles properly braced, formed of four segments rivetted together, with cast-iron pile points and driven 21 ft below the river bed. The structure is calculated to bear a safe distributed live load of 140 lb. to the square foot, with four times this amount for the ultimate load. The engineers were Messrs. D. Balfour & Son, of London and Newcastle-on-Tyne, and the erection has been done by Messrs. Head, Wrightson, & Co., of Stockton-on-Tees.

PROPOSED VICTORIA VIADUCT, KIRKCALDY.—It is proposed to erect a new Victoria Viaduct across the East Burn Valley, Kirkcaldy. The height of the bridge is to be 85 ft., and the width between the parapets 36 ft., while the road is to be 40 ft. wide. Mr. William D. Sang, C.E., Kirkcaldy, is the engineer, and the cost of the undertaking is expected to be from 14,000*l.* to 16,000*l.*

TEIGNMOUTH WATER SUPPLY.—Improved works have been opened for the supply of water to Teignmouth. There are two reservoirs, the Hazeldown and the Landscore, the first capable of holding two million gallons of water, and the other 600,000 gallons. The whole of the work has been carried out under the direction of the Council's engineer and surveyor, Mr. C. Jones.

## *STAINED GLASS AND DECORATION.*

WINDOW, ST. ANNE'S CHURCH, BIRKENHEAD.—A stained-glass window, given in memory of the late Mr. J. Laird by his widow and children, has been placed in the north side of the chancel of St. Anne's Church, Birkenhead. It consists of two lights, and was designed by Mr. H. Walter Lonsdale, of London, and executed by Messrs. Heaton, Butler, & Bayne.

FISHMONGERS' HALL.—In the course of last year the Court of the Fishmongers' Company decided to redecorate their Great Hall, with the entrance and main staircase leading to it. Mr. Crace was invited to assist the Company's surveyor, Mr. H. Chatfeild Clarke, in reporting upon the treatment desirable; and their joint report was adopted by the Court. The works decided upon were carried out during the autumn and completed before Christmas. The previously existing decorations were executed thirty years ago under the direction of Owen Jones; and some of the work then done remains in the reception rooms adjoining the hall. The building itself was erected in 1831 from the designs of H. Roberts, and is in the rather cold "Greek" character affected at that time. The late Sir Gilbert Scott, who was articled to Mr. Roberts, took some part in supervising the erection. It was an instruction of the Court to Mr. Chatfeild Clarke and Mr. Crace that the architectural detail and character should in no wise be disturbed. This has been strictly adhered to; but a much warmer and more "hospitable" result than before has been attained by the colouring, of which the following is a brief description:—

The square entrance hall, which has a flat coffered ceiling divided by flat beams, and walls divided by pilasters, has the wall space of a Pompeiian red, the pilasters, frieze and cornice being of a vellum tint, relieved in the frieze by a moderate amount of ornament executed in dull yellow and chocolate brown. The pavement here, as also in the adjoining staircase corridor, is of marble mosaic, laid out in a simple geometric scheme in mixed shades of white with bands of black, light red, grey and yellow. The corridor in question and the lower story of the grand staircase, to which it is open on one side, have also red as the ground colour of the walls; at the top a frieze is painted in light ornament upon the red ground, interrupted at intervals by panels or medallions with dark grounds. Below, a dado of simple Pompeiian character is worked on a darker tone of red. The large piers at intervals are in light colour with bronze and gold enrichments; and the ceiling is vellum white with grey-blue panels, and some relief of bronze and gold in the mouldings. The doors and other woodwork here and there throughout are of oak, once French polished, but now bared of polish, brought to a natural surface of quiet tone, and wax-rubbed, the mouldings being gilt. In the grand staircase the red is continued up to the gilt string course on the first floor level, the niche in which Walworth's statue is placed being gilt, as also are the metal balustrades throughout. Above this level the walls are panelled, as well as being broken by scagliola pilasters and columns, by doorways, and by the large triple window. In the panels are full-length portraits; the panels and margins being in two low tones of green, divided by mouldings in gold and vellum. The ceiling here is also coffered in square panels, now in quiet light-blue with gilt centre flowers; and the enrichments of the cross-beams, mouldings, &c., as also of the cornice and architrave, are mainly in bronze and gold. There is a rich maroon ground in the frieze, intended for inscription.

The triple window of three equal lights (originally filled with ground glass and coloured margins) is now glazed with leaded glass of which the design is expressive of the sea fisheries, the general ground being white, ornamented with sea plants, fish, and festoons of nets, while the borders are formed entirely of seaweeds and "crustaceans," all carefully drawn from nature. In the centre of the middle light are the Company's arms and supporters, while on either side are the arms of the former companies of stock-fishmongers and salt-fishmongers, which were united in the existing Company in 1535. The great hall, with five windows on the east front, has its ceiling, which rises on a low, elliptic section, also divided into rectangular panels with flowers in the centre. These are divided into groups by bands of Greek guilloche ornaments, which have been solidly gilt with good effect, as have the centre flowers, the panels being light blue, and the mass of the ceiling margins and framework in broken white. The cornice and frieze are in light tones with the enrichments gilt, and a dull red background to the scroll of the frieze. The scagliola pilasters remain, and the walls are painted in low-toned green as a ground for the pictures; whilst between the bronze and gold capitals of the pilasters, and close under the frieze are ranged the interesting series of old carved and gilt shields which commemorate the arms of the Prime Wardens from early in the seventeenth century. The woodwork here, as elsewhere, is of wainscot now freed from polish, and with the mouldings gilt; and a dado of similar wainscot panelling has now been added to connect the rest. A good effect is obtained by making the walls of the Music Gallery of a dull red. The hall has now been lit with electric light—partly from four points in the ceiling, where groups of lights are enclosed by pendent cut glass drops, and partly by lights concealed by the cornice on two sides of the hall. The light is under control by arrangements for the partial use of any portion of the system. This lighting has been entrusted to Messrs. Verity, of Regent-street. The whole of the decorative works were carried out by Messrs. Crace, of Wigmore-street.

## *MISCELLANEOUS.*

PROFESSIONAL AND BUSINESS ANNOUNCEMENT.—Mr. C. A. Nicholson, architect, has removed his offices from 28, Theobalds-road to 2, New Square, Lincoln's Inn.

REGISTRATION OF PLUMBERS.—A memorial has been presented to the Government urging them to deal with the Registration of Plumbers during the ensuing Session, in the interests of public health. The memorial points out that during the past twelve years a voluntary system for providing technical instruction and the registration of qualified plumbers has been in existence through the co-operation of the sanitary authorities and plumbers in the chief centres and towns of Great Britain and Ireland, and numerous petitions have been presented to Parliament to consolidate and extend the operations of the voluntary system under Parliamentary enactment. A Bill for the National Registration of Plumbers has been before Parliament for the last seven years. The general principles of the measure have been approved by large majorities on several occasions. It has also been supported by the Local Government Board under both Governments. The memorialists appeal to the Government to take the matter in hand on the grounds of urgency for the sake of public health, and of expediency, because the Bill is generally supported and is popular throughout the United Kingdom.

A NEW STREET.—The London County Council have given their consent to the formation of a new street, 50 ft. wide and nearly a quarter of a mile long, starting close to St. Paul's Schools at West Kensington and terminating opposite the house of the late Sir E. Burne-Jones. The street will be known as Fitzgeorge-avenue, and will be occupied on both sides of its entire length by blocks of residential flats. The contract for the whole operation is being carried out by Mr. Henry Lovatt, from the designs of Mr. Delissa Joseph, architect.

PROPOSED DEVONSHIRE STATUE, EASTBOURNE.—At a meeting of the Local Committee, held at the Eastbourne Town Hall on the 2nd inst., it was resolved to commission Mr. Goscomb John, one of four artists recommended to the Committee by the President of the Royal Academy through the Duke of Devonshire, to execute a statue of the late Duke of Devonshire, which is to be erected at a cost of 1,000 guineas, probably at the seaward end of Devonshire-place, Eastbourne. The statue, which is to be in bronze, will have a height of 9 ft. and will have a granite base.

THE ROMAN DEFENCES OF SOUTH-EAST BRITAIN.—At the Royal Institution on the 3rd inst. Mr. Victor Horsley delivered a lecture on "The Roman Defences of South-East Britain." He said that the many camps on the south-east coast which were mentioned in Antonine's itinerary were probably built on the sites of earlier camps, the original camp having a special interest as the work of the sailors of the British fleet of that day. Tiles had been found in the masonry stamped with the letters Cl.—BR.—standing for *Classis Brittanica;* and the evidence of coins pointed in the same direction. In discussing the structure of the *castra* Mr. Horsley pointed out that the masonry was not like that found at Pompeii. The walls were constructed not of great square blocks of stone, but with irregular masses of stone imbedded in concrete and with bonding courses of tiles at intervals. This structure was especially difficult to destroy. There were no remains showing whether the walls were battlemented at the top, but this was probably the case. It was a curious fact that in so many of the south-eastern camps of Britain one of the walls was apparently missing; but traces of the missing portion had been found in every case except, until recently, Lympne; and now, Mr. Horsley said, his excavations had enabled him to trace the missing portion of that camp.—*Times.*

THE LONDON SCHOOL BOARD AND THE ASSISTANT ARCHITECT FOR REPAIRS.—The weekly meeting of the members of the School Board for London was held on the 2nd inst. at the Board Room, Victoria Embankment, Lord Reay in the chair.—The debate was resumed upon the motion of Lord Morpeth, chairman of the Works Committee, "That the Board confirm the action taken by the committee in calling upon Mr. H. Bradfield, Assistant Architect for Repairs, to submit his resignation," to which the Rev. Father Brown had moved as an amendment, "That the resolution be referred back to the committee for further consideration." The circumstances which led the committee to submit the proposal to the Board were set forth in various reports relating to the condition of the drainage and sanitary arrangements at the Board's Brentwood Industrial School. A summary of the reports appeared in our last issue. A long debate took place, in which a number of members expressed the view that, even if Mr. Bradfield had committed an error of judgment, the sentence was more severe than the facts justified. Mr. Stanley urged that if the committee took the matter back the condition ought to be that the Local Government Board should be asked to name an expert to make an investigation, and that the report of the expert should be considered as final. Lord Morpeth thereupon accepted the amendment.

APPOINTMENT.—Mr. P. M. Beaumont, A.M.I.C.E., Borough Surveyor of Maldon, has been elected a Surveyor for the diocese of St. Alban's for the term of three years from March 1.

MEMORIAL STATUE, FORFAR.—The ceremony of unveiling the statue which has been erected to the memory of Provost Reid, in one of the principal streets of Forfar, was performed on the 4th inst. The site chosen for the memorial is in Castle-street, in close proximity to the Corporation Chambers. The statue stands 13 ft. high. The pedestal is of granite, 8 ft. in height, and the figure, which shows the late Provost seated in a chair, is life and a quarter in size. The sculptor is Mr. George Webster, Edinburgh. The bronze is by the firm of Messrs. J. W. Singer & Son, Frome. The statue was set up by Mr. James Maclean, builder.

ELECTRIC LIGHTING, BOOTLE.—Electric lighting works are being carried out at Bootle. The scheme has been designed and the carrying out of the works superintended by Mr. Thos. L. Miller, Liverpool, the Consulting Engineer to the Corporation; Mr. O. F. Francis acting as his clerk of works; the buildings being from the plans prepared by the Borough Engineer, Mr. J. A. Crowther.

NORTH STAFFORDSHIRE BUILDERS' ASSOCIATION.—The annual dinner of the members of the Potteries, Newcastle, and Leek branch of the National Builders' Association of Great Britain was held on the 2nd inst. at the Saracen's Head Hotel, Hanley. There was an attendance of over sixty, and the chair was taken by Mr. J. Gallimore, of Newcastle, the President. After the loyal toast, Mr. Bowden read the annual report, which stated that all the contractors of the Potteries, Newcastle, and Leek, with the exception of three or four, were members of the Association. After noticing the settlement of the claims by the stonemasons and bricklayers, the report stated that the Workmen's Compensation Act, so far as the building trade was concerned, was most unsatisfactory. The slightest practical knowledge of the building trade on the part of those who framed the Bill would have saved endless litigation and unnecessary conflict with the injured workmen. The cost of insurance was now a serious matter, and to cover this an extra charge per hour on all labour had to be made. In contracts an item to cover this was provided as in fire insurance. The cost of building was thus increased by the new Act, and patient John Bull had to pay for all. There was no excuse for any employer to risk ruin to himself and workmen by not being insured. The workman had a right to see that his employer had insured him, and in seeking a new master would naturally satisfy himself that he would be covered by insurance. It was to the credit of the members of the Association that nearly all had insured their workmen. Their insurance company had met all claims from the district (which included two killed) in a speedy and satisfactory manner. The joiners and carpenters gave notice last month for a rise of wages and alterations in the working rules. The bricklayers gave notice to have no umpire in future. A meeting would be held this month of representatives of the employers and workmen to consider the notices, when it was hoped that satisfactory arrangements might be made so that the peaceful relations between them would be continued. A meeting of members would also be called soon to consider an extended price-list to embrace nearly all the items of the jobbing trade. They had been honoured by having their esteemed Treasurer, Mr. G. Ellis, elected Mayor of the county borough of Hanley. The arrangements commenced last year of members paying subscriptions *pro rata* had worked well, and after paying off the adverse balance of last year a substantial balance was left in the bank.—Mr. Walley proposed the health of the Mayor. His Worship responded, and said with regard to the building trade, with which he had been connected for thirty-six years, it was handicapped worse than any other trade he knew. Alderman Hammersley proposed "Success to the Building Trade and the Builders' Association." Mr. Gallimore responded, remarking that the Compensation Act had brought the builders together, and they found it to their interests to combine. Mr. Price gave the toast of "The Officers of the Association," coupling with it the names of Messrs. Smith, Cooke, and Bowden, who responded.

Glasgow Architectural Craftsman Society.—The usual meeting of the Society was held at the rooms, 204, George-street, on Friday, 3rd inst., Mr. W. H. Baxter, Vice-President, in the chair. A discussion was opened by Mr. Isaac Low on "Building Deficiencies." As explained by him, he treated the subject principally from a craftsman's point of view and in a manner to raise discussion. Among the many heads for discussion given by Mr. Low may be mentioned: Insufficiency of Plans, Defects in Design, An Architect's Responsibilities, Cheap Work, Technical Training of all Craftsmen as well as Architects impossible, Moulding, Specifications, &c.

Proposed Memorial to the Late Sir John Millais.—His Royal Highness the Prince of Wales presided on Wednesday at a meeting of the Millais Memorial Committee, held by his Royal Highness's permission at Marlborough House. At the first meeting of the committee held last year at Marlborough House it was agreed that a memorial should be erected in St. Paul's Cathedral if a suitable place could be found, and a sub-committee was formed to visit St. Paul's and consult with the dean on the subject. The sub-committee having reported that the dean and chapter were strongly opposed to the erection of any memorial on the floor of the cathedral, and this decision having been confirmed by a subsequent letter from the dean, the committee after consideration came to the conclusion that their objections were insuperable, and that the idea of a memorial statue in St. Paul's must be abandoned. An alternative proposal of the sub-committee that a statue should be placed at the Tate Gallery was then considered, and a resolution was proposed by the Earl of Wemyss, and seconded by the President of the Royal Academy, that "a statue be erected in a prominent position in connexion with the National Gallery of British Art founded by Sir Henry Tate on the embankment at Millbank." This resolution was carried. It was further resolved immediately to invite contributions for carrying this object into effect. It is calculated that the amount required is from 1,500*l.* to 2,000*l.*

New Vauxhall Bridge and Compensation for Seizure of Premises.—An action arising out of the street improvements in connexion with the new Vauxhall Bridge was concluded on Wednesday before Mr. Under Sheriff Burchell, in the Sheriff's Court, Red Lion-square. The claimants, Messrs. Francis & Co., cement merchants and manufacturers, of Cliffe, Kent, and Vauxhall, sought to recover the sum of 40,000*l.* from the London County Council for the loss of business, stock, &c. by reason of the compulsory seizure of their premises, the Nine Elms Cement Wharf, for the new Vauxhall Bridge. The claimants estimated their annual profits at 8,800*l.* per annum, and claimed for three years' loss of trade. The special jury assessed the damages at 24,126*l*, being 13,563*l.* for the leasehold premises, 9,643*l.* for damages to business, and 920*l.* for fixtures, &c. Judgment was given accordingly, with costs.

## *CAPITAL AND LABOUR.*

Torquay Building Trade.—Torquay carpenters contemplate striking for more pay, the increase demanded being from 7d. to 7½d. per hour. Plasterers are still on strike for a rise in wages, and have been so for many months.

Halifax Plasterers' Dispute.—A dispute has arisen in Halifax between the plasterers and their employers. In May, 1898, a conference between the masters and the men took place, and a code of rules was agreed upon to operate amongst the men employed by the master plasterers of Halifax who are members of the National Association of Operative Plasterers, but before these rules have been in operation twelve months the men are asking, it is stated, for further concessions. The following letter has been sent to Mr. Thomas Foulds, the Secretary of the Masters' Association, recently:—Sir,—At a special summoned meeting of this branch it was decided to give our employers three months' notice for an advance of one penny per hour on our present wages, also for an alteration of working rules, as we think the present condition of trade warrants us in asking for a little more money. The following are the rules which we ask to be altered:—The first is Rule 2, which we want deleting. The second is in regard to Rule 3, which instead of reading on the third line that nine and a half hours be worked, it shall read that nine hours be worked. Also in regard to Rule 6, that the words—this rule does not apply to factory whitewashing—be struck out. Hoping they will meet with your favourable consideration, we remain, yours respectfully, the Committee.

Aberdeen Joiners.—The strike in this branch of the building trade is now over, having lasted just a week. The men originally demanded an increase in standard wages from 8d. to 8½d. per hour as from May 1. The matter has been compromised, and a rise of ¼d. is to be given on April 1, and another farthing five months after. The desired change in date of giving notice of alterations of by-laws and of the same coming into effect has also been agreed to.

## *LEGAL.*

### IMPORTANT POINT UNDER THE LONDON BUILDING ACT, 1894.

The case of Drury *v.* Rickard came before a Divisional Court of Queen's Bench, composed of Mr. Justice Lawrance and Mr. Justice Channell, on the 6th inst. on the appeal of Mr. Drury from the decision of a Metropolitan Magistrate. It appeared that a complaint was made by Mr. Drury (the appellant) under the London Building Act, 1894, that the respondent, a builder, in erecting Abbey Mansions, Victoria-street (the north and south blocks), had in respect of certain things contravened the Act. The facts were shortly these:—The respondent was employed by Mr. C. J. C. Pawley, and was engaged on June 1, 1898, in erecting the south block of the building in question. It was erected to a greater height than 80 ft., without the consent of the London County Council, and, if the Act applied, in contravention of Section 47 of the Act. A notice of irregularity was served on the respondent, who claimed that, by reason of Section 202 of the Act, the building was exempt from the operation of the Act. Section 202 runs as follows: — "There shall be exempt from so much of the provisions of this Act as relates to buildings and structures . . . . any building, structure, or work vested in and in the occupation of any department of her Majesty's Government." The building was erected for and under the supervision of Mr. Pawley, who was acting as the architect of the building, but subject to the approval of the Surveyor of the Commissioners of her Majesty's Board of Works. The agreement between Mr. Pawley and the Commissioners was made on November 19, 1897, and Mr. Pawley, who was therein called the landlord, agreed to grant and the Commissioners agreed to take, a lease of a piece of land with the messuage therein described as then in course of erection, "for the term of twenty-one years from December 25, 1897, or so soon thereafter as the buildings should, in the opinion of the Office of Works, be fit for occupation." No such certificate had been given by the officers of the Office of Works, and the Commissioners had now refused to take the buildings. One of the officers of the Commissioners of Works had on several occasions during the building visited it and made suggestions. The appellant contended that the buildings were in the occupation of Mr. Pawley and not in that of any Government department, and, at any rate, would not vest in the Government until the commencement of the term of twenty-one years mentioned in the agreement. The magistrate held that the building in question came within Section 202 and was, therefore, exempt, and dismissed the complaint, but stated a case for the opinion of the Court upon the question whether the buildings were exempt. Other questions were raised before the magistrate, but their discussion did not become necessary if his view was right.

Mr. H. F. Dickens, Q.C., and Mr. Daldy appeared for the appellant, the District Surveyor of the London County Council, and Mr. Horace Avory and Mr. H. Marshall for the respondent.

Mr. Daldy contended that the buildings were not exempt, and that the respondent ought to have been convicted. He submitted that the Magistrate had gone wrong in thinking that the whole question turned upon the construction of the agreement, but did not consider the circumstances of the case, which showed that the Government were not in occupation. There was no vesting of the buildings in the Government, and the premises were occupied, if by anybody, by the builder.

Mr. Avory said that the exemption given by the Act could not apply at all if it did not apply to buildings in course of construction, because no Government department could enter into occupation until the building intended for it was completed. They might also be said to be in occupation by reason of the Government Surveyor coming in. His submission was that the building also was vested in the Government. The document was a lease in equity, and if the Commissioners could compel the grant of a lease, then the property vested in them. He contended that they could enforce a lease.

In the result Mr. Justice Lawrance said it was impossible to say that the "buildings were vested in, and in the occupation of, any department of her Majesty's Government;" and as it followed that these buildings were not vested in the Government department, the matter must go back to the magistrate so that he could decide the other points which he had not dealt with.

Mr. Justice Channell concurred.

Order accordingly.

### FORTESCUE *V.* HYAM.

A "HOUSEBREAKER'S" ACTION.

On Thursday last week, Mr. Verey, Officia Referee, tried this action, which was brought by Mr. Nathaniel Fortescue, housebreaker and excavator, of Hackney, against Mr. William Hyam, proprietor of the "White Horse" public house, Fetter-lane, City, for 72*l.*, the balance of the contract price for pulling down and clearing the site of the old "White Horse."

Mr. Powell appeared for the plaintiff, and Mr. Morton Smith (instructed by Mr. H. H. Richardson) for the defendant.

The principal point in the case was whether basement walls which retained the roadway were included in the description in the specification of "all walls," Mr. Fortescue setting up a custom in the trade that retaining walls were never pulled down unless actually specified, and that a provision for shoring the roadway should have been included if these walls had been intended to come down.

Considerable evidence was given by housebreakers on one side and surveyors, including Messrs. Cubitt & Collinson, Mr. T. Woodbridge Biggs, and Mr. Strudwick on the other, and in the result the Official Referee found against the alleged custom, and directed judgment to be entered for the defendant with costs.

### CASES UNDER THE EMPLOYERS' LIABILITY ACT.

A special sitting of the Romford County Court was held recently for the purpose of re-hearing the action, Green *v.* Carter, the jury at the trial of the case in the first instance being unable to agree. The plaintiff, Mrs. Sarah Maria Green, widow, of Hornchurch, formerly of Writtle, claimed 234*l.*, damages for the death of her husband through the alleged negligence of workmen in the employ of the defendant, Mr. William Carter, builder, of the Hermitage, Barkstone, Dorset.

Mr. C. E. Jones was for the plaintiff, and Mr. Macaskie and Mr. Cecil Walsh were for the defendant.—A jury was empanelled to try the case.

Mr. Jones said the action was brought under the Employers' Liability Act of 1880, and not the Act of last July. The facts of the case were briefly these: James John Green, a carpenter, was on December 14, 1897, employed by the defendant in connexion with the erection of certain houses on the Emerson Park estate, Hornchurch. On that day Green went into a partially-constructed house, on the roof of which a man was sawing rafters. This man, after sawing off a piece of wood about 3 ft. or 4 ft. long, allowed it to fall into the interior of the house, and Green was struck on the head by it, receiving such severe injuries that he died on December 24. The plaintiff's case was that the defendant should have provided a floor to catch the falling wood, or a hoarding to prevent it from dropping to the ground; and, further, he (Mr. Jones) contended that the man who was sawing the wood should, when the piece was about to drop, have called out to warn anybody who might have been passing below.

The jury found that Green was not required to be in the house, and it was not part of his duty to be inside the building; further, they found that Hammerton was carrying out his instructions when he cut off the timber, but they considered he showed great negligence; that warning ought to have been given; and that 100*l.* should be awarded as damages to the plaintiff.

His Honour, upon these findings, said he should enter judgment for the defendant, with costs.

AT the Wandsworth County Court, on the 1st inst., before his Honour Judge Vernon Lushington, Q.C., an action was brought under the Employers' Liability Act by Mrs. Mary Jane Hoddinot to recover damages in respect of the death of her husband, Benjamin Hoddinott, a labourer, of North-street, Wandsworth, who met his death by a fall from scaffolding in August last year. Mr. Moyses stated that the plaintiff's late husband was engaged with others in making alterations for the defendants at some stables in the Lower Richmond-road, and one day while lifting an iron fitting he fell from a scaffold to the ground below, a distance of 8 ft. 6 in. His skull was fractured, and he died shortly afterwards. The scaffolding, consisting as it did of boards laid across tall trestles, was, counsel contended, very unsafe, and showed negligence on the part of the defendants. Evidence was called to bear this out, and rebutting evidence was called to show that the scaffolding was safe. Eventually his Honour decided for the defendants, saying that the weight of evidence was on their side. Mr. Moyses then asked that an allowance should be made under the new Workmen's Compensation Act. Mr. Bower objected to this on the ground that the building in question was not 30 ft. high, as required by the Act. Evidence was given showing that the building was 28 ft. high to the top of the brickwork, and 36 ft. to the top of the roof, but his Honour overruled the objection. He decided to allow the plaintiff 245*l.* 15s.

## DISPUTE OVER AN ARCHITECT'S COMMISSION.

AT the Wolverhampton County Court, on the 30th ult., before his Honour Judge Young, Mr. Ernest James Harthill, architect and surveyor, Wolverhampton, sought to recover from Arthur Lowder, of the "Swan Hotel," Brewood, the sum of 40*l.*, alleged to be due as commission for preparing plans, specifications, &c., of a brewery at Brewood. Mr. T. Dallow appeared for the plaintiff, and Mr. R. E. C. Kettle (instructed by Mr. Bevan) for the defendant. The evidence of the plaintiff showed that at the defendant's request he prepared plans, specifications, &c., in connexion with the erection of a brewery at Brewood, and contracted to do the work at 4 per cent. on the total cost, which amounted to 1,007*l.* The defendant paid him 15*l.* on account, but afterwards disputed the amount of the commission, stating that the plaintiff agreed to do the work at 1 per cent. commission. The defence was that the plaintiff agreed to accept 10*l.* down as commission. His Honour gave a verdict for the plaintiff for 25*l.*

## THE NEW BRIGHTON TOWER COMPANY AND THEIR ARCHITECT:

### MAXWELL *v.* NEW BRIGHTON TOWER COMPANY.

THE plaintiff in this case, which came before the Manchester Winter Assizes a few days ago, was Mr. F. W. Maxwell, architect, Manchester. The action was to recover a sum due to the plaintiff for services as an architect and for damages for wrongful dismissal.

Mr. Shee, in opening the case for the plaintiff, said that in 1895 Mr. Houston purchased for 30,000*l.* the Rock Point Estate at New Brighton for the purpose of erecting a tower and other buildings. Mr. Maxwell was entrusted with the task of preparing plans, and an agreement was made between him and a syndicate formed by Mr. Houston which ultimately became the present company. Under that agreement the plaintiff was to be paid 5 per cent. on the cost of the work executed. He was also to be paid for any additional work or deviations from the original plans, and he was to be entitled to receive the usual architect's commission from contractors. The original estimate of the cost of the works was 250,000*l.*, but after they had been in progress for some time the directors of the company cut down the cost by about 50,000*l.* The plaintiff claimed the commission agreed to on the work that was actually done, 2½ per cent. on the work that was abandoned, and reasonable remuneration in respect of additional work the company required him to do in the way of alterations on and additions to the original plans. The defendants disputed many of the items in the plaintiff's claim. They also alleged that he had demanded improper commissions from contractors, that he had been guilty of extravagant expenditure in the conduct of the works, and that he had supplied the company with misleading estimates. It was also alleged that the plaintiff neglected his work, leaving it too much in the hands of his assistants.

The Judge said the case involved a great number of small details, and he thought it would hardly be right to ask a special jury to spend perhaps two or three days in sifting them.

On receiving this expression of opinion from the Judge, counsel in the case had a conference, as a result of which,

Mr. Pickford said they had come to an arrangement to refer the whole matter to Mr. Taylor, Q.C. Part of the arrangement was that he should make a short statement to the court. The defendants would entirely withdraw a certain charge they made against the plaintiff, for which there was no ground. With regard to the question of the commissions the plaintiff was to receive from contractors or persons who supplied goods, they did not make any suggestion that the plaintiff was in any way bribed by them or that he had taken them unprofessionally. What the defendants did say was that he had received commission or remuneration from contractors to which, as a matter of law, he was not entitled under the agreement the Company made with him. As to the question of neglect of duty, they did not say, and never had said, anything against Mr. Maxwell's ability and competence. On the contrary, they thought when they engaged him, and they had thought ever since, that he was a gentleman of the highest competency. What they did complain of was that, whether owing to a pressure of other work or for other reasons, they did not get from Mr. Maxwell the continuous personal supervision and attention which they thought they were justified in expecting. Whether they were right in that opinion was a matter that would have to be decided afterwards; but that was the only kind of neglect they alleged against Mr. Maxwell. Mr. Pickford added that he agreed with his friends on the other side that it was only right that he should make these admissions on behalf of the defendants before the case was taken from the jury. —*Manchester Guardian.*

## WORKMEN'S COMPENSATION ACT: LEEDS ARBITRATOR'S DECISION REVERSED.

THE first case of appeal from the decision of the Leeds arbitrator (Mr. Perks) under the Workmen's Compensation Act to the Leeds County Court Judge, came before Judge Greenhow, on the 3rd inst. The appeal was supported by Mr. A. Willey, who appeared for Sarah Ann Wood, of 7, Mario-place, Beeston-road, widow of John Wood, who, whilst engaged as a painter in the service of Messrs. W. Walsh & Sons, Wade-lane, was killed by the breaking of a rung of a ladder on which he was standing when painting the premises of Messrs. Potts & Son, Guildford-street, in September. The learned arbitrator had given his decision against the claimant, on the ground that the ladder (with a plank fixed from it to a window sill) was not a scaffold within the meaning of the Act, and that the operation in which the deceased was engaged was not repairing within the meaning of the Act. It was upon these points that the appeal was raised.

Mr. Hart (Manchester), who appeared for an insurance company, contended that the learned arbitrator was right in his ruling.

The Judge said he gave his decision on both points in favour of the workman. Whether the ladder was a scaffolding within the meaning intended by the Legislature he did not know, but it was one according to the dictionary definition, viz., "An elevated platform on which to work." If that was not a scaffolding he did not see where one could draw the line between a temporary structure and one more or less permanent. He also found, with much less doubt, that the operations in the way of painting were to be regarded as repairs.

Mr. Willey said they had agreed as to damages—237*l.* 10s.—and he asked for his Honour's award for that amount, with costs.

The Judge made the award, and directed a stay of execution for three weeks, to admit of further appeal.—*Yorkshire Post.*

## AN ARCHITECT AND HIS FEES.

THE case of Tyler *v.* Renad came before Mr. Justice Bruce and a common jury last week, the hearing of which concluded on the 6th inst., it being an action brought by Mr. Robert Emeric Tyler, an architect, carrying on business in the City, against Mr. Charles Renad and Mr. Frederic Renad, acrobats, to recover 300*l.* in respect of fees for preparing the plans and drawings for a theatre at Tottenham. The defendants denied liability.

Mr. Maloney appeared for the plaintiff and Mr. Parkyn for the defendants.

The plaintiff's case was that on January 25, 1897, he was introduced to Mr. Frederick Renad, who informed him that he and his brother proposed to build a theatre at Tottenham, and asked whether he would act as architect. The plaintiff agreed to do so, and, in accordance with instructions which he received from Mr. F. Renad, he prepared the necessary plans and drawings, which had to be submitted to the District Council at Tottenham and the Middlesex County Council. The plans were passed by those authorities, quantities were taken out, and builders were invited to tender for the erection of the theatre; but eventually the scheme fell through, owing to the fact that the necessary money was not forthcoming. The plaintiff contended that he was entitled to recover from the defendants his fees at the rate of 3 per cent. on the lowest tender submitted.

The defendants, on the other hand, denied that they instructed the plaintiff to prepare the plans and drawings in question, and contended that if he prepared them at all, he did so at the request of the Albert Theatre Syndicate, Limited, which was formed for the purpose of purchasing the freehold of the Tottenham public hall and adjoining land, and erecting a theatre on the site. They further said that the plaintiff was a member of the Syndicate, and that his remuneration was dependent on the success of the scheme.

The plaintiff, in reply, said it was not true that he prepared the plans and drawings on behalf of the Syndicate. As a matter of fact, he did not hear anything about the Syndicate until some time had elapsed.

In the result the jury awarded the plaintiff 258*l.* 13s., being 2½ per cent. on the lowest tender submitted.

Judgment accordingly.

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## MEETINGS.

### FRIDAY, FEBRUARY 10.

*Institution of Junior Engineers (Westminster Palace Hotel).*—Joint meeting with the Discussion Section of the Architectural Association. Paper on "Factory Design," by Mr. J. H. Pearson. 7.30 p.m.

*Institution of Mechanical Engineers.*—Annual General Meeting (concluded). 7.30 p.m.

*Royal Institution.*— Professor H. S. Hele-Shaw on "The Motion of a Perfect Liquid," illustrated by experiments. 9 p.m.

*Institution of Civil Engineers (Students' Meeting).*—Mr. W. Middleton on "The Electrical Driving of Engineering Workshops." 8 p.m.

*Exeter Diocesan Architectural and Archæological Society.*—Mr. Harbottle Reed on "Churches of Tintagel and Neighbourhood." 2 p.m.

### SATURDAY, FEBRUARY 11.

*Royal Institution.*—The Right Hon. Lord Rayleigh on "The Mechanical Properties of Bodies." I. 3 p.m.

*South Kensington Museum (Lecture Theatre).*—Mr. J. H. Pollen, M.A., on "Furniture." I. 3.30 p.m.

*London and Provincial Builders' Foremen's Association.*—Annual Dinner, Anderton's Hotel, Fleet-street. 6.30 p.m.

*Edinburgh Architectural Association.*—Visit to Cable Power Station, Tollcross.

### MONDAY, FEBRUARY 13.

*Royal Academy.*—Lectures on "Greek Architecture," by Professor Aitchison, R.A. V. 4 p.m.

*Carpenters' Hall, London Wall (Free Lectures on Matters connected with Building).*—Mr. Basil Mott on "Building an Underground Railway." With lantern illustrations. 8 p.m.

*Clerks of Works' Association.*—Sixteenth Annual Dinner, King's Hall, Holborn Restaurant. 6.30 p.m.

*Bristol Society of Architects.*—Mr. Arthur Lee on "Marble Decoration."

### TUESDAY, FEBRUARY 14.

*Institution of Civil Engineers.*—Messrs. Jeremiah Head and Archibald P. Head, on "The Lake Superior Iron Ore Mines, and their Influence upon the Production of Iron and Steel." 8 p.m.

*Northampton Institute, Clerkenwell.*—Lectures on Mediæval Architecture, by Mr. Francis Bond. VI. "The Dome at Home." 7.45 p.m.

*Sheffield Society of Architects and Surveyors.*—Mr. P. Marshall on "Surveying."

*Perth Architectural Association.*—Mr. W. Watson on "The Progress of Sanitary Science." 8 p.m.

### WEDNESDAY, FEBRUARY 15.

*British Archæological Association.* — Professor McKenny Hughes on "The Fens." 8 p.m.

*Society of Arts.*—The Rev. J. M. Bacon on "The Balloon as an Instrument of Scientific Research." 8 p.m.

*Builders' Foremen and Clerks of Works' Institution.*—Ordinary meeting of the members. 8 p.m.

### THURSDAY, FEBRUARY 16.

*Royal Academy.*—Lectures on "Greek Architecture," by Professor Aitchison, R.A. VI. 4 p.m.

*Society for the Encouragement of the Fine Arts.*—Mr. G. C. Haité on "The Elements of Design in Painting." 8 p.m.

*Society of Antiquaries.*—8.30 p.m.

*Institution of Civil Engineers.*—Students' visit to the works of the new Vauxhall Bridge. 2.30 p.m.

*Civil and Mechanical Engineers' Society (Hotel Victoria, Northumberland-avenue, S.W.).* — Mr. M. Holroyd Smith on "Electric Tramways." 7.30 p.m.

### FRIDAY, FEBRUARY 17.

*Architectural Association.*—Mr. Cole A. Adams on "Colour Decoration." 7.30 p.m.

*Glasgow and West of Scotland Technical College (Architectural Craftsman's Society).* — "Notes on Building Materials," by Messrs. R. W. Horn and A. Davie.

### SATURDAY, FEBRUARY 18.

*Architectural Association.*—Spring Visit to the Roman Catholic Cathedral, Ashley Gardens, Victoria-street, Westminster, by permission of the architect, Mr. J. F. Bentley. 3 p.m.

*South Kensington Museum (Lecture Theatre).*—Mr. J. H. Pollen, M.A., on "Furniture." II. 3.30 p.m.

*Royal Institution.*—The Right Hon. Lord Rayleigh on "The Mechanical Properties of Bodies." II. 3 p.m.

*Perth Architectural Association.* — Visit to Wilson U.P. Church, New Scott-street. 2.30 p.m.

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## RECENT PATENTS:

### ACCEPTED SPECIFICATIONS.

### *Open to Opposition until April 1.*

[1897.] 24,446, J. B. & Lucy Heal, Low-pressure Automatical Acetylene Gas Generator. 27,569, Earnshaw, Sash Fasteners. 30,284, Adams, Hot and Cold Water Taps. [1898.] 1,758, Bromhead, Fireproof Roofs and Floors. 1,774, Webb, Cooking Ranges and Stoves. 1,831, Bous-

# COMPETITIONS, CONTRACTS, AND PUBLIC APPOINTMENTS.

## COMPETITIONS.

| Nature of Work. | By whom Advertised. | Premiums. | Designs to be delivered. |
|---|---|---|---|
| *House | Doncaster Grammar School Trustees | 50l. and 25l. | Mar. 30 |
| *Concrete Hall, Reading Room and Lavatories | Ramsgate Corp. | 50l.; 20l.; and 10l. | Mar. 31 |
| *Market Hall and Shops | Leeds Corp. | 150l.; 100l.; and 50l. | June 1 |
| *Vagrant Wards | Hexham Union | 20l. | No date |

## CONTRACTS.

| Nature of Work or Materials. | By whom Required. | Forms of Tender, &c. Supplied by | Tenders to be delivered. |
|---|---|---|---|
| *Excavation of Site of Electric Lighting Station | Hammersmith Vestry | H. Mair, Town Hall, Hammersmith, W. | Feb. 13 |
| *Materials, &c. (various) | Hendon U.D.C. | S.S. Grimley, Public Offices, Hendon, N.W. | do. |
| *Show Yards | Somt. Cty. Agric. Ass. | A. Cottom, Bridgewater | Feb. 14 |
| *Supplies (various) | Cty. Boro. of West Ham | See Advt. | do. |
| Granite Road Metal, &c. | Doncaster R.D.C. | F. E. Nicholson, Union Offices, Doncaster | do. |
| Four Villas, Exmouth | H. Blackmore | P. Kerley, Archt. Exmouth | do. |
| Alterations, &c. 13, Charlotte-st. Hull | ........ | T. B. Thompson, Archt. 15, Parliament-st. Hull | do. |
| Oddfellows' Hall, Hull | Committee | do. | do. |
| Two Houses, Hilderthorpe, nr. Bridlington Quay | F. Shaw | J. Earnshaw, Archt. Bridlington Quay | do. |
| Sewerage Works | Caerphilly U.D.C. | A. Harpur, C.E. Council Offices | do. |
| House and Shop, Wagonway-road, Alnwick | —— | J. Purvis, 16, Bridge-st. Alnwick | do. |
| *Road Making (Honor Oak Park) | Lewisham B. of W. | Surveyor's Dept. Town Hall, Catford | do. |
| *Road Making (Westwood Park) | do. | do. | do. |
| *Works and Materials | Hampstead Vestry | Surveyor, Vestry Hall, Hampstead | Feb. 15 |
| Flagging, &c. | Bristol Corp. | T. H. Yabbicom, C.E. 63, Queen-sq. Bristol | do. |
| Additions to Workhouse | Hailsham R.D.C. | Mitchell & Ford, Archt. 2, Langney-rd. Eastbourne | do. |
| Street Works, Railway-st. | Nelson (Lancs.) Corp. | B. Ball, C.E. Town Hall | do. |
| Two Walls, Road Works, &c. Cliff-st. Cheddar | Axbridge R.D.C. | G. Cook, Surv. Axbridge | do. |
| Road Materials | Stockport Corp. | J. Atkinson, C.E. Boro Surveyor | Feb. 16 |
| Sewer, Strand-road | Bray Township Commissioners | P. Comber, C.E. Town Hall Bray (Ireland) | do. |
| Factory, Barton-st. Bristol | E. Brodrick & Co. | H. Williams, Archt. 24, Clare-st. Bristol | do. |
| Stable Offices, Alves, near Elgin, N.B. | ........ | Reid & Wittet, Archt. Elgin | do. |
| Water Supply Works, Upton | Caldbeck Parish Council | G. Watson & Son, Engr. 3, St. Andrew's-place, Penrith | do. |
| Sewerage Works | Southend Corp. | A. Fidler, C.E. Clarence-road, Southend | do. |
| *Billiard Room, Concert Hall, &c. at Club | Leyton (Essex) Progressive Club | The Club House Pioneer Lodge, Church-road, Leyton | Feb. 17 |
| Making-up 14 Streets | Bexhill U.D.C. | G. Ball, C.E. Town Hall | do. |
| Police Station, Halesowen | Worcester C.C. | H. Rowe, County Surv. Worcester | do. |
| Cottage, Woodhouse Moor | Leeds Corp. | City Engineer, Municipal Buildings | do. |
| Additions to Baths | Darlington Corp. | Boro Surv. Town Hall | do. |
| Footpaths, Walverden Park | Nelson (Lancs.) Corp. | B. Ball, C.E. Town Hall | do. |
| Boundary Walls, &c. | Nottingham Corp. | A. Brown, C.E. Guildhall, Nottingham | do. |
| *Twelve Houses, and Dwelling House and Shop | —— | Morgan, Baines, & Clark, Sutton, Surrey | Feb. 18 |
| Sewers, Banchory, N.B. | —— | Jenkins & Marr, Archt. 16 Bridge-st. Aberdeen | do. |
| Slag and Granite | Oundle R.D.C. | N. E. Dixon, Surv. Oundle | do. |
| Wesleyan Church, Ladybarn, Manchester | —— | Greaves & Burbridge, Archt 1, Harrington-st. Liverpool | do. |
| Additions to Police Station, Helmsley | —— | W. Stead, County Surv. Northallerton | do. |
| Church Works, Kilbarchan, N.B. | ........ | W. H. Howie, Archt. 131, West Regent-st. Glasgow | do. |
| Villa, Bradshaw, near Halifax | J. Patchett | W. C. Williams, Archt. 29, Southgate, Halifax | do. |
| Road Materials | Glam. C.C. | T. L. Edwards, County Surv. Town Hall, Bridgend | do. |
| Sewers | Evesham R.D.C. | H. S. Harvey, Albert-rd. Evesham | do. |
| *Artisans' Dwellings | Southampton Corp. | Municipal Offices | Feb. 20 |
| Chapel | Chartham Parish Council | A. Bromley, Archt. Cathedral Precincts, Canterbury | do. |
| *Sewage Disposal Works | Staines U.D.C. | J. C. Melliss, 264, Gresham House, Old Broad-street, E.C. | Feb. 21 |
| Stone and Gravel | Salisbury R.D.C. | D. W. Morrice, Surveyor, Homington, Salisbury | do. |
| Additions to Schools, Barn-st. | Haverfordwest Sch. Bd | D. E. Thomas, Archt. Victoria-pl. Haverfordwest | do. |
| Flags, Kerbing, &c. | Bury (Lancs.) Corp. | J. Cartwright, C.E. Bury | do. |
| Sewers, Dunham Massey | Bucklow R.D.C. | J. M'Kenzie, Surv. 7, Market-st. Altrincham | do. |
| *Works and Services (various) | Battersea Vestry | J. T. Pilditch, Vestry Hall, Lavender Hill, S.W. | do. |

## CONTRACTS—*Continued.*

| Nature of Work or Materials. | By whom Required. | Forms of Tender, &c. Supplied by | Tenders to be delivered. |
|---|---|---|---|
| Granite Setts (950 tons) | Clayton-le-Moors U.D.C. | A. Dodgeon, Surv. Council Offices | Feb. 22 |
| Additions to Sewage Works | Gorton (Lancs.) U.D.C. | C. J. Lomax, Engr. 37, Cross-st. Manchester | do. |
| Bridge over River Sawdde, Llangadock | Llandovery R.D.C. | M. W. Davies, C.E. Gloucester-place, Swansea | do. |
| Warehouse, West Vale, Halifax | —— | Horsfall & Son, Archt. Halifax | do. |
| Hospital Block | Workington Corp. | W. Eaglesfield, Boro. Surv. Town Hall | do. |
| Sewerage Works | Ramsbottom U.D.C. | J. W. Barlow, Market-pl. Ramsbottom | do. |
| *Road Making and Paving | Fulham Vestry | C. Botterill, Town Hall, Walham Green, S.W. | do. |
| *Works and Materials | Hackney Vestry | J. Lovegrove, Town Hall, Hackney, N.E. | do. |
| Three Houses, Hipperholme | ........ | R. Berry, Archt. Commercial-st. Halifax | Feb. 24 |
| Granite, &c. | East Sussex C.C. | F. J. Wood, C.E. County Hall, Lewes | Feb. 25 |
| Road Materials | Horncastle R.D.C. | J. E. Chatterton, Council Offices | do. |
| Sewerage Works | St. Annes-on-Sea U.D.C. | H. Bancroft, C.E. 88, Mosley-st. Manchester | do. |
| *Works and Repairs | Commrs. H.M. Works | Office, Storey's Gate, Westminster | do. |
| Electric Lighting Extensions | Wolverhampton Corp. | J. W. Bradley, C.E. Town Hall | Feb. 27 |
| Reservoir | Merthyr Tydfil U.D.C. | T. F. Harvey, Engr. Town Hall | do. |
| Church Works, Llantwit Major, Glam. | —— | G. E. Halliday, Archt. Cardiff | do. |
| Two Cottages, St. Erth, Cornwall | G. W. Ry. Co. | G. K. Mills, Paddington Station, W. | Feb. 28 |
| Water Supply Works | Wakefield Corp. | C. G. Smith, C.E. Town Hall | do. |
| *Stabling, and Horse Keeper's Residence | Woolwich Local Board of Health | J. A. Cook, 1A, Eleanor-rd. Woolwich | do. |
| *Two Cottages | L.C.C. | Engineer's Department, County Hall, Spring Gardens, S.W. | do. |
| Hotel, Hebden Bridge | Halifax Brewery Co. | W. C. Williams, Archt. 29, Southgate, Halifax | Feb. 29 |
| *Cement Ballast, York Paving, &c. | St. Saviour's B. of W. | G. R. Norrish, Offices, Emerson-st. Bankside, S.E. | Mar. 1 |
| Storage Reservoir, Nant-y-geifr | Llanidloes T.C. | F. Beesley & Son, Engr. 11, Victoria-st. S.W. | do. |
| *Infirmary at Workhouse | Congleton Union | Master at Workhouse, Arclid | do. |
| *Works and Repairs in Hampton Court, Kew and Richmond Districts | Commrs. H.M. Works | Offices, Storey's Gate, Westminster | Mar. 2 |
| Schools | Sowerby Bridge S.B. | Horsfall & Son, Archt. Lord-st. Chmbrs. Halifax | Mar. 3 |
| *Services and Materials (various) | Bermondsey Vestry | F. Ryall, Town Hall, Spa-road, S.E. | Mar. 4 |
| Additions to Schools, Abergwynfi | Glyncorrwg Sch. Bd. | O. P. Lambert, Archt. Bridgend | Mar. 7 |
| *Underground Convenience also Asphalt Works | Camberwell Vestry | W. Oxtoby, Vestry Hall, Camberwell | See advt. |
| *School | Asker Haberdashers' Schools | Widnell & Trollope, 20, Tothill-st. S.W. | No date |
| *Painting and Decorating | Trustees Grand Stand, Ascot | W. Menzies, Englefield Green, Surrey | do. |
| Alterations to Premises, Scotch-st. Armagh | F. Mitchell | J. F. Gilchrist, Archt. Scotch-st. Armagh | do. |
| Schools, Hatfield Heath, Essex | ........ | Brown & Barrow, Archt. 12, Norfolk-st. W.C. | do. |
| Rebuilding Queen's Arms Inn, Barrow | Worthington & Co. Ltd. | E. M. Young, Archt. 90, Duke-st. Barrow-in-Furness | do. |
| Additions to National Schools, Morecambe | —— | Marshall Bros. Archt. Back-crescent, Morecambe | do. |
| Shops, &c. Poynton, nr. Stockport | —— | F. W. Dixon, Archt. Trevelyan-bldgs. Manchester | do. |
| Restaurant, North Albert-st. Fleetwood | R. Leadbetter & Sons | T. A. Drummond & Sons, Archt. Fleetwood | do. |
| Street Works, Ashley-gdns. Belfast | —— | D. M'Gonigal, 10, Donegall-st. Belfast | do. |
| *Hard or Rough Flag, or Suitable Rock | Diamond Stone Working Co. Ltd. | The Company, Burnley | do. |

## PUBLIC APPOINTMENTS.

| Nature of Appointment. | By whom Advertised. | Salary. | Application to be in. |
|---|---|---|---|
| *Engineer and Surveyor | Harrow-on-the-Hill U.D.C. | 160l. rising to 200l. per an. | Feb. 13 |
| *Inspector of Nuisances | do. | 130l. per annum | do. |
| *Foreman (Hardwood Paving) | Hackney Vestry | 3l. 5s. per week | do. |
| *Architectural Assistant | Oldham Corp. | 150l. per annum | Feb. 14 |
| Surveyor | Woodbridge (Suffolk) R.D.C. | 200l. per annum | do. |
| Surveyor | Ely R.D.C. | 100l. per annum | Feb. 15 |
| Surveyor | Wisbech R.D.C. | 140l. per annum | Feb. 16 |
| *Building Inspector | Tottenham U.D.C. | 150l. per annum | Feb. 20 |
| *Sanitary Inspector | Chelsea Vestry | 120l. rising to 180l. per an. | Feb. 24 |
| *Bricklaying Instructor | L.C.C. | 2l. 10s. rising to 3l. per week | Feb. 25 |
| *Superintending Architect | do. | 2,000l. per annum | do. |

*Those marked with an asterisk (*) are advertised in this Number. Competitions, p.* iv. *Contracts, pp.* iv. vi. viii. x. & xxii. *Public Appointments, pp.* xix. & xxii.

field, Grooved Rails for Sliding Doors. 1,966, Gammie, Window Frames and Sashes. 1,982, Waller, Attachment and Detachment of Metal Doors or Covers of Frames for Inspection Chambers and other Appliances employed for Sanitary and other purposes. 1,990, Jacques, Lathes. 2,384, Holbrook & Harding, and 6,128, Ackroyd & Best, Miners' and other Safety Lamps. 2,541, Piper, Power Mortising Machine. 3,228, Sanderson, Acetylene Lamps for Lighting and Heating. 3,280, Taylor & Hollick, Mills for Cement, &c. 3,866, Shanks, Syphon Flushing Apparatus. 4,050, Cowan and Coley, Ladder Steps. 4,051, Buggé, Means for Preventing the Spread of Fire. 5,061, Thompson, Shaping and Ornamenting Wood and other yielding Materials by Pressure. 5,336, Barralet, Regulating the Supplies of Gas and Water to "Geysers." 5,538, Dedecker, and 26,862, Gardner & Kelly, Acetylene Gas Apparatus. 6,006, Percival, Acetylene, Hydrogen, and similar Gas Generators. 6,522, Walsh, Burners and Globes. 6,677, Smith, Asquith, & Asquith, Safety Doors and Gates for Hoists. 6,773, Stewart, Street Lanterns for Incandescent Electrical Lamps. 6,926-7, J. Duckett & Son, and others, Waste-water Preventers and Traps for Soil Pipes. 7,284, Burgess & Burgess, Catches, Fastenings, and other Furniture for Windows, Doors, &c. 7,503, Cox & McTaggart, Refuse Destructors. 8,320, West & Hodges, Circular Saw Guard. 9,929, Pusill & Featherby, Method of Tubing Artesian Wells. 14,162, Whittaker & Bryant, Purification of Sewage. 19,637, Thomas, Syphoning and Flushing Apparatus for Lavatory Wash Basins. 20,492, Thom, Folding Wheelbarrows. 20,842, Streubel, Gas Cocks for Street Lamps. 20,846, Sagendorph, Metallic Ceiling and Wall Plates, and Means of Securing them to Metallic Beams. 21,742, Swift, Furnaces for Brick Kilns, &c. 22,347, Miller, Walls for Grain Storage Bins, &c. 23,389, Sapy and others, Water Meters. 24,283, Juhasz, and 25,199, Rammoser, Röhrs, & Röhrson, Automatical Gas Igniters for Incandescent Mantles. 25,218, Ham, Baker, & Sansom, Street Gully and Similar Gratings. 25,259, Obst, Electrical Speed Indicators. 25,726, Brown, a Vice. 26,545, Küpper, Walls and Wall Plates or Slabs. 26,879, Dimmitt, Ball Bearing Castor. 27,007, Ottesen, Arc Lamps. 27,103, the E. Ingraham Co., Sashes or Glazed Doors for Clock Dials. 27,324, Crane, Illuminated Clocks.

### ABSTRACTS OF PATENTED INVENTIONS.

22,167.—Dry Closets and Deodorants: *D. O'Brien.*—For a range of closets a pan, having a perforated bottom, whereon rests a layer of filtering material, is placed beneath each seat, and is furnished with a receptacle for liquid and a conducting tube. Pipes convey the liquid, flowing into a trough, to a pit containing ashes mixed with a disinfectant. A series of hoppers, filled with some absorbent material, is supported by a bar mounted in bearings in the end walls, and fitted with an operating lever, which at intervals swings the hoppers backwards, allowing them to fall, so that each strikes the back of the seat and discharges part of its contents into the pan below. For a single closet the hopper is moved by means of a chain, and bars carry the pan over a pit; or the hopper may be connected to a movable seat. For a deodorising compound may be mixed ½ ton of dry night-soil, 18 cwt. of ashes, 5 lbs. of ground charcoal, 1½ lbs. of permanganate of potash, 1 lb. of gypsum, and 2½ lbs. of alum; ½ oz. of izal in a quart of boiling water is sprinkled over the ashes.

22,170.—Systems of Lighting: *W. G. Inglefied.*—The contrivance, adapted for use in store-rooms, corridors, hospitals, mines, factories, and so on, and applicable for gas, oil, or electrical lamps, comprises a carrying wire which is stretched lengthwise and has sliding bobbins wherefrom india-rubber cords suspend the lamps. Conducting wires hang from the main wire by hooks, and are coiled around the india-rubber cords so that the lamps can be pulled down as may be desired.

22,205.—Waterproofing Ropes, Fabrics, &c.: *A. L. Kennedy.*—With the strands or threads of the rope or fabric are combined, during the process of twisting, spinning, or weaving, other strands of nitrocellulose or acetate of cellulose, the application of a solvent causes the cellulose to impregnate the fibre or threads, and to thus make the material waterproof.

22,220.—Water-waste Preventing Syphon Discharge: *F. Wangelin.*—The flush is started by lowering the bend of the syphon, which is adapted to slide within the discharge-pipe, the bend is lowered by a contrivance whereby the pull-chain rotates a sleeve upon the shaft and together with it an arm which carries a disc. A pin upon the disc engages with one end of a weighted arm, whose other end supports the syphon, and in raising it lets the syphon fall.

22,223.—CLEATS OR HOLDERS FOR ROPES, CORDS, &c. : *E. F. Hartshorn.*—A swinging frame embraces the pulley, at each side whereof is a notched hub; pawls are adjusted to engage in the notches of the hubs, and in doing so cause the frame to be swung up as the load descends, when the cord or rope becomes jammed; to lower the load, the rope must first be freed by lifting the load a little that the pawls may rise out of the notches; in lowering or raising the load the pawls do not engage in the notches, owing to the rapid rotation of the hubs.

22,252.—FASTENINGS FOR WINDOW BLINDS OR SHUTTERS : *H. Spencer.*—To secure shutters or blinds, when opened, a lever on the lower hings is pivotted to that portion of the hinge which is secured to the frame or wall; on the shutter stile is an inclined block, over which the lever is turned, in order to keep the shutter close against the wall, the hinge-plate is flanged or slotted to strengthen the lever in its horizontal, or fixed, position, so that the lever's inner end may engage with the slot or flange.

22,273.—LIGHTING AND EXTINGUISHING OIL LAMPS : *E. Weinhagen.*—For lamps whose wick is lighted by hydrogen gas, which is ignited by its impinging upon spongy platinum, the gas-vessel is detachably connected by means of tubing with the arms which carry the hydrogen jet and the platinum igniter. The arms may be mounted so as to be raised to the wick's level at the moment of lighting, and to be lowered when the gas supply is cut off by means of the release of a spring or self-closing valve. A ball or air-pump extinguishes the flame.

22,282.—PARALLEL RULERS : *J. H. Stone.*—On one part of the ruler is a guide or straight-edge, beneath which passes a measuring rule, which is attached to the other part of the instrument. Thus the distance between two ruled parallel lines can be set out. The measuring rule may be attached in various places, and may be turned out of the way when a long rule is used.

22,303.—FIXING THEIR HANDLES IN HAMMERS, PICKS, BROOMS, &c. : *J. R. Smith.*—A taper plug made to fit into an axial hole bored in the handle expands the handle when put into the taper socket of the head of the tool when the handle is driven in; a pin fits into slots cut transversely in the handle's end, and its pressure outwards will enable the handle to be removed; in lieu of a pin a flange may be formed upon the thick end of the plug.

22,315.—MOULDING BRICKS, &c. : *D. Black.*—A hopper feeds clay into the moulds, which are arranged radially in a rotating cylinder, and the plungers have rollers that run upon a fixed cam, transverse slides having pins or projections for running in a fixed cam-groove, close the moulds for pressing, and are again withdrawn before the moulds begin to discharge their contents; a cam and lever acting upon inner projections of the plungers force the bricks downwards on to a travelling band; a weight on a lever raises a plunger before its inner projection leaves the fixed cam-groove of the lever, whilst a fixed cam keeps the lever in position until the mould is again filled from the hopper.

22,328.—LINTELS FOR DOORS AND WINDOWS : *H. Mason.*—The lintels, of cast metal, and built into the wall, have ornamental fronts, and have recesses in which doors and windows can be raised for their removal; recessed plates hold the window or door when it is lowered into a position between them; the lintel may be cast in one piece, or flanges may be bolted to the face-plate and to one another.

22,417.—DRAIN-TRAPS : *A. G. Mitchell & J. A. Bolger.*—A weighted flap-valve closes the lower end of a pipe which hangs down from the grating; around the pipe's upper end is placed (upon a diaphragm) some disinfecting material through which the gases pass to the apertures of the grating.

22,428.—WASTE WATER-CLOSETS AND FLUSHING : *L. Ashworth & J. Taylor.*—A trap is formed by the dipping into the seal of an annular flange made upon the basin, whilst the dished top of a central pillar prevents obstructions from passing into the drain; a ring that can be turned to any angle at the joint forms a connexion between the tipper and the vessel containing the trap.

22,467.—FRET-SAW BLADES : *Hobbies & H. Jewson.*—By means of a screw-clamp which consists of a thumb-screw and a strap, the saw-blades are secured in fret-saw frames, the strap engages with a notch in one arm, and the screw bears on the other arm of the clamp—the arms having roughened faces for holding the saw-blade; the arms may also be formed in one piece screwed with the tension device as in No. 17,006 of 1897.

22,487.—PLUG COCKS : *D. Sugden.*—The inventor's object is to prevent jamming in the cock; he forms the plug in two portions between which he puts spiral and ring springs, the former springs are kept in position by pegs, and a spindle, whose extensions engage with grooves in the plug, actuates the valve, the cap of the cock serves as a stuffing-box, containing a loose packing-gland which a screw-gland holds down.

22,526.—GLAZING FOR ROOFS, DOMES, WINDOWS, FRAMES, &c. : *S. Carlisle (J. R. Carlisle's Administratrix).*—To the rafter is secured a bedding strip of lead, soft metal, or composition, and a rabbeted round-backed cover-plate, screwed on to the rafter, holds the sheets of glass in their places; joints are rendered air and water tight with cement, and the glazing bars are fashioned with a thickened centre for strengthening purposes.

22,662.—FILTRATION OF SEWAGE : *B. Harlow.*—The sewage-tank has walls made of two rows of iron bars, between which the filtering medium is placed, the medium consisting of peat, sand, coke-breeze, &c.; a cast-iron floor, made in segments, carries the bars. To facilitate drainage of water from the sludge, the spaces between the bars reach down to the floor, and pipes or openings, controlled by valves, are formed in the bottom of the tank.

22,681.—LAVATORY BASINS : *J. Shanks.*—A rectangular rubber-cushioned frame, bolted to the wall and supported by struts, carries the basin; the supply enters the valve-box through valves attached upon spindles and closed, normally, by springs; the valve-spindles are connected by rods with treadles, pivotted to a wall-plate; the mixed hot and cold water passes from the mixing-chamber through a pipe to the flushing-scroll, and the basin is bolted to the waste pipe, which is trapped at its upper end.

22,741.—STONE-PRESERVING COMPOSITION : *A. A. Dickson.*—In order to obviate disintegration of the material by blasting operations, the gypsum or similar hydrated rock is mined by sawing or channelling machinery; the blocks, after having been shaped or turned to the form desired, are dried by hot air; when slowly cooled, they are immersed in a solution of ammonia alum, then dried in open air, and polished. The solution may be coloured with chrome or iron alum.

## PRICES CURRENT OF MATERIALS.

### TIMBER.

| | | |
|---|---|---|
| Greenheart, B.G. ton | 8/0/0 | 0/0/0 |
| Teak, E.I. ....load | 10/10/0 | 15/10/0 |
| Sequoia, U.S. ft. cu. | 1/9/0 | 2/0/0 |
| Ash, Canada, load | 3/17/6 | 5/5/0 |
| Birch, do. ........ | 3/0/0 | 5/0/0 |
| Elm, do. ......... | 4/12/6 | 5/15/0 |
| Fir, Dantsic, &c. .. | 2/0/0 | 4/0/0 |
| Oak, do. ......... | 3/5/0 | 3/15/0 |
| Canada ........ | 4/0/0 | 6/0/0 |
| Pine, Canada red. | 0/0/0 | 0/0/0 |
| Do. yellow .... | 4/7/6 | 6/5/0 |
| Lath, Dantsic, fath | 4/10/0 | 5/10/0 |
| St. Petersburg .. | 4/0/0 | 6/10/0 |
| Wainscot, Riga, &c., log ....... | 3/15/0 | 5/15/0 |
| Odessa, crown .... | 3/15/0 | 5/15/0 |
| Deals, Finland 2nd & 1st std. 100 .. | 9/15/0 | 10/5/0 |
| Do. 4th & 3rd .. | 9/15/0 | 10/5/0 |
| Do. Riga ...... | 8/5/0 | 9/5/0 |
| St. Petersburg, 1st yellow .... | 11/15/0 | 14/5/0 |
| Do. 2nd yellow. | 10/15/0 | 12/5/0 |
| Do. white ...... | 9/15/0 | 11/15/0 |
| Swedish ........ | 9/15/0 | 16/15/0 |
| White Sea .... | 10/15/0 | 18/0/0 |
| Canada, Pine 1st | 18/15/0 | 25/5/0 |
| Do. do. 2nd .. | 13/15/0 | 17/0/0 |
| Do. do. 3rd, &c. | 6/0/0 | 10/0/0 |
| Do. Spruce, 1st. | 8/10/0 | 10/10/0 |
| Do. do. 3rd and 2nd ......... | 7/5/0 | 8/10/0 |
| New Brunswick | 7/5/0 | 8/0/0 |
| Battens all kinds . | 5/0/0 | 16/0/0 |
| Flooring boards, sq., 1 in., prep. 1st ........... | 9/6 | 16/3 |
| Do. 2nd ........ | 8/0 | 13/3 |
| Other qualities— | 6/3 | 7/0 |
| Cedar, Cuba, ft. .. | /4 | /4½ |
| Honduras, &c. .. | /3½ | /4½ |
| Mahogany, Cuba. | /5½ | /7 |
| St. Domingo, cargo av. | /5 | 1/3 |
| Mexican, do. do. | /3½ | /4 |
| Tobasco, do. do. | /4 | /6½ |
| Honduras, do. .. | /4 | /6 |
| Box, Turkey, ton. | 4/0/0 | 15/0/0 |
| Rose, Rio ........ | 7/0/0 | 14/0/0 |
| Bahia ......... | 6/0/0 | 12/0/0 |
| Satin, St. Doming. | /5 | 1/0 |

### TIMBER *(continued).*

| | | |
|---|---|---|
| Satin, Porto Rico | 0/0/9 | 0/2/0 |
| Walnut, Italian .. | 0/0/3 | 0/0/7 |

### METALS.

| | | |
|---|---|---|
| Iron—Pig, in Scotland ........ton | 2/14/10 | 0/0/0 |
| Bar, Welsh, in London ........ | 6/0/0 | 6/5/0 |
| Do. do. at works in Wales ...... | 5/15/0 | 5/17/6 |
| Do. Staffordshire, in London .... | 6/5/0 | 7/10/0 |
| COPPER—British cake and ingot | 76/10/0 | 77/0/0 |
| Best selected .. | 77/0/0 | 77/10/0 |
| Sheets, strong .. | 80/0/0 | 82/0/0 |
| Chili bars ...... | 72/2/6 | 0/0/0 |
| YELLOW MTL. lb. | 7d. | 7½d. |
| LEAD—Pig Spanish .... ton | 15/10/0 | 0/0/0 |
| English com. Brands ........ | 15/15/0 | 0/0/0 |
| Sheet, English 6 lbs. per sq. ft. and upwards .. | 16/15/0 | 0/0/0 |
| Pipe .......... | 17/5/0 | 0/0/0 |
| ZINC—English sheet........ton | 29/10/0 | 0/0/0 |
| Vieille Montagne .......... | 31/0/0 | 0/0/0 |
| Spelter ........ | 27/0/0 | 27/5/0 |
| TIN—Straits .... | 109/15/0 | 0/0/0 |
| Australian ...... | 110/0/0 | 111/0/0 |
| English Ingots. | 113/10/0 | 114/10/0 |
| Banca ......... | 0/0/0 | 0/0/0 |
| Billiton ........ | 0/0/0 | 0/0/0 |

### OILS.

| | | |
|---|---|---|
| Linseed ......ton | 17/7/6 | 0/0/0 |
| Cocoanut, Cochin | 27/15/0 | 0/0/0 |
| Do. Ceylon ...... | 24/10/0 | 0/0/0 |
| Palm, Lagos ...... | 21/15/0 | 0/0/0 |
| Rapeseed, English pale ......... | 22/15/0 | 0/0/0 |
| Do. Brown ...... | 21/5/0 | 0/0/0 |
| Cottonseed ref. .. | 15/0/0 | 16/0/0 |
| Oleine ........... | 17/0/0 | 18/0/0 |
| Lubricating U.S. | 0/5/3 | 0/7/6 |
| Do. Black ........ | 0/5/0 | 0/6/6 |
| TAR—Stockholm barrel | 1/5/0 | 0/0/0 |
| Archangel ...... | 0/18/0 | 0/0/0 |
| Turpentine ...... | 31/5/0 | 0/0/0 |

## TO CORRESPONDENTS.

A. H. (amounts should have been stated).—J. W. P. (none of the words quoted in your letter were used at all in this journal).—D. H. B. (too late).

NOTE.—The responsibility of signed articles, letters, and papers ead at public meetings, rests, of course, with the authors.

*We cannot undertake to return rejected communications.*

Letters or communications (beyond mere news items) which have been duplicated for other journals are NOT DESIRED.

We are compelled to decline pointing out books and giving addresses.

Any commission to a contributor to write an article is given subject to the approval of the article, when written, by the Editor, who retains the right to reject it if unsatisfactory. The receipt by the author of a proof of an article in type does not necessarily imply its acceptance.

All communications regarding literary and artistic matters should be addressed to THE EDITOR; those relating to advertisements and other exclusively business matters should be addressed to THE PUBLISHER, and *not* to the Editor.

## TENDERS.

[Communications for insertion under this heading should be addressed to "The Editor," and must reach us *not later than* 10 *a.m. on Thursdays.* N.B.—We cannot publish Tenders unless authenticated by the name and address of the sender; and we cannot publish announcements of Tenders accepted unless the amount of the Tender is given, nor any list in which the lowest Tender is under £100, unless in some exceptional cases and for special reasons.]

BANBURY.—Accepted for the supply of Hartshill stone for the Town Council. Mr. N. H. Dawson, C.E., Town Hall, Banbury:—

| | s. | d. |
|---|---|---|
| Tees Hartshill Granite and Brick Company, Limited, Hartshill ........ | 6 | 8 |

[Per ton Hartshill Block stone].

BANBURY.—For reconstructing the public swimming-bath, for the Town Council. Mr. N. H. Dawson, C.E., Town Hall, Banbury:—

| | | | |
|---|---|---|---|
| J. S. Kimberley .......... | £1,478 | Orchard & Son, Banbury* | £1,393 |

* Accepted.

CARDIFF.—Eor extensions to electric lighting station, Eldon-road, for the Corporation. Mr. W. Harpur, M.Inst.C.E., Borough Engineer, Town Hall, Cardiff. Quantities by the Engineer:—

| | | | |
|---|---|---|---|
| Jones Bros. ............ | £4,924 | T. Maggs .............. | £4,442 |
| J. Allan .............. | 4,880 | Rees & Thomas .......... | 4,363 |
| W. H. Ingleson .......... | 4,879 | E. Turner & Sons ........ | 4,288 |
| Thomas & Co. ........... | 4,700 | Lattey & Co. ........... | 4,287 |
| W. Symonds & Co. ...... | 4,640 | J. L. Chubb & Co.* ...... | 4,084 |

[All of Cardiff.]

* Accepted.

CHELTENHAM.—For the reconstruction of No. 3, reservoir, Hewletts, for the Corporation. Mr. Joseph Hall, Borough Surveyor, Municipal Offices, Cheltenham:—

| | | | |
|---|---|---|---|
| C. H. Channon & Son .... | £2,690 | C. Malvern & Sons, Cheltenham* ........ | £1,854 |
| W. L. Meredith ........ | 2,495 | | |
| Collins & Godfrey ........ | 1,995 | | |

* Accepted.

CHERTSEY.—For the erection of four villas for Messrs. Paine & Brettell. Mr. Charles Welch, architect:—

| | | | | | |
|---|---|---|---|---|---|
| Watson .............. | £3,564 | 0 | Martin .............. | £3,175 | 0 |
| Grey .............. | 3,191 | 0 | Hunt .............. | 2,894 | 0 |
| Greenfield ........... | 3,177 | 19 | Buckeridge ........... | 2,879 | 0 |

EAST BEDFORD.—Accepted for the erection and completion of three shops. Messrs. Morley & Letts, surveyors, 185, Earl's Court-road, S.W.:—

W. T. Herbert .................................. £1,350

FAREHAM.—For the extension of County Asylum, Fareham, Hants. Mr. W. J. Taylor, County Surveyor, architect:—

| | | | |
|---|---|---|---|
| C. Ford .............. | £16,396 | Cooke & Co. ........... | £14,890 |
| Stephens, Bastow, & Co. | 15,986 | Jenkins & Son, Bournemouth* ........ | 14,344 |
| Light & Son ........... | 15,793 | | |
| J. H Cooke ............ | 15,200 | | |

* Accepted.

FELIXSTOWE.—For the erection of a villa, for Mr. F. C. Robinson, London. Mr. G. W. Thompson, architect, Granville House, Arundel-street, London, W.C. Quantities by Mr. E. C. Pinks, 45, Parliament-street, S.W.:—

| | | | |
|---|---|---|---|
| E. West ............. | £1,663 | F. C. Thurman .......... | £1,475 |
| H. Linzell ............ | 1,495 | | |

LEYTON.—For the first portion of stores and workshops to be erected in Church-road, Leyton, Essex, for the London Electric Wire Co., Limited. Mr. A. W. Hudson, architect, 42, Bishopsgate-street-within, London, E.C. Quantities by Mr. W. Shornicraft, 6, South-square, Gray's Inn, W.:—

| | | | |
|---|---|---|---|
| W. Shurmur ........... | £11,475 | H. Brown .............. | £9,979 |
| E. Lawrence & Sons .... | 10,532 | S. G. Scott, Bloomfield-street, E.C. (accepted) .. | 9,868 |
| F. & F. H. Higgs ...... | 10,285 | | |
| T. Goodall ........... | 10,147 | | |

LONDON.—For the erection of cottages on Plot 2 of the Brook-street, Limehouse, scheme, for the London County Council:—

| | | | |
|---|---|---|---|
| W. Downs ............. | £5,980 | J. Brown, Son, & Blomfield ............ | £5,029 |
| F. & F. J. Wood ....... | 5,250 | Leslie & Co., Limited .... | 4,987 |
| J. Chessum & Sons ...... | 5,221 | R. A. Yerbury & Sons .... | 4,848 |
| Holloway Bros. .......... | 5,044 | | |

LONDON.—For No. 1a and No. 1, Belgrave-square, S.W., for Mr. Wm. Tebb. Mr. Philip A. Todd, architect:—

| — | New House and Alterations to Stables. | | | Alterations and Decorative Works, and Alterations to Stables. | | | Total. | | |
|---|---|---|---|---|---|---|---|---|---|
| | £ | s. | d. | £ | s. | d. | £ | s. | d. |
| T. Stevens .......... | 6,378 | 0 | 0 | 4,860 | 0 | 0 | 11,238 | 0 | 0 |
| T. Gregory & Co. .... | 5,987 | 0 | 0 | 5,097 | 0 | 0 | 11,084 | 0 | 0 |
| W. H. Lascelles & Co. | 6,111 | 0 | 0 | 4,723 | 0 | 0 | 10,834 | 0 | 0 |
| J. Cannon ........... | 6,053 | 6 | 9 | 4,601 | 11 | 5 | 10,654 | 18 | 2 |
| W. H. T. Kelland .... | 5,995 | 0 | 0 | 4,234 | 0 | 0 | 10,229 | 0 | 0 |
| Spiers & Son ......... | 5,795 | 0 | 0 | 4,173 | 0 | 0 | 9,968 | 0 | 0 |
| Edwards & Medway .. | 5,479 | 0 | 0 | 4,171 | 0 | 0 | 9,650 | 0 | 0 |
| R. S. Buckeridge ...... | 5,225 | 0 | 0 | 3,750 | 0 | 0 | 8,975 | 0 | 0 |

LONDON.—For the construction of pipe sewers, for the Ealing Urban District Council. Mr. C. Jones, C.E., Public-buildings, Ealing, W.:—

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| F. Adams .......... | £6,972 | 0 | 0 | C. Ford ............ | £6,480 | 0 | 0 |
| J. Macklin .......... | 6,890 | 0 | 0 | R. Ballard .......... | 6,374 | 0 | 0 |
| Nowell & Co. ...... | 6,677 | 3 | 4 | Neave & Son .. .... | 6,221 | 0 | 0 |
| Wilkinson .......... | 6,600 | 0 | 0 | H. M. Morecroft, Acton Green* .... | 5,996 | 0 | 0 |
| Wimpey & Co. ...... | 6,543 | 0 | 0 | | | | |

* Accepted.

LONDON.—For the erection of a Public Reading Room at Kensal Rise, N.W. Messrs. Done, Hunter & Co., architects and surveyors, Cricklewood, N.W.:—

| | | | |
|---|---|---|---|
| H. C. Clifton ............ | £1,425 | G. Neal ................ | £1,149 |
| Marchant & Hirst ........ | 1,415 | G. Wheeler ............. | 1,149 |
| Godson & Sons .......... | 1,330 | F. T. Chinchen .......... | 1,094 |
| J. Christie .............. | 1,220 | Yerbury & Sons .......... | 1,044 |
| General Builders ........ | 1,150 | | |

LONDON.—Accepted for decorations at 77, Redcliffe Gardens, Earl's Court, S.W. Messrs. Morley & Letts, surveyors, 185, Earl's Court-road, S.W.:—

Simmond Bros., South Kensington .................. £125

LONDON.—Accepted for pulling down and re-building 49, Rupert-street, Haymarket. Messrs. Chambers & Dewes, architects. Quantities by Mr. Max Clarke:—

F. G. Minter ........................................ £2,298

[No competition.]

LONDON.—Accepted for pulling down and re-building 48, Rupert-street, Haymarket. Messrs. Chambers & Dewes, architects. Quantities by Mr. Max Clarke:—

F. G. Minter ........................................ £2,690

[No competition.]

LOWESTOFT.—For erecting a new hotel, Lowestoft, for Messrs. Spiers & Pond, Limited. Messrs. Lewis H. Isaacs & Henry L. Florence, architects, 3, Verulam-buildings, Grays Inn, W.C. Quantities supplied by Messrs. Young & Brown, 7, Southampton-street, W.C.:—

*For Foundations.*

F. Bennett, Ipswich (accepted) .................... £5,350

*For Superstructure.*

Johnson & Co., Limited, Wandsworth Common* .... 70,893

* Accepted.

MYNYDDISLWYN (Wales).—For additions, &c., to schools at Trinant and Ynysdda, for the Mynyddislwyn School Board. Mr. R. L. Roberts, architect, Abercarn and Newbridge. Quantities by architect:—

*Trinant School.*

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| W. Morgan .......... | £520 | 0 | 0 | C. F. Morgan ........ | £410 | 0 | 0 |
| T. L. Morgan ........ | 511 | 5 | 0 | E. Williams, Newbridge* ........... | 396 | 7 | 6 |
| C. Rowlands ........ | 428 | 11 | 9 | | | | |
| J. Jenkins ............ | 415 | 0 | 0 | | | | |

*Ynysdda School.*

| | | | | | |
|---|---|---|---|---|---|
| T. L. Morgan .......... | 495 | 10 | J. Jenkins ............. | £412 | 0 |
| W. Morgan .............. | 487 | 0 | Davies Bros. ........... | 398 | 0 |
| C. F. Morgan ............ | 418 | 0 | E. Williams, Newbridge* | 397 | 10 |

* Accepted.

REDHILL.—For the superstructure of business premises for Messrs. Nicol & Son, at corner of High-street and Station-road on the Market Hall Estate. Mr. A. Broad, architect, 22, George-street, Croydon. Quantities by the architect:—

| | | | |
|---|---|---|---|
| Pink & Moon ............ | £5,568 | W. Akers & Co. .......... | £4,977 |
| T. Bushby & Son ........ | 5,325 | E. Worssell .............. | 4,975 |
| J. Longley & Co. ........ | 5,260 | J. Smith & Sons .......... | 4,884 |
| C. Nightingale & Sons .... | 5,230 | S. Page ................. | 4,864 |
| C. Parsons .............. | 5,170 | E. J. Saunders .......... | 4,850 |
| S. J. Jerrard & Sons ...... | 5,135 | J. J. Carrick ............ | 4,706 |
| Buckland & Waters ...... | 5,100 | E. P. Bulled & Co. ...... | 4,720 |
| W. H. Lorden & Sons .... | 5,093 | D. W. Barker, Croydon* | 4,645 |

* Accepted.

*Terra Cotta Dressings.*

| | | | | | |
|---|---|---|---|---|---|
| Gibbs & Canning ...... | £507 | 0 | J. Stiff & Sons (accepted) | £495 | 10 |

SHEFFIELD.—For the erection of bakehouse, &c., Button-lane and Horse-lane, Sheffield, for the directors of the Old Albion Brewery, Limited. Messrs. Hall & Fenton, architects and surveyors, 14, St. James's-row, Sheffield. Quantities by the architects:—

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Chas. Roberts ........ | £382 | 13 | 0 | Marten & Hughes .... | £289 | 0 | 0 |
| J. W. Dickins ........ | 366 | 0 | 0 | E. Hancock .......... | 289 | 0 | 0 |
| J. & H. Wheen ...... | 317 | 0 | 0 | A. Turner .......... | 287 | 0 | 0 |
| Thos. Roper .......... | 307 | 15 | 6 | H Lardler, Sheffield (St. Barnabas-lane)* | 281 | 0 | 0 |
| Abey & Son .......... | 300 | 0 | 0 | | | | |
| Bee & Son ............ | 298 | 0 | 0 | | | | |

* Accepted.

SUTTON (Surrey).—For levelling, kerbing, &c., Albion and Western-roads, for the Urban District Council. Mr. C. Chambers Smith, Surveyor, Public Hall, Sutton, Surrey. Quantities by Surveyor:—

Lawrence & Thacker, Clapham Common, S.W.:—

| | | | |
|---|---|---|---|
| Albion-road | £747 16 0 | Western-road | £401 7 6 |

W. Jenner, Sutton, Surrey:—

| | | | |
|---|---|---|---|
| Albion-road* | £606 2 10 | Western-road* | £325 4 1 |

* Accepted.

WEST HAM.—For the erection of covered playgrounds to the Colegrave-road Schools, Stratford. Mr. William Jacques, architect, 2, Fen-court, London, E.C., Architect to the Board:—

| | | | |
|---|---|---|---|
| G. W. Smith | £544 | Gregar & Son | £447 |
| Reed & Son | 517 | I. Noakes | 405 |
| Welsh & Son | 490 | J. T. Luton | 404 |
| Maddison | 460 | G. J. Hosking (accepted) | 393 |

WEST HAM.—For the erection of covered playground and other works at the Bridge-road Schools, Stratford. Mr. William Jacques, Architect to the Board, 2, Fen-court, London, E.C. Quantities by Messrs. R. L. Curtis & Sons:—

| | | | |
|---|---|---|---|
| W. J. Maddison | £550 0 0 | Whitelaw & Wright | £509 0 0 |
| I. Noakes | 527 10 10 | Welsh & Son | 497 0 0 |
| Gregar & Son | 524 0 0 | Reed & Son | 495 0 0 |
| G. W. Smith | 523 0 0 | G. J. Hosking* | 486 0 0 |

* Accepted.

WEYBRIDGE.—For the erection of five cottages for Mr. J. Rhodes. Mr. Edgar J. Selby, architect, 8, Adelphi:—

| | | | |
|---|---|---|---|
| Martin | £1,470 | Young | £1,170 |
| Hunt | 1,200 | Brown | 1,050 |
| Horsell | 1,173 | Greenfield | 980 |

WEYBRIDGE.—For the erection of house and laundry, for Mr. J. W. Brooker. Mr. W. Mann, architect, Weybridge:—

| | | | |
|---|---|---|---|
| Horsell | £2,312 | Lucas | £2,050 |
| Greenfield | 2,057 | Young | 1,990 |

RESIDENCES AND SHOPS, BEXHILL-ON-SEA.—In the list of tenders for this work, published in our last issue, the name "F. G. Newton" should be F. G. Minter. The mistake was not ours.

## LONDON SCHOOL BOARD TENDERS.

AT the last meeting of the London School Board, the Works Committee submitted the following lists of tenders:—

HANBURY-STREET (B and G).—Removing iron troughs, and refitting old offices with separate pans and syphon cisterns: replacing the girls teachers' closet inside the building, and alterations to lavatories and new drainage scheme:—

*Second Competition.*

| | | | |
|---|---|---|---|
| G. Godson & Sons | £1,718 0 | Ashby Bros. | £1,478 0 |
| C. W. Killingback & Co. | 1,713 0 | F. & F. J. Wood | 1,420 0 |
| W. V. Goad | 1,624 10 | F. G. Minter | 1,399 0 |
| Unsigned | 1,555 9 | E. Triggs | 1,340 0 |
| Willmott & Sons | 1,538 0 | F. Britton | 1,320 0 |
| Lathey Bros. | 1,479 0 | F. Bull* | 1,296 0 |

HEAD OFFICES.—Providing additional lavatory accommodation at foot of west staircase:—

| | | | |
|---|---|---|---|
| Staines & Son | £120 | J. Marsland | £95 |
| Lathey Bros. | 99 | B. E. Nightingale* | 79 |

HIGHWAY.—Covered playground for Junior Girls:—

| | | | |
|---|---|---|---|
| W. Shurmur | £189 | E. Jackson & Son | £165 |
| G. Kemp | 170 | G. Barker* | 129 |
| F. Bull | 168 | | |

NICHOL-STREET.—Improvements—The plans include new halls for boys and girls, new staircase for girls, boiler-room and cellar; new cloak-rooms and lavatories, removing existing stepping, and re-stepping centre class-rooms, extending girls' playground on top of school, and providing small heating schemes. Revised accommodation:—Boys, 270; girls, 270; total, 540. Loss of 84 places:—

[The rooms interfered with have been placed on the seat basis].

| | | | |
|---|---|---|---|
| J. Outhwaite & Son | £8,546 | E. Lawrance & Sons | £7,457 |
| J. Chessum & Sons | 8,205 | L. H. & R. Roberts | 6,762 |
| G. S. S. Williams & Son | 8,110 | J. & M. Patrick | 6,436 |
| Snewin Bros. & Co. | 8,090 | C. Cox | 6,418 |
| W. Shurmur | 7,935 | E. Triggs | 6,359 |
| J. Grover & Son | 7,744 | T. L. Green* | 6,185 |

RATHFERN-ROAD—Enlargement.—Boys, 140; girls, 140; infants, 120 (seat basis); total, 400. Providing new staircase for boys' department, and additional cloak-room accommodation, and water-closets for all departments:—

| | | | |
|---|---|---|---|
| J. Garrett & Son | £5,415 | J. & C. Bowyer | £4,977 |
| A. White & Co. | 5,347 | E. Parsons & Co. | 4,924 |
| S. Hart | 5,127 | J. Smith & Sons | 4,869 |
| J. Marsland | 5,092 | W. Johnson & Co., Ltd. | 4,800 |
| Kirk & Randall | 5,076 | E. P. Bulled & Co., Croydon* | 4,555 |
| Edwards & Medway | 5,022 | | |

ROLLS-ROAD.—Enlargement (including new hall)—Infants, 181 (seat basis); providing additional lavatory and cloak accommodation; and enclosing, draining, and tar-paving the additional land:—

| | | | |
|---|---|---|---|
| Johnson & Co. | £5,320 | J. Smith & Sons | £4,527 |
| Edwards & Medway | 4,763 | W. Downs | 4,396 |
| J. Outhwaite & Son | 4,547 | Stimpson & Co.* | 4,280 |

* Recommended for acceptance.

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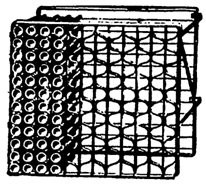

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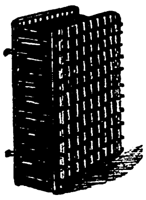

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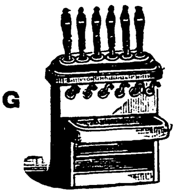

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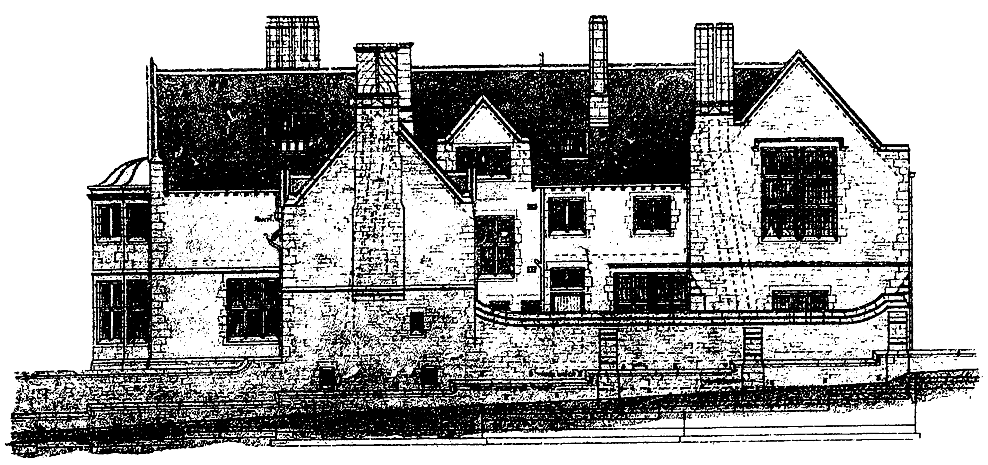

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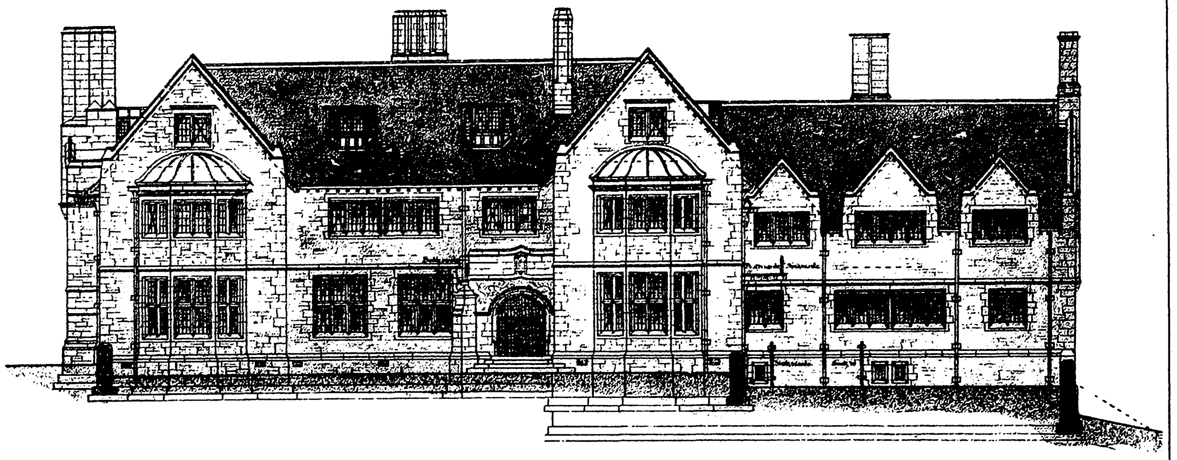

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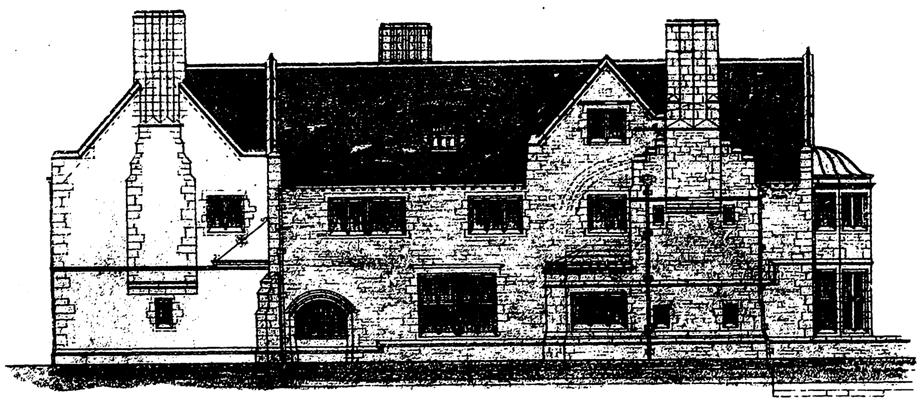

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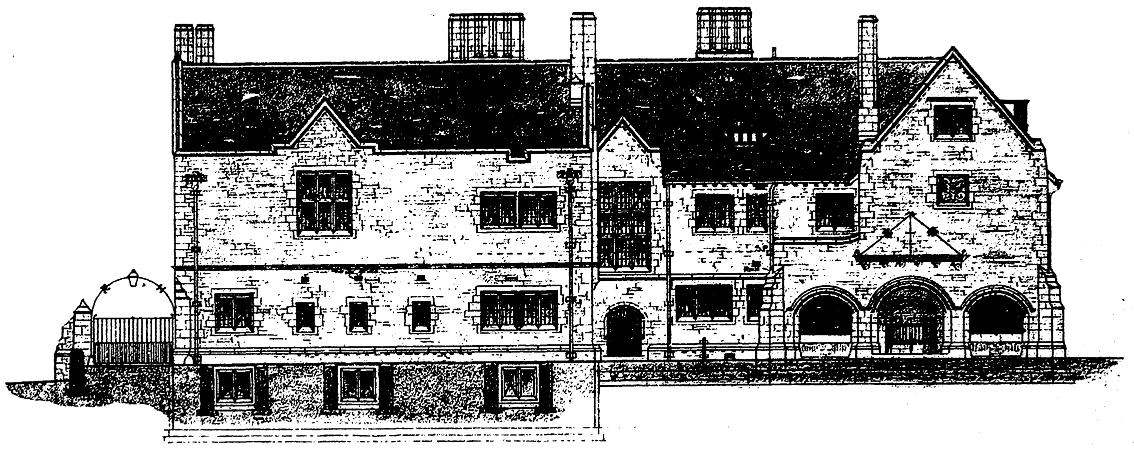

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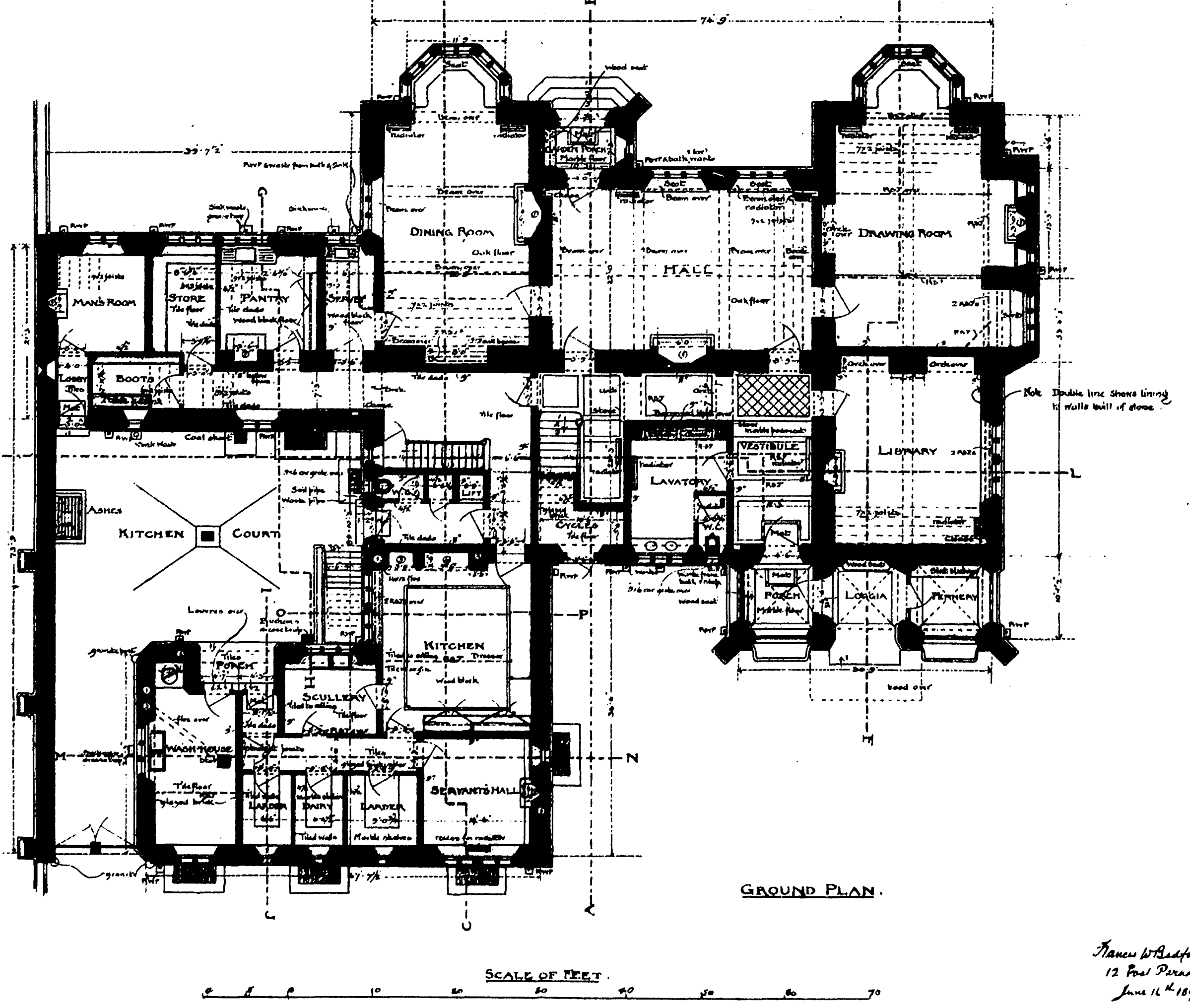
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STORE
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SERVERY
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LIFT
LIBRARY
Note. Double line shews lining to walls built of stone.
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Marble floor
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Wood seat
KITCHEN
Wood block
SCULLERY
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Tile floor
LARDER
DAIRY
LARDER
SERVANTS HALL
Tiled walls
Marble shelves
Louvres over
granite
K
L
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SCALE OF FEET.
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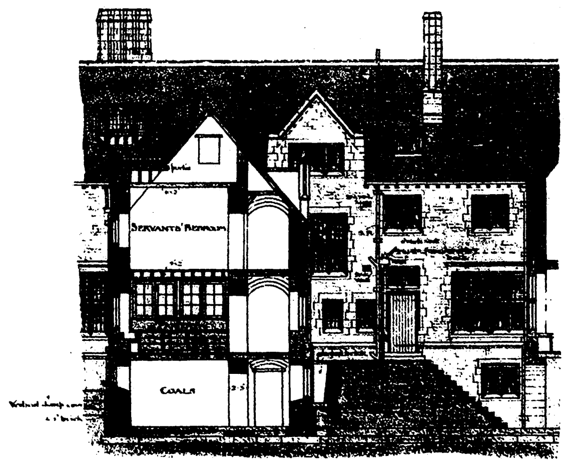
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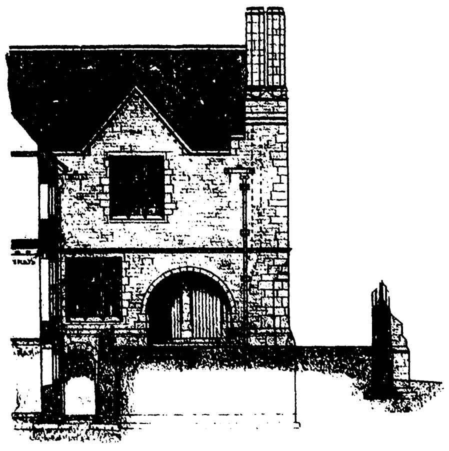

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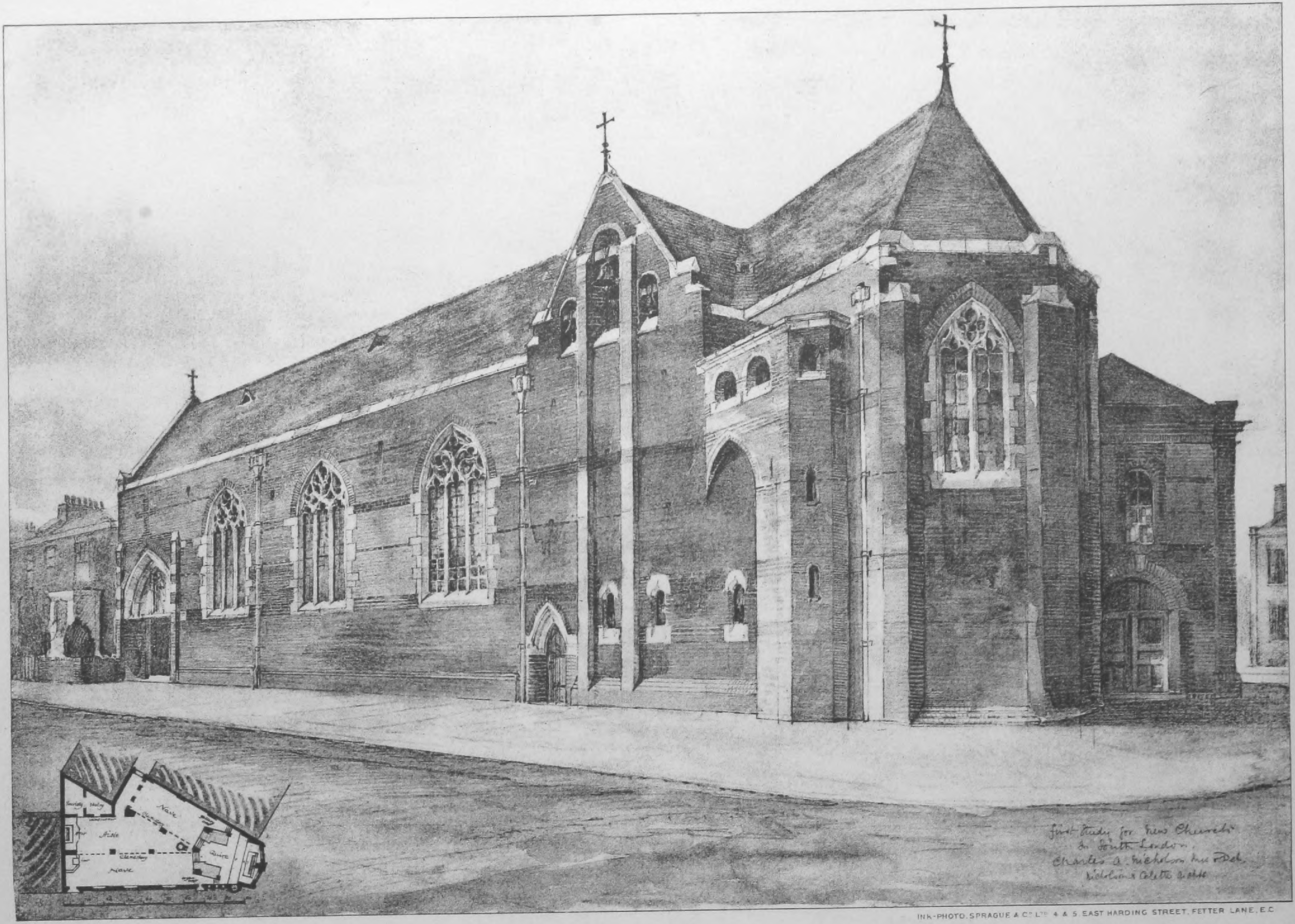
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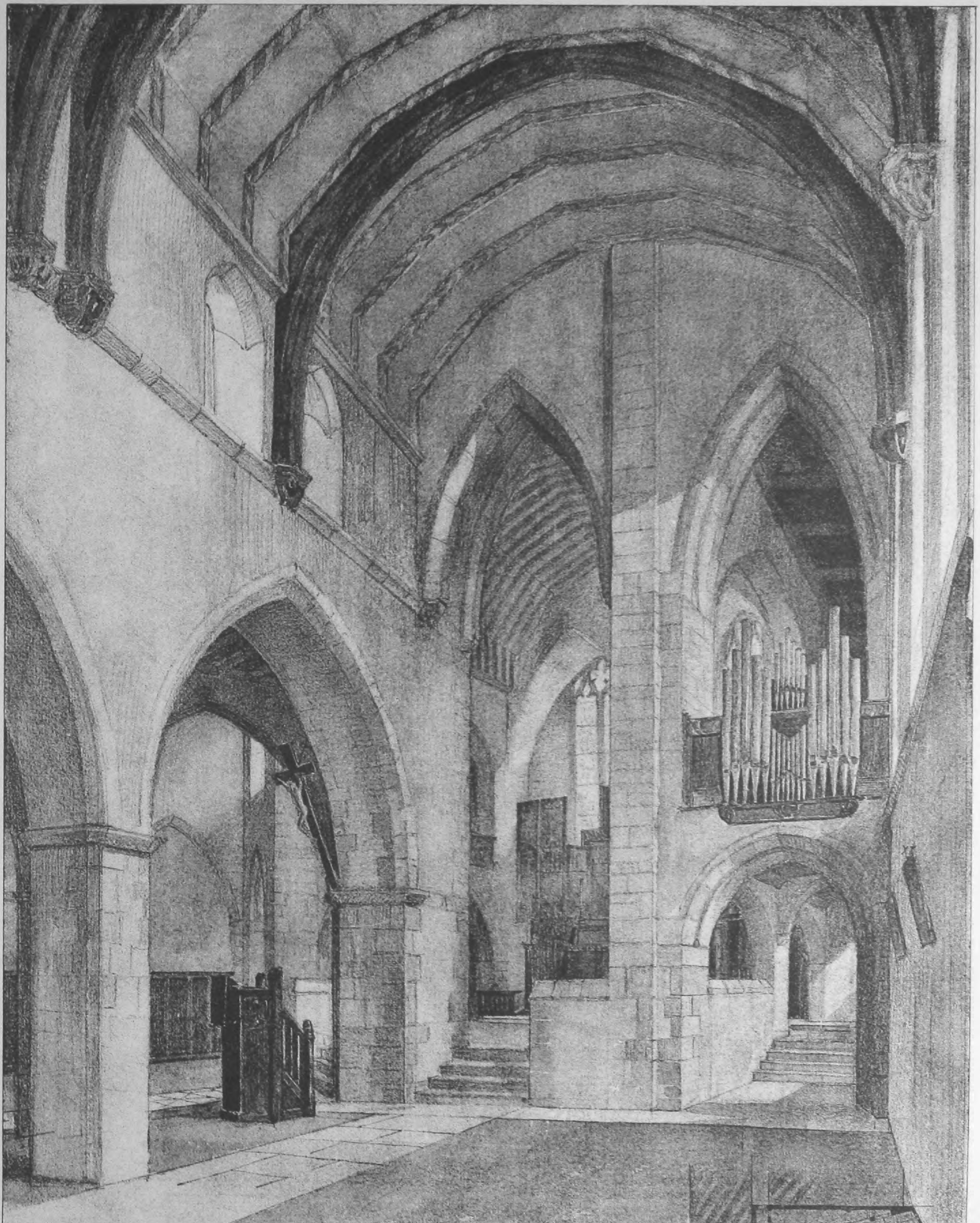

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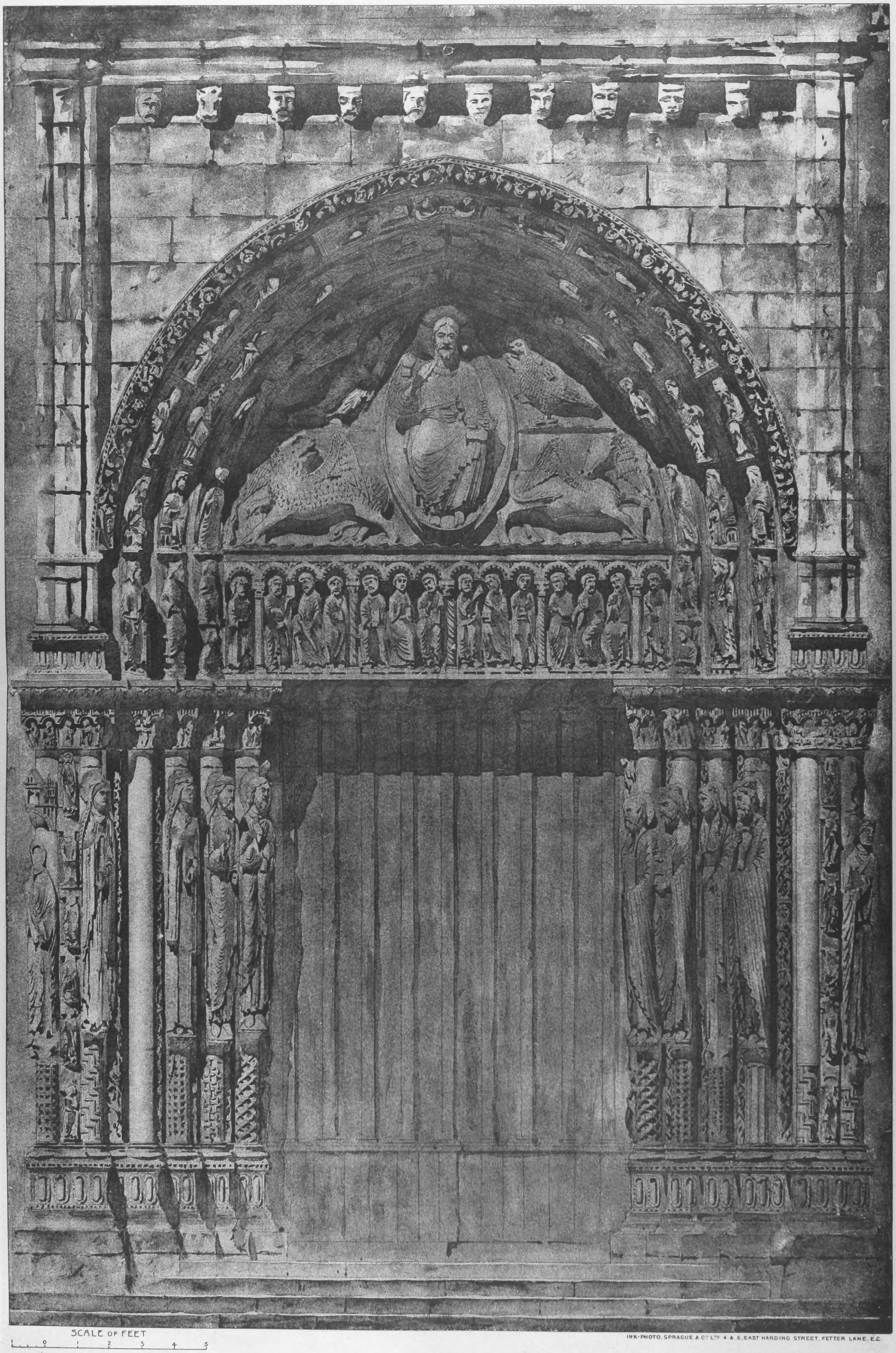

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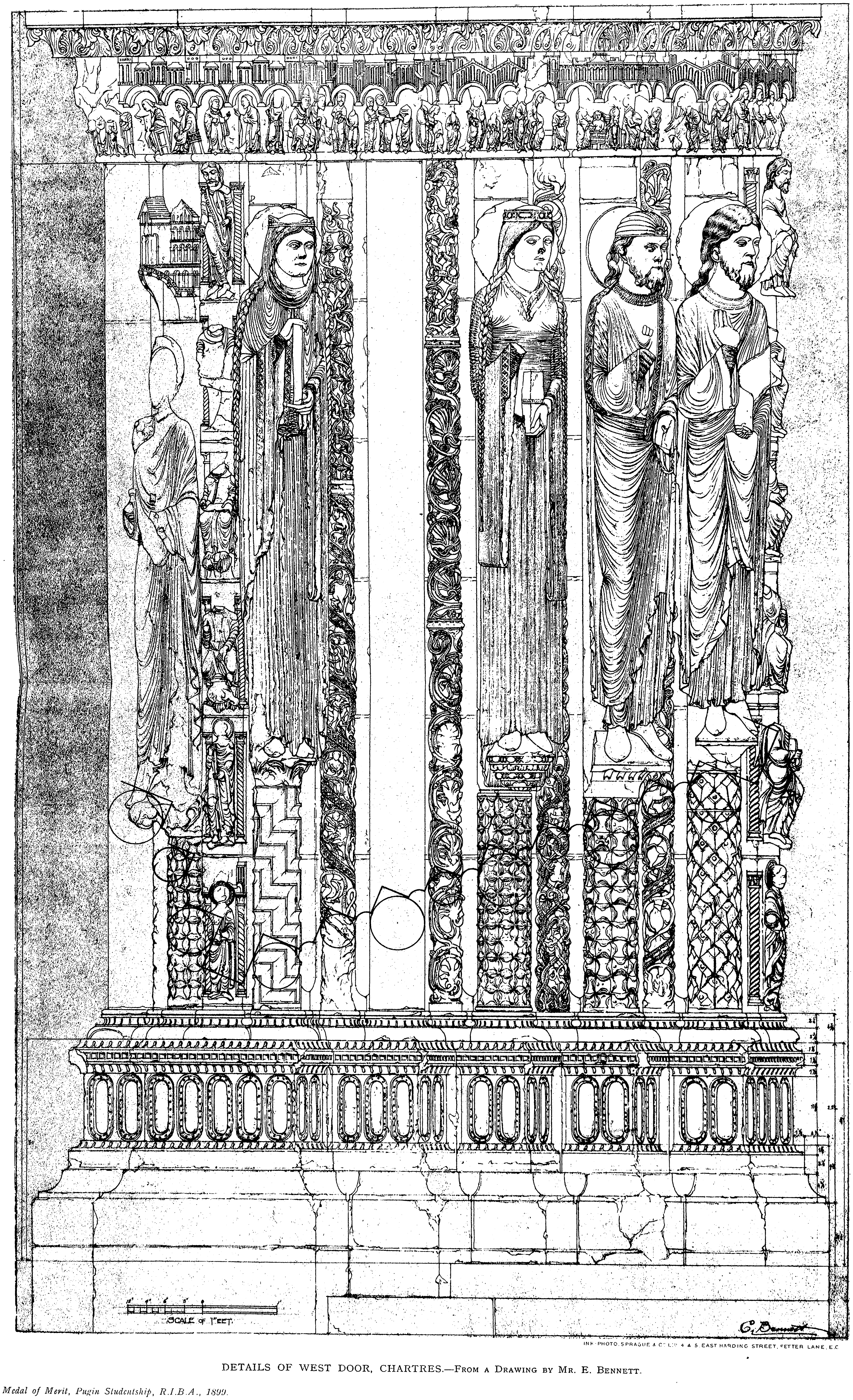

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VOL. LXXVI. No. 2924. FEBRUARY 18, 1899.

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## *Vitruvius Under a Cloud.*

MOST architects are men of feeling; some are men of letters. Those who are both, and who hold in affection the literary monuments of their craft, and the links which join one generation of architects to another, will look with melancholy apprehension upon the utterances which Professor Ussing has recently put forward. His pamphlet[*] upon the "Ten Books of Vitruvius," to which he gives the innocuous title of "Observations," is no less than a determined and scholarly attempt to unseat our old favourite, not merely from his supremacy as a classic authority, but from the reputation of ordinary integrity.

Briefly, Professor Ussing's charges against Vitruvius are: First, that his task as an instructor is done, that the information which his work has for generations afforded is now superseded by the more direct and authentic evidences derivable from actual examples of ancient architecture; secondly, that instead of being (as we used to hope and think) a man of knowledge and integrity, he was a shallow-minded and ignorant person, boasting of knowledge which he did not possess; and finally, that he did not live in the Augustan Age, as his statements would lead us to suppose, but was a writer of later period, and possibly assumed not his knowledge only, but his very name.

To analyse Professor Ussing's attack in another way we may say that Vitruvius (or should we rather call him the "pseudo-Vitruvius"?) is accused of three moral and literary crimes. The first is that of being as unlearned as he is pretentious; the second is that of antedating his own existence by some three or four centuries; and the third is no less than the assumption of another man's name. Ignorance, hypocrisy, and fraud are the heads of the charges, and the evidence in detail may be gathered together into the following summary:—

First the author is judged out of his own mouth; his speech is said to betray him. His style, says Professor Ussing, is late, and his diction abounds in words which only came into use at a date considerably later than the period to which he boasts of belonging. Next our attention is turned to the contents of his work and to its omissions. The pseudo-Vitruvius is accused of addressing Augustus incorrectly, which a real Augustan Vitruvius would not have done; he is accused of certain "cock-and-bull" stories which are said to reveal his falsity; he is accused of omitting the mention of buildings which he should have mentioned, and of incorrectness as to those which he does include; and, strangely enough, it is brought forward (not without a show of reason) as an argument for his *lateness* that all the buildings he pretends to know anything about are not buildings of the Empire, but earlier buildings of the Republic. His canons of proportion and rules of the orders are, to continue the indictment, not those prevailing in the Augustan age; the authorities he quotes are not genuine; his account of the Greek Theatre is muddled and incorrect; his allusions to the worship of Isis betray his ignorance of the suppression of that worship by Augustus; and (cruellest blow of all!) whatever else he may know about, he does not know his own trade. Finally, his relation to other authors is brought into court, and it is asserted that he pillaged Athenæus (thereby not merely jeopardising his reputation for honesty, but actually disproving his assumed date), that he plundered from and distorted the utterances of Pliny the Elder, and that if we only had by us the text of Varro's "De Architecturâ," we should be able to bring home against him a third charge of unscrupulous literary robbery.

At first reading of the pamphlet we are bound to admit that we threw Vitruvius over and sided with the enemy. Professor Ussing is one of those few men who understand something of architecture as well as being an acknowledged authority on the classic languages. His weight is great, his arguments are searching, and they are appallingly numerous. We were not, to be sure, convinced under every head of the indictment, but it seemed to us that a refutation here and there of this particular argument or that would be worth so little in such an ocean of incrimination that hope had practically to be abandoned. We even put pen to paper for an epitaph on one "who had lived beloved for 400 years and died by the stroke of a Danish pen"; but with a second reading came a ray—just a ray of hope.

This journal is not a philological organ, and it will, therefore, not be expected that we should here stand up to Professor Ussing on his own ground, nor meet him with his own weapons. The considerations we shall put forward will, therefore, be rather unprofessional than technical—they represent the indications, from a layman's point of view, of the lines upon which it is hoped that some classical scholar may take up the cudgels and succeed in vindicating the honour of one who has so long been venerated. Our remarks, in fact, are to be taken as the sort of reflections that may naturally be put forward by the architect who, while he has his drawing-board before him, keeps at his elbow a few of his old school friends on a bookshelf.

Let us go through in brief the arguments which the critic has brought together, and offer, as far as seems possible, some indication of the lines on which our old friend may yet be saved by some skilled student from his present overshadowed position.

To begin with the last argument first; a case is made out against Vitruvius in his relations to Athenæus, the stages of which may be stated syllogistically thus. Athenæus, says Professor Ussing, wrote in the third century A.D. Vitruvius copied Athenæus; therefore Vitruvius belongs to the third or some subsequent century. Now we have followed with some care the parallel passages of Athenæus and Vitruvius which the writer of the pamphlet has brought together, and we are on the whole prepared to admit that the writer of what is known as the Tenth Book of Vitruvius copied either from Athenæus or from a common source, from which both parties must in that case have transcribed pretty closely. Possibly Vitruvius (if he was Vitruvius) copied Athenæus,[*] but this admission still leaves us a long way from any proof that Vitruvius must be relegated to the third or fourth century.

---

[*] Observations on "Vitruvii de Architecturâ: libri decem.,' by J. L. Ussing, Ph.D., &c. Translation printed by the Royal Institute of British Architects. 1898.

[*] This is no new idea. See Marini's note on Vitruvius x. 16 (19). Vossius and Perrault both held this view, but Marini himself discards it in favour of the notion that Vitruvius copied Agesistratus, whom Athenæus mentions as his source (de Machinis, p. 3), and whom Vitruvius himself names (Bk. vii. præfat as an authority.

In the first place it will be noticed that the passages which are parallel to Athenæus all occur in the last (tenth) book of Vitruvius and are all subsequent to the eighteenth chapter. We confess that it would by no means distress us to find that these last chapters were an interpolation, or rather an unauthentic termination to the genuine text. We have no knowledge of any evidence for such a suggestion; we merely put it forward as a possibility. But, granting the authenticity of the last chapters of the last book, and granting also that Vitruvius copied Athenæus, we believe it is by no means proved that Athenæus belongs to the third century A.D. Dr. Ussing bases his contention in this matter upon his diction, and upon his political sentiments, which, he says, are those of the later empire. But the fact that Athenæus dedicated his work to Marcellus, and the supposition that he was a friend of Archimedes, together with other indications which we need not detail here, have, among good authorities, been considered evidence that Athenæus lived—in the third century to be sure, but the third century B.C.!

Next (to continue working backwards through the arguments), Vitruvius is tried on his relation to Frontinus and Pliny. Now, it happens that both Frontinus and Pliny allude to Vitruvius by name. This circumstance, according to Professor Ussing, is a proof, not of his genuineness, but of his disingenuousness. He hints that the pseudo-Vitruvius, knowing of the mention of Vitruvius in Frontinus, and finding in Pliny an actual acknowledgment of indebtedness to him, craftily seized on the name as his *nom-de-plume*, and endeavoured to play up to the character of the dead authority whose works were lost. The obvious argument against such a theory is that a forger of the third century would probably have played the game a great deal better than Vitruvius can be proved to have done. He would certainly have taken pains to make triumphant use of the actual word *quinaria** as the name of the standard of measurement which Frontinus attributes to him. As a matter of fact Frontinus (Knobloch edn., p. 9) never says that he finds the term in the text of Vitruvius, but only that tradition in the trade commonly ascribed it to him, and he further implies that Vitruvius introduced or favoured the system of naming the bore of a pipe from the width of the sheet of metal from which it was formed, which is perfectly true (*vide* Vitruvius viii., 7).

Dr. Ussing produces a formidable array of passages in which the elder Pliny and Vitruvius run parallel, and his attempt is to prove that, instead of Pliny having epitomised Vitruvius (which has generally been assumed on the strength of Pliny's acknowledgement and of their supposed relative dates), the parts are really reversed. Vitruvius, in his opinion, has expanded and sometimes stultified the utterances of Pliny. We are far from satisfied on this point. If it comes to calling one or other of the writers an old fool, we would as soon give the title to Pliny. The latter, in his brevity, is quite as obscure as Vitruvius in his prolixity, and if we look to power of expression, and even to style, we do not think that Pliny need hold his head too high. We shall have another word to say under this topic later, but we must mention here that Professor Ussing himself provides a loophole from the Pliny indictment by the suggestion of Varro as a source for both authors.*

In many ways the most threatening part of Dr. Ussing's argument is that which he bases on the character of the language used by Vitruvius. The consideration of this we will postpone to examine first the charges based upon the contents of his work.

The earliest among these is the puzzle as to the impropriety of Vitruvius addressing the Emperor as "Imperator" after he had officially received the title "Augustus."† In the Third Book Vitruvius alludes to the temple of Quirinus, which was built in the year 16 B.C. It has, therefore, been generally argued that he wrote after that date and (for other reasons) before the year 13 B.C. Now Professor Ussing declares that a genuine Roman citizen living and writing between these dates could not possibly have been guilty of the impropriety of calling Augustus Imperator." There are ways of escape for Vitruvius even here. People did not correct proofs for the press in the days of Augustus, and it is just conceivable that the Preface might have been written before Augustus received the title, and that it was never corrected afterwards. Again, it is possible that Professor Ussing may be mistaken as to the incapacity of an ordinary professional man to make a slip of the pen (or of the memory) even in the irreproachable Augustan age. We have known architects who could make errors in the addressing of potentates in this virtuous Victorian era. Were they infallible in the year 13? Vitruvius, again, was an old man, and old men sometimes call things, and even men, by the names they knew them by in youth. Dr. Ussing makes great capital, and no little fun, out of two stories told by Vitruvius of Cæsar's campaigns. One is what we may call a philological story about an Alpine fortress said to be named Larignum, after the larch tree (*larix*). Vitruvius, in this instance, probably made a mistake, but it is a mistake that could have been made as easily in the first century as the fourth, and is really no evidence against his being alive in the time of Cæsar and Augustus. The next story which Professor Ussing looks upon as almost fatally conclusive is the account of certain mines and countermines which formed part of the strategic devices of the siege of Marseilles. He implies that these mines, which the besieged filled with water from the sea and other sources, are looked upon by Vitruvius as the turning point of the siege, and as the means of victory to the Massilians. Then he points triumphantly to Cæsar (Bellum Civile ii.), and shows that Cæsar has not a word to say about the mines, and that, as a matter of fact, the besiegers got the better of the operations. This criticism is, we think, unfair. Vitruvius never says that the temporary advantage gained by the countermining operations secured *final* victory for the Massilians; and as to Cæsar's silence on the subject, it is of little account. The siege lasted many months. Cæsar's account does not even profess to mention every detail of the blockade, and for that matter there is an allusion to certain operations which were abandoned by the Cæsarians before taking to the particular contrivance which brought the siege to a successful end. Moreover, Cæsar writes that the "musculus," which was eventually the means of success to the besiegers, was a device adopted by those on the right wing of the attacking army: the mining operations may easily have taken place in another part of the line of attack.*

It is worth mentioning that Gwilt's translation—a very free and easy translation, to be sure—goes so far as to dissociate a great part of the incriminating account from the special allusion to Marseilles, and treats the flooding episode and its successful issue not as a historical record of what happened at Marseilles, but as an account of general or possible procedure in such cases. If, as suggested above, the latter part of the Tenth Book were by any chance to be found spurious, this passage would go with it, being among the closing sentences.

That the buildings mentioned by Vitruvius are for the most part buildings of the Republic, may, of course, be evidence, as Professor Ussing pleads, that the writer lived at a late date and copied an early author; but the conclusion is at least a very indirect one, and it is fair to note that the same fact has been considered among previous commentators to be a proof of his early date. If Professor Ussing's assumption and conclusion were correct it would be almost inconceivable that a man in the third century, setting out to write an elaborate forgery, should not have included in his nefarious composition at least a few of the very well-known buildings that marked the Augustan epoch. It is infinitely more likely that Vitruvius in old age, and possibly in rural retirement, put together the notes, many of which he had made in his youth, and that they contain in their collected form such slips and omissions, such inaccuracies and such garrulities, as old age loved even in Augustan days.

We have disclaimed the attempt to overthrow Professor Ussing's contentions; the task lies outside the province of a technical journal of this kind, and it will not therefore be expected of us that we should follow the critic through every stage of his hostile argument. Before, however, we look at the last line of attack—the question of style and diction—we feel bound to offer a few further observations on some of the remaining criticisms directed against the contents of the text. The onslaught upon Vitruvius as being unlearned in his own trade is pointed by the suggestion that he does not know burnt bricks from unburnt, or forgot to mention the former. What then is the meaning of *coctus later* contrasted with *crudus* in Book I., ch. 5? The statement that the Doric column is given by Vitruvius as six diameters high, whereas the general Augustan use was seven, does not, we confess, shake our faith. As a matter of fact, Vitruvius does not say that the proportion of 6 : 1 was in use in his day, but that it was *originally* in use. Again, we resent the suggestion that Vitruvius was incompetent because he gives 1 in 200 as the *minimum* gradient for an aqueduct, while Pliny gives a greater fall. Frontinus, our best authority, is very clear on the point that the ancient aqueducts differed from one another in the matter of gradient (Front. de Aqu., p. 7, edit. Knobloch.). That Vitruvius quotes false authorities is another of Professor Ussing's charges. We are not sure that he proves it, but if proved it does not satisfactorily settle the location of him in the third or fourth century. We admit at once that the lists of authors quoted are bombastic; they may or may not be inaccurate; in fact, we regret them as undesirable excresences; but they are no proof of fraud or of late date.

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* We are of course aware that the word *quinaria* does occur in Vitruvius as meaning a pipe made of a sheet five digits wide, but it is not referred to by him as a standard of measurement—the standard being no doubt adopted after Vitruvius wrote the chapter on this matter.

* Varro, who lived from B.C. 116 to B.C. 28, was the most copious of writers. He issued between five hundred and six hundred works, of which only the *De Re Rusticâ* and the *De Linguâ Latinâ* have survived. It is known that one of his books dealt with architecture, and it is certainly within the range of possibility that both Pliny (who died A.D. 79) and Vitruvius may have made use of his writings as a storehouse of information. Such a view is strongly supported by Vitruvius's allusion to Varro in the preface of Bk. vii.

† This difficulty was known to the older commentators, and led to the suggestion that the Imperator addressed was Titus.

* The use of water as a means of defence by the Massilians is certainly not disregarded in Cæsar's account, for, speaking of the musculus, he says, "*Supra lateres coria inducuntur; ne canalibus aquâ immissâ lateres diluere possit.*" Bell. Civ. ii., 10

That the decree of Augustus forbidding the worship of Isis would render impossible an allusion to temples of Isis by a true Augustan, we simply deny. Vitruvius does not say or even imply that there is a temple of Isis in every city, he merely gives direction as to placing the temple of Isis and Serapis (if there be one) in the great public square. The interdict of Augustus applied to Rome and the surrounding district only; there would therefore be no great impropriety in merely mentioning Isis in connexion with the laying out of new cities, even in a work dedicated to Augustus.

The difficulty about C. Julius, son of Masinissa, who is said to have stayed with Vitruvius, has been got over by earlier commentators by the suggestion that he was born in the old age of Masinissa, among whose titles to fame are his large family and great age.

We are now brought face to face with the first argument of Professor Ussing, which we have elected to treat last. In this it is contended that Vitruvius is late in style and late in his use of certain words. Here, in our opinion, lies Professor Ussing's strongest line of attack, and it is the least easy for those to refute who do not hold professorial rank in the humanities.

After a tribute to the work of C. F. L. Schultz, of Wetzlar, as a pioneer in the exposure of Vitruvius, the writer plunges into the philological argument without much preliminary. On the general subject of diction he is prepared to argue that a styleless author, who makes a claim to be placed chronologically in the age of Augustus, thereby rules himself once and for all out of court. This we can hardly accept without modification. We do not believe Professor Ussing would find support among the students of the classics for the view that it was impossible for a writer to put pen to paper in the Augustan age without producing high-class classic Latin. For our own part we disbelieve the notion, and are quite prepared to discover that an ordinary craftsman, even if endowed with literary ambition might perpetrate in the first century A.D., or just before it, those blemishes of style and diction which to-day sometimes characterise the prose of clerks of works and even (shall it be said?) of architects. Professor Ussing, indeed, mentions as a sort of *reductio ad absurdum* the conclusion that the authors of the Golden Age did not write the real living Roman tongue, but a conventional literary language. This suggestion which, to be sure, embodies the characteristics of other golden ages, we believe to be no absurd fancy but the fact.

It is not, however, upon this ground only that Professor Ussing is willing to base the weight of his philological argument. His considerations of Vitruvius's language in detail put forward an array of solecisms which are uncomfortably germane to his argument.[*] Worse than this, the peculiarities of style are not merely personal oddities of expression; they in many cases are said to find their parallels and counterparts in usages prevailing at a later day. Augustan Latin is the perfection of synthetic language. Structurally, as we know, the Romance and later European tongues differ from this pure Latin by the substitution of the analytic for the synthetic system; and the failings of Vitruvius are thought to be in the analytic direction, and therefore evidences of lateness.

We cannot accept every step of Professor Ussing's detailed denunciations. *Ignotitia*, *indecentia*, *nascentia*, and the like are, indeed, words that no conscientious Latin dictionary admits, and we should be sorry to hear that our boys had put them into their Latin prose, yet we fancy that the tendency which they represent is one of which the rudiments are to be found even in so great a writer as Tacitus. Tacitus, of course, outlived the first century; so we cannot press that point, but he is not to be put down as hopelessly unclassic.

Among particular words and phrases chosen to enforce the argument there are several which we should venture to pick out as unnecessarily strained. The use of *Notitia* as meaning "renown" is not unknown to the classic writers. Ovid certainly uses it once in this sense, though to be sure Ovid is not writing prose. The substitution of *videtur* for *placet* occurs at least twice in Cicero; *aliter* with a stronger sense than "otherwise" has, we believe, occasional precedents; and *forte* as the equivalent of *fortasse* is certainly known to Cicero again.

Earlier critics have noticed the inferiority of the language of Vitruvius, and have put it down to want of erudition on the part of the writer, for whom they have claimed that he was, like other men of action, probably more skilled with the tools of his trade than with the pen of a ready writer. To this argument Professor Ussing replies with the contention that Vitruvius is by no means a modest writer, and that his language is not that of unassuming commonplace, but shows a certain ostentation which in the Augustan age would have been bound to be accompanied by style. Happy age! In our own time, alas, bombast can go with bad grammar and indifferent syntax. Ambition is not the equivalent of power even in literature.

If it can be proved indisputably by Professor Ussing, to the satisfaction of those who make it their business to know the facts of the chronology of language, that the solecisms of Vitruvius are without any doubt the characteristics of late date, he will certainly have given our old hero a blow from which he will find it difficult to recover. Our hope is that it may still be proved, as it used to be thought, that his irregularities of grammar, etymology, and syntax are the result of incomplete cultivation and possibly of rural life. The contention more than once put forward by Professor Ussing that Vitruvius was a non-metropolitan favours this hope, and it may even be brought to remembrance that critics *have* been known to consider the style of Vitruvius too *early*, not too late, to be Augustan. "His style," says one writer, "has much more of the *rudeness* peculiar to the Latin tongue in the times preceding Augustus than of the corruption which made itself noticed in the subsequent epoch of Seneca, Pliny, and Tacitus. Obsolete expressions," he says, "like *donicum* for *donec*, and *quot mensibus* for *singulis mensibus*, ally him in style to Ennius, Pacuvius, and Lucretius, the early writers whom he mentions with so much favour."

In regard to this very important argument based on style, we wish, in conclusion, merely to offer two observations. The elder Pliny died in 79 A.D., and had been writing for thirty years or more. Dr. Ussing gives us special opportunities of studying some of his passages in parallel contrast with Vitruvius, and we are bound to admit, not on these evidences alone, that his style for a writer of the period strikes us as execrable. Pliny, in fact, would appear to prove that a *savant* of the first century could write Latin that would not win a public school scholarship. Secondly, we consider that an intelligent forger of the qualities presupposed in Dr. Ussing's pseudo-Vitruvius would probably have written better prose than that of the *De Architecturâ*, even in the third or fourth century. Macrobius, who was alive at the end of the later century, can give Vitruvius heavy odds in style and syntax. If Vitruvius is not to be tolerated at the close of the first century B.C. because other men then wrote better prose than he, no more can he rest easy in the fourth or fifth A.D. Must he be made to move on through century after century till, with Schultz, we eventually commit the anachronism of placing him in the century succeeding the Harleian Codex?

If we are to lose Vitruvius as an Augustan writer, we are ready to fall back for solace on Vitruvius the centre and idol of a triumphal progress of publication dating from the dateless volume of Sulpicius, which appeared about 1486, and was continued through four centuries by the production of one beautiful edition after another. But the time for such solace is not yet. Vitruvius has been attacked; we do but await the counter-attack.

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## NOTES.

Some Bills in Parliament.

THE shadow of a General Election is already on the House of Commons, and there is quite a rush to bring in bills which will show the electors how anxious members are to benefit them. Sir F. Flannery has given notice of a bill "For the Granting by County Councils of Pensions in Old Age." This, nakedly stated, would seem to be a measure for an increased system of outdoor relief. Mr. J. A. Pease follows with a proposal "To Authorise the provision of Cottage Homes for the Aged

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[*] We have intentionally completed the present article without reference to the criticism by Professor Baldwin Brown, recently published in the "Journal R.I.B.A." We look upon Professor B. Brown as one of the principal British Vitruvians, and are glad to note that he agrees in resisting Professor Ussing's attack, but observe with disappointment that with regard to the detailed criticism of the language, where we had hoped for a particular expansion of the defence, the Professor, though admitting that he has studied and weighed the subject, keeps silence. We shall look forward to seeing his vindication of Vitruvius under this head at some later date.

Deserving Poor," which looks like bringing the workhouse into the village. Mr. H. Whiteley, not to be outdone, has a measure "For Establishing a National System of Old Age Pensions," which is practically the same as the bill of which Mr. J. Rankin has given notice. Finally, Mr. W. Foster appears with a proposal "To provide Pensions for Poor Persons over the Age of Sixty-five Years." We feel little doubt that a Committee will be appointed to consider the subject on which these several measures touch, and that this will be the sole result of this show of legislation, which, however, will no doubt be presently employed as electioneering advertisements, not only by those who actually bring in these Bills, but by any one who has spoken a word in their favour. At present it is clear, from the decision of Lord Rothschild's Committee, that there is no satisfactory way of providing any general system of old-age pensions, and it is probable that Parliamentary discussion will make this clearer.

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**The Public Health Act.** THE manner in which some persons enter with a light heart into litigation is really surprising, and the appellant in the recently reported case of Robinson *v.* The Sunderland Corporation appears to be quite a fighting litigant. That the law was dead against him is quite clear, yet he has done some service by placing a legal point in regard to the working of the Public Health Act beyond doubt. The Corporation of Sunderland, under Section 36 of this Statute, served a notice on Mr. Robinson to provide a proper water-closet and ash-pit. This notice was not complied with, and thereupon the Corporation applied to the Justices for an order under Section 305 to enable them to enter on the premises and do the necessary work. When the application was made to the Justices objection was taken by the householder that the matters to be done were not necessary; in other words, he tried to appeal to the magistrates against the opinion of the Borough Surveyor. The Justices decided that they could not go into the facts of the case, and it was against this decision that the householder appealed to the High Court, but without success. "There was no power in the magistrates," said Mr. Justice Channell, "to enter into the question of the sufficiency of the privy. . . . The Local Authority were the judges of the matter." On the present application it was sufficient for the Justices to see that the legal technicalities required by the Act had been complied with. This is obviously clear and sound sense. The proper time for the appellant to have gone into the merits of the case was before the matter came to the Justices at all, when the Local Authority had the question under consideration. If this were not so it would make the Justices judges of fact in regard to sanitary matters.

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**London's Gas Consumption.** SOME noteworthy statistics were announced at the recent half-yearly meetings of the Gas Light and Coke Company and the South Metropolitan Gas Company. The former company have gained a large additional number of consumers, but have nevertheless sold 2·1 per cent. less gas during the half-year. This heavy loss, which, as the Chairman pointed out, is equal to the total annual make of gas in such towns as Folkestone, Gloucester, Exeter, Worcester, and Bournemouth, is stated to be due to the unusual mildness of the weather; but it is probable that the extensive use of incandescent gas lights (using less gas per burner), the high price of gas in a great portion of this company's district, and the increasing use of the electric light in the City and West End, have been responsible for a great part of the loss in consumption. The South Metropolitan Gas Company, on the other hand, record not only a great increase in the number of consumers, but an increase also of 5 per cent. in the amount of gas sold. This company is fortunate in supplying a district in which the population is rapidly increasing, and in which there is little electric light competition. Both companies had to pay higher prices for coal, and still further rises are threatened.

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**River Pollution Conference.** A PRELIMINARY conference on "River Pollution," held under the auspices of the Sanitary Institute, took place on Tuesday last, the 14th inst., at the Parkes Museum. There was a small, but influential, attendance, and the chair was taken by Sir Francis Sharp Powell, M.P., who has for many years had charge of a Bill dealing with the subject. Several resolutions were passed, but the subject which exercised most ingenuity amongst the speakers was as to which should be the authorities to carry out inspections of sources of water supply—the Local Sanitary Authorities, or the County Councils. It was argued that Local Sanitary Authorities were best, for the reason that they are always on the spot, and are likely, in consequence, to detect pollution more quickly than the County Councils. Champions of the latter maintained that in the majority of instances the pollution was carried out by the members of the District Councils themselves, who were not likely, therefore, to condemn their own actions. Eventually it was resolved that "For the purpose of inspection, and of taking samples for examination, the officers of Local Sanitary Authorties, including County Councils, shall have free access to any land and premises from or through which water is supplied for domestic purposes to the public in their districts." Another resolution which, amongst other things, proposed that the reports of the water inspectors should be published, was amended on the ground that the publication of such reports might from time to time unnecessarily scare the public, and it was ultimately resolved that the inspectors should only communicate their reports to the authorities concerned. Major Lamorock Flower subsequently expounded his well-known views in regard to watershed authorities, largely based on his experience in the Lea watershed area; and a resolution was passed which proposes that authorities be appointed for each gathering ground or group of gathering grounds of the kingdom, for the general care and supervision of the waters within each respective watershed. We thoroughly agree with this resolution, but it seems to be in conflict to some extent with the resolution already passed at the meeting, which proposed to give the power of inspection, &c., to already existing bodies. Sir John T. Hibbert, in proposing that the conference should approve and support the Rivers Pollution Prevention Bill, to be introduced into the House of Commons by the chairman, gave some interesting statistics as to the beneficial action of the Mersey and Irwell Watershed authorities, of which he is the chairman, in preventing pollution of those rivers. Altogether the conference was a useful one, though there seemed to be a disposition to give every speaker what he wanted, instead of adhering to any particularly strong policy.

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**Debate on Electric Wiring Rules.** THE debate on electric wiring rules at the Institution of Electrical Engineers was continued with renewed vigour on Thursday night of last week, and many had to content themselves with sending what they had intended saying to the *Journal.* Mr. Raworth, in an amusing speech, inveighed against the grandmotherly legislation of municipalities, and pointed out that although there was a municipal gas supply at Manchester, yet the gas consumers were not subjected to severe restrictions and rules like those which hampered the electrical consumers in their choice of fittings and apparatus. A swivel gas bracket between two lace curtains, or a water gasalier, are serious fire risks, yet the fire insurance offices do not issue rules for gas lighting. It was the opinion of several other speakers also that rules and regulations were only vexatious. Mr. Arthur Wright, of Brighton, thought that it was a very short-sighted policy on the part of supply companies to issue rules, as they only frightened the public. The municipal engineer should confine himself to keeping the pressure of supply absolutely constant, to seeing that the general leakage on his system was not too great, and to preventing any individual consumer from taking a large supply intermittently. Municipalities would be the first to grumble if the Board of Trade rigidly enforced their rules, and this ought to show them the folly of making rules for their consumers. Mr. Wordingham, of Manchester, in an able speech traversed the arguments that had been brought against the conclusions in his paper, and said that many of the speakers had been led away by their animus against municipalities. Rules were made for the benefit of the consumer, and were the only safeguard against jerry wiring. If rules were abolished we should be flooded with cheap German fittings, and a premium would be placed on inferior workmanship. At a late hour a motion was unanimously passed to invite all interested in electric wiring rules to a conference, which it was hoped would be successful in securing uniformity in rules.

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**Metropolitan Asylums Board.** CONSIDERING recent circumstances it is not surprising that the Metropolitan Asylums Board should have prepared a new form of agreement to be entered into with architects carrying out work for the Board. The main point of the agreement, and the motive for drawing it up, is evidently to be found in paragraph 7, which runs as follows:—

"7. The architect will not, in the construction of the works, allow or in any way countenance any deviation from or alteration in the said plans, drawings, elevations, and sections to be made, the estimated cost of which shall exceed 25*l.*; nor shall any extra or additional work (the estimated cost of which shall exceed the sum of 25*l.*) be begun by any such contractor until such deviation or alteration, or extra or additional work, shall have been approved by the Managers or by the Committee

And any order for any such deviation or alteration, or extra or additional work as aforesaid, shall be given to the contractor in writing, and shall, as evidence of the approval of the Managers or of the Committee be countersigned by the clerk or assistant clerk to the Managers."

We see no objection to this; in fact, it seems a very wholesome regulation; but we do not see why the Chairman of the Committee should have gone out of his way to sneer at the Institute of Architects and make the remark that "the Committee would have been more simple than he thought them if they had submitted the conditions to the Institute of Architects." If Mr. Scovell imagines that the Institute of Architects exists for supporting architects in every way against their clients he is mistaken. The Institute would be the very last to support its own members in anything that was not fair towards the public who employ architects.

**The New Brighton Tower Case.**

ON page 153 of our last issue there appeared a report, extracted from a Manchester paper, of an action brought by Mr. F. W. Maxwell, architect, of Manchester, against the New Brighton Tower Company, which ought not to pass without comment. The action was for fees due to the architect and damages for wrongful dismissal; the result was given in our report of last week, to which the reader may be referred. But in the course of the report it is stated that the architect "was to be paid for any additional work or deviations from the original plans, and he was to be entitled to receive the usual architect's commission from contractors." In the course of the case it was stated on the part of the defendants that they did not accuse the architect of having been bribed by the contractors or of having taken anything from them "unprofessionally"; but that he had received a commission or remuneration from contractors "to which, as a matter of law, he was not entitled under the agreement the company made with him." The company, or their legal advisers, seem to have been under the impression that there was some kind of commission from contractors to architects which was "usual," and that their architect was only to blame in having taken such commissions in contravention of the special terms of their agreement with him. They may be assured that they are entirely misinformed. There is no sort of commission from contractors to architects which is "usual" or is recognised by the representative body of the profession; and if Mr. Maxwell accepted any commission from contractors or tradesmen employed on the work he acted unprofessionally. The *Manchester Guardian* is reponsible for the statements made in the report of the case; and if they are not correct on this point, Mr. Maxwell had better, in his own interests, explain what are the real facts. That the expression the "usual architect's commission from contractors" should appear in a newspaper is derogatory to the whole profession, and indicates some serious misconception on the part of those who employed it.

**The Louvre and the Luxembourg.**

FOR several years the Colonial Department of the French Government has occupied the Pavillon de Flore at the Louvre, which has accordingly been cut up with wooden partitions and occupied with heating apparatus and other requirements for the use of the building as offices. The Conseil des Musées has now awakened to the idea that this state of the Pavillon de Flore, which is *en suite* with the Salle des États, constitutes a danger to the great national art collection, and has formally demanded that the Pavillon should be cleared out and made a portion of the Louvre Museum. It is to be hoped that the Government will accede to the demand, and prevent the possibility of a disaster which would be irreparable. It is also considered that the time has come to consider definitely what is to be done about the Luxembourg Museum, the whole of the wall space of which is now occupied; moreover, the part of the building now used as the museum, formerly an orangery, is by no means a safe building, in a structural sense, for keeping a valuable collection of pictures in. It seems not unlikely, therefore, that the erection of a new gallery for modern works of art will shortly have to be entertained.

**Dudley Gallery Art Society.**

THE thirty-fifth annual exhibition of water-colours by members of this Society, at the Dudley Gallery, contains the usual tolerably large proportion of what may be called respectable works, which are up to a certain standard of execution, but in which it is impossible to take any particular interest; the reason being that their authors have taken no particular interest in them; they are painting without strong feeling for the subject or decisive effort to make the most of it. Among the more original and true works several are by lady members; Miss Margaret Bernard, for instance, whose "Giddy Lake, Wimbourne" (43; is not "lake" a misprint for "lane"?) is a really good composition, and her "Weavers' Houses, Billericay" (60), a fine piece of colour. Miss Mary Stormont's "The Lock, Rye" (51) is an effective small picture of the "vignette" type. Among larger works Mr. C. J. Adams treats his groups of cattle admirably in "Contentment" (55) and "A Farmyard Corner" (64). Mr. Howard Stormont's "Risen—the Harvest Moon" (73) is a picture of real feeling and beautifully composed both in regard to lines and lighting, only a little conventional in tone, in a manner which reminds one of the late Alfred Fripp. Mr. R. A. K. Marshall is also somewhat conventional in the style and composition of his landscapes; nevertheless his "Looking to Dallington" (178) and "Evening After Rain, Hurstmonceux" (185) remind us agreeably of an older school of landscape —careful and learned, and having somewhat the effect of large pictures reduced to a small scale. Mr. George Marks is as good as usual in his beautiful little works "The Edge of the Heath" and "The Way to the Fold" (209, 219), the former especially. Mr. F. G. Coleridge paints miniature Thames pictures as before; pretty, but not so true as Mr. Dixey's "Wargrave Backwater" (181), which is really like the Thames. Mr. de Moleyns has realised a powerful effect in his painting of "Sunset Glory" on the houses on the old bridge at Kreuznach (83). Among other works worth attention are "On the Ayrshire Coast" (248) by Mr. R. Wane; Mr. Berenger Benger's "A Sussex Vale in December" (252) a really fine little work, original in treatment and colour; Mr. Nigel Severn's "H.M.S. *Terrible*" (221) in which the great warship is rising over an Atlantic swell in very real style; Miss Beatrice Smallfield's "A Sunny Bathing Corner" (115), good both in the figure painting and the bit of strongly lit landscape; and Mr. Newton Benett's "The Allotments, Dorchester" (32). Mr. Medlycott has made a better picture of St. Paul's (109) than some of his previous ones, but he has not yet achieved drawing the horizontal curves of the dome cornices and string-courses in true perspective.

**Mr. Wilfrid Ball's Exhibition.**

MR. WILFRID BALL'S small water-colour drawings in North and East Anglia, at the Fine Art Society's Gallery, without presenting anything remarkable, are an interesting set of landscape studies in a good, true water-colour style. All those in the neighbourhood of Danbury are good, and all have a certain colour-scheme of their own, differing from most of the other drawings, as if they had been done under some special impulse. Among the other little drawings we noted specially "A Morning Mist—Robin Hood's Bay" (17), "Suffolk Marshes" (22), "Norfolk Uplands" (74), with a grand cloud rolling across the sky; "Ploughlands, Essex" (88), and "The Old Inn, Sandsend, Yorkshire" (108). The small but interesting collection of Japanese works of art, in the front room at these galleries, should not be overlooked.

**"Switzerland in Sunshine and Snow."**

THIS is the title of a collection of water-colour drawings by Mr. Harry Goodwin, exhibited at Messrs. Dowdeswell's. These are to a great extent attempts to render special effects of sunshine and mist in Swiss scenery, and their general style is rather pretty than vigorous; but there are some happy exceptions. "Berne, Evening" (26), is a really fine little picture both in general effect and in the making out of the buildings; indeed, one would almost expect to find the name of Mr. Albert Goodwin attached to it. In "Silver Sunshine on the Schreckhorn" (11) there is an admirable effect of sunlight on the foreground grass; "Brieg—in Sunshine and Shower" (43) is an effective panorama of a landscape seen amid shifting lights; and in "Old Road over the Simplon" (23) and "A Mountain Chapel at the foot of the Matterhorn" (64) the background mountains are painted with more force and solidity than in most of the other works. A careful drawing of the old "Kapell-brücke" at Lucerne is of some architectural interest.

**The Dutch Gallery.**

THE small exhibition of sculpture, designs, and drawings "for fountains, vases, and for the decorations of gardens," at the Dutch Gallery, 14, Brook-street, is rather disappointing. The exhibitors are only three—Mr. Legros, who is by far the largest exhibitor; M. Lantéri, and the Countess Gleichen. Mr. Legros exhibits some carefully executed heads in "point d'or," or what is generally called silver-point in this country, but hardly of any special interest; his sketch in crayon for a fountain basin—somewhat in the form of a Greek cylix, with infants' heads at the upper portion of the rim and scroll-work below, is a pretty suggestion in design. The decorative masks and other similar studies exhibited are not very far removed from the commonplaces of this class of work. The honours of the exhibition are with the Countess Gleichen; her sketches for fountains combined with sculpture are graceful; the sundial, supported on the shoulders of three seated figures of the Fates, is an original idea; and the model for a well-head, one-sixth scale, to be executed in stone with a wrought-iron carrier for the chain and bucket, is the best thing in the collection. The well-head takes roughly the outline and proportions of a capital, decorated with water-flags and with a crouching figure of a nymph under each angle; the wrought iron-work is treated with great vigour and freedom of line.

**New Mosaic at the Houses of Parliament.** We are glad to see that the space in the octagon hall of the Houses of Parliament, opposite to that occupied by Sir E. Poynter's mosaic of St. George, has been filled by another mosaic from the design of the same artist, illustrating St. David, as symbolical of Wales, with allegorical figures as supporters on each side, and a kind of decorative predella below. It now remains to complete the two other similar spaces with mosaics of St. Patrick and St. Andrew, and the four constituent peoples of Great Britain will then be decoratively represented. It is to be hoped, for every reason, that Sir E. Poynter will be commissioned to carry out the two remaining designs also; unity of style being an important consideration in such a work. That the new mosaic, as we have seen it remarked, has not attracted much attention is due to the initial mistake of combining stained glass and coloured mosaic in the same scheme of decoration. Coloured decoration may be introduced by transmitted light (through the windows) or by reflected light (on the walls), but the two can hardly be combined on equal terms; the stained windows tend to kill the mosaic. The scheme having been commenced, however, it is desirable that it should not be left half-finished.

**The Leighton Bequest.** Lord Leighton left, it appears, a bequest of 10,000*l.* to the Royal Academy, of which that body has announced the intention of making use in a manner which will commend itself to every one. The fund is to be administered as a trust, and the income to be spent in acquiring or commissioning works of decorative painting, sculpture, and architecture; the paintings to be placed in public buildings; the sculpture in or on public buildings or in the open air; the architectural commissions to be in the form of fountains; seats in marble, bronze, or stone; lamp-posts, and other objects for the adornment of public places. It is to be hoped that this will assist in initiating a better artistic taste in such objects in our public places; and certainly no method of employing the fund could be more in keeping with the known tastes and wishes of the donor.

## HARROGATE ROYAL PUMP-ROOM COMPETITION.

This competition presents some unusual features, inasmuch as the competitors have been invited to submit designs both for a simple enlargement and for an entire reconstruction of the same building, as well as suggestions for the general treatment of its surroundings. With instructions of a scope so wide, and no limitations upon entrance, it is not surprising that as many as fifty-one sets of drawings were received. These were exhibited last week in the Winter Garden of the Royal Baths (an admirable place, by the way, for such an exhibition, affording ample space and abundant light—advantages often sadly lacking on similar occasions), and formed certainly as varied, and possibly as interesting, an assemblage of designs, as were ever brought together by the attraction of the comparatively small projected outlay of 8,000*l.* The problem set to be solved by the Corporation of Harrogate, the promoters of the competition, was in itself of the most uninspiring and barely utilitarian description. It was simply to provide more room than at present exists for the serving-out of medicinal natural waters to the crowds of visitors who resort to Harrogate during "the season." The existing building covering the outflow of the much-sought-after sulphur springs consists of a single octagonal hall, 34 ft. in diameter, with a counter, also octagonal in form, in the centre, from which the waters are dispensed. As is pointed out in the instructions to competitors, the daily concourse of from 1,200 to 1,300 water drinkers, all of whom arrive at about the same hour of the day, in this confined space, with such inadequate accommodation, produces much inconvenience. To remove, or at least to lessen, this inconvenience somehow, the Corporation have agreed; but whether anything should be done which would involve the disappearance of the present Royal Pump-room has, apparently, been the subject of a serious controversy. And hence the alternative programme and two sets of premiums of the competition.

The result of the awards by Mr. George Corson, the assessor, was published in our last issue. They mark a compromise, for by arranging to ask competitors to show how they would enlarge the old building, as well as how they would build a new one in its place, two conflicting sets of opinions have been reconciled. To take the bull by the horns and build a new "pump-room," as well adapted as possible to its purpose in every way, and quite unfettered by any reference to the late one, would seem to the ordinary mind the wisest course to pursue in the circumstances. But there exists in Harrogate, for some mysterious reason quite unintelligible to the mere outsider, a strong attachment to the very fabric of the existing structure; plentiful evidence was forthcoming in the remarks made during the exhibition of the drawings that many influential inhabitants cherish their pump-room with quite a tender, sentimental regard, which would be most estimable if only the building, the object of such affection, were in any way worthy of it. It is very likely that the place has had a great deal to do with the material prosperity of the tradesmen of the town, but to treat it in consequence as if it were an ancient building worthy of preservation for its beauty and its associations is absurd; and if the Corporation of Harrogate, after evoking such a really excellent response to their request for a *new* pump-room, should after all decide, as there seems some reason to fear, to throw all these designs overboard, and merely add on to the present commonplace building—which, by the way, is in bad repair externally, owing to faulty selection of stone—their procedure will verge on the ridiculous.

A special point of interest about the designs sent in for the re-building scheme was that, partly as best suiting the site, at the intersection of several streets, and partly, no doubt, influenced by the octagonal form of the existing building, the majority of the competitors had adopted perfectly regular plans, forming simple geometrical figures—circles, triangles, squares, hexagons, octagons, dodecagons, all being represented—such as are seldom seen in competitions for actual buildings, at any rate in this country. A dome, or at least a high central roof, was an essential element of every design. In the matter of style the promoters had closely followed Lord Palmerston in his views as to public buildings in London: they were not particular as to what sort of architecture was employed, so long only as it was *not* Gothic; that was definitely prohibited. The general effect of the exhibition had, consequently, a striking resemblance to the annual show of drawings submitted for the Tite Prize (for the promotion of the study of Italian architecture) at the R.I.B.A.; indeed, several of the Harrowgate designs might, with very slight alteration, have been appropriately sent in for the subject of this year's prize, a Royal Mausoleum, so severely monumental was their expression, and withal so gloomy. It was curious, though, to notice how very far from *classic*, according to the true meaning of that word, were many of the so-called "Classic" designs; it seems to be easy enough to evolve something which no one could call Gothic, but to be quite another matter to achieve the really classical.

The first premiums, alike for a new building and for a scheme for enlargement, have been awarded to Mr. J. Anderson, and, weighing all the circumstances, we do not think that a wiser choice could have been made. These designs do not stand out from the crowd by reason of any special excellence, and there is certainly much better architecture displayed in some of the others; they neither call out strong admiration at the first glance nor grow into one's appreciation on further study; but, on the other hand, they have the merits of being straightforward, workable, and possible for the money; they have no conspicuous failings or extravagances; and they would probably be acceptable to the promoters and the public. For his new building, Mr. Anderson shows, standing on the site of the present Pump-room, a dodecagonal hall, 50 ft. in diameter, with small, low projections from the sides for offices, &c. The principal entrance and exit are on opposite sides. In the centre is a fountain surrounded by an octagonal counter, and there are also counters projecting from three of the sides. A large dome, of similar horizontal section to the hall itself, covers the whole of it, and is formed with a flattish elliptical inner vault, apparently of stone, and a much higher lead-covered iron-roof, the latter carrying a lantern of good proportions. The building is treated, both externally and internally, as of two stories, with a separate order to each, the lower one embracing the wings and being comparatively plain and massive, while the upper one forms the drum of the dome, and is pierced with large, round-headed windows, so that the interior is sufficiently and cheerfully lighted, a point which several of the competitors have distinctly missed. The winner of the second premium (Mr. Arthur A. Gibson) sends two alternative plans, one circular, the other octagonal, of 57 ft. and 50 ft. in diameter respectively. Of these only the former is accompanied by elevations and sections. Both of them cover more ground than does the successful design, the circular plan having the additions of a colonnaded portico and two flanking towers, and the octagonal one those of a covered promenade 100 ft. long by 25 ft. wide, placed tangentially in front of it, and a reading-room of about 25 ft. square. These plans are very well thought out, and if they could be carried out for the money would probably produce the most satisfactory building of any in the competition; more especially is this the case with the one having the adjunct of the long gallery, which would prove of much practical advantage, affording space for sitting at small tables, as at Bath, in addition to the standing room in the central hall. But this competitor has damaged himself by the unpractical character of his elevations. They are distinctly interesting, much more so than those just mentioned, and equal in this respect to any in the exhibition, but besides being somewhat more grandiose than the occasion warrants, they are of a character which must be "caviare to the general," and therefore have little chance of being accepted. The general idea seems to be a diminished and modernised version of the Pantheon, so far, at any rate, as regards grouping (as it was before the "asses' ears" were removed), and though most of the work is clever, refined, and well put together, one can hardly be surprised that the design as it stands should not recommend itself for execution. The competitors placed third (Messrs. Eade & Johns) show a still larger and more ambitious building, covering at least three times the area of the existing one. The plan comprises a central hall 40 ft. square, with two smaller ones 36 ft. by 25 ft. opening out of it on either side, the total length being 94 ft., besides projecting offices. Externally the building is treated as of one story, with a low octagonal dome, surmounted by a tall lantern, rising over the central hall. The design generally might be described as vernacular Anglo-Italian of the railway station type, and has nothing about it worthy of commendation. The authors show also an alternative scheme, somewhat smaller, but similar in treatment.

In the other part of the competition Mr. Anderson again wins the first place with a reasonable and businesslike scheme, by which he leaves five sides of the present pump room intact, and extends crosswise behind it an "additional hall," 81 ft. 6 in. by 24 ft., which gives three extra counters, the triangular spaces between the old and new buildings being filled in and utilised. The new hall is of five bays, with cross arches between, and a dome and two semi-domes in each bay. Dormers are inserted in the roof of the existing building, which otherwise is left as at present. The second premium has unaccountably fallen to one of the weakest and worst sets of drawings to be seen in this exhibition, or which, indeed, ever won a premium in any competition. This award was certainly a mistake, and many competitors better deserved the place. The planning of Messrs. Hunt & Shield, who receive the third premium, is altogether better than that of the winner of the second, and although, as we have said, we cannot think it worth while to make any sacrifice for the sake of retaining a portion of the present building, it must be allowed that their idea of turning the regular octagon into an elongated form, and so doubling the floor space, is ingeniously worked out and well adapted to meet the views of the ultra-conservative section.

Among the designs, too numerous to criticise severally, by unplaced competitors, a few deserve particular mention for the really good architectural quality they show. The enlargement scheme, naturally, did not attract the best men, but of the designs for a new building those by Mr. F. Musto (in plan pseudo-elliptical), Messrs. Ashley & Armstrong (octagonal), Messrs. Tapper & Crouch (hexagonal), Mr. R. T. Beckett (octagonal), and Mr. W. T. Morley (Greek cross form), are distinctly meritorious, and we should have been glad if any of them had received premiums. On a lower level, but of interest in some respects are the designs of Messrs. Murray (triangular), Hall, Cooper, and Davies (circular), Taylor (Greek cross), Wilson (circular), Ambler & Son (pseudo-elliptical), H. and A. Bown (dodecagonal), Marshall (pentagonal), Stevens (Greek cross), and Edwards (triangular). It may be noticed in conclusion that in dealing with domes it is a fatal mistake, but one, in this instance, fallen into by many of the competitors, to make the ground story so low in proportion to the size of the dome, that the latter appears quite to crush the rest of the building, and however large in itself realises but a squat, mushroom-like effect, entirely losing all the dignity and beauty which almost inevitably attach to any dome reared high into the air.

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## GREEK ARCHITECTURE.*

### THE ORDERS: DORIC.

IT may seem strange to you that I should treat of the orders when the students here are advanced from their preliminary studies and have entered into the mysteries of composition; but this is not the view taken in France. At the exhibition at the École des Beaux Arts at Paris, 1887, there were quarter full-size drawings of one of the capitals of Mars Ultor, consisting of plans, elevations, sections, and perspectives by one of the students at Rome.

We entered on this course with a distinct view of trying how we could best improve our powers, and get imbued with those principles of proportion, of grace, elegance, and distinction which we could apply to the work we may have to do. All the problems we have to solve in architecture are to make our building fit for its purpose, and to seem fit, and when we have so made it, to see how the various parts of it are to be proportioned, to see how they may form a rhythmical whole, and that they have their proper adornment. A building consists of parts, mostly vertical or horizontal; these parts have their necessities and proprieties, and we ought always to give them character, and beauty when it is consistent with their use. By necessities I mean their height and bulk and, to some extent, their shape; by their proprieties I mean the due expression of the office they have to perform; for instance, a cornice has to shelter; a window-jamb, in this country, to exclude as little light as possible; a pier or column to support a load. By character I mean the proper æsthetic expression for its use and place, and for according with the building. The pier of a prison would be out of place in a church, a picture gallery, or a palace; and the column from one of the last-mentioned buildings, on account of its elegance, refinement, and ornament, would be out of place in a warehouse, where it fulfils a merely necessary duty, though it should not be without its proper character. The study of the orders teaches us how these parts have been treated, so as to have proportion, grace, and beauty; and they have been objects of admiration for over two thousand years. For many centuries columns and their entablatures, even when not wanted, have been used as ornaments to buildings, so that it would be hard if we could learn no lesson and get no hint from their study.

In Plato's "Philebus" Socrates says: "If we are not able to hunt the good with one idea only, with three we may take our prey, and character, truth, and symmetry are the three." Symmetry is what we call proportion.

We turn to Vitruvius to see what he says on the subject of the Doric column, for it is of that order that I treat to-day. It may not be amiss to again marshal the claims of Vitruvius to be considered as an authority on Greek architecture, and on the methods pursued by the Greek architects in getting the proportions of their buildings. We know from him that he had read many of the treatises of the Greek architects; these treatises have perished, and Vitruvius is the only architect whose works have come down to us who has read them. He uses Greek words, too, to explain the technical terms. He was probably bred as an architect, as he speaks of what his masters had taught him. He was a practising architect, for he tells us that he built a basilica at the colony of Fanestrian Julia, on the east shore of Italy. There is also some reason to believe he was with the army of Julius Cæsar, and he tells us that Augustus made him an inspector of artillery. His mention of the shifting of the triglyph, from the angle of the building to the centre of the angle column, his objection to the Greek plan of narrowing the angle intercolumniation, and his other remarks about Greek buildings and temples, show that he was acquainted with the Greek practice, though he evidently considered the Roman method the best.

We have not, however, the smallest reason to suppose that he is giving us the Greek traditions of the days of Pericles; the utmost we can hope is this—that as Roman architecture was borrowed, as far as its construction went, from the Etruscans, and, on its art side, from the Greeks, that the Greek rules in force when Vitruvius wrote were the old Greek rules, only modified to meet the current wants and tastes, and, afterwards, to suit Roman tastes and Roman requirements. Even if the ruins of Greek buildings did not prove that Vitruvius' rules did not apply to them, we should infer it from the considerations before stated. All we can hope is that he gave us roughly the Greek methods adapted to Roman views. As regards Vitruvius there are two points that must be borne in mind—first, that his treatise was dedicated to Augustus, and was for the reading of the nobility and gentry. It was founded on the model of the cubic verses of Pythagoras, and was meant to be as short as possible to aid the memory; were it not for this we could never forgive an architect for not telling us how the temples were lit, but every Roman gentlemen and every man whose parents wanted him to be well taught was sent to Athens. We know Augustus went there, and was a contemporary student and "chum" of Virgil.

Horace, whose father is said to have been a tax-gatherer, was also there, so Vitruvius might have thought it was unnecessary to say how Roman temples were lit at home, or how Greek ones were lit abroad, because all his readers knew that as well as he did; secondly, it was an illustrated book, and all the illustrations have perished.

He lived before archæology had become a science, as well as before anything was known of chemistry or geology; so that no story about the causes of things is too idiotic for him to believe and repeat. Some of you may have read the early treatises on Gothic, where the late stellar groining was attributed to the savages who overran Europe, wanting to reproduce in stone the effects of their native forests.

Vitruvius' accounts of the origin of buildings and of their parts are quite as sensible and credible as this. He is only to be depended on when he speaks of what he has seen, of the methods he has learned, and of the experience he has had. If I give his cock-and-a-bull stories it is because they were implicitly believed by the Renaissance architects, and may possibly be found repeated in the architectural literature of the present day.*

You are not to suppose, because I make these remarks, that I am unconscious of the value, or despise the writings, of Vitruvius, for he has not one, but many titles to respect. That his work has survived for more than 1,800 years is alone a title, that it is the only technical treatise on our art that has illuminated that vast tract of blackness from the days of the building of the pyramids and of Solomon's temple by "the son of a woman of the daughters of Dan," down to the beginning of the fifteenth century, is another (for the sketch-book of Wilars de Honecort is not a treatise); that it is written by the only man we know who has read the Greek treatises on architecture is in itself a sufficient title.

That he has preserved the name of innumerable Greek architects, would be alone a reason for reading him; that his work was the *vade-mecum* of the mediæval, architects and that Milan Cathedral was designed according to his rules, was another; that were it not for him we should be as ignorant of Roman methods as we are of Greek is an additional title; but it is as the only ancient who has described the architect's qualifications that he is the best entitled to our gratitude and respect. Addison takes up the cudgels on our behalf against Martial, on the testimony of Vitruvius.

"It is generally the method of such as are in love with any particular science to discover all others in it. Who would imagine, for example, that architecture should comprehend the knowledge of history, ethics, music, astronomy, natural philosophy, physic, and the civil law? Yet Vitruvius will give you his reasons, such as they are, why a good architect is master of these several arts and sciences—sure, says Çynthia, Martial had never read Vitruvius when he threw the crier and the Architect into the same class:—

> 'If of dull parts the stripling you expect
> A Herald make him, or an Architect.'"
> (Addison's Works, by Tickell, 1777).

He has, however, another title which I was well-nigh forgetting, though I do not recollect it even being mentioned before, and that is that he had possibly been read by St. Paul. Newton translates the passage (Lib. 1, cap. 4, par. 7) as follows:—"For the species of birds have one constitution, fish another, and the terrestrial natures another far different." St. Paul says, 1 Corinthians, cap. xv., verse 39, "But there is one kind of flesh of men, another flesh of beasts, another of fishes, and another of birds." I think we may safely say that if St. Paul had not read Vitruvius, they had both borrowed the passage from the same source.

I gave you in the last lecture the system adopted, according to Vitruvius, to get the general proportions of buildings, because the module or measure was got from them, and not the building from the module.

Vitruvius tells us that when the Ionian colonies were settled in Asia Minor, they began to build temples, the first of which was dedicated to Apollo Paionios, and resembled what they had seen in Achaia, and they gave it the name of Doric, because they had first seen that species in the cities of Doria. As they wished to build this temple with columns, and had no knowledge of the proper proportion, and did did not know how to build them so as to be fit to carry the superincumbent weight, and to produce a beautiful effect, they measured a man's foot, and finding its length the sixth part of his height they gave the column a similar proportion, *i.e.*, six times the thickness of the shaft at the bottom; the successors of these people improving in taste and preferring a more slender proportion assigned seven diameters to the height of the Doric column. He says (Lib. 4, cap. 3): (3) "The front of a Doric temple in the case in which columns are determined on is to be divided, if tetrastyle into twenty-seven parts, if hexastyle into forty-two parts, one part of this will be a module, which in Greek is called Εμβατης, from the module so formed, the distribution of all the parts is regulated; (4) the thickness of the columns will be two modules; their height with the capital, fourteen; the height of the capital one module; its width two and one-sixth modules" (and I presume that does not include its cymatium). "Let the height of the capital be divided into three parts, then one of the parts is to be for the abacus, and its cymatium, another for the echinus with its fillets, the third for the hypotrachelion (or necking). The column will be tapered as is written in the third book about Ionic columns, the epistylium (or architrave), with its tænia and guttæ, is to be one module in height, the tænia is one-seventh of a module, the length of the guttæ under the tænia coincides with the triglyphs." (By this he means the whole row of guttæ). "Their height with the regula is one-sixth part of a module; the width of the lowest part of the epistylium is equal to the hypotrachelion of the top of the column. Upon the epistylium are to be placed the triglyphs with their metopes, one and a half modules high, one module wide on the face, so divided that in the angle and intermediate columns they are placed to correspond with the centre quarters of the columns, and two in the intercolumniations; in the middle one of the pronaos and posticum three. The middle intercolumniation being so extended, the entrance will be without obstruction to those going to the images of the Deities. (5) The width of the triglyphs is divided into six parts, of which five parts will be in the middle, the two halves will be arranged right and left; a flat piece in middle forms the thigh, which in Greek is called *μηρος*; next its channels are scored with the point of a square, other thighs right and left are placed in the row, in the outside parts, the half channels are slanted. The triglyphs being so placed, the metopes, which are between the triglyphs, are as broad as they are long; but at the extreme angles half metopes are impressed half a module in width."

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* Professor Aitchison's third Royal Academy lecture delivered on Thursday, February 9.

* See Gwilt's Encyclopædia, 1881

(I presume he means this roughly, because, as columns are diminished one-sixth, and the architrave is flush with the necking, and is plain—*i.e.*, without the three fascias—it would leave but ten minutes instead of fifteen.)

"Thus indeed it will be, that all defects of the metopes, intercolumniations, and coffers will be cured, because they will be made of equal divisions."

(You see how the practical Roman got out of a difficulty that the artistic Greek made a beauty of) "(6) The capitals of the triglyph are to be made the sixth part of a module" (This cap seems to be included in the one and a half modules high).

"Above the capitals of the triglyphs the corona is to be put in projection one-half and one-sixth part of a module, having the Doric cymatium at top and bottom, the corona with its cymatia half a module thick."

"In the bottom of the corona to the perpendicular of the triglyphs and the middle of the metopes the direction of the spaces and the distribution of the guttæ are to be so divided that six guttæ may appear in the length and three in the depth: the remaining spaces, since the metopes are wider than the triglyphs, may be left plain, or carved with thunderbolts; at the chin itself of the corona, a line is to be cut which is called a scotia—all the rest, pediments, cymas, coronas, may be executed as is described before for Ionic buildings." This may seem curious to us, as Ionic was supposed to be later in Greece than Doric, and was not so popular; but Vitruvius knew that the later buildings in Asia were mostly Ionic, and that after Alexander the Great's time Asia became the most prominent part of the world until the Roman Conquest.

Though the Roman Doric must have been used, on account of his description of the shifting the triglyphs from the angle to the centre of the columns, we do not know of any example extant, except at Pæstum, earlier than the Theatre of Marcellus, built by Augustus and finished 11 B.C., except those to the arcade in front of the Capitoline Tabularium, about 78 B.C.

"(7) This method will be adopted in diastyle works, but if the work be made systyle and single-triglyphed, the front of the temple, if it be tetrastyle, may be divided into 18½ parts, if it be hexastyle into 28½, of these parts one will be the module according to which the work may be divided as is written above. Thus above each epistylium two metopes and two triglyphs will be placed: this is wider in the side ones; as much as the space of half a triglyph." The setting out for getting the module has different numbers in almost every new edition from 1486 down to the present day. In the "Editio Princeps," 1486, they are 28, 32, and 18, 28; in Jocundus, 1513 A.D., they are 28, 44, and 23, 35; it would weary you to go through the list. The learned Newton, our first real English translator, accepts Jocundus; and so does Gwilt. I have given them from Rose, as his edition appears to be accepted by scholars, though no one as yet seems to have solved the difficulty, even if he has been able to translate the last passage, about which the learned have disagreed for the last 400 years.

In this case of the triglyphs we are on the horns of a dilemma: if we accept Rose's numbers, we get the triglyphs and metopes right in number and width, but the last passage is incomprehensible, and the columns are not set the distance apart that Diastyle and Systyle prescribe. If we take Jocundus, Newton, and Gwilt, we get the intercolumniations right, but the metopes are all out of proportion.

The widening of the central intercolumination was not common in Greek temples, though there is some reason to believe it was adopted at the temple of Diana at Ephesus, but it was used in the propylæa of the Acropolis to get in the oxen that were offered in sacrifice, and in that of Eleusis you may see a one-triglyphed hexastyle Doric portico, with two triglyphs in the middle intercolumniation. There is, however, a barbarous temple at Cadachio in Corfu, where the centre intercolumniation is wider, it was supposed to be without triglyphs or guttæ, *i.e.*, Railton found no remains of either.

Vitruvius continues: "One must chamfer the columns with twenty chamfers, which, if they are flat, have twenty angles set out; but if they are hollowed, this is the way of doing it, as big as is the space between the markings: let a square be described with the sides as big as, and equal to the markings; in the middle of the square let the centre of the compasses be put and a circular line be drawn which shall touch the angles of the square; and as much curvature as there is between the rounding and the square, let so much be sunk out to the shape. Thus the Doric column will have the perfection of the fluting of its kind."

10. "Concerning its addition, which is increased in the middle (the entasis) as is prescribed in the third book for Ionic columns, so it may be transferred to these." If we have been correct in our supposition that Vitruvius' treatises gave the pith of the Greek treatises adapted to Roman requirements, you see that they dealt mainly with the general proportions, leaving it to each architect's taste and genius to vary the details pretty much as he pleased.

At the ruins of a peripteral temple at Thoricus, near the promontory of Sunium, the shafts of the columns are unfluted from about 3½ in. above the bottoms to the neckings; whether the Greeks got to like this, or whether the shafts were covered with tapestry, I know not. The important part tapestry played in antiquity is too often overlooked; you should read M. Louis de Ronchard's book on the subject. At Thoricus, the flutes are finished at the bottom, just as they are under the annulets of the capital. Professor Cockerell, and many of the French architects have used this form of column, and in certain cases the contrast of absolute smoothness of considerable length, with the little bits at top and bottom, which are much cut up, is not unpleasing.

Curiously enough there is a Greek Doric temple at Cora between Velitræ and Ardea in Latium, the columns of which have segmental flutes above, plain chamfers at the bottom of the shaft (this chamfering and fluting exactly corresponds with Vitruvius' description) and it has a double moulding for a base, *i.e.*, a fillet and a reversed cyma recta running into the torus without a fillet and a square plinth, the channels of the triglyphs are stopped by a square. The value of triglyphs was threefold; first, it called the note of the fluted columns into the entablature; second, by its rigid vertical lines it acted as a foil to the curved lines and modulated surface of the sculpture, and it contrasted with the long horizontal lines of the architrave and cornice. When the shafts were plain, it could carry no note of them into the entablature, it could not act as a foil to fine sculpture where there was none; but as barbaric ornaments they still afforded a contrast to the lines of the epistylia and cornice, and probably for that reason they have been occasionally used up to the present day. I do not know any one thing that marks the difference between Roman and Greek taste better than the triglyph; and that, too, when both nations were at their highest pitch of cultivation. The two are almost the same thing with very slight differences in their proportions and treatment; but while the Roman triglyph is utterly commonplace, the Greek is marked by elegance and distinction. Some of you may have seen illustrations to books of botany which cannot be said to be unlike the plants and flowers they represent, but every bit of the exquisite grace and distinction of the plants has been left out.

If you will compare a triglyph of the Parthenon with one at the Theatre of Marcellus, you can see by what slight alterations you can turn a very fine thing into a commonplace one. The one has certainly been done by an artist; the other might have been done by a carpenter. When you have learned to appreciate the difference, and will bestow the same thought and care on your own work, you will have to teach the public to appreciate it. At present they would say:—

> "Strange that such difference should be
> 'Twixt tweedledum and tweedledee!"

One of the most curious features of the Doric of the Greeks is the absence of a base; they had tried a base to it at the Temple of Olympian Zeus at Acragas, in the pronaos at Athené at Syracuse, possibly to the columns of the peristyle of Zeus on the Anapus River at Syracuse and at Cora in Latium—if this can be called Greek, as it was built under the Roman duumvirs about 80 B.C., the year Vitruvius is supposed to have been born. This tetrastyle temple at Cora is said by Piranesi to be dedicated to Hercules.

All the best examples in Greece, Ionia, and the Ionian islands, are without a base. The long sweep of steps, with their repeating horizontal lines, were better emphasised by the shallow flutes coming on to them direct, than by frittering away the horizontility by a base whose curved lines as seen in perspective would merely have softened off the contrast and made it less striking. The steps of the pronaos seen between the columns of the portico make a sort of wide dentilation which was repeated in alternation on the lower line of the architrave, by the square lines of the abacus This effect is reproduced by the regula, the shadows from the guttæ making a dappling that accentuated this part, and contrasted with the circular shields between. The triglyphs carry into the entablature the vertical lines of the flutes over each column and between them; the breaking of the upper line of the architrave is repeated higher up—four times by the mutules in the distance between the centres of the columns. Then the horizontal lines of the corona and its cymatium repeat those of the steps. The sloping lines of the pediment make a variation which prevents the composition from being monotonous. What the acroteria were at the Parthenon we know not, though we have Prof. Cockerell's restoration of this, but we know the triangular tympanum was filled with the curved lines and modulated surface of sculpture. This superb creation, the Doric temple, was sublime through its outline, proportion, contrast, and distribution of light and shade; every part was calculated to produce the effect desired in what seems to be the simplest but most perfect way, and every art and refinement had been lavished on it, and the effects of Greek sunshine had been studied and applied with the most exquisite skill. The simas crowning the pediment were the segments of a circle, the only part of a circle found in the mouldings, and therefore had a regularly graduated shadow, confined at the top and bottom by two narrow, but sharp shadows, and were capped with the bright light of the narrow top fillet and shoed with the wide bottom band, the latter a little more than twice the width of the top one, and below that you see nothing but the broad band of light formed by the inclined corona, with its soffit in shade, until you come to the sculpture of the tympanum; here you have all sorts of curved and angular lines, a modulated surface and dark shadows which contrast with the formal lines of the architecture, and are set off by it; then the horizontal corona capped by a hawk's-bill moulding. The horizontal line of its bottom is accentuated by another line, just below, to enforce it, and then come the bright faces of the mutules, breaking up the line of shadow, these having guttæ and an inclined soffit, break up the horizontal shadow from the lower member of the corona, and this edge again is broken by the guttæ. When the sun's rays are not vertical these shadows of the mutules have alternately straight and sloped ends, as they come down from the horizontal line of the corona, thus forming a jagged line, and they so fall on the sculptured metopes, and the channelled triglyphs, whose splayed channels make other jags. Remark, too, that the Greeks emphasised the angles of their building by the channelled triglyph, and did not, like the Romans, leave a weak place at the angles; in fact they could not when the Epistylium was of wood. In the best age, to better equalise the metopes, which in earlier work were wider at the angles, the

Greeks pulled together the last two columns, so as to strengthen the angles below the cornice, made the last column a bit bigger, and battered the lines at the sides.

As the capital was found worthy of the most minute care by generations of Greek architects, it must be worthy of our attention on account of its beauty and the art that has been employed in contrasting those forms, whose shades and shadows are the most striking in the whole structure.

I will describe the form of the column at the Parthenon, which is considered as the most perfect example. The column is round, but fluted with twenty shallow elliptical flutes, forming arrises at the junction, and these flutes are carried right up to the annulets following the apophagee; the column is, I should say, a trifle more than $5\frac{1}{2}$ diameters high, and diminishes between $\frac{1}{4}$ and $\frac{1}{6}$ = 4·598. A massive square abacus crowns the column, below there is the echinus with a sharp elbow under the abacus, at its bottom are the three annulets, viz., three small squares slightly projecting beyond the echinus, and at right angles to its curve and about twice their width apart, sweeping down from the lower edge into the curve of the echinus. The necking is merely a piece of the fluting cut off by deep indentation, and the height of the necking is nearly half that of the abacus; nothing sounds simpler, and I might say more commonplace, than this, yet when seen in sunlight, it makes one of the most perfect things man has yet invented. First there is the broad flat light of the abacus, the deep shadow under it on the echinus graduated down to the annulets, with their lights, shades, and shadows; but from the abacus being square, and the echinus and all below it being round, there is a sort of bay of light in the middle of the echinus, beautifully modulated, like the rising moon on a clear night; the flutes have a light and a dark edge and are all shaded but those facing the sun, till at last all are in shade, the angle of the abacus too makes a pointed shadow on the flutes of the light side, the dark line of the necking enforcing those of the annulets.

I cannot do better than to quote a passage from a letter of the late Professor Middleton on this subject, which will show that I am not singular in my opinion :—

"There is one point about the Greek Doric capital which struck me very much at Athens, while studying the Parthenon, and made me feel that it was really the finest of the orders, that is, the exquisite beauty of the shadow of the abacus falling on the echinus, giving with the movement of the sun an infinite variety of different forms to the contours and gradations of the shadow. After a time I got to feel that the Ionic and Corinthian capitals, beautiful though they are, were monotonous and dull compared to the varying subtleties of light and shade of the Doric cap. I think we can hardly realise the marvellous skill of the early Greek architects in designing their mouldings, so as to make all the shadows transparent, by means of light reflected from some adjacent surface."

It is mainly owing to the persistence of type that we have got such perfection as is exhibited in the Parthenon and Propylæa at Athens; doubtless the type gradually improved up to this point, and then deteriorated.

The Greeks in each temple varied the ratios of height to the width of the column, of the intercolumniation to the columns, the proportions of the parts, the contours of the mouldings, the method of finishing the triglyph channels, the forms of the guttæ, and the shape of the annulets.

One cannot help asking oneself whether this narrow groove in the Doric caps of the best age was not at first intended to take a bronze tongue, and whether the upper part of the flutes were not filled in with bronze leaves, as in some of the earlier examples. At the Erechtheum we know there were bronze ornaments in the flutes on the flank of the Ionic capitals.

Restriction has the same value in form as in colour. A Persian potter had only white, a dark green we may call black, a pea-green, an azure blue, a dark blue, and a purple; by varying these, in shape, size, and position, and perhaps slightly in tone, he made some of the most beautiful compositions in colour we have ever seen. Look at the restriction of forms in a flank entablature of a Doric temple. The mouldings are almost wholly composed of square sections, varied here and there with a sloped or a curved soffit. The regula is square, the tænia is square, the triglyph cap is square, the face of the corona is square, the mutule face is square, its soffits, it is true, are splayed and the corona soffit is curved; the only curved mouldings that occur are the cymatium of the corona, and one little bead above the triglyph cap; the plan of the triglyph is a square chanelled with a V shaped channel; the guttæ, it is true, are circular on plan, and slightly hollowed in section, and the heads of the triglyph channels are ellipses; but you have sculpture in the antifixæ and in the bead, figure sculpture in the metopes, and the whole gorgeous with colour. All this squareness above and below, for the steps are also square, forms a fine contrast to the circular columns, with their circular necking, annulets, echinus, and their elliptical flutes; here we have only one thing four square every way, the abacus.

You would probably laugh at any one who said to you "I want a sublime capping to a building, the parts of which shall be all square, except that a few of the members may be splayed or hollowed on the soffit. You may have one bead, or one or two mouldings, though these must be quite insignificant in size, and I will throw in some little bits sawn off a silk roller which you may imitate in stone, and if you make channels you may finish one end with an ellipse." Yet this is the Doric entablature.

There is nothing like restriction for bringing out all the faculties; you may recollect what Goldsmith said of the French, "that they would be the best cooks in the world if they had any butcher's meat, for they could make ten dishes out of a nettletop."

I strongly advise you to learn the value of squareness; and when you want dignity, see how few curved surfaces you can do with, and how little floral ornament, so that you can restrict your sculptor to do without floral ornament, and get a figure, a group, or even a head in its place. The Greek architect lavished so much care on the exquisite contour of his curved mouldings that he naturally grudged them for sculpture, preferred the painter's aid, and left the flat parts only to the sculptor.

A good many Doric capitals show the gradual restriction of the echinus from the bulbous examples in Sicily and Italy to the delicate curves of the Parthenon, until the echinus becomes a straight line at the Portico of Philip at Delos.

The colossal one at Zeus Olympius at Acragas is 15 ft. 10 in. across the abacus, and in one of the flutes of the shafts a man can stand. The columns at the entrance of the London and North-Western Railway are but 8 ft. in diameter. I also exhibit the proto-Doric one, from the Treasury of Atreus, which is supposed to be copied from a wooden one covered with metal, like the Assyrian metal work on wood that we see at the British Museum, and like the description of the columns, boards, and bars of the Tabernacle in Exodus (caps. 26 and 36). Herr Puchstein traces the early Doric capitals of Sicily and Pæstum (including one lately found at Xenarois, in Corfu) that have the fringe of leaves under the echinus, to the cap of the column at the Treasury of Atreus at Mycenæ, and he divides the Doric into kymatic and a-kymatic, an early example of the former having been found at Pergamon. He suggests that the kymatic arose from the application of terra-cotta to the original wood entablature, and this terra-cotta, he believes, was sometimes applied to stone. He suggests that some of these shapes of kymatia were suggested to the potters by the profiles of vases, and by their rims and feet.

Those who want to study Greek architecture archæologically, and to trace their comparative anatomy from the earliest to the latest times, must read Herr Puchstein's learned treatise on the Ionic order, and the works of Messrs. Bothelin, Jacobsthall, Dörpfeld, Chipiez, and others. Our object here is not to know how the forms arose, but whether they look well. It is impossible to say how the ornamental painting looked. The effect of the polychromy at the School of Athens is not disagreeable. Mr. Watts is, I believe, the only living artist who has ever seen a bit of Greek floral ornament painted in blue, yellow, and red; he saw this at Halicarnassus, and said it looked admirable. We can say of this piece of ornament that it was at least coeval with the destruction of the mausoleum.

The only allusion to the colouring of buildings externally I ever came across in contemporary Greek writers is in that oracular response from Delphi mentioned by Herodotus, and it is partly on this account that I have got the Guardian Fire Assurance to let me have a chromo of the President's drawing, though I may add that it gives you an idea of the extra magnificence added by colour and gilding to a building; but it is particularly on account of the red tint of the marble which he has so admirably shown. I must preface Herodotus' story by saying that the hulls of ships were painted red, that heralds were dressed in white, and that we must conclude buildings were ordinarily coloured red, and that the new buildings mentioned were not yet completed.

"Those of the Samians who had fomented the war against Polycrates, when the Lacedæmonians were about to abandon them, set sail for Siphnos, for they were in want of money. The affairs of the Siphnians were at that time in a flourishing condition, and they were the richest of all the islanders, having in the island gold and silver mines, so that from the tenth of the money accruing from thence a treasure is laid up at Delphi equal to the richest, and they used every year to divide the riches that accrued from the mines. When, therefore, they established this treasure, they consulted the Oracle whether their present prosperity should continue with them for a long time, but the Pythian answered as follows: "When the prytaneum in Siphnos shall be white, and the market white-fronted, then there is need of a prudent man to guard against a wooden troop and a crimson herald." The market and prytaneum of the Siphnians were then adorned with Parian marble. This response they were unable to comprehend, either then on the moment, or when the Samians arrived. For as soon as the Samians reached Siphnos, they sent one of their ships conveying Ambassadors to the city. Formerly all ships were painted red, and this it was that the Pythian forewarned the Siphnians, bidding them beware of a wooden troop and a crimson herald. These Ambassadors then having arrived, requested the Siphnians to lend them ten talents; but when the Siphnians refused the loan, the Samians ravaged their territory; but the Siphinans having heard of it, came out to protect their property, and, having engaged, were beaten, and many of them were cut off from the city by the Samians, and they afterwards exacted from them a hundred talents" (Herodotus, "Thalia" 3, pars 57-58, pp. 194-195).

We cannot, however, doubt that the mouldings and other parts were enriched with colour and painted ornament; scorings for the painted ornament have been found on the marble, and traces of the colours; though no one can prove to demonstration that these were contemporary with the best times: and I have no doubt myself that the buildings were painted in glowing colours; we have, however, two or three circumstantial proofs. We know that the Egyptians, the Persians, and the Pompeians in Magna Grecia painted their buildings, and we know, in the best age, the Greeks painted their statues.

In the "Republic" (Lib. 4, par. 420, Jowett's Trans., vol. iii., page 297) Plato makes Socrates say: "If we were painting a statue, and some one were to come and blame us for not putting the most beautiful colours on the most beautiful parts of the body; for the eyes, he would say, ought to be purple, but they are black. In that case we might fairly answer, 'Sir, do not imagine that we ought to beautify the eyes to such a degree that they are no longer eyes; but see whether by giving this and the other features their due, we make the whole beautiful.'"

Now Socrates is said to have been a sculptor, and before he turned philosopher was a first-rate one. Pausanius (in his "Attics," Lib. 1, cap. 22), says: "In the entrance to the citadel there is a statue of Mercury, whom they call Propylæus, and statues of the Graces, both which are said to have been made by Socrates, the son of Sophroniscus, who, according to the testimony of the Pythian Apollo, was the wisest of men."

Pausanius, too (Lib. 6, cap. 19), says: "The Megarenses also, who dwell near the Attic land, built a treasury, and dedicated in it images made of cedar and painted with gold, so as to resemble flowers." Besides this, we read of statue painters, and most of the little figures from Tanagra have been painted; but probably the most convincing fact of the purely architectural polychromy is the discovery of the painted terra-cotta cappings which formed the outside gutters, and those that were used as wall linings, which were found by the Duke de Luynes at Metapontum, in the Gulf of Taranto.

We have Vitruvius' account that triglyphs were painted blue. When Messrs. Henzler and Daumet published the result of their researches in the "Mission Archéologique de Macédoine," in 1876, they tell us they found at Pydna, in Macedonia, on the Thermaic gulf, and close to Thessaly, a sepulchral chamber ornamented with a Doric façade, and they show that the triglyph and the mutules of it were painted blue, the guttæ white, and in the blue triglyph cap was a bead and reel ornament like that at the Parthenon, painted white too; a red tænia, and the upper mouldings ornamented with patterns in colour. Besides the piece of ornament seen by Mr. Watts, Mr. Pullan found traces of red and blue on the ornament of the Mausoleum, and so did Wood at the Artemision or Temple of Diana of the Ephesians. There seems little doubt that the gold, red, and blue, which Owen Jones found to be the usual gamut of the Saracens, was merely continued by them from the Classical remains they found, though its use may have been extended by them. Hittorff has given some charming restorations in polychromy in his "Ancient Sicily," as well as in his Temple of Æsculapius. I cannot help thinking that anyone, not colour blind, must be charmed with Hittorff's polychromy in his "Ancient Sicily," and would desire to see it on our buildings now, even if it had not the prestige of Greek art.

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## ORNAMENT IN ARCHITECTURE.

ON the 6th inst., in the Hall of the Carpenters' Company, London Wall, a lecture was given by Professor Banister Fletcher on "Ornament," the lecture forming one of a series given under the auspices of the Company.

The lecturer introduced his subject by saying that it was always of practical value, as well as pleasing, to trace the origin of ornament, and he thought that they might safely say that it was derived from two sources—(1) geometrical forms, and (2) natural foliage, flowers, and other objects. Under the first category came the use of the forms of the net, the honeycomb, snowflakes, clouds, and waves, arrangements of dots and lines, continuing and dividing geometrical figures and artificial objects made by man, such as shavings. Under the second class came plants, with their foliage, buds, flowers, and fruit, and trees, the flora of nature; and the fauna, human and animal forms and hair, and, derived from them, monstrous forms, such as the sphinx, the centaur, and the mermaid; human and animal bodies with plant-like terminations, and so on. Of the two classes, the geometrical might be taken as the earlier. Professor Meyer, of the School of Applied Art at Karlsruhe, considered geometrical ornament the oldest element of decoration, and pointed out that the implements of savages and the tattooing of Indians proved this. The seam, with its thread running back and forward, might have given rise to the zigzag, woven work suggesting reticulated patterns, and plaited hair the ornament of the plaited band. The lecturer showed in illustration implements used by Australian aborigines, and proceeded to deal with what he regarded as one of the most pleasing examples of geometrical ornament—the fret. He showed by diagrams how simply it was constructed, the band being divided horizontally into nine or thirteen alternate black and white spaces, and the vertical divisions being made according to a perfectly easy rule. Next came the bead, or astragal, of which he showed examples in Greek and Roman work, and which might be regarded as derived from a necklace of beads or from the knuckle-bones placed side by side. The bead and reel pattern might also be explained, with much probability, as derived from a simple arrangement of reversed and crossing semi-circles. After showing the varieties of charming ornament which took their rise from a simple arrangement of alternate black and white squares, and the use of the star or uraniscus, by which a panel could be effectively filled by an arrangement of radiating lines, as in a Greek coffer ceiling, of which he showed an example, the lecturer dealt with the apparently difficult band ornament known as the "guilloche," which was really simplicity itself, being readily formed by making a series of equidistant circles with diagonal lines rounded off. It might not improbably have been suggested by a piece of twisted wool. He next showed an Egyptian ornament, in which the ground was formed by a conventional treatment of the wave, upon which appeared a lotus leaf with a bud on each side—a most effective black and white design. A series of pavements were then shown, from Pompeii and elsewhere, exhibiting the varied effects to be obtained from arrangements of coloured bricks of various geometrical forms. In this connexion he showed a modern pavement as an example of what to avoid—a design in black and white, suggesting cubes standing out in high relief. Such a design could be of no use unless perhaps to teach a horse to lift its feet. The object of design in a pavement should, of course, be to give the impression of flatness, however elaborate the design. For examples of how geometrical design could be made to cover an entire wall space they must go to Moorish work. He showed the detail of the wall of a bay in the Alhambra Palace and other parts of the building, with an enormous amount of geometrical work and marvellous decorative effect. A vast amount of time must have been spent on this work, but architecture was not for to-day, but for all time, and was worth the best that could be given. In those days, too, labour was cheap and strikes unknown.

Still dealing with geometrical design, the lecturer went on to show various examples of Gothic windows with their magnificent tracery, beginning with the simpler forms of the Early English and proceeding to the Decorated period. He thought they would agree that geometry was grandly illustrated in the windows of that period. The tracery was absolute ornament, the whole could be removed leaving the arch bare, but although the supporting structure would remain, how poor would be the result. In the Perpendicular style they had the decadence of Gothic. The vertical and horizontal lines began to predominate over the charming features of the earlier work.

Coming again to what was to be avoided in ornament, the lecturer gave an example of spiral ribbon enrichments from the walls of the Louvre, which presented the same faults as he had noticed earlier in a pavement. The ribbon, although clever and charming in design, appeared to come out towards the spectator. That was false ornament. Ornament on a flat surface should never seek to imitate a moulding in relief.

Passing next to the second class of ornaments, those derived from natural objects, the lecturer emphasised the principle that in no case was nature to be "copied," though from nature were taken the ideas forming the basis of design. He showed a representation of the natural papyrus plant, side by side with the conventional treatment of the subject in stone in ancient Egypt and elsewhere. The beautiful bell-like shape was preserved, but the whole character of the plant was altered to suit the material the architect had to use. Among the examples were the pillar of Beni Hassan, one from the "Hall of Columns" at Karnac, of the date of 1322 B.C., showing the treatment of the papyrus bud, and a coloured example, 1311 B.C., Memnonium.

One of the simplest forms of natural ornament was the leaf and tongue, of which he showed examples in Greek and Roman mouldings. The lecturer then dealt with the acanthus plant, which, although without symbolic meaning, had been more used than any other plant in architecture of many and widespread styles. He showed cartoons of the natural plant; its use in the Greek capital, marked by the sharpness of the leaf-tips; the blunt rounded tips of the leaves in Roman work; the Byzantine, with its rough and massive treatment, contrasting with the delicate Greek work; the Romanesque and Early English. Every style of historic architecture had used the acanthus, and as time went on the forms became more and more conventional till hardly any trace of the natural leaf remained.

Reverting to the earlier use of the acanthus, he specially dealt with the more complex use of the plant in the Greek scroll. In an example shown from a building in Athens they would see that the original plant was positively lost, but the result was as grand and bold a bit of work as could be wished for. In a Roman example they had bold outline, rich in character: but nothing of the natural plant remained. It was a purely artistic invention, and most successful. Finally, he showed a knocker of the Adam period based on the acanthus, in which the plant not only formed the knocker, but was used as a coronet over the woman's head above. The Adam period, of course, was to some extent a revival of the Greek.

The lecturer went on to give examples of the use of the vine, honeysuckle, and other plants in architecture, and went on to ask the question, "Was the architect wise in varying natural objects, or should he, like the painter, be content with copying?" He fancied, from the examples he had given to his audience, that the ornament of the past, with its conventional treatment, was best, and the reason was not far to seek. Nature did not make her foliage, fruit, and flowers in stone, nor did she place her delicate buds isolated and at great heights. The architect had to do this, and to make his stone or brick building his background, to which his ornament must to some extent assimilate. Nature had a far different background—green hills, flowing streams, objects instinct with life, swaying and bending to the wind. Nothing of this could be copied in stone, which was for ever fixed part of the building, and only to be viewed in conjunction with it. If the architecture of the building were bold and masculine surely the ornament should be the same. How incongruous it would be to carve the daisy or the violet on the frieze of such a building. He laid stress on this because there was a school arising whose theory was that the natural treatment of ornament was the true one, and because ornament must play a most important part in any new style of architecture. Mr. Owen Jones, whose whole life was devoted to ornament and design, had laid it down as an axiom that the recurrence to a natural type was a degradation of design, and that great writer on architecture, Fergusson, said, "While confining himself to purely lithic forms, an architect can never sin against good taste, though he may miss many beauties. With natural forms used in ornament he is always in danger of offence, and few have ever employed them without falling into mistakes; in the first place because it is impossible to imitate perfectly foliage and flowers in stone, and secondly, because if the pliant forms of plants are made to support or do the work of hard stone, the incongruity is immediately apparent; and the more perfect the imitation the greater the mistake." The author of "Nature in Ornament" said that the reproduction must be more or less conventional, or it would not be ornamental.

Leaving the question to his audience, the lecturer went on to show a number of selected examples of the use of ornament in various styles, and pointed out that ornament should be confined to the decoration of the constructive parts of the fabric; and while it should not be used in too great profusion, a paucity of ornament betokened unpleasing poverty. Without ornament there was no architecture—only building. He gave a striking example of this by showing cartoons of the Palace of the Foscari, in Venice, and of the Greenwich Hospital, first as they are and then denuded of ornament; substantially the same structures, but exactly as a practical builder might put them up.

After showing some famous buildings by means of the lantern, the lecturer quoted in conclusion the words of a German professor, Herr von Tschudi of Berlin, to show that there was still hope of architecture, of which so many had desponded. The professor wrote: "In England the continuity of the development of taste in art had never been interrupted. The organic growth of art and of artistic handicrafts had been undisturbed, hence the present overwhelming influence of England upon the development of continental art."

A cordial vote of thanks to the lecturer was passed at the close.

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## BUILDING AN UNDERGROUND RAILWAY.

ON Monday Mr. Basil Mott lectured at Carpenters' Hall, London Wall, on "Building an Underground Railway." He began by giving figures showing the enormous growth of the passenger traffic of London, by which the principal thoroughfares had been reduced to a state of congestion approaching a block. The enormous cost of making an underground railway of the ordinary type, which in the central part of the Metropolitan Railway reached 2,000,000*l.* a mile, and the impossibility of adding to the omnibus service, made some new means of transit imperative. Overhead lines of the New York type would never be tolerated in London, and the best solution of the problem hitherto found was the deep-level underground line, to the possibilities of which the late Mr. J. H. Greathead drew attention. A successful example was the City and South London Railway, constructed under Mr. Greathead's own supervision.

The Central London Railway, now nearing completion, was in a unique position. Following the line of thoroughfares from Shepherd's Bush to the Mansion House, it occupied the most crowded route in the world, and it was impossible to estimate the traffic it would carry, which must be enormous. The deep level system avoided altogether the complex task of diverting the intricate maze of pipes, tubes, and wires that lay beneath the surface of the streets of a great city.

The line consisted of two separate tunnels, for the up and down traffic, fifty to a hundred feet below the street, and with larger tunnels for the stations, access to which was gained by lifts and stairways. Instead of brickwork, the tunnels were made entirely of iron.

The first thing to be done after deciding on the route and obtaining powers, was to purchase the sites for the stations, as from these points the whole of the work had to be carried out. The surface of the streets must not be disturbed. On securing a site adjoining the street a shaft had to be sunk and a small tunnel driven out under the roadway before the actual station could be commenced. The shafts, like the tunnels, were of iron, in rings, the segments of which were bolted together, thus preventing any possible shifting of the ground. The site having been cleared, a ring of segments, each 6 ft. by 4 ft. was put down, and then the earth was dug away under the segments one by one, and new segments were bolted in underneath until a second ring was complete. The perpendicular surface of the earth round the shaft was thus never exposed for more than the space of two or three segments at a time. Thus the rings were put in one beneath another as the shaft deepened.

As the work of constructing the shaft went on, machinery had to be put in for removing the earth. This was done by a colliery cage of the ordinary type, with travelling cranes for loading and unloading the soil removed and the materials put in. The shaft having been completed and the bottom covered by a thick bed of concrete, a small tunnel 8 ft. in diameter was driven under the street, and here a chamber was made for the shield, which was the most important element in the tunnelling work.

The shield might be compared to the cap of a telescope, fitting over the iron tunnel as the cap fitted over the instrument. It consisted of a steel cylinder about 7 ft. in length, the front of which was a steel ring or cutting edge to cut into the clay. Behind that edge was a strong bulkhead or diaphragm, to stiffen the cylinder. Through the diaphragm was an opening or door about 5 ft. square, which could be entirely closed to prevent an inrush of water into the tunnel behind. Behind the bulkhead, and going right round, was a series of hydraulic rams, working against the steel rings of the tunnel, which were built within the tail or back part of the shield. Two or three rings having been built, miners went through the opening in the bulkhead and drove a heading or small tunnel ahead of the shield. Then the rams were brought into play, and forced the shield forward from off the rings. The cutting edge pierced into the clay, and the part to be removed fell into the space which had been made in front.

When the shield had been forced forward 1 ft. 8 in. the rams were withdrawn from the ring, another ring was put in under cover of the tail of the shield, the heading in front was driven further, and the shield was ready to be forced forward again.

As the shield advanced and left the iron rings of the tunnel uncovered, a narrow space was left all round between the tunnel and the clay by the withdrawal of the skin or cylindrical tail of the shield. This was filled in a very simple way, by a most effective machine, called a grouting apparatus. Lime or cement was forced through small holes left in the rings of the tunnel for the purpose, and ran completely round the tunnel, filling up the space left by the shield, so that any possible movement of the ground was prevented. The grouting apparatus was a strong iron tank, with an inlet pipe at the top by which compressed air was driven in by hydraulic power, and an outlet pipe at the bottom, communicating with the holes in the tunnel, through which the cement was forced. A spindle ran through the tank, with a pair of revolving arms to keep the cement stirred.

So effectual was this grouting, that on removing a small portion of a tunnel made in this way they did not find any case where the grouting had failed to fill up the finest hair crack. In some places the grouting had been forced 3 ft. or 4 ft. back from the iron segment.

In this way the tunnel was built up ring by ring, each ring being built up inside and under the protective cover of the shield. Very rapid progress was made, the average being 12 ft. or 14 ft. at each shield for the twenty-four hours. At every station site the same programme was followed, tunnels being driven in each direction to connect with those from the neighbouring stations. On the Central London they had as many as thirty shields at work at once, and had completed 500 yards in one week—a record in the history of tunnelling.

As these tunnels followed the line of the streets, when one tunnel was being driven to meet another, and the shafts or starting points were at the sides and not in a direct line, great care had to be taken in the alignment to see that the tunnels went in the right direction, and did not wander away under the houses. This required very accurate instruments. The practice was to set out on the street above the centre line of the tunnel, and then to follow the centre line underground. By means of the theodolite, the angles were accurately measured, and two thin wires were then hung down as far apart as possible to form the base lines for the angles. With a good instrument carefully used the results were very satisfactory. After three-quarters of a mile of tunnelling the tunnels had arrived at their destination without having deviated more than 1¾ in. In several cases the error was so small that it could be disregarded, and they might say that the tunnels met actually on the centre line. It was always a moment of anxiety when tunnels driven from a distance were about to meet. When the shields met they were removed, and the cast-iron rings joined together.

When the comparatively small main line tunnels had been fairly started, the large tunnels for the stations had to be made. They were made in precisely the same way, with larger shields. But as the diameter of these tunnels was 21 ft., of course the cast iron segments forming the tunnel had to be stronger and heavier. Where the streets were not of sufficient width to allow the two station tunnels for the up and down line to lie side by side, as at the Post Office, Chancery-lane, and Notting Hill Gate stations, the tunnels were made to lie one over the other. Even with these two large tunnels one over the other the work had been done so successfully that no movement of the ground or damage to property had been caused. The small tunnels had been carried under the entire length of Holborn Viaduct with its numerous piers, without any damage whatever.

After describing the large "cross-over" tunnels of 25 ft. diameter, made here and there to connect the up and down lines, the staircases and lifts at the stations, and the guiding of the shield in tunnelling, which was regulated easily, either to the right or left or up and down by varying the pressure on the hydraulic rams, the lecturer described the construction of the great terminal station occupying the space underneath the whole of the broad thoroughfare in front of the Bank and the Royal Exchange.

This had to be made without stopping the traffic overhead for a single day. Immediately under the horse's hoof was the central booking hall, round which ran a series of subways made for the convenience of the public, by which foot-passengers could get, say, from Cheapside to Lombard-street without crossing the street. Under these subways was a second series of subways, for gas and water pipes, telegraphic and other wires, pneumatic tubes, &c. Not one of the pipes could be removed till the new ones were in position and ready to be connected up. As the ground was excavated all the vast network of pipes had to be supported in the air in their original position until they could be taken away one by one as the pipes in the subway replaced them. The roofing in with steel troughing of the booking hall was a very delicate task, as the traffic could not be interrupted, but this was now nearly complete; the steel being covered with planks until the whole space was ready to be handed over to the Corporation to be asphalted.

While the booking-hall and subways were immediately below the traffic in the street, the two station platforms were below the booking-hall, and lower still were the tunnels of the City and South London Railway, which was now being extended to Moorgate-street, and would be running there in a few months. There was no reason why another railway lower still should not be made if necessary. Few people who passed the Mansion House had any idea of the enormous series of works, one below another, which had thus been constructed under this busiest thoroughfare in the world, without the slightest interference with the public convenience or with the heavy vehicular traffic on the surface.

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## THE LONDON AND PROVINCIAL BUILDERS' FOREMEN'S ASSOCIATION:

### ANNUAL DINNER.

THE annual dinner of this Association was held on Saturday evening last at Anderton's Hotel, Fleet-street, E.C. Mr. Charles J. Elphick presided, and among those present were Messrs. Collinson, Treasure, W. N. Knowles (President of the Association), F. Ruddle, Wimpey, Carmichael, Butler, Wilson Mills, Todd, Grover, Bloore, Stirling, Courtney Lawrence, Winter, Woodward, and Croggon.

After the toast of the "Queen and Royal Family" had been honoured, the Chairman gave the "Navy, Army, and Reserve Forces," which was responded to by Mr. Treasure.

Mr. W. Young next submitted "The Architects and Builders." He observed that builders' foremen had lately come to occupy a very prominent position. One thing had struck him during the past few weeks—that was, that the foremen had not been allowed to establish their own identity and have a voice in the settlement of questions pertaining to their own existence. From his own standpoint it seemed as though the builder's foreman must, if the machinery was to run smoothly, be a friend of all and the enemy of none connected with the trade. Certain it was there were none who came before him in his desire to see the architect's designs successfully executed, even to the smallest detail, and there were none other next to the architect who looked with greater pride upon a finished piece of work, well carried out, than the responsible foreman. It was with the view that builders should have as foremen men in whom they could place implicit confidence that the Association was formed, and in their collective capacity they would like to be consulted in issues that arose between masters and men. They were looking forward to the time when they would receive sympathy from both master and man, and when all three would realise what was essentially true—that the interests of each were equally the interests of all. To this end he proposed "The Architects and Builders."

Mr. Collinson, who responded for the architects, said he was pleased to see the builders' foremen clubbing together and working as a body. They were undoubtedly the backbone of the building trade. He recognised that no branch of the trade desired good work more than the builders' foremen.

Mr. Treasure, for the builders, said he felt sure that if the builders' foremen only held together with the contractors who enjoyed the support of the architects and surveyors, the masters would get the best of the men in the present conflict with the plasterers. The pressing difficulty with the men was not on account of trade unionism, but the abuse of trade unionism. If they only showed that they had sufficient backbone on this occasion to stand out against this abuse, and press all their points upon their men, they would secure a victory which would be lasting in its results.

The Chairman proceeded to propose "The London and Provincial Builders' Foremen's Association." He remarked that builders' foremen had to know a little of everything, and a great deal of some things. The moment the foreman went on a job he was in charge of the details of work, and had to carry them out so that the job paid. He saw great possibilities in the Association. In his own case, when he wanted the services of a foreman, he knew were to obtain them. Touching upon the crisis with the plasterers, the Chairman pointed out that it was not the principle of trade-unionism that they objected to. In fact, he should like to see the builders' foremen banded together in a union of their own, rather than join the other kindred unions, which numbered forty or more. He did not see how they could be loyal to their employers when allied to the other unions. In the present crisis he hoped the plasterers would realise the folly of trying to dictate to the employers.

Mr. W. N. Knowles, the President of the Association, responded. They had, he said, been in existence more than five years, and included on their roll foremen of character and ability in all sections of the building, engineering, and kindred trades. Their objects were educational first, and it necessarily followed that they endeavoured to raise the standard and preserve the integrity of their members. Besides that they rendered assistance to members in procuring engagements, and in the time of adversity. For the latter purpose they had a small contingent fund. At their meetings they had papers read by members on economic and technical questions. In fact, they sought to work on such lines as to earn the confidence of employers and employed alike.

"The Press" (proposed by Mr. G. Barclay), "The Visitors" (proposed by Mr. Webster, and acknowledged by Mr. Ruddl), and "Success to the Building Trade" (responded to by the Chairman) were the concluding toasts.

## METROPOLITAN ASYLUMS BOARD.

At the fortnightly meeting of the managers of the Metropolitan Asylums District, held on Saturday at the County Hall, Spring-gardens, Sir Edward Galsworthy presided.

*Costly Sanitary Work.* — The Leavesden Asylum Committee have long had under consideration the question of modernising the sanitary arrangements of the institution, which was built nearly thirty years ago. They now reported that an estimate by Messrs. A. & C. Harston, the architects, showed that the cost of the necessary sanitary annexes would be something like 20,000*l*. The Committee therefore recommended, and it was agreed, that the whole question should be deferred for consideration by the new Central Asylums Committee which is about to be constituted.

*The Brook Hospital.*—It was resolved to reply to the Local Government Board's criticisms in the terms of the report of the Works Committee already published.

*Agreements with Architects.*—The Works Committee submitted a further report suggesting changes in the system of the Managers with regard to building contracts arising out of the Brook Hospital Committee. They recommended that in future every architect employed should as a general rule be engaged under an agreement sealed by the Board. They submitted a draft form of agreement with architects, to form the basis of the individual agreements to be settled in each separate case by the solicitors. The draft agreement provided for the preparation by the architect of (1) sketch plans, estimates, and reports; (2) detailed plans for the approval of the Local Government Board; and (3) working drawings, specifications and the documents necessary for obtaining tenders, and to enable the contractor to carry out the work. All such plans and documents were to be the property of the managers, who should be at liberty to abandon the scheme and pay the architect an agreed sum. The architect was to agree to superintend the works, acting under the direction of and strictly obeying the orders of the managers and the committee. He should not allow any deviation or extra exceeding £25 in value to be commenced without the approval of the committee signified by the signature of the clerk of the managers. The architect should have custody of the plans, give certificates to contractors only in respect of works done to his entire satisfaction, and attend committee meetings on twenty-four hours' notice. The agreement provided for an inclusive payment, and might be determined without notice in case of incompetency or misconduct on the part of the architect. No rules of the Royal Institute of British Architects or any other Society should be held binding upon the Managers, and the agreement contained an arbitration clause under the Act of 1889. — Mr. A. C. Scovell, Chairman of the Committee, in moving the adoption of the report, said it was undoubtedly the most businesslike plan to make a specific contract with each architect. —Mr. Lile objected to the report on the ground that the Board were considering the proposal to have their own architect.—The Chairman said the agreement did not affect the proposal to have their own architect. It would only apply to any cases in which they might decide in future to engage an outside professional man.—Mr. Edward White, L.C.C., said the agreement guarded against the preparation of elaborate designs before the original sketches had been approved.—Mr. W. M. Acworth asked if steps had been taken to ascertain that architects would not refuse to sign such conditions.—Mr. Scovell replied that the committee would have been more simple than he thought them if they had submitted the conditions to the Royal Institute of British Architects. The managers paid for the work, and it was their business to protect themselves and the ratepayers. He did not apprehend much difficulty with architects. If any point was raised by an architect they could deal with it when it arose.—The report was adopted. On the recommendation of the same committee the managers approved a series of regulations as to the qualifications, duties, and wages of clerks of works, and delegated the appointment of these officers to the committee.

*Appointments.* — Mr. Hilton Johnson was appointed, out of 268 applicants, as Assistant Engineer to the Board. Mr. W. T. Farthing, of 46, Strand, was appointed to take out quantities of the buildings for the electric light installation at the Northern Hospital. Messrs. Fowler & Hugman, 9, Craig's-court, Charing Cross, were appointed to take out quantities of the buildings for the new heating system at the South Eastern Hospital, estimated at 5,396*l*. The plans of Messrs. A. & C. Harston, architects for the new laundry at the North Eastern Hospital, estimated at 14,450*l*., were approved and adopted.

## THE LONDON COUNTY COUNCIL.

The usual weekly meeting of the London County Council was held on Tuesday, in the County Hall, Spring-gardens, Mr. T. McKinnon Wood, Chairman, presiding.

*Loans.*—On the recommendation of the Finance Committee it was agreed to lend the Fulham Vestry 12,505*l*. for paving and other works, the Newington Vestry 10,000*l*. for electric lighting works, the St. George's-in-the-East Vestry 7,770*l*. for alterations to the Vestry Hall, and the School Board for London 200,000*l*. for purposes of the Elementary Education Acts.

*Greenwich Tunnel.*—The Bridges Committee stated that in July last they reported to the Council on the tenders that had been received on March 22, 1898, from Messrs. Mowlem & Co., 119,732*l*., and Messrs. S. Pearson & Son, Limited, 155,000*l*., for constructing the Greenwich footway tunnel. These tenders were received in reply to invitations addressed to certain selected firms. The revised estimate of the Engineer was 83,175*l*., the original being 65,000*l*., and the Committee advised the Council to allow the Engineer to carry out the work at a cost of 100,000*l*., which was to include the estimated loss on the necessary plant. The Council referred the matter back. The Committee then advertised for tenders, with the following result:—Messrs. John Cochrane & Sons, 101,800*l*.; Mr. Thomas Taylor, 131,033*l*. 16s. 7d.; Messrs. Mowlem & Co., 135,330*l*. 7s. 4d.; Messrs. Pethick Brothers, 143,570*l*. 16s. 2d. Since the tenders were received Messrs. Cochrane have pointed out that they made an error of 7,700*l*. in their tender in respect of general charges for work under compressed air. The Engineer was of opinion that Messrs. Cochrane were correct in their statement, and the Committee considered that the amount should be added to their tender. This was 10,232*l*. below the lowest tender received in March, 1898, and only 9,500*l*. above the sum at which the Committee recommended last year that the Council should carry out the work. The Engineer, however, owing to the large increase in cost due to labour and materials, varying from 15 to 20 per cent., stated that his former estimate would have to be considerably increased were it brought up to date. Messrs. Cochrane & Sons desire that a similar arbitration clause to that which was accepted by Messrs. Pearson & Sons in the Blackwall Tunnel contract shall be included in their contract. To this the Committee agreed, and recommended that the supplemental estimate of 44,500*l*. submitted by the Finance Committee be approved, and that the amended tender of Messrs. Cochrane & Sons, amounting to 109,500*l*., for the construction of the Greenwich footway tunnel, be accepted.

After a brief discussion the recommendation was agreed to.

*Tower Bridge Northern Approach: Mansell-street.*—The Improvements Committee recommended, and it was agreed, that the estimate of 2,675*l*. 4s. submitted by the Finance Committee be approved, and that, subject to the City Corporation agreeing to contribute one-half of the net cost of widening the whole of the portion of Mansell-street within the City boundary, in the event of that work being undertaken from time to time as opportunity occurs, the Improvements Committee be authorised to take all necessary steps for the widening of Mansell-street to 50 ft. at Nos. 21 to 29 (odd numbers).

*Trinity-road Bridge, Wandsworth.*—It was also agreed that sanction be given to the expenditure of 2,993*l*. 15s. 3d. in excess of the estimate approved by the Council for the widening by the London and South-Western Railway Company of the bridge and approaches carrying Trinity-road, Wandsworth, over the railway.

*Parliament-street and Charles-street.*—It was agreed that a payment of 2,250*l*. be made to H.M. Office of Works on account of the Council's promised contribution in respect of the making-up of Parliament-street and Charles-street.

*The Housing Question.*—Dr. Cooper moved, and Mr. Crookes seconded—"That Standing Order No. 315, relating to the dwellings for the working classes, be amended by the omission of the following words from clause 2 (*a*)—'and shall be so fixed that, after providing for all outgoings, interest, and sinking fund charges, there shall be no charge on the county rate in respect of the dwellings on such area or scheme, and that all such dwellings shall be so designed that the cost of erection may not exceed a sum which will enable the Council to carry out the foregoing conditions.'"

Mr. Campbell moved, as an amendment, that the proposal should go to the General Purposes Committee.

Mr. R. C. Phillimore seconded.

Dr. Cooper accepted the amendment, which was agreed to.

Mr. Beachcroft then moved to add that the Finance Committee should also consider the question.

Mr. Corbett seconded, and after a short discussion the amendment was rejected. The motion, as amended, was then agreed to, with a further instruction that the committee were to consider whether the Standing order should be amended in any other respect.

On the motion of Mr. Glanville the following was agreed to:—"That it be an instruction to the Housing of the Working Classes Committee to ascertain and report at the earliest opportunity the cost of acquiring from 30 to 50 acres of land not previously built upon, and the cost of erecting thereon small dwellings for two families, such parts of dwellings to be let at a rental of not less than five shillings nor more than ten shillings weekly, including all rates and taxes, and not more than twenty nor less than fifteen houses to be built upon each acre after allowing for the usual 40-foot roadway; and further, the annual amount per house required in order to repay the cost of the land and buildings within a period of 100 years."

*Means of Escape from Fire.*—Mr. Westacott moved, and it was agreed, that in the opinion of the Council it is desirable that provision for a proper and easy access should be made to the roofs of all new and altered buildings within the County of London, for use not only in cases of fire, but for all general purposes, and that it be referred to the Building Act Committee to advise the Council the best way of accomplishing this object.

*The Price of Gas.*—Mr. Westacott also moved, and Mr. Nathan Robinson seconded, a motion urging the Board of Trade to hold an inquiry into the present management and working of the Gas Light and Coke Company, with a view to ascertaining whether there was any reason for the difference in the price of gas in North and South London, and whether measures could be taken to secure a uniform charge for gas supplied in London.

The motion was adopted.

*Relieving Strand Traffic.* — Mr. Howell Williams moved:—"That with a view of relieving the extreme pressure of traffic in the Strand, the Improvements and Bridges Committees be instructed to consider and report as to the desirability and possibility of constructing an approach from Waterloo-bridge on to the Victoria-embankment, so that traffic requiring to proceed eastward or westward may do so without entering the Strand."

Colonel Ford seconded the motion.

Mr. Ward, Chairman of the Bridges Committee, said there were great practical difficulties in the way of the scheme.

Mr. Lawson said it would greatly disfigure and damage the only good thoroughfare that London possessed.

Dr. Longstaff said he desired to oppose the motion on behalf of the Improvements Committee. The Council's officers were so full of work that it would be positive cruelty to put more work upon them at present.

Mr. Westacott moved "That the Council do proceed to the next business," which was seconded by Mr. N. Robinson and carried.

*Chaucer and Milton Memorials.*—On the motion of Mr. Parker, it was agreed that, as London possesses no adequate memorial of two of her greatest citizens, Geoffrey Chaucer and John Milton, and as the year 1900 will be the fifth centennial of the former's death, an exceptional opportunity will arise for marking Londoners' sense of the honour due to men whose reputations are world-wide as well as metropolitan, and that, therefore, it be referred to the General Purposes and Improvements Committees to consider the desirablenesss of erecting (in the space to be reserved for refuges or ornamental enclosures) in that portion of the Strand which will be widened consequent upon the removal of the Holywell-street block of buildings, statues in honour of the memory of Geoffrey Chaucer and John Milton.

The Council adjourned shortly before seven o'clock.

## THE CLERKS OF WORKS' ASSOCIATION:

### ANNUAL DINNER.

THE sixteenth annual dinner of the Clerks of Works' Association was held on Monday evening in the King's Hall, Holborn Restaurant. Mr. E. W. Mountford was to have presided, but, in his unavoidable absence, the chair was occupied by Mr. W. H. Seth-Smith, who was supported by Messrs. E. Flint, E. Woodthorpe, J. E. Drower, Howard Colls, — Boulnois, and others.

The usual loyal and patriotic toasts having been honoured (Mr. J. Aitchison responding for the "Navy, Army, and Reserve Forces"),

Mr. F. Dashwood, secretary, gave "The Architects and Surveyors." In the course of his remarks, he said he wished to ask the assistance of architects and surveyors in the endeavour of clerks of works to secure better remuneration. During the past thirty years the wages of mechanics and labourers had gone up 25 or 30 per cent., whereas the salaries of clerks of works had remained stationary. He was not making a demand; there was no trades unionism about their Association; but he thought that clerks of works could justly ask for better payment seeing how much their duties had increased in recent years. He thought that clerks of works ought to receive four guineas a week for jobs up to 50,000*l.*; five guineas for 100,000*l.*; six guineas when the work would cost from 100,000*l.* to 150,000*l.*, and a guinea a week for each 50,000*l.* in addition. That was not too much for a good, honest, straightforward clerk of works. In the present form of building contract, where the clerk was called a clerk of works, it was stated that he should represent the architect; that was as it should be. But in the proposed form the clerk of works was referred to as an inspector, "who had power to inspect and report"; that was as it should not be. They wanted to retain the old and honourable title of clerk of works, and be an adjunct to the great profession of architecture.

Mr. H. V. Lanchester, in responding for the architects, said he felt that the position of inspector on a building was not derogatory to a clerk of works. There were serious difficulties to be faced by the clerk of works when he was the representative of the architect, as he (the speaker) knew when he once acted in that capacity. As to the clerk of work's salary being proportionate to the cost of the building, he could not agree with that at all. The salary should be proportionate to the ability of the clerk of works. Men were not all alike in heir abilities, and they had to be paid accordngly. He cordially agreed, however, that the alaries of clerks of works were smaller than they should be.

Mr. J. E. Drower replied for the surveyors, and said that he had great admiration for English architects of the present day. In no other country had there been so much breaking away from architectural tradition—such an amount of originality and invention and such an intuition as to the needs of the day. There had been buildings erected during the last twenty-five years which for centuries would be a delight to look upon. If engineers would remember that they are only engineers and not architects, and would entrust some of their designs for bridges, warehouses, &c., to architects, the country could be covered with many more buildings of a monumental character which would beautify the land and delight the beholder. In all the originality he had referred to, architects had been helped by the practical knowledge and resourcefulness of clerks of works. A clerk of works should be, and generally was, honourable, businesslike, tactful, and of great practical experience; much of this could be obtained by belonging to the Clerks of Works Association—an association of self-helping and self-reliant men, who united for self-improvement—an association which he could only compare with the Architectural Association, which had, perhaps, no equal in the world and performed a great educational work which in other countries would be undertaken by the State.

Mr. J. Brady, editor of the Clerks of Works' *Journal*, then proposed "The Worshipful Company of Carpenters." A few years ago the Company were almost alone in their efforts to get satisfactory practical work done in the various trades, but their work had grown. The Company provided a home for the Clerks of Works Association, and every year one of the members of the Association assisted in the Company's examinations.

Mr. H. Phillips Fletcher having briefly replied,

The Chairman gave the toast of the evening, "The Clerks of Works Association." In the course of his remarks he said, in referring to the question whether architects were artists or craftsmen, that every architect was an artist, and that no architect could be a craftsman. A partnership between the architect and the craftsman was exactly what was wanted, and the Clerks of Works Association was an excellent organisation to act in conjunction with architects. Considering the amount and the character of the work of clerks of works—their energy, skill, and watchfulness—he thought they should receive better pay. He could not wholly agree with Mr. Lanchester that the commission scale was not a reasonable one. Some such scale as that suggested by Mr. Dashwood would not be unreasonable.

With the toast was coupled the name of Mr. W. Baker, President, who replied. He said he was decidedly opposed to the clerk of works being known for the future as the "Inspector"; there was no reason for such a change.

Mr. J. Spooner, Vice-President, next gave the toast of the "Visitors," and Mr. Howard Colls, in response, said it did seem absurd that the clerk of works who was superintending a small work should receive, within a guinea or so, the same salary as the man who was superintending the erection of a palace costing some hundreds of thousands of pounds. Mr. Colls then briefly referred to labour troubles, and said that there was an idea among workmen that it was a fine thing for a man to do a third or half a day's work for a full day's pay, and so provide work for others. That was a gospel of idleness which was certain to end in disaster sooner or later. He hoped that this idea would pass away, and that workmen would feel that for a fair day's wage they should do a fair day's work. From all he heard, however, he was afraid that there was trouble ahead.

Other toasts were "The Press," proposed by Mr. E. Woodthorpe and responded to by our representative; "The Hon. Treasurer, Mr. John Oldrid Scott," proposed by Mr. Green and acknowledged by Mr. King; and "The Chairman," proposed by Mr. E. W. Nightingale.

CHUBB'S NEW WORKS AT WOLVERHAMPTON.—In addition to the large erection now in progress close to the high-level station, Wolverhampton, the directors of Chubb & Son's Lock and Safe Company, Limited, have this week decided to also build over the rest of the freehold land which they acquired recently from the Wolverhampton Corporation. The further additions will be of a substantial nature, affording accommodation for 100 more men, and when the whole of the new buildings at Wolverhampton are fully equipped, they will have cost the company between 15,000*l.* and 20,000*l.*

## APPLICATIONS UNDER THE LONDON BUILDING ACT, 1894.

AT the meeting of the London County Council on Tuesday, the Building Act Committee brought up the following list of applications under the 1894 London Building Act. Those applications to which consent has been given are granted on certain conditions.*

### *Lines of Frontage.*

*Marylebone, East.*—An open iron gangway across Berners-mews, to connect Nos. 1 and 3, Mortimer-street with Nos. 51 and 52, Newman-street, St. Marylebone (Mr. J. Slater, for Mr. E. Penton).—Consent.

*Wandsworth.*—Houses with shops on the western side of Streatham High-road, Streatham, between St. Leonard's Church and The Shrubbery (Mr. J. S. Quilter, for the Rev. Canon Nicholl).—Consent.

*Lewisham.*†—Buildings on the east side of Rushey Green and the north side of Sangley-road, Lewisham (Mr. J. Norton, for Mr. E. Mac. F. Patterson).—Refused.

### *Space at Rear.*

*Lewisham.*—A stable at the rear of a house proposed to be erected on the east side of Bromley-road, Lewisham, adjoining The Gables, without an open space at the rear in accordance with Section 41 of the London Building Act, 1894.—Refused.

### *Buildings for the Supply of Electricity.*

*Battersea.*—That the Council do approve of the amended plans, submitted with the further application of Mr. C. S. Peach, for the Vestry of Battersea, for the construction of a generating station and works on the east side of Lombard-road, at the corner of Holman-road, Battersea.—Agreed.

*Southwark, West.*—That the Council do approve of the plans submitted with the applications of Mr. F. Bailey, for the City of London Electric Lighting Company, Limited, for the construction of an engine-house and an additional story to a workshop at the company's electricity generating station, No. 64, Bankside, Southwark.—Agreed.

*Southwark, West.*—That the Council do approve of the plans submitted with the application of Mr. F. Bailey, for the City of London Electric Lighting Company, Limited, for the construction of an extension to a boiler-house at the company's electricity generating station, No. 65, Bankside, Southwark.—Agreed.

### *Means of Escape at Top of High Buildings.*

*Strand.*—That Messrs. White & Co. be informed that the Council, in the exercise of its powers under Section 63 of the London Building Act, 1894, is not prepared to grant a certificate in respect of the means of escape in case of fire to be provided for the persons dwelling or employed on the topmost floor of a building proposed to be erected on the site of Nos. 173 to 179 (inclusive), Strand, and No. 2, Norfolk-street.—Agreed.

*The recommendation marked † is contrary to the views of the Local Authorities.*

## THE DISPUTE IN THE LONDON BUILDING TRADE.

ALTHOUGH the officials of the Plasterers' Union refuse to make public the result of the ballot, it is understood that a large majority are opposed to forcing foremen plasterers into the union, and that, therefore, the resolution making it obligatory upon them to become members of the union will be withdrawn at the next meeting of the committee. On Monday, in consequence of the result of the ballot, a number of the men who struck work at the commencement of the dispute at the works of the Veronese Company, at Putney, returned to work. All of these men had been at work elsewhere, but as this company is considered, it is stated, to be one of the best shops in the trade, and as the real cause of the trouble had been removed, the men did not hesitate to at once resume work for their old employers.

## BOOKS RECEIVED.

LAXTON'S BUILDERS' PRICE BOOK FOR 1899. (Simpkin, Marshall, & Co.)

PULPIT, ST. ANDREW'S, AVONMOUTH.—A new pulpit has been erected in Avonmouth Church. The pulpit is of Bath stone. Its panels contain three figures in relief. representing our Lord, St. Andrew, and St. Paul, and an inscription, "To the glory of God and in memory of His servant, David Wright, thirty-five years vicar." The pulpit is from the design of Mr. W. W. Bethell, of London, the architect of the church, and has been executed by Messrs. Hems, of Exeter.

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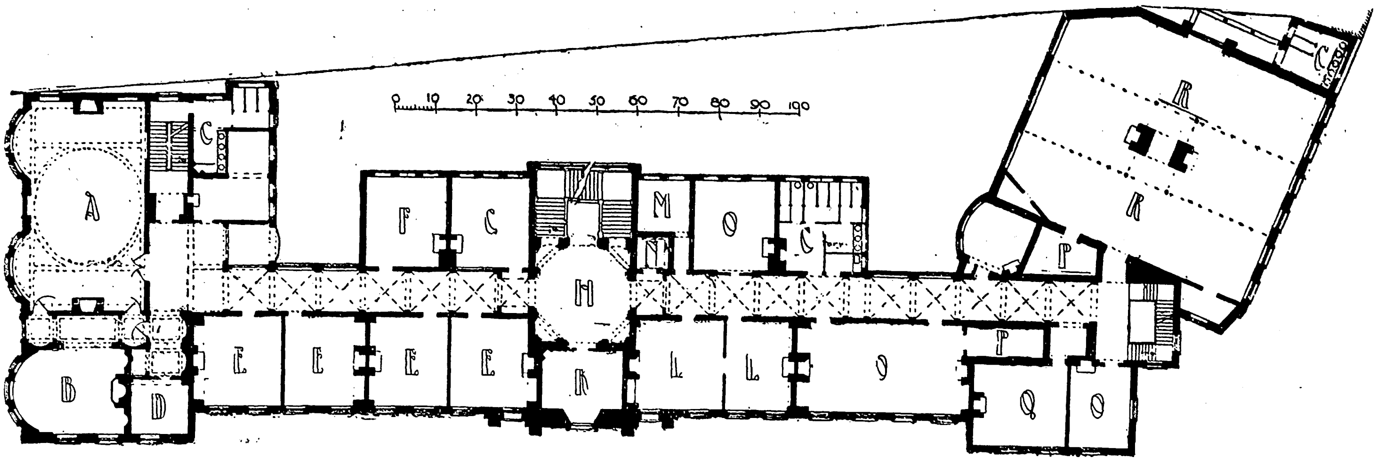
* Names of applicants are given in brackets. Buildings are new erections unless otherwise stated.



*New Railway Offices, York. Plan of First Floor.*

A. Board Room.
B. Ante Room.
C. Lavatories.
D. Hats and Coats.
E. Committee Rooms.
F. Chairman.
G. Officers' Waiting Room.
H. Upper Hall and Main Staircase.
K. Messenger.
L. Secretary.
M. Cleaner.
N. Lift.
O. Offices.
P. Strong Rooms.
Q. Auditor.
R. Transfer and Debenture Offices.

# Illustrations.

## DESIGN FOR A CONCERT HALL.

THIS design, by Mr. W. Stanley Bates, was prepared in competition for the Soane medallion; and we give it as the one to which, in our opinion, the prize ought to have been awarded, because it shows the best knowledge, among the designs submitted, of the requirements of a concert hall.

The following is the author's own description of his intentions in the design:—

> "One of the most important conditions was that the plans should conform to the regulations of the London County Council. In view of the fact of the Royal Institute of British Architects publishing some 'Suggestions for Competitions,' in which paragraph 9 states that if a design violate any of the conditions, that design shall be excluded from the competition, it was felt that all the conditions would be rigidly enforced. An attempt, therefore, was made to try and carry out the regulations of the London County Council.
>
> The area and the first and second circles have numerous exits with doors opening outwards into fireproof corridors which lead to the exit staircases from the tiers and into the street from the area.
>
> Gangways 3 ft. wide are provided in the rear and sides of all the seating.
>
> Opening out of the fireproof corridors on the flanks of the building and out of the crush rooms in the front are six groups of balconies, each group looking directly into a street which would form additional elements of safety in case of fire.
>
> All the staircases for the use of the public and the performers are fireproof and enclosed with 9 in. walls, with the exception of the two entrance staircases in the front.
>
> The portion given up to royalty is kept perfectly private, and comprises royal entrance, staircases, two retiring rooms, and a royal box.
>
> Two separate entrances are provided for the artistes and two for the band and chorus, the whole of the block devoted to the performers being divided from the rest of the building by a party wall.
>
> As the sanitary arrangements of a building of this size become very important care was taken that all the offices were well lighted and ventilated, and separated from the retiring-rooms by passages. Inspection-chambers placed in the areas shown on the plans take the drainage of the several groups.
>
> As regards the plan of the concert hall proper in connexion with its accoustic properties, the auditorium follows in shape that of the Queen's Hall in Langham-place, W., which is very successful in this respect, and the area floor was purposely kept level for promenade concerts.
>
> It was felt also that the concert hall proper should rise above the general mass of the building, and the subsidiary parts carefully grouped round it so that the external appearance would explain, as far as possible, the arrangements within."

We will add one or two comments of our own. The exterior design has the merit of arising out of and expressing the arrangement of the building; at the same time it lacks dignity of style, and we cannot admire what may be called the "stumpy-column" manner. A concert hall is a building for festive purposes, and should have an architectural treatment more in accordance with that idea. In regard to practical matters, the curve of the orchestra and chorus seats would have been better of a wider and flatter segment; to bring the curve round so much makes the singers at the sides sing too much sideways and not sufficiently towards the audience.* The lower stages, for the band, should have been fewer in the given space and wider; about 3 ft. 2 in. wide is the best. The curve at the opposite end of the hall is liable to cause an echo towards the centre of the curve; the walls, both here and at the side, should be a little broken up with projections of some kind, and not left with a smooth surface. In regard to the end curve, however, the galleries, as shown on the section, would assist in obliterating echo. The corridors could only be lighted in the daytime by glass panels in the doors, and would be rather dark, though it must be admitted that this is a defect common to many concert halls and one which, where there are galleries, it is very difficult to avoid; and it is of less importance in a concert hall than in many other classes of buildings, in view of the fact that concert rooms are so much more often used by night than by day.

The arrangement of the rooms for principal performers at opposite sides of the orchestra —ladies on one side and gentlemen on the other—would not answer in practice; the "green-room" (to use the theatrical term) is common ground for solo artists of both sexes; and necessarily so, because where ladies and gentlemen are to take part together in the same piece (for instance, where a lady violinist leads a quartett in which the other players are men), they often have some arrangement to make together as to the performance—something to say at the last moment, and they must be together before going before the audience. Dressing rooms and lavatories are required for ladies and gentlemen in contiguity with the green-room, but the green-room itself is a kind of drawing-room common to all the performers.

In the main, however, this is a very clever design, and does credit to its author.

## PART OF NEW NORTH-EASTERN RAILWAY OFFICES, YORK.

THESE buildings, of which Mr. Horace Field is the architect, will occupy a site opposite to the old station at York, now used as railway offices.

The materials proposed to be used are Huddlestone stone, red Suffolk bricks and green Westmoreland slates. A plan of the first floor is given.

The perspective view was exhibited at last year's Royal Academy.

## PROPOSED CHURCH AT BEDFORD.

THIS church is about to be built on the northern side of the town in a rapidly-develoding district, where new church accommodation is greatly needed. It will replace the present iron structure, which is already far too small for the requirements.

The new church will be built of brick and stone, with grey stone slates for the roofs. A colour scheme is being prepared for the interior treatment.

The plan consists of nave and aisles, with the latter as ambulatories only. There will be a morning chapel on the south side, with an organ-loft and singing-gallery on the north side. A special feature of the interior will be the raised sanctuary (the floor of which will be 7 ft. above that of the nave), with the vestries and sacristy arranged below.

The total seating accommodation will be 750; and the cost, including the tower, will be about 5,000*l*.

The architects are Messrs. C. E. Mallows & Grocock, of Bedford and London.

The drawing from which the illustration is taken was exhibited in the Royal Academy of last year.

## DESIGN FOR CEMETERY CHURCH ON A HILL.

THIS design, by Mr. E. F. Reynolds, was exhibited at the Royal Academy last year. The author writes:—

"The *motif* of the design was the architectural expression of special conditions imposed by the site, which was supposed to be at the summit of a hill. The tower is therefore grouped with the west gable, thus forming a mass with vertical lines emphasised, which buttresses up the more horizontal lines of the body of the church."

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## *COMPETITIONS.*

SCHOOL, DUFFTOWN, N.B.—At an adjourned meeting of the Mortlach School Board the consideration of three competitive plans for the new schools was resumed, and the Board agreed to accept the plans submitted by Mr. G. Sutherland, architect, Elgin, and appointed him to carry out the work. The probable cost is about 4,000*l*.

WESLEYAN CHAPEL, ANNFIELD PLAIN, DURHAM.—Mr. Geo. T. Wilson, architect, Blackhill, has secured the premium for the best design for the reconstruction of the Wesleyan Church at Annfield Plain in amphitheatre form, at an estimated outlay of about 2,000*l*. Messrs. Green & Brockbank, Liverpool, were adjudicated second; Mr. Thompson, Newcastle, third; and Mr. D. Spence, Shotley Bridge, fourth.

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BANK, DOUGLAS, ISLE OF MAN.—A new bank is to be erected at Douglas for the Isle of Man Banking Company, Limited. It is to be built of Aberdeen granite at a cost of 13,000*l*. The new bank will occupy a site in Douglas similar to that of the Northern Assurance Company in Aberdeen, as it is to be built at the junction of the principal thoroughfares, Athol-street and Prospect Hill. On the ground floor the bank offices will be located, and the two upper floors will be let out as business offices. Mr. A. Marshall Mackenzie, A.R.S.A., Aberdeen, is the architect.

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* The whole of the chorus seats, it should be added, are not shown on the ground plan, as the back rows come above its level.

## *ARCHITECTURAL SOCIETIES.*

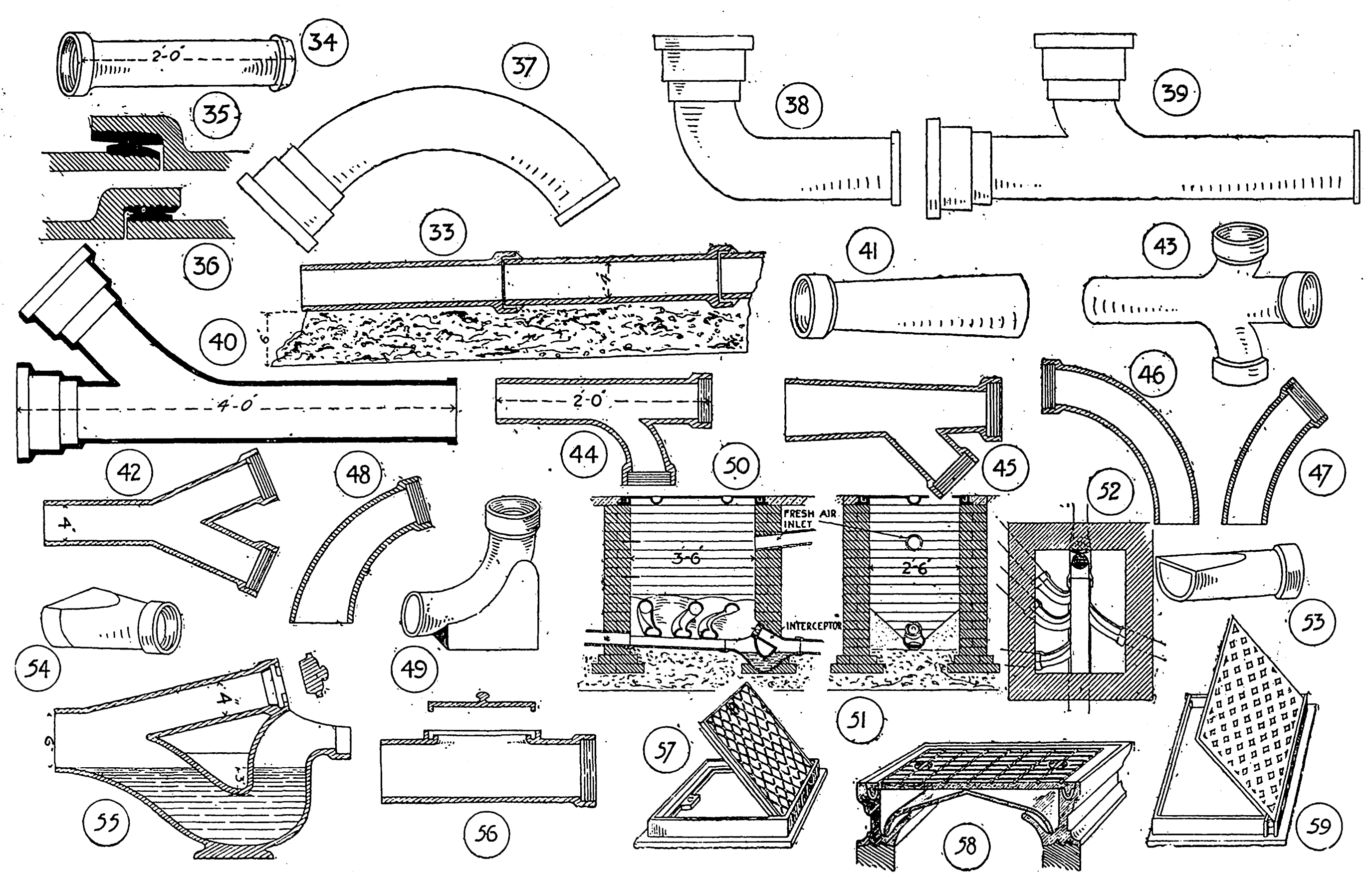
CARDIFF AND SOUTH WALES AND MONMOUTHSHIRE ARCHITECTS' SOCIETY. — The annual dinner of the Cardiff and South Wales and Monmouthshire Architects' Society was held at the Royal Hotel, Cardiff, on the 11th inst. Mr. C. B. Fowler, President of the Society, presided. After the loyal and patriotic toasts, Mr. W. Cooke proposed the toast of "The Royal Institute of British Architects and the Cardiff, South Wales, and Monmouthshire Architects' Society." Mr. H. L. Florence (vice-President of the Institute) responded. He had that afternoon visited Cardiff Castle, and there he saw the spirit of an artist who had produced the forms of the thirteenth century and had infused into them the life and spirit of the nineteenth. That should be the end and aim of the architect. They were about to erect new municipal buildings in Cardiff. He had seen the plans, and he was delighted to see how convenience and admirable arrangement in the interior had been blended with beauty and proportion in the exterior.—The President also responded, and expressed the opinion that young architects should, instead of settling down at once in the town, go about and get eight or ten years' experience in different parts of the country. In this way would local architecture be raised to the highest standard. In conclusion, the President spoke of the good work in connexion with the local society done by their indefatigable secretary, Mr. W. H. Dashwood Caple.—At this point the President moved a resolution of hearty congratulation to Mr. Goscombe John on the occasion of his achieving membership with the Royal Academy. It was an honour of which they all felt proud, for Mr. Goscombe John was a Cardiff boy. Mr. E. W. M. Corbett seconded, and the resolution was adopted with acclamation. Mr. J. Coates Carter (President-elect) proposed the Local Government bodies. The Deputy-Mayor (Alderman Trounce), the Mayor of Newport, and Mr. Lewis Williams responded. Other toasts were "The Master Builders" and "The Visitors." The front page of the menu card was designed by the President. The wording of the menu bore the heading, "Specification," and the courses were named "Setting Out," "Foundations," "Damp Course," "Joinery," "Walling," "Roof," "Certificates," "On Account," and "Final Certificate."

EDINBURGH ARCHITECTURAL ASSOCIATION. —At the meeting in the Royal Institution on the 8th inst.—Mr. Thomas Ross, President, in the chair—a paper was read by Mr. Thomas A. Croal entitled "Some Words about Edinburgh Architecture." Dealing with the placing of buildings and the exits from public places, Mr. Croal took for his starting point Mr. Waterhouse's comments on the site ultimately selected for the Usher Hall. Mr. Waterhouse had remarked, on the general question, that a site for a public building should be more or less surrounded by lawns and trees, as nothing, in his judgment, so much enhanced the enjoyment of fine architecture as the softening influence of neighbouring vegetation. Proceeding on the lines thus indicated, Mr. Croal reviewed the position of many public buildings in Edinburgh, first noting the beauty to the eye presented by the Register House, and suggesting that the reason for the determination of Edinburgh to preserve the north side of Charlotte-square lay in the charm of its combination of a sunny frontage and the "softening influence of neighbouring vegetation." Mr. Croal indicated the Scott Monument as a prominent illustration of a building badly placed, in respect that its worst aspect was on its own proper front. The University was so placed that the best front view was obtained inside, and the Museum of Science and Art had heavy cornices to keep off the sun, and an open glass front to the cold north. Fettes College was so grandly placed that the plainness of its rear view did not offend, but many buildings existed whose back parts, although on the sunny side, were so bald as to show only deformity. Princes-street although Glasgow folk called it "a street wi' ae side," seemed the perfection of condition for prominent town architecture. Referring to the fact announced by the Lord Provost that the new buildings in the Castle were condemned by the Commander-in-Chief and the War Secretary, Mr. Croal showed how they came as an ugly breach in what was formerly a lovely and perfect contour, and then commented on the curious fact stated at Dundee by the Marquis of Lothian, that the War Office had raised the question of carving the English quarterings on the Castle. The second part of the paper pointed out the dangers of exit from a number of public halls in Edinburgh, and counselled architects to keep this point well in mind.—The members made their first visit for the present session on the 11th inst., when Tollcross cable-power station was thrown open for their inspection. Members were met at the depot by Mr. W. N. Colam and Mr. Cooper, the Engineers for the Corporation, and were conducted by them over the station. The company, having completed their inspection of the station, paid a short visit to the Edinburgh Industrial Brigade Home in Fountainbridge, over which they were shown by Mr. Frank W. Simon.

GLASGOW ARCHITECTURAL ASSOCIATION.—At a meeting of this Association, held in the rooms, 187, Pitt-street, on the 7th inst., Mr. George S. Hill in the chair, a paper was read by Mr. John Lochhead entitled "Shop Fronts." The essayist shortly described the shops of the seventeenth and eighteenth centuries, and quoted several enactments passed about those times regulating the projection of stall-board, resulting in the flat bow window, which was still a common feature of English shops. With the introduction of plate glass the necessity for numerous astragals had been done away with, and with the possibilities of having large windows in single sheets the desires of tenants had increased, and shops to please them must have the whole front practically one sheet of glass. It was almost always the desire of the tenant of a corner site to carry his windows unbroken round the corner, and this caused a great loss of appearance to the whole building, as all idea of strength at the corner was gone when the corner butt was dispensed with. The idea of recessing the shop front and carrying along a colonnade was good, as it afforded not only protection to the windows, but also to the public while examining the goods on view. The interesting series of shops called the "Row" at Chester was referred to, where the first floor was also devoted to shops, access being obtained by means of a gallery running along at that level. The essayist advocated that greater individuality should be given to shops occupied by tenants carrying on different trades, and showed by means of photographs and sketches the different treatment which could be accorded with pleasing effect to provision shops, public-houses, &c. In this connexion also a large number of drawings were shown illustrating the treatment which the upper portion of a shop window could have, either by dividing the pane by vertical or radiating astragals or by the uses of etched lines, &c., round the panes, as only a height of 7 ft. to 8 ft. was required for the show-case in the window. The treatment thus given did not detract from the showing of goods, while, at the same time, giving a most pleasing effect to the whole window. At the close of the paper the meeting accorded a vote of thanks to Mr. Lochhead.

THE ARCHITECTURAL ASSOCIATION OF IRELAND.—A meeting of this Association was held at the Grosvenor Hotel, Westland-row, on the 7th inst., the Vice-president, Mr. George Sheridan, in the chair. Mr. R. M. Butler, hon. sec., read a paper entitled "The Influence of Climate and Material on National Architecture." This paper was awarded the prize essay of the Association for 1897. The lecture was illustrated by lantern views, and the subject very fully dealt with. The lecturer showed that in all great periods of architecture the influences of climate and material had exercised a large influence over the art of building. That it was only when the art became corrupted and enervated, and when mere copyism was called design, that these principles ceased to govern design. Likewise the lecturer showed that the social conditions and requirements of the people had in all times exercised an immense influence on their buildings. A vote of thanks to the lecturer was passed unanimously.

EXETER DIOCESAN ARCHITECTURAL AND ARCHÆOLOGICAL SOCIETY.—On the 10th inst., the annual meeting of the Exeter Diocesan Architectural and Archæological Society was held at the College Hall, South-street, Exeter. The Rev. F. B. Dickinson presided. The annual report stated that the Society sustained a deep loss in 1898 by the lamented death of the senior hon. secretary (the late Rev. J. L. Fulford), who had acted in that capacity for forty-two years, and was a member of the committee for fifty-seven years. The Society might be congratulated on securing his son's help in the deceased's special work of editing the transactions of the Society and as hon. secretary. The report was adopted. The hon. treasurer (Mr. J. T. Browne-Mason) presented the accounts for 1897 and 1898. Those for the former showed a balance in hand of 87*l*. 7s. 4d.; those for the latter 45*l*. 19s. 10d., the reduction being due to the payment of a debt of 50*l*. The accounts were adopted. Officers, &c., were then elected. The Rev. R. Medley Fulford read a memoir of his father, the late Rev. J. L. Fulford, and it was resolved that, with a photograph of deceased, it be printed in the transactions of the society. Mr. Harbottle Reed then read a paper on the Churches of Boscastle, Trevalga, and Tintagel, which were visited during the 1897 district meeting. At Boscastle the site of Bottreaux Castle was situated, though now marked only by the steep grassy slopes Minster Church was visited, this being about a mile and a half from Boscastle. The church now consisted of a chancel, nave, south aisle, south porch, and western tower, and it appeared that William, son of Nicholas Botreaux, about the year 1200, founded a cell here of the Priory of St. Sergius of Anjou. According to Sir John Maclean, it ceased to exist in 1407. Proceeding, the lecturer stated that a credence table had been partly formed with two mutilated oak bench ends, in one of which a tonsured figure was kneeling before a book. These two fragments, it appeared, were the only remains of the carved oak which was once the glory of the sacred edifice. Mr. Reed regretted the spoliation of these old churches at the hands of unsympathetic restorers—he was inclined to call them destroyers. He was told that a great actor had been allowed to transport some old bench ends to a London stage. Passing on to Forrabury Church, the speaker described its situation, and, referring to the credence, said one had been made out of three bench ends rudely carved. Between Trevalga and Tintagel was situated St. Piran's Chapel, now used as a cattle shed. Close by is St. Piran's Well, covered by rude pyramidal masonry. Arthur's Quoit, a slab of rock measuring seven feet across, was next noticed lying near Long Bridge and by the roadside. At Bossiney was an ancient earthwork, while in the Vicarage at Trevenna was a rather rare columbarium. Passing on, the lecturer described the Church of St. Materiana, a conspicuous object not far from the edge of a precipitous cliff, and so exposed is its site that the gravestones required stone buttresses to withstand the force of the Atlantic gales. From its proximity to Tintagel Castle, it might be expected that some interesting and ancient work would be discovered, but such was not the case, the alterations and restorations in 1854 and 1868 rendering certainty as to the dates of its masonry almost impossible. The smallness of the ancient windows of the nave was remarked upon, together with the narrowness of those on the north side of the church. The transepts were discovered to be unusually long, while it was seen that the nave and chancel gradually narrowed towards the east end. The Lady Chapel was described as very small; but resting on masonry and leaning against the east wall was a dilapidated slate altar slab, upon which were traced a consecration cross and two others of a rough description, so that the mensa had evidently been altered. The interior of the church produced the effect of permanence, and for this artistic reason the lecturer thought that people were wont to admire Norman work as a dumb witness of the deeds of many generations of humanity. At Tintagel they had the thick walls and narrow windows so evidently for defence. Mr. Reed gave it as his opinion that the church might have been used as a fortress; at least, it was evident that this idea was in the minds of the builders of those days. Against the south wall of the south transept was a monolith, which for many years formed part of the lych-gate upon which the coffins were placed. This was discovered by Mr. Jago, the Cornish antiquary, to have an inscription. He had no doubt it was a Roman milestone, set up at the beginning of the reign of the Emperor Licinius (307 to 324).—On the motion of the Chairman, seconded by the Rev. D. W. Oldham, Mr. Reed was thanked, and it was resolved that the paper be printed in the transactions. The Rev. D. W. Oldham asked whether any date could be assigned for the erection of plaster ceilings,



*Illustrations to Student's Column.*

which were so prevalent in Devonshire country churches. The Rev. R. Medley Fulford expressed the opinion that plaster ceilings came into vogue when slates were being substituted for shingles and as a cheap means of keeping out draughts. Mr. Jerman and Mr. Reed concurred, and the former suggested the early part of the middle of last century as the date of the introduction of ceilings.

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## ENGINEERING SOCIETIES.

The Institution of Junior Engineers.—On Friday, last week, the Chairman, Mr. Basil H. Joy, presiding, the Institution held at the Westminster Palace Hotel a joint meeting with the Discussion Section of the Architectural Association, when a paper on "Factory Design" was read by Mr. J. H. Pearson, a member of both societies. The paper dealt chiefly with the requirements in the design of factories for London, and its vicinity. In introducing the subject the author insisted upon the importance of a close relationship between the architect and engineer, as it was only by consultation together, and united action, especially with regard to buildings of the factory class, involving the employment of machinery, that a satisfactory result could be arrived at. The sections of the London Building Act, 1894, which had special reference to buildings of the factory type, were touched upon, and the different kinds of buildings were classified. It was shown how the design and construction were affected not only by the character of the machinery to be installed, but also by the form of power adopted for driving it. Systems in use at the present time were briefly reviewed, preference being given to electricity. In considering the question of elevation, the good architectural effect obtained from the use of parti-coloured bricks was indicated, and the opinion expressed that stonework should be sparingly introduced, on account of its inability to withstand an excessive heat should a fire occur; its employment should be confined to copings, window-sills, strings, and steps. Materials of construction were then considered, a number of specimens being exhibited to the meeting. Referring to foundations, wherever the nature of site and subsoil was at all doubtful, a continuous bed of concrete over the whole surface was advised, as by that means a uniform pressure of the loads upon the foundation was secured. Fire-resisting floors and staircases having been discussed, the author proceeded to consider details for the construction of roofs, partitions, windows, and skylights. Furnace chimney shafts received attention at some length as did also the questions of ventilation, sanitation, and fire-protection, with special reference to the Factory Act of 1895. The construction of a factory with which the author had been associated was described and illustrated, and an interesting account given of the method of putting on an additional top floor, without meanwhile interrupting in any way the business ordinarily carried on, and without taking to pieces the existing roofs, which were raised by screw-jacks.—An animated discussion ensued, in which Messrs. M. Garbutt, P. J. Waldram, J. Pearson, T. C. Morewood, H. H. Statham, W. Worby Beaumont, H. C. Reid, H. J. Leaning, H. J. Young, E. A. Berry, Max Clarke, and W. R. Beckton took part; and the proceedings terminated with a vote of thanks to the author. It was announced that the Institution would hold a Conversazione on Saturday, March 11, and that at the ensuing meeting a paper on "The Direct Production of Electricity from Carbon," would be read by Mr. W. R. Cooper, M.A., M.Inst.J.E.

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## The Student's Column.

### ARCHITECTURAL HYGIENE.

### VI.—HOUSE DRAINAGE.

Under this section we shall consider underground drains, and include their laying, inspection, and general disposition.

*Stoneware Drain Pipes.* — Underground drains should be constructed of glazed stoneware. The pipes are usually made in 2-ft. lengths, and are of cylindrical form, with a "socket" at one end and "spigot" at the other. Both ends have ridges and furrows formed on them, so that the jointing materials are more easily held in position. In London those that have been tested by hydraulic pressure should be used.

The pipes should be truly laid and securely jointed, and should have a fall of at least 3 in. in 10 ft. (*i.e.*, 1 in 40) for 4-in. pipes, 1 in 60 for 6-in. pipes, and 1 in 90 for 9-in. pipes. In ordinary house drainage a fall of 3 in. in 10 ft. (1 in 40) is generally adhered to where it is possible to obtain it, but in towns one often has to be content with 2½ in., or even 2 in., in 10 ft. A long drain with a flat gradient should always have an automatic flushing tank at it highest point, so as to ensure thorough flushing at intervals.

All drains should be laid as straight as possible from one point to another, thus shortening the length of drain, facilitating cleansing and inspection, and ensuring that the excreta shall be carried away as quickly as possible. Where it is necessary to have bends, they should be of as easy a curve as possible, so that no obstructions may be likely to occur.

The pipes should be laid on a bed of concrete 6 in. in thickness (as shown in fig. 33), formed with care to the required fall. The pipes are then laid in position, commencing at the lowest part of the drain, the spigot end being placed in the socket end of the pipe next below it. The space underneath the body of the pipe should then be packed up carefully with concrete, so that the whole of the pipe, and not only the socket, may rest on the solid concrete. If the latter only rest on the concrete, any weight from above would be liable to cause the fracture of the pipe, on account of its support being only at intermediate distances.

*Jointing.*—The jointing of drain pipes is a most important consideration, and too much stress cannot be laid on this point. The drains may be in perfect alignment on a solid bed of concrete, but the drainage system will be faulty if the joints between the pipes are not absolutely water-tight.

The simplest and one of the best joints is, without doubt, that formed with neat Portland cement or in cement and sand in equal proportions wiped round the socket before the spigot is driven home into position. The inside of the pipe should then be carefully wiped out to preserve the clear bore of the pipe without obstruction, and a fillet of cement should be wiped round the outside of the joint. In order to ensure that the bore of the pipes shall be quite clear at the joints, cylinders of india-rubber are sold for various sizes of pipes, and these can be drawn through by the drain layer as each section is placed in position. In laying the pipes care must be taken to keep the bore of the adjacent pipes concentric. If cement be placed in the bottom only of a socket and the next pipe pushed home, the weight of the pipe will displace the soft cement until the spigot end of the one rests on the inside of the socket of the other. The joint is too close at the bottom, too wide at the top, and there is a ridge inside each joint. The pipe can be packed up with brick chips, or a gaskin of yarn all round is sometimes used. In making joints the hands should be able to reach every part of the outside of the pipe. The fillet formed on the outside should be trowelled smooth all round.

Various patent methods and substances for making joints have at times been placed before the profession.

*Patent Joints.*—Chief amongst these is that known as "Stanford's" joint, shown in figs. 34 and 35, in which a composition of coal-tar, sulphur, and ground pottery is formed on the spigot and socket ends of the pipes, which are then greased and fitted into one another. The ball-and-socket principle allows of a certain amount of deflection, and the possibility of obstruction by cement passing into the body of the drain is avoided. Another method is Doulton's patent self-adjusting joint, which is supplied on the best London tested pipes. In this the joint is effected as shown in fig. 36. Doulton's patent joint is very useful in relaying drains where the flow of sewage cannot be altogether stopped, as in large hotels and public institutions. The pipes can be laid in the water, but when completed a fillet of Portland cement should be placed outside each socket.

A caution is necessary here against the jointing of pipes by means of clay, for, until within comparatively recent years, clay was frequently used. Of course, it forms no reliable joint at all, and should on no account be allowed. It has sometimes been employed in connexion with cement, the inner part of the joint being puddled around with clay; but a little reflection will show that if it is bad anywhere it is bad everywhere, and it should never be allowed to be used.

*Iron Drain Pipes.*—Iron pipes are preferred by some architects, especially for drainage under houses, one of the chief reasons for their employment being that systems in which they are employed have fewer joints—the iron pipes being obtainable in 9-ft. lengths. Bends and junctions are also obtainable for these pipes, as shown in figs. 37, 38, 39, and 40. The jointing of such pipes is effected by means of tow and lead.

Iron pipes are frequently necessary in deep basements, or in places where pipes have to be slung up to the walls, owing to the depth of the sewer being such that they cannot be taken under ground. In such a drain iron pipes, because of their transverse strength, are easier to place in position.

Whenever iron pipes are used, they should be subjected to some preservative process in order to prevent them from rusting. In the *Bower-Barff* process the pipes are subjected for some twelve hours to the action of superheated steam, after having themselves been raised to a very high temperature; they thus become coated with the black oxide of iron. In *Dr. Angus Smith's* system the pipes are heated to a certain degree and then dipped in a special solution. Neither process can be considered quite perfect, for an accident may chip off the oxide coat formed by the Bower-Barff process, or Dr. Angus Smith's composition may wear slowly away; but it should be mentioned that it is calculated to last about forty years.

The case for and against the use of iron pipes has been debated over and over again. Architects, as a rule, prefer glazed stoneware pipes because they are practically indestructible from the interior. But iron pipes are often specified for under-house drains because of the fewness of joints. Even in this case some prefer stoneware pipes, provided they are encased all round with 6 in. of concrete. In America the general opinion seems to be entirely in favour of iron piping.

*Size of Pipes.*—With regard to the size of drain pipes that should be used, there is no doubt that in the past the mistake has been in using pipes of too great a diameter. For ordinary dwelling houses, pipes of 4 in. internal diameter are quite sufficient. A pipe of 4 in. diameter with a fall of 1 in 40 will discharge 140 gallons per minute, which is never likely to be exceeded in an ordinary dwelling house.

In large mansions or in public buildings the size of the pipes must be increased as the system gets nearer the outlet and receives more discharges. This is usually effected where manholes occur by means of half taper pipes, as described later; but an illustration is shown of an ordinary whole taper pipe (fig. 41). In addition to the ordinary straight pipes, 2 ft. long, other pipes of different forms are made to answer certain purposes.

*Junctions.*—Chief among these are the *junctions* which are necessary where one line of pipes is connected to another line. The chief point relative to the construction of these is that they must be made in the direction of the sewage, never at right angles; this is necessary in order that the contents may be directed well in the direction of the fall. Junctions are best made by means of half pipes in inspection chambers, but short branches from soil pipes and wastes may be joined to main drains direct by means of ordinary junctions. Junctions are effected by means of the V junction, double junctions, single or Y junctions, and taper junctions. Of these the Y junction is shown in fig. 42; the double junction in fig. 43; the single junction in fig. 44; the taper junction in fig. 45.

*Bends.*—Bends are necessary where the drainage has to be led round a corner. Bends of various curvature are made to suit special circumstances. Of these, figs. 46 and 47 are shown, so that the student can realise their shape. Bends should be used with care and so as to prevent all sharp turns, which would have a tendency to impede the flow of the sewage. A taper bend is also shown in fig. 48.

An excellent bend made by Messrs. Broad & Co. is the "pedestal bend," shown in fig. 49. This is to take the discharge of the vertical soil pipe where it meets the ground drainage. It will be seen that it has a horizontal base fixed to it, so that a direct seat can be obtained on the concrete bed which would be laid to receive it.

*Inspection of Drains.*—Although a system of drainage should if properly executed be faultless, and in fact may be so, yet in practice it is found to be necessary to have at certain points along the line of pipes means of access, so that by means of drain rods any obstruction can be removed if occasion requires it. This is the more necessary, inasmuch as the domestic servant seems to regard the water closet pan as the proper receptacle in which to deposit anything that cannot be got rid of in any other way without trouble. Such being the case, articles are often passed through the water closet trap and so into the drains which ought never to be deposited there, for instance, old rags, &c., and so it comes about that drains get clogged up.

*Inspection Chambers* (or manholes, as they are sometimes called) are, therefore, introduced at such points as the architect considers necessary, so that the whole drainage system can be thoroughly overhauled if necessary. In a similar manner each separate section of a drainage system can be tested by the water test at any subsequent period to its installation. Figs. 50, 51, and 52 show such an inspection chamber. They should be built, where possible, in white glazed bricks laid in cement mortar, the wall of the chamber being one brick in thickness, with two courses of footings; a bed of concrete, one foot in thickness, being underneath the whole area of chamber and footings. The object of using glazed bricks is that the chamber can be kept perfectly clean, and can be cleaned periodically from the splashings which are certain to occur; being of white glazed bricks, and, therefore, impervious, all dirt is easily seen and washed away. If expense prevents the use of white glazed bricks, salt glazed bricks may be used, and if these are too expensive, stock bricks can be used and rendered in Portland cement on the inside. The whole drain pipes are made to run into the manhole and then continued in the manhole by pipes of semi-circular section, or channel pipes as they are more usually called, as shown in figs. 50 and 52. These were formerly semi-circular in section, but in order to provide as deep a channel as possible 6 in. pipes are now made with a channel section of 4½ in. deep, and 4 in. channels 3 in. deep. The advantage of these is apparent, there is less danger of overflowing than in the ordinary section. Channels of a section of three-quarters of a circle are also made with the same object in view.

The junction between the circular pipe and the channel is generally made at the inside face of the wall; but for effecting a better junction between the two, Messrs. Broad have introduced connecting pieces of the shape shown in figs. 53 and 54, by means of which a better junction is obtained, the flat portion supporting the wall without unnecessary cutting away.

The branch drains enter at various angles, and are terminated, as before mentioned, with channel bends. These must be carefully set in the bed of cement concrete forming the floor of manhole, and must be so arranged with curved pipes as to direct the flow without splashing, and with as little friction as possible. The pipes being set in cement, the space between them and the wall, or any other pipe, should be "benched" up as shown on cross section (fig. 51) in neat Portland cement, so that in case of splashing, the sewage immediately falls back into the channels.

*Disconnection of Drains.*—We shall discuss the different kinds of traps later on, but we should state here that it is necessary to disconnect the house drainage from the sewer by the insertion of an intercepting or disconnecting trap on the sewer side of the manhole, as shown on the section of manhole which illustrates the Crapper disconnecting trap, fig. 50. Various makers have taken out patents for these intercepting traps. In the fig. 55 the one associated with Messrs. Broad's name is given. It is fitted, as are all intercepting traps, with an inspection arm, provided with an air-tight plug formed by a cap fitted with a Stanford joint, which should, before fixing, be lightly coated with grease dressing. When placed in position it can be wedged tightly home by the action of turning it. The inspection arm is useful in case of a stoppage occurring between the manhole and the sewer, as the cap can be removed and drain rods inserted.

*Access to Drains.*—A man can by the use of drain rods obtain access to any of the branch drains which discharge into the manhole or the main drain; and by the aid of the inspection arm of the trap the piece of drain between the manhole and the sewer can be cleared. This is the chief value of the manhole, though we shall see that it is also used as a means of distributing a current of air through the drains; and although it necessitates a certain first cost in laying down a drainage system, yet the cost is saved many times over, because it is not necessary to break up the ground in various places in order to clear a stoppage.

*Inspection Pipes* are occasionally used in the length of a long section of drainage where it is not considered necessary to go to the expense of an inspection chamber. One form is shown in fig. 56.

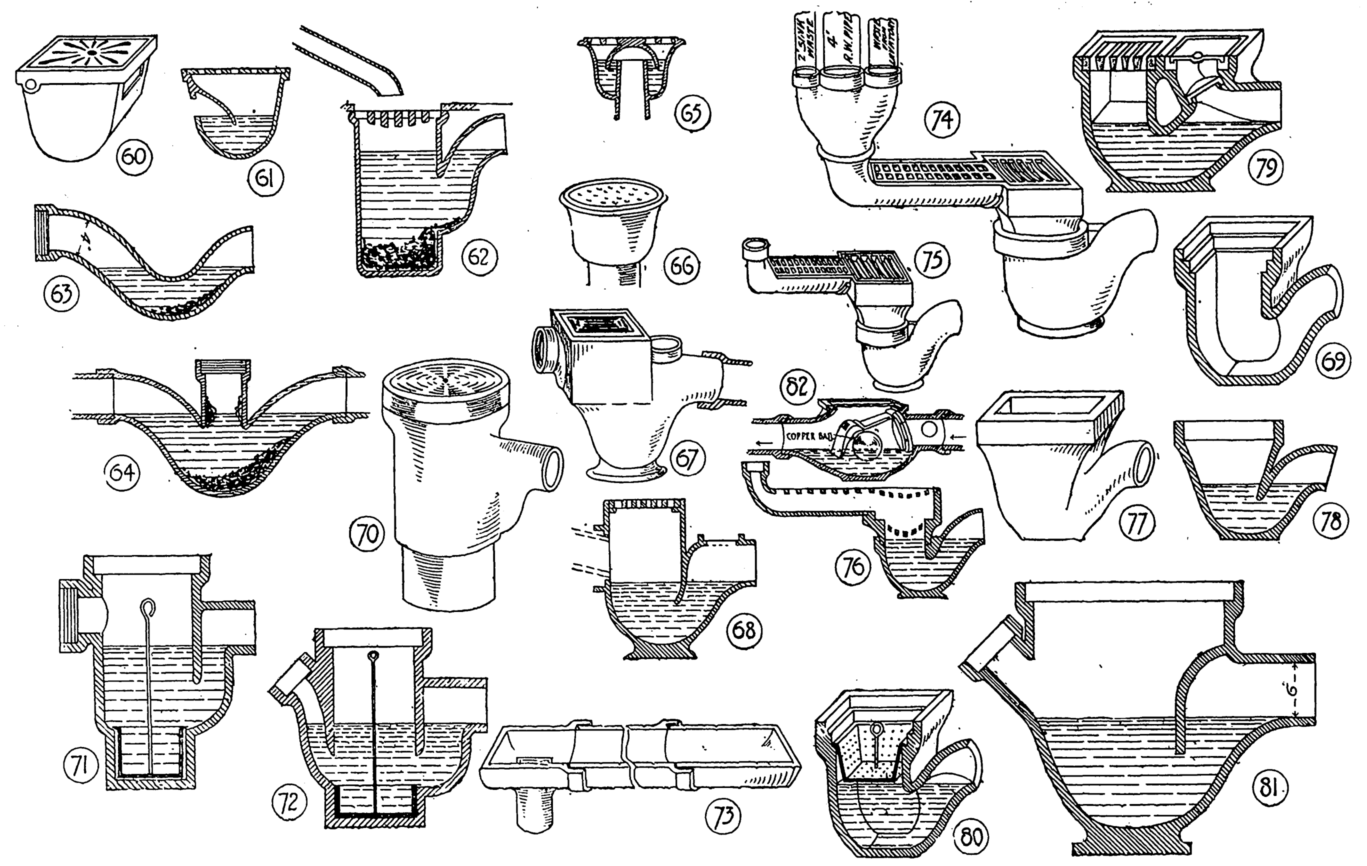
*Manhole Covers.*—The manhole should in towns and confined spaces always be covered with a perfectly air-tight cover. Figure 57 is an illustration of one made by Messrs. Broad. The section will explain itself; the cover is sent out fitted with india-rubber joints, and is also provided with grooves to be filled with grease, soft soap, and sand; the covers are held down by four gun-metal screws. Another form which has been used of late is that shown in the accompanying illustration (fig. 58). In this, it will be seen, there is a double trap, an outer trap formed of an iron cover resting in a groove filled with tallow, fat, or soft soap. The inner or lower trap is formed of a dome-shaped cover, on the underside of which the moist air of the drains is condensed and collected into a trough at its bottom edge. This water-seal is kept continually filled by the condensing action of the drains. It is patented by Mr. John Jones, of Chelsea. In the country and districts well separated from surrounding houses there is no necessity for an air-tight cover, but only an open grid (fig. 59), which prevents anything falling into the manhole. In this case the grid forms the air inlet to the drains; and no inlet pipe is required.

### VII.—HOUSE DRAINAGE (*Continued*).

*Underground Drainage Traps.*—Besides the intercepting trap previously mentioned, traps are required at the feet of waste pipes from *baths, lavatories,* and *sinks,* and at the feet of rain-water pipes; in fact, for every pipe excepting a soil pipe. These traps are generally known as "gully" traps, and are made in numerous shapes and sizes.

Traps are necessary in order to disconnect the vertical pipes attached to the sanitary fittings from the ground drains, and, provided these latter are properly ventilated, the water seal in the traps effectually accomplishes this disconnection, and a current of fresh air is enabled to pass up the vertical pipes and to keep them sweet and clean. The waste pipes are arranged so that they discharge immediately over the trap, or they may be brought in behind, in which case all splashing is avoided.

*Lip Trap.*—Formerly the old "Lip" trap, figs. 60 and 61, was much in vogue; but it will be observed that there are corners in which sewage can be deposited; further, it was made in cast iron, and having no socket, was difficult to connect properly with the drainage pipe. The trap shown in fig. 62 is a bad form of



*Illustrations to Student's Column.*

gully because it is not self-cleansing, but contains a considerable quantity of water, and the bottom portion forms a catch pit for the collection of filth. It should never be used.

*Syphon or U-trap.*—A kind of trap which was one of the earliest forms, and frequently used in underground drainage, was the syphon or U-trap, fig. 63. This is a bad form, partly on account of the quantity of water it contains, which is so large that an ordinary flush from a lavatory or water-closet would not empty it; partly on account of its non-cleansing qualities, the solids remaining in the bottom of the trap on account of the want of pressure of water. The introduction of an inspection pipe, as shown in fig. 64, only made matters worse, as the solids got pushed up into the pipe, and were only removed by the drainage-rods from above. There is one word of warning which should be given, and that is, never to use, or allow to be used, what is known as the "bell" trap (figs. 65 and 66). This form was formerly much used for yards, scullery sinks, &c. As will be seen, it is of a non-cleansing type, and when the "bell" is removed, which is often done by servants knowing no better, there is no trap at all, but direct communication with the drain.

We may now proceed to discuss the best forms, which are designed so as to keep their seal, and to be self-cleansing as far as possible.

*Gully traps* are now usually made of the form shown in figs. 67 and 68, which give an elevation section of a gully trap for receiving a lead or iron rain-water pipe. In this case the rain-water is led into the trap under an iron grating in order to prevent splashing. Some of the vestries insist that it shall discharge over the grating, in which case fig. 69 illustrates the section of gully trap recommended to be used.

The waste-pipes from baths and lavatories are treated in the same way.

*Grease Traps.*—The waste-pipes from *scullery* sinks bring us to a rather more complicated problem, namely, the prevention of the entry of grease into the drains. In order to effect this special traps are used. They consist of a trap large enough to collect the fat from the greasy water which is carried off by the sink waste. The number of patent grease traps is legion, but illustrations of one or two are given. Dean's grease trap (also used in yards, &c.), is shown in figs. 70 and 71. It will be noticed that the sink waste discharges under the iron grid, which is level with the ground. There is a deep seal, and the grease naturally floating is thus prevented, to a large extent, from going into the drain beyond the trap. The bucket, which rests in the bottom of the trap, is provided with a long handle by means of which it can be raised at necessary intervals, and both the solid matters which have fallen into it and the grease which is floating on the top can be removed. Fig. 72 shows a grease-trap made by Messrs. Winser & Co., in which a still wider space is left for the congealed grease.

The great objection to all grease traps is that they become little cesspools if not frequently cleaned out. In large country mansions and hotels they are necessary, as the amount of grease and dirt discharged from a scullery in such cases is very great. They should then be placed under supervision and be cleaned out two or even three times a week.

In ordinary dwelling houses, it is doubtful if grease traps are desirable; and considerable diversity of opinion exists among authorities on this subject.

Probably the best way of treating the wastes from sinks is to follow out the recommendations of the Local Government Board that all wastes should discharge over an open channel connected with a trapped gully. Fig. 73 shows what is known as "Duckett's" self-cleansing channel gully; in this case the greasy sink water has time to congeal while passing towards the gully trap, and can be cleaned off daily. Further, it is visible, and if not cleaned away would give rise to smells which would draw attention to it. The ordinary grease trap falls in with that condition which is always insanitary, viz., "out of sight, out of mind," whereas the discharging over an open channel obviates this difficulty. Fig. 74 shows an illustration of Broad's channel shoe and reversible gully trap, in which the waste from a bath and lavatory, a rain-water pipe, and also a sink waste, is all discharged by means of a three-way head into an open shoe, and thence to the gully trap. In this case an iron grid may be used, but it is probably better left wide open, although if it is also made to take the surface water from a yard some form of grid is necessary to prevent débris finding its way into the drain.

Generally speaking, we should say that every gully should be made to do as much duty as possible, as the number in use can thereby be reduced. The position of the rain water and waste pipes decide where they are to be fixed, and the paving may also be laid so as to make them do duty for surface drainage. If possible, no surface gully should be without a waste pipe discharging into it, so as to keep it sealed during dry weather. In positions where many leaves fall or much waste-paper is blown about, gullies should be covered with wire cages to keep the litter off the gratings.

Figs. 75 and 76 show a view and section of a similar arrangement to take simply the 2 in. waste from a sink.

*Surface Drainage.*—Yards, areas, and other open spaces are drained in a similar manner, by having their surfaces laid to falls. Figs. 77 and 78 show in elevation and section a yard gully as used extensively by the London School Board. It has a flat bottom, and should rest on a bed of concrete. In this case no grid is used, the surface-water being led direct into the trap, the water of which is therefore visible from above. It is made with either P or S outlets, to suit the inclination of drain. Beside the traps enumerated above, many are made with inspection eyes, so that if a stoppage occurs it can be easily removed by means of drain rods. It will be readily seen that to pass a drain rod from above, through the curved space forming the trap, is almost impossible. Fig. 79 shows an air-tight stopper on the drain side of the trap, which can be taken out and the drain rods inserted into the length of pipe. There is always, of course, the danger that this may become unsealed, in which case the outlet would be in direct communication with the drain. Where it is likely that a considerable amount of sand and grit will be washed down a gully it is advisable that a space should be provided for solids to accumulate in (figs. 70 and 71), so that these can be removed from time to time. They are also useful in large warehouses, in the basements, as the latter, when washed down, carry a large amount of dirt in the water, which can thus be collected and prevented from entering the drain.

In *stables* there is the same difficulty to contend with, and Messrs. Broads' stable gully (fig 80) is designed to intercept particles of straw which may have passed through the top grating, the perforated bucket below lessening the possibility of the drain becoming choked. In the Express Dairy Company's cow-houses there are no gullies inside, but they are placed outside, the drainage being led to them in open white glazed channel pipes covered with strong galvanised iron gratings. When cleaning the houses the gratings are lifted, taken out, and washed, while the stalls, gangway, and channels are cleaned with a hose pipe.

Various other gullies have been designed, and one of them is the *flushing gully* of the form shown in fig. 81, often used for sink wastes. It is connected at the back with a flushing tank holding some thirty gallons which discharges automatically from time to time. Such a discharge undoubtedly helps to keep the drains clean.

Before passing from this subject, attention should be drawn to the prevention of what is known as "back flow," that is, the return of sewage from the sewer back to the house drainage. This is only liable to occur where the main drainage is not of a sufficient depth to secure immunity from floods. Fig. 82 shows a method of preventing this. The diagram explains itself. A copper ball floats in the intercepting trap, and in the event of any back flow effectively stops up the opening on the house side of the drain. The patentees of this trap are Messrs. G. & F. Couzens.

The traps here dealt with are those which are fixed in the ground outside the building in the system of house drainage. Traps used inside the building are treated in a later article.

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## *GENERAL BUILDING NEWS.*

St. Agatha's Church, Sparkbrook, Birmingham.—Preparations have been made for the erection of a new church, dedicated to St. Agatha, at Sparkbrook. The church is to be erected on a site adjoining Stratford-road Board Schools, from plans by Mr. W. H. Bidlake, architect, Birmingham. The building is to be carried out in red brick, with stone dressings and green slate roofs. The church will present a symmetrical front to Stratford-road, consisting of a tower over 100 ft. in height, flanked by two deep porches, and having at the base a baptistry projecting as an octagonal apse. The total length of the building is 170 ft. The narrowest part will be 60 ft. at the commencement of the nave, but from that point the church is to open gradually until the extreme width of 78 ft. is reached at the chancel. Seating accommodation is to be provided for 1,000 worshippers on the ground floor—the organ chamber, which is to be placed over the choir transept, being the only part raised above the ground floor. The church is to be lighted by a number of traceried windows, the largest being the one in the chancel. The church will be completed in about eighteen months, and the total cost is estimated at 10,000*l.*

Chancel, Oldbury-upon-Severn Church.—The chancel of this church has been restored and opened. The windows and roof of the church are entirely new, as is also the major portion of the walls, the disastrous fire in 1897 leaving only the case walls, and these, after an examination by the architect, Mr. Waller, of Gloucester, were found to be in several places in a state unfit for restoration. The whole of the work has been carried out, as far as the old drawings and masonry would serve, to represent the former building; but where improvements could be effected, advantage was taken to carry the same into effect. The chancel, vestry, and tower are all now restored, and the contractors anticipate that the whole building will be completed by April.

Baptist Church, Lowestoft.—A new Baptist Church, which has been built on the Grove Estate, London-road, Lowestoft, was opened recently. The new church has seating room for upwards of 700 persons. The seating in the body of the church and in the galleries, which is of pitch pine, is arranged in semi-circle form, whilst the choir seats are arranged in tiers on each side of the organ, behind the platform and Communion Table. The pulpit is of Caen stone, with green marble shafts. The whole of the work has been carried out by Mr. John Ashby, builder and contractor, South Lowestoft, from the designs and under the superintendence of Mr. Geo. Baines, London.

Art School, Wordsley.—On the 6th inst. the Earl of Dartmouth, Lord-Lieutenant of Staffordshire, opened the new School of Art which has been erected at Wordsley, near Stourbridge. The building has been erected in the main street, from the plans of Mr. T. Robinson, of Stourbridge, at a cost of about 1,000*l.* The building is of red brick, with buff terra-cotta facings.

Board School Extension, Sheffield.—On the 6th inst. a new girls' department was opened as an extension of the Gleadless-road Board Schools, Heeley. The architect, Mr. C. J. Innocent, has provided in the school large separate rooms for cookery and manual instruction. The contractor was Mr. John Lister, of Aston. Messrs. J. C. & J. S. Ellis have put in the heating apparatus.

School, Ashley Down, Bristol.—The formal opening of the Ashley Down School, Downend-road, Ashley Down-road, took place on the 7th inst. The premises are arranged to seat 690 scholars in three departments. The central hall system has been adopted. The materials of which the schools have been constructed are local bricks, Bath stone dressings, and Bridgwater roof tiles, the whole of the floors being composed of wood blocks. The general contract was in the hands of Mr. E. Walters, of Montpelier, Mr. G. F. Tuckey being entrusted with the plumbers' and sanitary work. Messrs. Walter S. Paul and James and Mr. G. C. Laurence were the joint architects of the buildings, and Mr. S. White acted as clerk of works.

Aberdeen Royal Lunatic Asylum.—At the annual meeting of the Aberdeen Royal Infirmary and Asylum, the directors were authorised to proceed with the reconstruction of the main asylum, in accordance with plans by Messrs. W. & J. Smith & Kelly, architects, Aberdeen, at an estimated cost (including new kitchen) of 40,000*l.*

Proposed Fever Hospital, Scarborough.—Dr. F. St. George Mivart, one of the Local Government Board Inspectors, held an inquiry recently in the Town Hall, Scarborough, with reference to an application by the Corporation for power to borrow 15,000*l.* for the erection of a fever hospital in Newley-lane. Mr. Harry W. Smith, the Borough Engineer and Surveyor, gave evidence. There was no opposition to the application.

Parish Church Hall, Macduff.—Contracts have just been accepted for the erection of a new hall for the congregation of the Parish Church, Macduff. Some time ago a site in Market-street was purchased, and there building operations will soon commence. The architect is Mr. Wm. Dawson, Sunnyhill. The stone to be used will be Pitsligo granite, and the hall proper will accommodate 500 people. The cost is estimated at 1,000*l.*

New Empire Palace, South Shields.—On Monday the new Empire Theatre of Varieties was opened at South Shields. The new building will accommodate 3,000 people. The designs were prepared by Mr. Frank Matcham, architect, London, in conjunction with whom Messrs. Milburn, architects, of Sunderland, have supervised the work.

Business Premises, Belfast.—New premises for Messrs. Wm. Strain & Son have been erected in Great Victoria-street, Belfast. The buildings are five stories in height. The work has been carried out by Messrs. W. J. Campbell & Sons, from the plans and under the superintendence of Mr. Samuel Stevenson, architect.

Public Library, Borough-road. — A public library was opened in the Borough-road on the 8th inst. by the Right Hon. James Bryce, M.P. The building is placed about 20 ft. from the pavement in the Borough-road. It consists of a basement, ground floor, and first floor, with an attic floor over the portion assigned to the librarian's residence. The basement extends over the whole area of the building, and in it are the heating chamber and the coal cellars; the rest of the space being available for the storage of books, and repairs and unpacking, &c. The ground floor is placed about 3 ft. above the level of the pavement. On entering, one reaches the ladies' room on the right-hand side and the news room on the left-hand side, the public portion of the lending library being in front. The boys' room has a door opening into the news room. On the first floor is the reference library and magazine-room with book store attached. A spiral staircase from the book store communicates with the lending library and basement below. Adjoining the reference library is the committee room. There is a separate entrance for the librarian's staff, and this entrance also leads to the librarian's residence. The exterior facings of the wall are of red brick, with terra-cotta dressings, the roof being covered with slates. The contractors were Messrs. J. Smith & Sons, of Norwood, and the building has been carried out from the designs, and under the superintendence, of the architect, Mr. A. Blomfield Jackson.

Liverpool New Post-office.—By permission of Mr. W. H. Preece, C.B., F.R.S., acting in his dual capacity of President of the Institution of Civil Engineers and Engineer-in-Chief of the General Post-office, members of the Liverpool Engineering Society recently inspected the new Post-office fittings and machinery. Among those present were Mr. E. Ashton (superintending engineer), Mr. D. P. Walsh (assistant superintending engineer), Mr. H. Tanner (Chief Architect of the Office of Works, the architect of the new post-office), Mr. W. Woolven (clerk of works), Mr. E. W. Rees (electrician), and Mr. J. A. Brodie (President, Liverpool Engineering Society and City Engineer). The new building covers nearly two acres of ground, while there is provision for future extension towards Whitechapel.

New Hall, Battersea Polytechnic.—The hall at the Battersea Polytechnic has just been opened. It occupies a space at the east end of the Polytechnic ground left vacant for it in erecting the main buildings, with the style of which it is in harmony. It is built of red brick and Bath stone, the roof being covered with brown tiles and surmounted by an oak turret. Internally the hall is 85 ft. long and 56 ft. wide, while the crown of the arched ceiling is 43 ft. above the floor. The stage is 34 ft. by 16 ft., and has an organ loft above it. Behind the platform are three rooms, which when not required for purposes connected with the hall will be used for music classes, and underneath are two workshops for masons and plasterers' work. The gallery extends across the end of the hall opposite the stage, and will accommodate 180 people, the body of the hall accommodating 780. The hall is to be used for examination purposes, for meetings of students, and for the holding of popular concerts and entertainments and exhibitions. Mr. H. Holloway was the builder, the architect being Mr. E. W. Mountford.

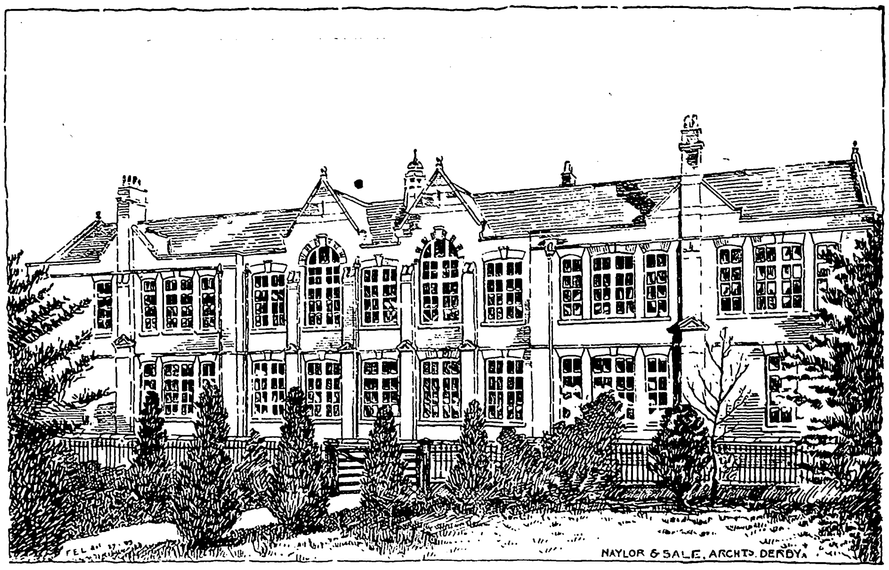
Children's Home, Wavertree, Liverpool.—Richmond Lodge, Wavertree, has been acquired by the Toxteth Board of Guardians, and converted into a home for children. Mr. Walter W. Thomas has been the architect, under whom, with the assistance of Mr. Henry Hallard, clerk of works, the scheme has been carried out. Mr. J. Dilworth, Wavertree, has been the contractor, Messrs. Range & Wright, Wavertree, have had charge of the plumbing work, Messrs. J. B. Johnson & Co., Liverpool, the slating and plastering, Messrs. Harlow & Son, Macclesfield, the heating arrangements, and Messrs. Goddard, Massey, & Warner, Nottingham, the ironwork.

Proposed Public Baths, Stratford.—It is proposed to erect public swimming, warm, and Turkish baths, and shops in Romford-road, Stratford. It is intended to erect the buildings upon a site lately acquired by the Corporation at the corner of Romford-road and Vicarage-lane. The frontage to Vicarage-lane is shown (in the plans) occupied respectively by six lock-up shops, and six shops with residences over. The public baths occupy a small part only in the centre. The main frontage faces Romford-road, and the present building line is adopted. The following accommodation is provided in the public baths: Entrance and waiting-hall, first-class men's swimming bath, second-class men's swimming bath (which will also be used for women), club-room (first-class bath), six first-class men's warm baths, twelve second-class men's warm baths, five first-class women's warm baths, five second-class women's warm baths, a separate waiting-room to each class, small Turkish bath, committee-room, ticket office, superintendent's offices, towel store, laundry, boiler-house, engine-room, coal stores. The building is set back from the public footway, and there is a wide court-yard in front of it. Three paved pathways traverse the court-yard from the public footway up to the entrances, viz., men's general entrance, women's entrance and private door. A paved corridor, 6 ft. wide, leads to the waiting hall of the first-class swimming bath at the lower end of the site. Dressing boxes are provided round the walls, over which a wide gallery extends all round, access to which is obtained by three staircases. The bath is 100 ft. long by 30 ft. wide, with a depth ranging from 6 ft. 6 in. to 3 ft. 6 in. The roof is shown supported by wrought-iron trusses, resting on cast-iron ornamental columns. A large skylight and lantern would afford light and ventilation. The latter would be aided by an electrical fan placed in the end wall. The club-room (21 ft. by 14 ft. 6 in.), which would be fitted with lockers, &c., is approached from the gallery. The second-class bath is shown fitted with separate dressing boxes. There is no gallery. The bath is 72 ft. 6 in. long by 24 ft. wide, with a depth varying from 6 ft. to 3 ft. The Turkish baths comprise a frigidarium (20 ft. by 16 ft. 6 in.) a tepidarium (19 ft. 6 in. by 16 ft. 6 in.), and two hot rooms (each 18 ft. by 8 ft). These rooms would have tiled floors and walls. The architect, Mr. A. Saxon Snell, estimates the cost of these baths at 26,000*l.*, the cost of the two blocks of shops respectively at 4,000*l.* and 6,500*l.*

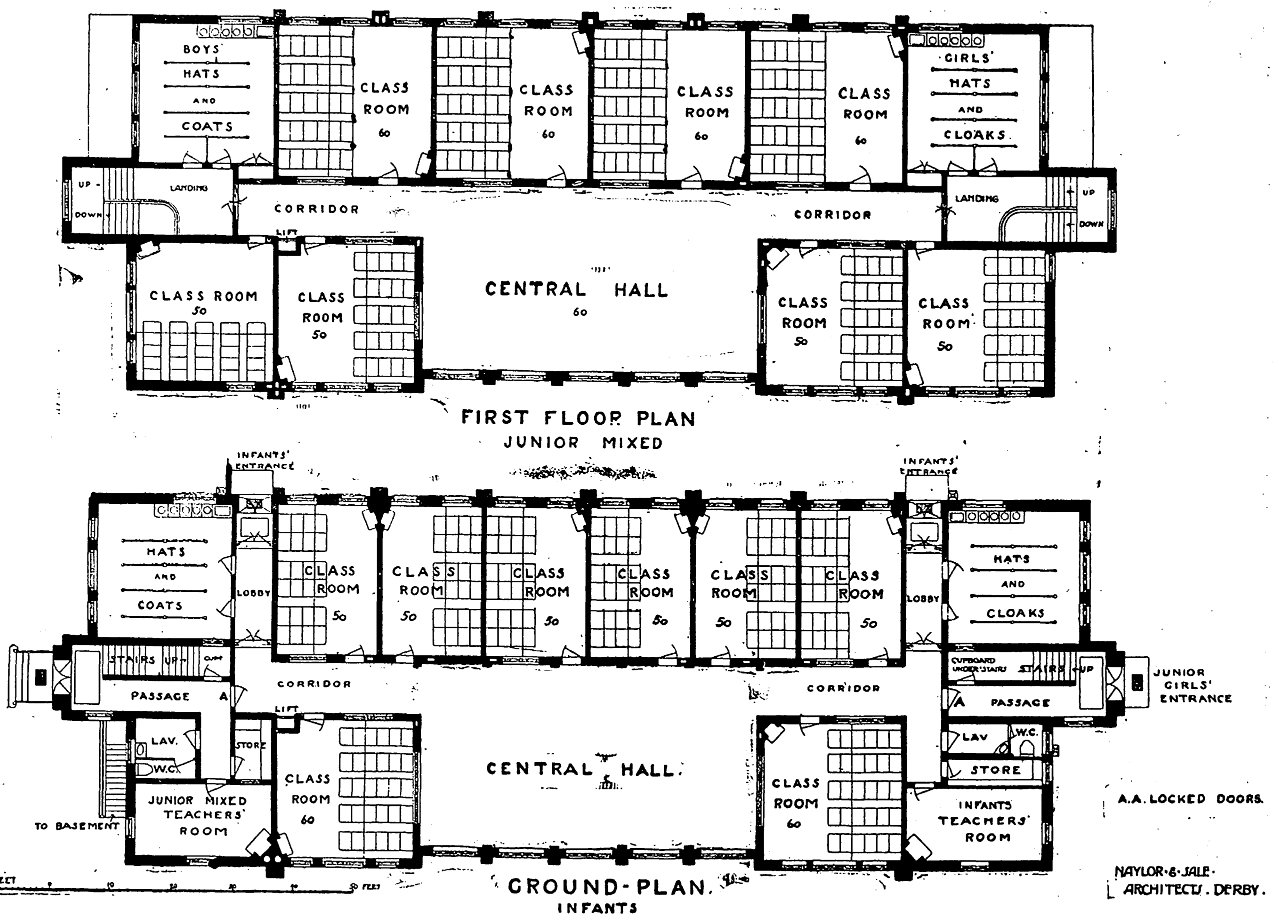
University Medical Buildings, St. Andrews.—The University Medical Buildings, St. Andrews, are situated in Queen's-terrace, at the southern side of the city, and are in the English Renaissance style. It is about eighteen months since building operations commenced, and it is expected that the main or front block will be ready for occupation for the summer session. The practical anatomy part has been in use for six months. The buildings will accommodate four scientific departments—viz., anatomy, physiology, botany, and materia medica. There will be a laboratory 38 ft. by 27 ft. in each department for materia medica, physiology, and botany. Each will also have a lecture-room 18 ft. by 14 ft., and a museum 24 ft. by 14 ft. The physiology department will, in addition, have a number of smaller rooms for private research. A practical room, 45 ft. by 22 ft., is also in the anatomy department, and a lecture-room, 20 ft. 4 in. by 14 ft., and a museum 38 ft. by 26 ft. It contains, further, a theatre, 27 ft. by 24 ft. This theatre will also be used by the lecturer in physiology, but the students in that department will enter by a separate corridor The botany and materia medica theatre, 26 ft. by 26 ft., is lighted from the east. A studio, dark-rooms, and storage-rooms are in each department in the main building. A small office is to the right of the entrance for the janitor. There are the usual preparation-rooms connected with all the departments. Lavatories and other conveniences are provided. The outer and inner halls and the corridors of the practical anatomy rooms are laid with wood-block flooring. The total cost of these buildings, which are two stories in height, is estimated at about 14,000*l.* Messrs. Gillespie & Scott are the architects. The contractors were:—Mason, Mr. Thomas Liddel, St. Andrews; joiner, Mr. Roderick M'Kenzie, St. Andrews; plasterer, Mr. Alexander M'Ritchie, Dundee; slaters, Messrs. Steele & Son, Dunfermline; plumber, Mr. William M'Leish, Perth; painter, Mr. David M'Gregor, St. Andrews; lift, Messrs. Westwood & Son, Dundee.

Buxton Electric Lighting Station.—The tender for the erection of the Buxton Electric Lighting Station, to be built on a site near to the present gas works, has been let to Mr. H. Vickers, of Nottingham. The plans have been prepared by Mr. W. R. Bryden, architect, of Buxton.

New Board Schools, Derby.—The scheme for these schools, which have been erected in Pear-street for the Derby School Board, provides accommodation for 440 boys, 440 girls and 500 junior mixed, and 420 infants. There are three separate buildings with detached cookery and manual instruc-


NAYLOR & SALE, ARCHTS. DERBY.

*New Board Schools, Derby.*


BOYS' HATS AND COATS
CLASS ROOM 60
CLASS ROOM 60
CLASS ROOM 60
CLASS ROOM 60
GIRLS' HATS AND CLOAKS
UP
DOWN
LANDING
CORRIDOR
CORRIDOR
LANDING
UP
DOWN
LIFT
CLASS ROOM 50
CLASS ROOM 50
CENTRAL HALL 60
CLASS ROOM 50
CLASS ROOM 50
FIRST FLOOR PLAN
JUNIOR MIXED
INFANTS' ENTRANCE
INFANTS' ENTRANCE
HATS AND COATS
LOBBY
CLASS ROOM 50
CLASS ROOM 50
CLASS ROOM 50
CLASS ROOM 50
CLASS ROOM 50
CLASS ROOM 50
LOBBY
HATS AND CLOAKS
JUNIOR BOYS' ENTRANCE
STAIRS UP
PASSAGE A
CORRIDOR
CORRIDOR
CUPBOARD UNDER STAIRS
STAIRS UP
A PASSAGE
JUNIOR GIRLS' ENTRANCE
LIFT
LAV.
W.C.
STORE
CLASS ROOM 60
CENTRAL HALL
CLASS ROOM 60
LAV
W.C.
STORE
JUNIOR MIXED TEACHERS' ROOM
TO BASEMENT
INFANTS TEACHERS' ROOM
A.A. LOCKED DOORS.
SCALE OF FEET
NAYLOR & SALE ARCHITECTS. DERBY.
GROUND-PLAN.
INFANTS

*New Board Schools, Derby.*

tion schools. The buildings will face three sides of a square site, comprising about three acres of ground. The block now completed is for the infants and junior mixed departments, the infants occupying the ground floor and the "junior mixed" the first floor. The whole is planned with the idea of combining both the central hall and the corridor systems, the whole of the class-rooms being accessible from this central area. A left light has been adopted in all but two of the class-rooms. The two floors can be used as entirely separate schools, with their teachers'-rooms, lavatories, store-rooms, &c.; or, if desired, the two floors can be used in conjunction. All rooms and corridors have a dado of glazed brick, with sanitary angles, and are plastered above, woodwork being avoided as much as possible. The floors are in all cases fireproof, of concrete and iron construction in central halls and class-rooms, with pitch-pine boards secured to joists imbedded in the concrete; and in all lavatories and corridors they are of Rust's marble mosaics. The floors to class-rooms are all sloped instead of stepped, thereby avoiding tripping and a ledge for dirt. The heating is by low-pressure hot water, but all rooms are provided with open fireplaces in addition. The ventilation is by Messrs. Cousland & Mackay, and consists of inlets in the external walls and internal walls, and extracts in all ceilings connected by trunks, with exhaust ventilators on the roofs. Cross ventilation has been arranged in all rooms, so that the whole school can be well aired in the absence of the children. The fanlights over all internal doors work on the double louvre system. The lighting is at present by gas, the fittings being four-way pendants, but it is hoped that very shortly this will be superseded by electric light. The landings on staircases, which are of Hopton stone, are all protected by iron guards, 6 ft. 6 in. high. A lift from the basement is connected with both floors, for brushes, brooms, and coals, &c. Special cupboards are provided for dinner-baskets of children coming from a distance. Externally, the buildings are of red brick and terra-cotta, with Hopton stone sills to windows. The roofs are of slate. A plain, dignified appearance has been aimed at, with no suggestion of future dilapidation. The playgrounds are large, and asphalted, with good fall. Ample playsheds are provided, also drinking-fountains, and stones for pencil sharpening. The latrines are by Messrs. Doulton & Co., and these and the urinals are roofed with wired glazing, with ample provision for ventilation. The contractor for the work was Mr. A. Smith, of Derby, and the architects, Messrs. Naylor & Sale, also of Derby.

## *SANITARY AND ENGINEERING NEWS.*

**Proposed Bridge, Linhope, Northumberland.**—Owing to the frequent and high flooding of the River Breamish, making the existing means of access by the ford very dangerous, plans are now before the Northumberland County Council for the erection of a bridge. The freestone abutments will be built on the concrete foundations resting on the rock, and the girders will be of steel, and bowstring in design, with a corrugated iron flooring resting on steel cross girders, on which will be laid concrete and the road metal. The approach roads will have easy gradient and be properly fenced. The engineers are Messrs. D. Balfour & Son, of London and Newcastle.

**Sewerage Scheme, Herne Bay.**—Mr. G. W. Willcocks, M.Inst.C.E., attended, a few days ago, at the Council Offices, Herne Bay, to inquire into the applications of the Urban District Council to the Local Government Board to borrow 17,000*l.* for works of sewerage and 530*l.* for the purchase of land for a town depôt. The engineer to the scheme is Mr. Baldwin Latham.

**Manchester Ship Canal.**—The engineer's half-yearly report as to works states that the dredging operations in the canal and docks have been carried on continuously during the last half-year, and the depth of the water has been fully maintained throughout. With regard to the quantities of sludge brought down by the rivers—some diminution appears to have taken place in the deposit in the docks at Manchester, though the quantities are still very large. No diminution can be detected in the quantities of sewage matter brought down by the Mersey and deposited in the coaling basin at Partington; the quantities of detritus brought down by that river and deposited near the weir at Irlam are also very large. At the site leased to the Smelting Corporation, near Ellesmere Port, the excavation for the laybye has been completed, and the wharf which is being constructed for the corporation is well advanced. The branch railway for the permanent connexion is in course of formation. At the bend at the Weaver mouth the navigable channel of the canal is being widened. A laybye, with a depth of 26 ft., is being formed by the removal of the rock in front of the wharf at Wigg's Works, at Runcorn, so as to provide for a development of the trade there. At the buildings for cold storage, erected at Mode Wheel by the Colonial Consignment and Distributing Company, the laybye and jetties have been completed and are ready for use. Special railway connexions have been formed, and the paving of the extension of Adamson-road is in hand and is nearly completed. At the grain elevator the special fire preventive works, ordered to meet the requirements of the fire insurance companies, are in hand. The large shed warehouse on the pier, between Nos. 6 and 7 Docks, is nearly complete, and is partially in use for traffic purposes. A wharf with railway connexions, road approaches, &c., is being constructed on the side of the approach to the Pomona Docks between the railway swing bridge and the Trafford-road swing bridge for the Manchester and Liverpool Transport Company, Limited. The old bank of the river opposite to the Cornbrook Wharf has been removed, and the operations required for the blasting and dredging of the rock under water at that place are in hand, so as to enable the wharf to be utilised for sea-borne traffic. Additional lines of railway have been laid down at and about the docks, and two new locomotive engines of a specially powerful type have been delivered and put to work. The eight new hydraulic cranes previously ordered have been erected and are now at work at the new shed-warehouse. The embankments and slopes of the canal generally are in good condition, and the works throughout the canal have been efficiently maintained.

PROPOSED PONTOON DOCK, ABERDEEN.—On Monday the Aberdeen Harbour Board authorised acceptance of an offer by Messrs. Clark & Standfield, patentees and contractors of patent docks, to supply and erect an off-shore single-sided pontoon dock, to accommodate vessels up to 425 tons dead weight, at the price of 7,250*l.*

SEWERAGE SCHEME, BILTON, HARROGATE.—The sewerage and sewage disposal scheme for Bilton, Harrogate, has just been completed by Mr. J. L. Hampton Matthews, contractor, of Harrogate, from plans prepared by Messrs. D. Balfour & Son, civil engineers, London and Newcastle. The main sewerage for Bilton comprises about 4,000 yards of 15 in., 12 in., and 9 in. diameter fireclay pipes laid at considerable depths and in rock-cutting, the whole being in straight lines, with manholes at all angles and changes of gradient. Automatic flushing chambers holding 1,000 gallons are provided at the head of all sewers, and ventilation is obtained by open manhole covers and cast-iron pipe shafts. The sewers have a minimum velocity of 3 ft. per second, and storm overflows only come into use when the quantity is eight times the normal sewage flow. The sewage is disposed on 9 acres of land on the broad irrigation principle, the effluent discharging into the River Nidd.

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## *FOREIGN.*

FRANCE.—The large and ugly building facing the Square Louvois, Paris, which was connected with the old opera house, is to be pulled down.——The Château of Chantilly will be open to the public again from April 1; on Sundays and Tuesdays free, on Saturdays at a charge of one franc.——The French Parliament has under consideration a proposal to establish a canal between the port of Marseilles and the Rhone, and thence with the general system of interior navigation. The cost is estimated at eighty million francs. The canal, which would start from Madrague basin, on the north side of the port of Marseilles, will be fifty-four kilomètres in length. It will connect with the Rhone at Bras-Mort, about ten kilomètres above Saint Louis.——The death is announced at the age of thirty-six, of M. Durand Tuhier, general secretary of the Société Nationale des Beaux-Arts, who for some years used to exhibit, under the pseudonym of "Paul Froment," landscapes which attracted a good deal of notice. He has left behind him an interesting manuscript relating to the life of Puvis de Chavannes.——The death is also announced of M. Eucher-Girardin, sculptor and pupil of M. Gauthier and M. Thomas, who exhibited in the Salon of 1893 a monument to some of the soldiers of 1870; that of M. Arthur de Gravillon, sculptor, Vice-President of the Société des Amis des Arts of Lyons; and that of M. Voulot, curator of the Departmental Museum of the Vosges, who died at the age of seventy at his residence at Epinal. M. Voulot had discovered and set up again the column at Portieux, and was the discoverer also of the mosaic at Grand, near Neufchatel. He was a member of the Society of Antiquaries of France, and author of various important archæological works, notably that under the title "Les Vosges avant l'histoire.".

BULAWAYO.—At the Police Camp at Bulawayo a galvanised iron theatre has been constructed. The building is capable of seating about 300 persons. Its principal dimensions are a length of 56 ft., a breadth of 40 ft., and a height to the pitch of the roof of about 26 ft. The stage is 16 ft. deep by 28 ft. wide, leaving the auditorium nearly 40 ft. square, the latter being floored with pine. The architects are Messrs. Cummings & Brown, and the contractor Mr. Gerloff.

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DECORATION OF ST. MICHAEL'S, WOOLWICH.—The first part of the scheme for the decoration of this church has just been completed. Five angels painted on canvas, after the style of Albert Dürer, have been placed above the large chancel arch, and the surrounding portion diapered in Indian red and finished at bottom with a border upon the yellow brick. The work was carried out by Messrs. Percy Bacon & Bros.

## *MISCELLANEOUS.*

PROFESSIONAL AND BUSINESS ANNOUNCEMENTS.—It is announced that Mr. Henry Glenn, the sole proprietor of the Seyssel Asphalte Company, having died on the 1st inst., the business will be continued under the same general management, with the addition of Mr. G. F. Glenn, the only son of the late proprietor.——Messrs. W. B. Wilkinson & Co., Limited, concrete specialists, have removed their London offices from 15, Great George-street to No. 1, Victoria-street, Westminster, S.W.

APPOINTMENT.—Mr. Dennett H. Barry, F.S.I., has been appointed by the Benchers as Surveyor to the Honourable Society of Lincoln's Inn.

ABERDEEN GRANITE ASSOCIATION.—At the annual meeting of this Association Mr. A Wilson was re-elected President; Mr John Taylor, Vice-President; and Mr. James T. Jeffrey, Advocate, Secretary. It was resolved to decline to pay stonecutters' wages weekly instead of fortnightly as at present. A new scale of payment to granite polishers for night work was arranged.

NOTTINGHAM MASTER BUILDERS' ASSOCIATION.—The annual dinner of the Nottingham Master Builders' Association was held at the Albert Hotel on the 10th inst. Mr. Enoch Hind, a former President, occupied the chair, in the absence, through illness, of Mr. James Wright, the President. After dinner the customary loyal and patriotic toasts were honoured, after which Mr. Lewin submitted "The Mayor and Corporation of Nottingham." Alderman Pyatt responded. Mr. Vickers then gave "The Architects." Architects were the exponents of the greatest craft in the world, and to a certain extent they led the taste of the community amongst whom they lived. Beautiful buildings, buildings of noble proportions and clever construction, were as necessary to their education and their daily life as other beautiful things they saw around them day by day, and the more they could get of them the better it would be for their history, and better would be the record they would have to hand down to their children. In Nottingham they were somewhat behind other large towns in the matter of architecture. He was glad to add, however, that during the last few years there had been great improvement in this direction, and he sincerely trusted it would continue, and that the rising generation of architects, as they got larger practices, would be able to lead the people of the city to abandon that parsimonious spirit of spending as little money as possible on a building.—The Chairman then submitted "Success to the Master Builders' Association." He said the Association had been formed for only two or three years, but he was pleased to inform them that during the past year their membership had increased by thirty-one. They had had 140 meetings during the twelve months, and the members on the books to-day were ninety-nine. He hoped they would soon exceed one hundred. They were all aware that they had had some differences with the architects and with the men during the year. At its beginning there was a strike with the labourers, and, of course, the old song again—the bricklayers were in sympathy with them. There was only one result—the Association had to give way because work was good; but he was sure that, so long as they remained banded together, they would go on progressing, and not only progressing, but they would be even more successful in the undertakings of the future than they had been in the past.—Mr. George Fish responded, and observed that although the Association had had several difficulties to contend with they had been amicably overcome. They had met the bricklayers on several occasions, and the latter had met the masters in a fair spirit, and it was sincerely hoped that the plasterers' matter would eventually be settled without any deleterious issue.—Mr. Thomas Greenwood next submitted the "National Federation and Kindred Associations." He observed that the strength of the labour organisations was well known to all of them. If that strength were used for just and righteous purposes, for the promotion and the benefit of the conditions of the working classes, without injustice to the rest of the community, they would wish the men success. But when they saw those combinations not satisfied with their rights, but striving to injure the community in general, it was absolutely necessary for the welfare of the country that those who had the capital and the interest of the country at heart should combine. He referred more particularly to the advisability of unity in consideration of the action being taken in respect to the limitation of apprentices. In respect to the Federation, they had realised the great hopes of many. It was standing as firm as a rock.—Alderman Bowen, replying, dealt at some length with the work of the National Federation and the Midland Federation, over which he presided. Alderman Bowen remarked that they had not felt it to be their duty to carry on aggressive work against trade societies; they had aimed at greater things, such as obtaining proper forms of contract and better provisions generally. To protect their interests the Master Builders' Associations must take united action, and co-operate heartily one with the other. Mr. Ernest Jardine also returned thanks on behalf of the kindred associations. The remaining toasts were "The Visitors" and "The Chairman."

THE GLASGOW 1901 EXHIBITION.—At a meeting of the Chairman's Committee of the Glasgow 1901 International Exhibition, on the 8th inst., Mr. Hedley, the manager, was instructed to confirm the arrangement with Sir George H. Chubb for the formation of a London committee. It is understood that this step has not been taken in view of the opposition suggested by the Naval Exhibition, which it is proposed to hold in London in 1901, but simply to exert influence for the success of the Glasgow show.——A deputation from the Archæological Society waited upon the Parks Committee of Glasgow Corporation, on the 8th inst., and urged that the Kelvingrove House should not be removed, as had been proposed in connexion with the erection of buildings for the 1901 Exhibition. The Committee unanimously agreed to recommend to the Corporation that the old mansion should not be removed.

WORCESTER MASTER BUILDERS' ASSOCIATION.—The dinner of the Worcester Master Builders' Association was held on the 7th inst. Mr. J. Sharman Wood (President) presided. The toast list opened with the "Royal Family," after which Mr. J. Stokes proposed "The Mayor and Corporation of Worcester." Alderman Ernest Day, in response, congratulated the builders of Worcester on forming such a society, which would promote the trade of Worcester. He referred to the usefulness of such an association as that in helping them to avoid the distress and discomfort, and the severe suffering caused by strikes. Councillor Parker also replied. The Chairman next proposed "The Midland Branch of the National Building Trades Federation." The work of the Federation was one of defence, not defiance; and it was formed to defend the reasonable rights of the building employers. In defending their rights they were not only defending the rights of the builders but also of the public, because if there were to be any restrictions upon the hours or terms of labour, and if there was to be any advance in the wages, the money would have to indirectly come out of the pockets of the public, and therefore in protecting the reasonable rights of the builders the Federation was also protecting the public. The National Federation was divided into four branches which embraced the entire building interests of the kingdom. The Worcester Association had become affiliated to the Midland Branch. Although the Worcester Association was one of the most recent to join the branch, it was the intention of the Worcester builders to accord hearty loyalty and thorough support to the branch. It must not be thought that the Federation was started to act in defiance of the different building trades-unions, which had been the greatest possible advantage to the working classes, who owed their present position to unionism. There was a growing feeling amongst employers that some control should be placed upon the unions. When those unions attempted to restrict the number of apprentices, when the members refused to work with non-union men, when they dictated as to the hours of labour, and when they demanded an undue rate of wages, it became the duty of the master builders to unite and endeavour to stamp out the extreme course taken by the unions. The master builders of Worcester had not suffered a great deal, but in other places there had been great tyranny, and no one knew when such a thing would be experienced in Worcester, so that it was wise to be prepared.—He coupled with the toast the name of Ald. Bowen, who, in reply, contended that builders would not be in such a happy position but for the National Federation. The object of that Federation was not to grind down the workmen, but rather to uphold fairness between employers and employees. To builders circumstances had been such that the National Federation had had to take into consideration how it could best do its work in the interest of the members. While the workmen had been joined together they had been prone to dictate to the employers, demanding unwarrantable and extravagant wages. To the employers that was unsatisfactory; they wanted to be treated fairly and to treat their workmen fairly. In order to make the work of the Federation more effective efforts had recently been made to federate the whole of the branches in the country, and at the recent meeting in Bradford the outgoing president was able to state that federation embraced all the branches in the country. The Midland branches comprised the twelve central counties of England and the whole of North Wales.—Ald. Higgs proposed "Trade and Commerce," and Councillor Jones replied. Mr. J. Bromage gave "The Architects of Worcester." Mr. A. B. Rowe (of Messrs. Rowe & Son) returned thanks, and, after regretting his father's absence, complimented the Worcester builders on the formation of such an association. Speaking of strikes, Mr. Rowe said the architects were almost as much affected by strikes as the builders themselves. He hoped the Association would prosper, and that in a short time the strike clauses would not be necessary in contracts. Other toasts followed.

THE EAST END DWELLINGS COMPANY.—The annual report of this company states that a leasehold site, with frontages to Globe-road and other streets in Bethnal Green, has been acquired, and plans for building thereon have been approved, and building operations will be commenced as soon as possible. Considerable progress has been made with the new buildings fronting on Stepney Green which have been named "Dunstan Houses," and they will probably be ready for occupation early in the summer. They will contain 161 lettable rooms, divided into tenements of one, two, and three rooms each, besides eight workshops. The large block of buildings known as "Ravenscroft," in Columbia-road, Bethnal Green, was opened for occupation in May, 1898, and not a single tenement was vacant at the close of the year, and the only shops unoccupied were three out of the twenty-four provided at Ravenscroft.

New Chancel Screen for the Parish Church, Leamington.—A new chancel screen was dedicated on the 11th inst. The screen is of hammered wrought-iron, constructed from designs prepared by Sir Arthur Blomfield. It is about 26 ft. high, and surmounted by a Maltese cross 7 ft. high. The screen is the work of Messrs. Hart, Son, Peard, & Co., Limited.

The British Fire Prevention Committee.—The first official test under the auspices of the British Fire Prevention Committee took place at its testing station off Regent's Park on Wednesday afternoon at 3 p.m. The subject under investigation was a floor constructed by the Expanded Metal Company, Limited. Sir Arthur Blomfield attended to represent the Council, and among the ten representatives of the Committee were :—Messrs. Arthur M. Watson, District Surveyor, St. George's, Hanover-square; Bernard Dicksee, District Surveyor, East Newington; Benjamin Tabberer, District Surveyor, Greenwich; Frederick Hammond, District Surveyor, East Hampstead; and Edmund Woodthorpe, District Surveyor, Northern Division of the City of London. The test was conducted by a special sub-committee of the executive, comprising Mr. Max Clarke (directing member), Mr. Ellis Marsland, District Surveyor, Camberwell, and Mr. Charles E. Goad, with Mr. Edwin O. Sachs (Chairman of the Executive) and Mr. F. R. Farrow (Chairman of the commercial section) *ex officio*. Among the special visitors was the Technical Attaché of the German Embassy, Mr. H. Muthesius. The official illustrated report will be issued in due course.

Waterworks, Fylingdales, Whitby. — The Rural District Council have approved of a scheme for the improvement of the existing waterworks for Fylingdales, recently agreed to be purchased from Sir Charles W. Strickland. The works comprise the providing of several miles of new water mains, the construction of filter beds and a large storage reservoir. The plans have been prepared by Messrs. D. Balfour & Son, civil engineers, London and Newcastle, who are submitting the same to the Local Government Board for sanction to a loan.

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## *CAPITAL AND LABOUR.*

Threatened Rupture in the Barnsley Building Trade.—A lock-out of labourers is threatened in Barnsley. It seems that in September last the plasterers employed by Mr. T. Lindley, at the Theatre Royal, struck work because material required for the plastering of the theatre was being obtained from a firm who employed a man who had failed to pay a fine imposed by the National Union of Plasterers for some breach of rule. This was settled, but when the stoppage occurred one labourer had remained at work, and the Labourers' Union ordered him to pay a fine. He refused, and the other labourers would not resume work until he paid, and, as the plasterers cannot work without labourers, Mr. Lindley's shop has been standing idle since September. The Barnsley Building Trades Federation, having failed to obtain a settlement, have decided that, unless the objection to Mr. Lindley's shop is removed, the employers connected with the Federation will lock out all the trade-union labourers in their employ.—*Sheffield Telegraph.*

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## *LEGAL.*

### POINT UNDER THE PUBLIC HEALTH ACT, 1875.

The case of Robinson *v.* The Sunderland Corporation came before Justices Lawrance and Channell, sitting as a Divisional Court of Queen's Bench, on the 9th inst., on the appeal of Mr. Robinson from a decision of the Justices of the Borough of Sunderland. Proceedings were taken under Section 305 of the Public Health Act, 1875, authorising respondents to enter, examine, and lay open a certain house in the borough known as 31, East-street, for the purpose of making plans, surveying, and measuring, and making certain works. It appeared from the special case which had been stated that the respondents, acting under Section 36 of the Public Health Act, 1875, upon the report of their inspector of nuisances, had served notice upon the appellant requiring him to provide for his house a sufficient water-closet and an ashpit furnished with proper doors and coverings. This notice was not complied with, and the respondents determined to execute the works themselves. To do this it became necessary for them to enter, examine, and lay open the house for the purpose of making plans, surveying, measuring, and making the works. The respondents' Surveyor applied to the appellant for permission for the respondents to make such entry and examination for the purposes aforesaid, but the appellant refused such permission. The respondents then, after due notice to the appellant, applied to the Justices under Section 305 for an order authorising the necessary entry. At the hearing of the application evidence was tendered on behalf of the appellant as to the condition of his house and of the sufficiency of a privy and ashpit there. This evidence, however, was objected to by the respondents on the ground that the question of the sufficiency of the privy and ashpit was a matter to be decided by the respondents under Section 36 of the Public Health Act, 1875, subject only to appeal to the Local Government Board under Section 268, and that the respondents having jurisdiction under Section 36 to give the notice in question in this matter, the Justices could not review such notice, and were not entitled to receive evidence as to the sufficiency of the privy and ashpit. The Justices, being of opinion that they were not entitled to review the decision of the Local Authority as to the sufficiency of the privy and ashpit, declined to hear evidence thereon and made the order sought for. Hence the present appeal.

At the conclusion of the arguments of counsel their Lordships affirmed the decision of the Justices and dismissed the appeal.

Mr. Scott Fox, Q.C., and Mr. Adair Roche appeared as counsel for the appellant; and Mr. E. Tindal Atkinson, Q.C., and Mr. Manisty for the respondents, the Corporation.

### INJURY TO BUILDINGS THROUGH CONSTRUCTION OF A TUNNEL AT ST. JOHN'S WOOD.

The case of Lucas *v.* the Great Central Railway Company came before the Lord Chief Justice and a special jury in the Queen's Bench Division on the 9th inst. on an issue directed to be tried under the Railway Clauses Act, 1868, to ascertain what (if any) compensation should be paid to the plaintiff in respect of two houses, Nos. 10 and 12, Marlborough Hill, St. John's Wood, which, as he alleged, had been damaged by the construction of a tunnel by the railway company, the defendants.

It appeared that the plaintiff held the houses in question under a lease, the unexpired term being thirty-eight years. The houses were erected in the year 1838, and in 1870 were acquired by the plaintiff for 1,870*l.* Since that time he had spent about 1,000*l.* upon them in permanent repairs, and they yielded, prior to 1896, a profit rental of about 150*l.* a year. The plaintiff alleged that the houses were then worth between 2,400*l.* and 2,500*l.* The tunnel was commenced in May, 1896, and was completed in February, 1898. The tunnel runs under the roadway of Marlborough Hill, the crown of the arch being 23 ft. below the surface, and the front walls of the houses being about 60 ft. from the nearest point of the arch. The plaintiff alleged that since the tunnel was constructed cracks had developed in the walls of his houses and continued to develop up to the present time, and that these cracks were caused by the construction of the tunnel. He said that to remedy this state of things it would be necessary to underpin both the houses, and to execute other repairs, which would cost about 1,000*l.* The evidence called on behalf of the plaintiff was to the effect that the land for some distance from the tunnel had slipped in the direction of the tunnel, dislocating the gas and water mains under the roadway, and causing the roadway itself to subside, as well as injuring the plaintiff's and other houses.

The defendants' case was that the cracks in the plaintiff's houses existed before the tunnel was commenced, and that these had been widened in consequence of its construction, but that no underpinning was necessary to reinstate the buildings, and that the repairs could be executed for about 75*l.*

In the result the jury awarded the plaintiff 250*l.*

Judgment accordingly.

Mr. McCall, Q.C., and Mr. Alexander Glenn appeared for the plaintiff; and Mr. Littler, Q.C., and Mr. J. Eldon Bankes for the defendant company.

### BUILDING DISPUTE AT DOVER.

The hearing of the case of Cessford *v.* the Dover Harbour Board was concluded on the 3rd inst. in the Court of Appeal. The case came before the Court on cross appeals by plaintiff and defendants from the judgment of Mr. Justice Wills, sitting with a jury in the Queen's Bench Division. The facts are shortly as follows :—The plaintiff was the proprietor of the Esplanade Hotel at Dover, and the defendants were his landlords. Between the years 1865 and 1877 the plaintiff carried on a lodging-house on the premises then known as Nos. 17 and 18, Esplanade. In the year 1876 he entered into an agreement with the defendants for converting the premises into a family hotel, and in 1877 took a lease from the defendants for that purpose by which lease the defendants demised to him, *inter alia*, all ways, lights, easements, and appurtenances belonging to the premises. The defendants, in the year 1892, commenced under statutory powers, to erect a new harbour, and during the course of its construction the plaintiff alleged that in so doing the defendants had caused a serious nuisance to him and damaged him in his business by interfering with the free access to the hotel, blocking the views from his windows, putting up a staging with a travelling crane and steam engine, from which some of the bedroom windows were overlooked by workmen, making and storing concrete cement blocks, laying down rails on which locomotives were employed, and causing by their working dust, smoke, and noise. The plaintiff alleged that these acts of the defendants violated their implied covenant for quiet enjoyment, and claimed damages and an injunction, or alternatively damages in respect of the acts complained of and the threatened continuance thereof. The defendants mainly relied on their statutory powers, under which the works were executed. Mr. Justice Wills gave judgment for the plaintiff for 200*l.* in respect of that part of the acts complained of, which consisted of the defendants storing and unstoring cement in a cement shed at the back of the hotel, being of opinion that the defendants had been negligent in the way in which they did that part of the work. With regard to the rest of the acts complained of, however, he held that the defendants were protected by their statutory powers. The plaintiff now appealed from this decision, and asked for judgment for 800*l.*, the verdict of the jury. The defendants aiso gave notice of cross appeal.

At the conclusion of the arguments of counsel their lordships (the Lords Justices) held that the defendants had power to make certain subsidiary works within the limits of deviation shown on the deposited plans, and that therefore the plaintiff could not claim compensation under Section 11 of the Lands Clauses Act, 1845, and that the works complained of in front of the plaintiff's hotel came within the description of work in that section, and that the evidence showed that the works were all proper and ordinary works usual in such a case. Upon this point, therefore, the judgment of Mr. Justice Wills was affirmed. They held, however, that the plaintiff had not only the right to complain of the negligent use of the cement store at the back of the hotel by the defendants, but he had a right to complain of the defendants using the store at all. The damages, therefore, should have been based upon that view. Their lordships increased the damages to the plaintiff on this head to 350*l.*, but gave no costs of the appeal.

Order accordingly.

Mr. Dickens, Q.C., and Mr. F. M. Abrahams appeared for the plaintiff; and Mr. Lawson Walton, Q.C., and Mr. J. Eldon Banks for the defendants.

### CLAIM FOR BUILDING MATERIALS.

In the Westminster County Court, on Friday last week, his Honour, Judge Lumley Smith, Q.C., had before him the case of Paxton *v.* Cohen by way of a remitted action from the High Court, in which the plaintiff, a dealer in building materials and hardware goods, sued the defendant, a builder and contractor of Friars-place, Acton, to recover the sum of 67*l.* 10s. in respect of lavatory fittings, stoves, and other goods, supplied to the order of the defendant.

The original action was brought by Mr. Ward, who was appointed Official Receiver of plaintiff's estate, and was remitted from the High Court to the County Court for the purpose of several disputed items in the account being gone into.

The defendant had paid 43*l.* into Court, and the plaintiff's claim as to the balance was admitted, subject to counter-claim. It was not disputed that the whole of the goods mentioned in the account had been duly delivered, but the defendant's case was that in reference to several important articles they were not in accordance with the orders given.

Mr. James D. Cohen was called, and said he was engaged in building an estate at Friars-place, Acton, and in the ordinary course of business he gave the plaintiff orders for a quantity of tiling, lavatory-fittings, and stoves. He had paid into Court a sufficient sum to pay for the goods which were according to order, but he disputed the balance on the ground that some of the lavatory fittings were not of the proper pattern and size, whilst a kitchen stove, which was to have patent dampers, was not in accordance with the order, and was quite useless for the purpose for which it was required. He admitted, however, that the stove in question had been duly fixed in the house.

His Honour, after going into the items at some length, said it might be that the goods were not quite to the defendant's order, but, at any rate, he had made use of them. On the whole he (the Judge) did not think the sum paid into Court was sufficient, and, therefore, judgment would be for the plaintiff for 10*l.* beyond that sum, and costs.

### IMPORTANT APPLICATION AGAINST THE LONDON COUNTY COUNCIL IN THE CHANCERY DIVISION.

The case of Bayley & Co. *v.* The London County Council came before Mr. Justice Romer in the Chancery Division of the High Court of Justice on Saturday, the 11th inst., on a motion by the plaintiffs for an *interim* injunction till the trial to restrain the defendants, the London County Council, from trespassing on the plaintiffs' premises, No. 13, Warwick-street, and from interfering with the party-wall, &c.

Mr. Henderson appeared in support of the motion, and Mr. Kenyon Parker for the defendants.

Mr. Henderson explained that the action was one which had been assigned to Mr. Justice North.

Mr. Parker said that his clients had only got the affidavits that morning, and he should like an adjournment so as to have an opportunity of answering them. His clients' architect was out of town, but he was instructed that no further interference with the plaintiffs' premises would take place.

His Lordship: Will you undertake not to do any further act in the meantime?

Mr. Parker said he could not do that.

Mr. Henderson. I must press for the injunction, because the evidence is that the defendants are going on with the work. I understand that their architect has gone away to Wales in connexion with some water scheme, and I want protection meanwhile.

His Lordship: You want an injunction to restrain them from dealing with the party wall?

Mr. Henderson: Yes. If the defendants are not going to do anything further the injunction will not hurt them.

His Lordship: You are not asking for a mandatory injunction?

Mr. Henderson: No. I am not asking for that now.

His Lordship: Ought you not, Mr. Parker, to give an undertaking not to futher interfere with the wall till the trial?

Mr. Parker: There is always a difficulty in a Corporation undertaking. I am told that everything is done that will be done.

Mr. Henderson: That is not in evidence.

His Lordship (to Mr. Henderson): What do you say they are doing?

Mr. Henderson: I say that they are going on with this work—pulling down the house next to ours and that they have taken away our support, the consequence being that our house has gone away from the perpendicular.

His Lordship: One ought to be very careful in a case of this kind. I do not know what injunction to grant, because if I grant an injunction restraining them from interfering with the wall they could not shore it up or anything like it.

Mr. Henderson: Well, I should like an injunction to restrain them from doing anything further.

His Lordship: Yes, but that might prevent the defendants from going to shore the wall up.

Mr. Henderson: Will your lordship grant an injunction to prevent them from interfering with our right to support? I should be content with that. I am entitled to it because the evidence shows that they are going on with the work and pulling down the support which keeps my building upright. I do not see why my learned friend could not give an undertaking in that form.

Mr. Parker: I am instructed to say that I should not object to an injunction in that form.

His Lordship: Very well.

Mr. Parker: So long as it is understood that if I want to shore up the wall I shall not be prevented.

His Lordship (to Mr. Henderson): Very well. Take an injunction in that form till the 17th inst.

Order accordingly.

## THE EXPENSES OF PAVING A NEW STREET.

THE case of Wix and others *v.* Rutson, which came before Mr. Justice Bruce, sitting without a jury, in the Queen's Bench Division, on the 13th inst., raised the question as to which of two parties, viz., the landlord or tenant, was liable for an assessment for the expenses of paving a new street. It appeared that the defendant was assignee of a lease, dated March, 1882, whereby the plaintiff's predecessor in title demised to a Mr. J. T. Bonner certain land in Wandsworth for a term of twenty-one years. This lease, which was determinable by a six months' notice, contained a covenant by Mr. Bonner, for himself and his assigns, to bear, pay, and discharge during the term all taxes, charges, rates, duties, tithe and tithe-rent charges, assessments, and impositions upon the premises which might at any time during the term be imposed on the premises, or upon the landlord or tenant in respect thereof (the landlord's property tax only excepted). In April, 1898, notice was given by the plaintiffs to determine the tenancy, and in May, 1898, the plaintiffs entered into an agreement to sell the property. In June, 1898, the Wandsworth Board of Works gave the owners of the property notice of the apportionment of the sum of 122*l.* 6s. 7d. for the expenses of paving a new street on which the premises abutted, but the notice fixed no date for payment. In July the plaintiffs paid the sum due. In February, 1899, or five months after the tenancy had determined, the works were commenced and the plaintiffs now sought repayment of the amount of the assessment on the ground that the sum was a charge or duty imposed on the landlord in respect of the premises. The defendant, however, contended that the notice served by the Local Board was not a demand under Section 96 of the Metropolis Management Act, 1862, but was only an estimated apportionment, and not taxed, rated, assessed, or imposed upon the premises within the meaning of the covenant sued upon.

Mr. Justice Bruce held that, although the case was one of apparent hardship on the tenant, he could not find any valid reason for exempting the defendant from the burden of the covenant which had been entered into and gave judgment for the plaintiffs for the amount claimed with costs.

Mr. George Wallace appeared as counsel for the plaintiffs, and Mr. H. L. Manby for the defendant.

## ACTION BY THE LEEDS CORPORATION TO RECOVER EXPENSES OF PAVING A NEW STREET.

THE case of the Lord Mayor of Leeds *v.* Armitage came before Justices Lawrance and Channell, sitting as a Divisional Court of Queen's Bench, on the 14th inst., on the plaintiff's appeal from the judgment of the County Court Judge of Leeds, who gave judgment for the defendant in an action by the Corporation of Leeds for the expenses of paving executed by them.

It appeared that certain flagging, channelling, and paving were required to be done in Brookfield-road, Leeds. A notice was served in May, 1896, on the owners to execute the work, stating that in case of default for two months, the Corporation would do the work and charge them therewith. Through an error, no notice was served upon the owner of the property of which the defendant became the owner in September, 1896, and the Corporation began the work, and the flagging and channelling was finished on March 24, 1897, but the paving did not quite reach the defendant's land. On that day the defendant visited the ground, and upon his going to the Highway Department and asking on what authority the work was done, he was served with a copy of the old notice. The work was stopped for two months to enable the defendant to do the paving, but as he did nothing the Corporation did it and made an apportionment of the expense, and charged the defendant with the cost of the paving which had been done after the notice, and the action was brought to recover this amount. The County Court Judge, however, found that there had been no service of the order of the Corporation to do the work within the meaning of and in accordance with the Corporation's private Act of Parliament so as to found the proceedings, and gave judgment for the defendant. Hence the present appeal.

Their Lordships affirmed the judgment of the County Court Judge, and dismissed the appeal with costs.

Mr. Geo. Banks appeared for the Corporation; and Mr. J. A. Compston for the defendant.

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## MEETINGS.

### FRIDAY, FEBRUARY 17.

*Architectural Association.*—Mr. Cole A. Adams on "Colour Decoration." 7.30 p.m.

*Glasgow and West of Scotland Technical College (Architectural Craftsman's Society).* — "Notes on Building Materials," by Messrs. R. W. Horn and A. Davie.

### SATURDAY, FEBRUARY 18.

*Architectural Association.*—Spring Visit to the Roman Catholic Cathedral, Ashley Gardens, Victoria-street, Westminster, by permission of the architect, Mr. J. F. Bentley. 3 p.m.

*South Kensington Museum (Lecture Theatre).*—Mr. J. H. Pollen, M.A., on "Furniture." II. 3.30 p.m.

*Royal Institution.*—The Right Hon. Lord Rayleigh on "The Mechanical Properties of Bodies." II. 3 p.m.

*Perth Architectural Association.* — Visit to Wilson U.P. Church, New Scott-street. 2.30 p.m.

### MONDAY, FEBRUARY 20.

*Royal Institute of British Architects.*—Messrs. J. M. Brydon and F. J. Burgoyne on "Municipal and Public Libraries." 8 p.m.

*Royal Academy.*—Lectures on "Greek Sculpture," by Dr. A. S. Murray. I.—"The Niobides in Florence." 4 p.m.

*Surveyors' Institution.*—Mr. J. L. Crouch on "The Management and Valuation of Brickfields." 8 p.m.

*Carpenters' Hall, London Wall (Free Lectures on Matters connected with Building).* — Professor Roger Smith on "Terra-cotta—its Nature, History, and Use in Former Times, and at the Present Day." 8 p.m.

*Sanitary Institute (Lectures for Sanitary Officers).*—Introductory Lecture, by Professor W. H. Corfield. 8 p.m.

*Liverpool Architectural Society.*—Professor F. M. Simpson on "Some Burgundian Churches." 6 p.m.

*Leeds and Yorkshire Architectural Society.*—Professor Goodman on "Steel Construction in Buildings." 6.30 p.m.

### TUESDAY, FEBRUARY 21.

*Institution of Civil Engineers.*—Paper to be further discussed, "The Lake Superior Iron Ore Mines, and their Influence upon the Production of Iron and Steel," by Mr. Jeremiah Head. 8 p.m.

*Northampton Institute, Clerkenwell.* — Lectures on Mediæval Architecture, by Mr. Francis Bond, M.A. VII. —"Travels of the Dome." 7.45 p.m.

*Society of Arts (Applied Art Section).*—Mr. Cyril Davenport on "Vitreous Enamels." 8 p.m.

### WEDNESDAY, FEBRUARY 22.

*Society of Arts.*—Mr. Philip Dawson on "Electric Traction, and its Application to Railway Work." 8 p.m.

*Liverpool Engineering Society.*—Mr. G. C. Aitchison on "Snowdon Mountain Railway." 8 p.m.

### THURSDAY, FEBRUARY 23.

*Royal Academy.*—Lectures on Greek Sculpture, by Dr. A. S. Murray. II.—"The Nereids in the British Museum." 4 p.m.

*Society of Antiquaries.*—8.30 p.m.

*London Institution.*—The Rev. Canon Benham on "Winchester Cathedral." 6 p.m.

*Sanitary Institute (Lectures for Sanitary Officers).*—Dr. Herbert Manley on "Sanitary Law: English, Scotch, and Irish; General Enactments Public Health Act, 1895; Model By-laws, &c." 8 p.m.

### FRIDAY, FEBRUARY 24.

*Institution of Civil Engineers (Students' Meeting).*—Mr. R. Gordon Mackay on "The Loss of Heat from Buildings." 8 p.m.

### SATURDAY, FEBRUARY 25.

*Lecture Theatre, South Kensington Museum*—Mr. William Burton on "Pottery." I. 3.30 p.m.

*Royal Institution.*—The Right Hon. Lord Rayleigh on "The Mechanical Properties of Bodies." III. 3 p.m.

*Builders' Foremen and Clerks of Works' Institution.*—Annual dinner, King's Hall, Holborn Restaurant. 6 p.m.

*Sanitary Institute.*—Inspection and Demonstration for Sanitary Officers at the Aylesbury Dairy Company's premises, St. Petersburg-place, Bayswater. 3 p.m.

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## RECENT PATENTS:

### ACCEPTED SPECIFICATIONS.

*Open to Opposition until April 8.*

[1897] 28,310, Tickle, Terra-cotta and Earthenware Goods. 30,811, Campbell, Treatment of Metal for Roofing, and for Inside and Outside Wall Purposes. [1898] 2,524, Brookes, Ratchet Braces. 2,885, Pinnock, Taps or Valves. 3,179, Hattersley, Ratchet Brace and Portable Drilling Mechanism. 3,376, Wright, Building Blocks, Bricks, &c. 3,447, Reynolds & Astley, Feed for Supplying Oil to Burners in Controlled Quantities. 3,799, Jürgen, Automatical Gas-Ignition. 3,850, Geipel, Lange, & Gattrick, Holders for Glow-Lamps. 3,864, Bousfield, Sliding-door Rollers. 4,260, Hutcheson & Service, Fire-Bricks and Mortars or Cements. 4,902, Parkinson, Coin-Freed Gas-Meters. 6,243, Rooney, Combined Square and Protractor. 6,385, Turner, Hearth-Plates, Tiles, &c. 6,588, Siddle, Solder. 6,655, Wilford, Workmen's Tool-Bag. 6,990, Weston, Electrical Measuring Instruments. 7,500, Hanman, Brushes. 7,751, La Soc. Guyenet et de Mocomble, Lifts Worked by Electricity with Hydraulic Braking Apparatus. 7,686, Richmond, Gas Meters. 7,842, Kirkland, Heating and Cooling Apparatus, more especially for use in Hospital and other buildings. 8,155, The Metal Tube Jointing Company & Palmiter, Expanding the Ends of Tubes in Sockets of T-pieces, &c. 8,180, Redman, Window Fasteners. 8,306, Oliphant, Water Heaters. 8,697, Green, Cranes, &c. 9,276, Wade, Automatical Delivery of Disinfectants to Flush-water. 10,224, Stöger, Roofing Tile. 11,522, Sanderson, Treatment of White Lead. 14,974, Knopfe, Scaffolding. 15,496, Browne & Martineau, Electrical Time Switches. 16,743, Breslauer, Keyless Locks. 20,756, Schultze, Incandescent Burners or Lamps. 20,760, Coombs, Pavements and Conduits. 21,848, Grove, Wrenches. 23,071, Stoop, Paint, &c. 23,394, Smith, Saw Handles. 23,802, Capitaine, Portable Drilling Apparatus. 24,151, Brassington & Brassington, House and other Ventilators. 25,750, Barnikel, Time Apparatus for Gas Extinction. 26,222, Wolz, Convertible Furniture. 26,314, Stevens, Window Sash Locks. 26,846, Green, Clamping Devices Applicable to Vices, Wrenches, Presses, &c. 27,155, Young, Interceptors for Sewer Drains. 27,353, Duffy, Cross-cut Sawing Machines. 27,563, Jones, Method of Attaching the Heads of Brushes, Brooms, &c., to their Handles or Shafts.

### ABSTRACTS OF PATENTED INVENTIONS.

22,781.—CHIMNEY-CLEANING: *A. Messenger.* — The apparatus (for domestic use) consists of a windlass to be brought to the fire-place, and a pulley at the top of the chimney from which hangs a wire rope; in operation, a brush is attached to one limb of the rope, and the two rope-ends are fastened to two other ropes wound, oppositely, upon the windlass, whose frame has a vertical plate for preventing escape of soot into the room.

22,784.—WINDOW SASHES: *J. Matthew & J. T. Buckley.*—The sashes of the windows, divided vertically, slide upon horizontal rails and so pass into recesses within the walls at either side; friction is reduced by means of pulleys, whilst the rails are sloped towards the sill for carrying away moisture, and are furnished with guide-ribs or channels.

22,792.—PAINTS AND VARNISHES: *L. Hunt.*—For a white paint or varnish that shall be permanent, the inventor grinds a mixture of barium sulphate and zinc sulphite in oil, and then thins it with copal varnish or oils and driers.

22,805.—CASTING PLASTER CORNICES, &C.: *A. Carlewitz.*—A metal frame holds the pattern, into which soft clay is pressed, in order to fill the cavities, depressions, &c., to a uniform depth. Thus the clay back follows, roughly, the design's configuration. A plaster backing is next cast in the frame, which, when the plaster becomes set, is removed. Then the backing is detached from the clay, and the latter from the pattern. A flexible composition of gelatine and glycerine mixed with chalk, resin, and turpentine is poured through holes drilled in the plaster backing into the space where the clay had been and into the holes. The composition is allowed to become set. On removal of the pattern and inversion of the mould, the plaster cornice is found cast in inverted relief upon the elastic base. The backing is then removed from the elastic base, which may be stripped from the plaster without injury, and may serve again.

22,826.—TRIPOD STANDS FOR LEVELS, THEODOLITES, TELESCOPES, &C.: *M. Leithoff & A. Hein.*—The partly spherical head on which the instrument is mounted is cut away in order that it may allow the free passage of a bridge adapted to carry a centre point, and secured to the cylinder upon the tripod stand; the pendulum hangs from a ring which is fixed to the head, and a ring which embraces the head's rounded portion is screwed upon the top of the cylinder. Thus the parts can freely swing until the pendulum remains in a vertical position, when the ring is screwed down and so clamps the head.

22,827.—PIPE JOINTS: *E. Box.*—One end, or both ends, of the pipe are slit down by saw cuts and then expanded into a sleeve by either the taper ends of the pipes or internal ferrules; the joints may be of various kinds—*e.g.*, with the pipes, cut as above, expanded into a sleeve by ferrules; with a separate ferrule instead of a tapered pipe-end; or with one pipe slit and the other tapered to form an internal ferrule.

22,837—DRAIN AND SEWER PIPES: *E. A. S. Fawcett.*—Discs for closing branch inlets are made in one piece with the pipe and are notched around their circumferences so that connexions can afterwards be made by breaking off the disc; a separate disc also may be seated in an extension of the socket.

22,841.—SPANNERS: *F. S. Smith.* — A worm which engages with teeth upon the stem connects the sliding jaw to the stem, being mounted upon a shaft which is pressed towards the stem by means of springs; adjustment of the jaw is effected by turning the worm or by sliding the jaw when the worm has been pulled out of gearing with the teeth.

# COMPETITIONS, CONTRACTS, AND PUBLIC APPOINTMENTS.

## COMPETITIONS.

| Nature of Work. | By whom Advertised. | Premiums. | Designs to be delivered. |
|---|---|---|---|
| *Concrete Hall, Reading Room and Lavatories | Ramsgate Corp. | 50*l*. ; 20*l*. ; and 10*l*. | April 30 |
| *Market Hall and Shops | Leeds Corp. | 150*l*. ; 100*l*. ; and 50*l*. | June 1 |
| *Vagrant Wards | Hexham Union | 20*l*. | No date |

## CONTRACTS.

| Nature of Work or Materials. | By whom Required. | Forms of Tender, &c. Supplied by | Tenders to be delivered. |
|---|---|---|---|
| *Australian Hard Wood Blocks | Camberwell Vestry | W. Oxtoby, Vestry Hall | Feb. 20 |
| Business Premises, Silver-st. Stockton-on-Tees | Hill & Co. | E. E. Clephan, Archt. St. Nicholas-chmbrs. Newcastle-on-Tyne | Feb. 21 |
| House and Surgery, Wincobank | Dr. J. Milne | G. A. Wilson, Archt. Hartshead-chmbrs. Sheffield | do. |
| Street Works, Elgin, N.B. | ——— | A. A. Turriff, Burgh Surv. Elgin | do. |
| Asphalting Footpaths, Seedley Park, Pendleton | Salford Corp. | S. Brown, Town Hall, Salford | do. |
| Two Houses, Lansdowne-rd. Bridlington Quay | Trustees of R. Harrison | S. Dyer, Archt. Bridlington Quay | do. |
| Sewers, St. John's-avenue East, Bridlington | ... | do. | do. |
| Sewerage Works | Staines U.D.C. | J. C. Melliss, 264, Gresham House, Old Broad-street, E.C. | do. |
| Road Works | Cardiff Corp. | W. Harpur, C.E. Town Hall | do. |
| Five Houses, Lancaster-road, Morecambe | J. Bond | Marshall Bros. Archt. Back-crescent, Morecambe | do. |
| Surgery, &c. 94, Manchester-rd. Bury | Lancs. & Yorks. Ry. Co. | H. Shelmerdine, Archt. Hunt's Bank, Manchester | do. |
| Station Buildings, Rose Grove | do. | Engineer, Hunt's Bank, Manchester | do. |
| Forty Houses | Kilkenny Corp. | W. K. Cleere, Kilkenny | do. |
| Sewerage Works, Earl-street | Ramsbottom (Lancs.) U.D.C. | J. W. Barlow, Market-pl. Ramsbottom | Feb. 22 |
| Road Works | Ilkley U.D.C. | Surveyor, Council's Offices | do. |
| Additions to Asylum, Rainhill | Lancashire Asylums Board | J. Gornall, The Asylum, Rainhill | do. |
| Footbridge, Elton | Bury (Lancs.) Corp. | Borough Engr. Bank-st. Bury | do. |
| Sewers | Saltcoats (N.B.) Burgh Commrs. | J. & H. V. Eaglesham, C.E. Ayr | do. |
| *Works and Materials | Hackney Vestry | J. Lovegrove, Town Hall, Hackney, N.E. | do. |
| *Three Glazed Earthenware Urinals | St. George-in-the-East Vestry | Surv. Vestry Hall, Cable-street, E.C. | Feb. 23 |
| Alterations to Stabling, Nile-road, New Brompton | ... | E. J. Hammond, Archt. 111, High-st. New Brompton | do. |
| Chapel and Lodge, Sutton-road | Southend Corp. | A. Fidler, C.E. Clarence-road, Southend | do. |
| Waterworks | Aberystwith R.D.C. | G. Jones & Son, Aberystwith | Feb. 24 |
| Road Metal | Bedford C.C. | County Surv. Shire Hall, Bedford | Feb. 25 |
| Stone Bridge, Hovingham, near Malton | ........ | W. Stead, C.E. Northallerton | do. |
| Electric Light Buildings | Burton-on-Trent Corp. | F. L. Ramsden, Engr. Town Hall, Burton-on-Trent | do. |
| House and Two Shops, Nursery, Bradford | ——— | S. Spencer, Archt. 344, Great Horton-road, Great Horton | do. |
| Wall, Station-road | Keswick U.D.C. | W. Hodgson, Surv. Town Hall | do. |
| Sewers | St. Annes-on-Sea U.D.C. | H. Bancroft, C.E. 88, Mosley-st. Manchester | do. |
| House and Shop, Ashton, Breage, Cornwall | ——— | Mrs. L. J. Eustice, Ashton, Breage | do. |
| Additions to Tregarthen's Hotel, Scilly | ——— | O. Caldwell, Archt. Penzance | do. |
| Road Materials | East Sussex C.C. | F. J. Wood, C.E. County Hall, Lewes | do. |
| Residence, Station-rd. Masborough | Dr. E. E. Dufty | G. H. Johnson, Archt. 38, High-st. Rotherham | Feb. 27 |
| Additions to Schools, Middleforth, Preston | ——— | Mr. Swindells, 3, Cannon-st. Preston | do. |
| Bridge, Patterdale | ——— | J. Bintley, Surv. 7, Lowther-st. Kendal | do. |
| Reservoir | Merthyr Tydfil U.D.C. | T. F. Harvey, Engr. Town Hall | do. |
| Street Works | Wolverhampton Corp. | J. W. Bradley, C.E. Town Hall | do. |
| Alterations to Schools, Silver Hill | Hastings U.D. Sch. Bd. | Elworthy & Son, Archts. London-rd. St. Leonards | do. |
| Additions to No. 18, Wellington-sq. | do. | A. Dray, Archt. Town Hall-chambers, Hastings | do. |
| Police Station, Woodhouse | ——— | City Engineer, Municipal Offices, Leeds | do. |
| Extension of Weaving Sheds, Earlsheaton | ——— | F. W. Ridgway, Archt. Dewsbury | do. |
| *Iron Fencing and Gates | Ilford U.D.C. | H. Shaw, 7, Cranbrook-rd. Ilford, E. | Feb. |
| *Street Works | Cty. Boro. of West Ham | Lewis Angell, Town Hall, West Ham, E. | do. |
| Additions to Schools | Sheffield Sch. Bd. | C. J. Innocent, Archt. 22, High-st. Sheffield | do. |
| Waterworks | Wakefield Corp. | C. G. Smith, C.E. Town Hall | do. |

## CONTRACTS—*Continued*.

| Nature of Work or Materials. | By whom Required. | Forms of Tender, &c. Supplied by | Tenders to be delivered |
|---|---|---|---|
| Branch Stores, Alfred-rd. | Brightside, &c. Co-op. Soc. | H. Webster, Archt. Norfolk-row, Sheffield | Feb. 28 |
| Flint Road Metal | Dover T.C. | E. W. Knocker, Castle Hill House, Dover | do. |
| Rebuilding Bridge, St. John's-road | Buxton U.D.C. | J. Taylor, Town Hall | do. |
| *Works and Materials (various) | Lewisham B. of W. | Town Hall, Catford, S.E. | do |
| *Road Works, &c. Tyrwhitt-road, Lewisham | do. | Surv.'s Dept. Town Hall, Catford, S.E. | do. |
| *Road Works, &c. Ringstead-road, Catford | do. | do. | do. |
| *Drainage Works | Willesden D.C. | O. C. Robson, Public Offices, Dyne-road, Kilburn | do. |
| Store Buildings | Portsea Union | G. C. V. Inkpen, Archt. Whittington-chambers, Southsea | Mar. 1 |
| Road Works | Clacton-on-Sea U.D.C. | A. R. Robinson, Surv. Town Hall-buildings | do. |
| Storage Reservoir | Llanidloes T.C. | F. Beesley & Son, Engr. 11, Victoria-st. S.W. | do. |
| *Infirmary at Workhouse | Congleton Union | Master at Workhouse, Arclid | do. |
| *Blue Guernsey Granite | Bethnal Green Vestry | F. W. Barratt, Vestry Hall, Church-row, Bethnal Green, E. | Mar. 2 |
| Alterations to Houses, Gt. George-st. Leeds | ..... | Smith & Tweedale, Archt. 12, South Parade, Leeds | Mar. 3 |
| Drainage Works | Uxbridge R.D.C. | J. Anstie, C.E. 10, Marchwood-crescent, Ealing | do. |
| Bridges | Sheffield Corp. | C. F. Wike, C.E. Town Hall | Mar. 4 |
| Bridge, Buckie, N.B. | Commissioners | J. Barron, C.E. 1, Bon Accord st. Aberdeen | do. |
| *Services and Materials (various) | Bermondsey Vestry | F. Ryall, Town Hall, Spa-road, S.E. | do. |
| *Chimney Stack | Edinburgh and Leith Gas Commrs. | W. R. Herring, Gasworks, Edinburgh | do. |
| Hospital Buildings | Tiverton Hospital Board | J. Siddals, Tiverton | Mar. 6 |
| Road Works | Belford R.D.C. | A. J. Ware, Surv. Belford, Northumberland | do. |
| Schools, Thornaby-on-Tees | Canon Shanahan | E. Goldie, Archt. 31, Upper Phillimore-place, W. | do. |
| Hartshill Stone (3,115 tons) | Abingdon R.D.C. | B. & E. M. Challenor, 59, Stert-st. Abingdon | do. |
| *Articles, Works, &c. | Rotherhithe Vestry | J. J. Stokes, Vestry Hall, Lower-rd. Rotherhithe | do. |
| *Sorting Office, Putney, S.W. | Commrs. H.M. Works | Office, Storey's Gate, Westminster | do. |
| *Materials (various) | Fulham Vestry | Town Hall, Walham Green, S.W. | Mar. 8 |
| *Works, Materials, &c. | Bath U.S.A. | C. R. Fortune, Guildhall, Bath | Mar. 14 |
| *Construction of Wells and Supply of Plant, &c. | Poplar Union | E. J. Warden Stevens, 34, Victoria-st. S.W. | Mar. 17 |
| *Superstructure of Lunatic Asylum | Kesteven County Asylum | G. T. Hine, 35, Parliament-st. S.W. | April |
| *Materials (various) | Camberwell Vestry | W. Oxtoby, Vestry Hall, Peckham-road, S.E. | See advt. |
| Residence, Pocklington | R. M. English | W. Thorp, Archt. 22A, Commercial-st. Leeds | No date |
| School, Richmond, Yorks | ——— | Clark & Moscrop, Archt. Feethams, Darlington | do. |
| Restoration of Church, Thwing | ——— | T. Moore, Archt. 46, Well-walk, Hampstead, N.W. | do. |
| Mill Buildings, Hull | Storry, Smithson & Co. | Brodrick & Co. Archts. 77, Lowgate, Hull | do. |
| Alterations, &c. Industrial School, Halstead | ——— | Baker & May, Archts. Colchester | do. |
| House and Shop, High-st. Manningtree | ——— | H. Spooner, South-street, Manningtree | do. |
| House, Caramore, Ireland | ——— | J. Armstrong, Canal House, Tullamore, King's County | do. |
| Inn, Bolton-rd. Bradford | ——— | J. Jackson, Archt. Barry-st. Bradford | do. |
| Sanatorium, Baguley Lodge, Cheshire | Withington U.D.C. | J. Broadbent, Archt. 15, Cooper-st. Manchester | do. |
| Sewerage Works | Keighley Corp. | W. H. Hopkinson, C.E. Keighley | do. |
| Three Houses, Higham Ferrers | ——— | H. Adnitt, Archt. High-st. Rushden | do. |
| Alterations to Premises, Derby-road, Skegness | ... | C. N. Holloway, Archt. Angel-row, Nottingham | do. |
| School | Aske's Haberdashers' Schools | Widnell & Trollope, 20, Tothill-st. S.W. | do. |

## PUBLIC APPOINTMENTS.

| Nature of Appointment. | By whom Advertised. | Salary. | Application to be in. |
|---|---|---|---|
| *Clerk of Works | Fulham Vestry | 3*l*. 3*s*. per week | Feb. 25 |
| *Corresponding and Shorthand Clerk | St. Marylebone Vestry | 100*l*. per annum | do. |
| *Road Ganger | Tottenham U.D.C. | 35*s*. rising to 42*s*. per week | Feb. 28 |
| *Building Inspector | Southend-on-Sea Corp. | 125*l*. per annum | Mar. 3 |
| *Clerk of Works | Edmonton U.D.C. | 3*l*. 3*s*. per week | Mar. 6 |
| *Surveyor | Westminster Union | See advt. | Mar. 10 |
| *City Engineer | Municipality of Calcutta | 1,800 Rupees per month | See advt. |
| *Engineering Assistant | Southport Corp. | 150*l*. per annum | No date |

*Those marked with an asterisk* (*) *are advertised in this Number. Competitions, p.* iv. *Contracts, pp.* iv. vi. viii. x. & xxi. *Public Appointments, pp.* xviii. & xxi.

22,867.—PRESERVATIVE COMPOSITIONS: *H. L. Bates.*—For coating metal, canvas, and similar materials, is made an admixture of acetic acid, powdered borax, carbonate of soda, glucose, paraffin wax, citronella, salt, alum, nitre, and white grape juice.

23,026.—APPARATUS FOR CUTTING DOVETAILS: *J. R. Rickard.*—The contrivance is devised as an attachment for the dovetailing machines specified under No. 1,124 of 1895 and No. 1,732 of 1896; for cutting lapped dovetails, the lower end of the vertical spindle carries the cutter—a belt and its guide-pulley rotating the spindle, which is carried by a bracket traversed by a crank through a range limited by stops. When the work is put under the vertical cutter upon the spindle, and the cutter is traversed first on one side of the dovetail and then on the other side, the rounded corners left by the ordinary rotating cutter in lapped dovetails are cut out.

23,059.—WINDOW BLINDS: *J. Hempstalk.*—Flexible straps connect the blind laths in which elongated holes engage with hanging guide-rods, on each lath is a pair of metal springs which pass through slots in the other laths to wind round pulleys that run on a shaft at the top; the blind may be held in any position by the pressure of collars against the pulleys, and by pulling a cord that hangs from a pivotted arm a collar is turned axially so as to draw the pulley-collars from the pulleys and thus to leave them free to turn; the spring-bands and the pulleys can also be adapted for balancing sashes.

23,124.—MINERS' AND OTHER SAFETY LAMPS: *C. H. Wolf.*—To light the lamp is devised an inflammable tape, which carries pellets that are ignited by friction instead of by percussion: the teeth of a spring rack feed the tape, which moves readily upwards, but not so readily downwards (owing to the shape of the teeth), whilst a spring scratcher ignites the pellets.

23,151.—OIL LAMPS AND STOVES: *A. Thorpe.*—The object of the inventor is to facilitate the filling of the oil-reservoirs; he puts an eyelet around the stem of the float, which indicates the level of the oil; the filling nozzle is pivotted to a rotating closing-piece or valve by means of the eyelet; the reservoir can be filled when openings, cut in the valve and nozzle, coincide; in other positions the valve is turned so as to close the openings in the nozzle.

23,184.—FASTENINGS FOR SASHES: *J. Walsh.*—A bracket on the lower sash-rail holds the pivot of an eccentric, to the strap whereof is attached a hook which engages in a loop upon the upper sash-rail, the hook is adjusted by turning the eccentric so as to force the hook tightly against the loop, and so to draw the sashes closely together.

23,198.—ACETYLENE GAS GENERATOR: *A. Molet.*—A passage connects the lower water chamber with the calcium chamber which has an inclined bottom, and is placed above a separate chamber wherein is a device, to be worked by electricity, clockwork, &c., for oscillating a hammer, the device being put into operation by means of a catch upon a rod that passes through a tube to a float in the water chamber beneath; when gas passes to the service pipes water enters the water chamber and so raises the float, the hammer then strikes against the inclined bottom of the calcium chamber, and its vibration causes some carbide to fall down into the water, the generated gas thereupon forces the water back, and the mechanism for moving the hammer ceases to move with the falling of the float.

23,210.—SYPHON DISCHARGE OF WATER-CLOSETS: *D. G. Wallace.*—To meet cases of breakage of the seal the inventor has devised means of automatically re-sealing a syphon-discharge closet; the syphon is contained within a casing placed inside the flushing tank, and the syphon communicates with a pipe which ends just over the level of the water-seal in the closet-pan; the small syphon is started to re-fill the pan and prevent the escape of sewer-gas, if the pan is emptied of its contents; when the syphon is emptied, the contents of a chamber that communicates with the syphon both above and below, return in part, so that sewer gas cannot escape through the flushing-tank.

23,297.—GAS COOKING AND HEATING-STOVES: *W McCaig.*—The gas passes from the supply chamber through nozzles into a mixing chamber and the mixing tubes, and so to the burners, the two chambers being arranged behind the stack in the grate; for this arrangement the advantage of preventing "lighting-back" is claimed.

23,378.—MANUFACTURE AND FIXING OF ROOFING TILES: *R. Walker.*—A bevelled frame holds the mould tray upon which the plastic material is laid, to be levelled with a blade or tool; to the table is hinged the frame, which forms a recess in the tile's upper face, and by drawing a trowel along the mould's upper bevelled edges, upper bevelled ribs are made in the tile. Pieces of metal can be inserted in the tile at the hanging nibs and nail holes, and it may be secured to the lath by a staple or hook inserted into a loop or eye underneath; the bevelled ribs are adapted to prevent the passage of moisture derived from condensation within the building.

23,470.—INCANDESCENT ELECTRICAL LAMPS: *W. Nernst.*—The lamps, which have magnesia or other oxide incandescent bodies, are fitted with resistant metal wires. In one modification of the invention, a concave porcelain reflector, which contains a coil of platinum wire, has the incandescent body fixed at its focus. The current heats the body until it conducts enough to take a current from a separate or parallel circuit; then the operator's hand, or a cut-out worked by the current supplied to the incandescent body, may stop the current to the platinum wire.

◆

## SOME RECENT SALES OF PROPERTY:

### ESTATE EXCHANGE REPORT.

January 24.—By LOWDEN & POSTLETHWAITE (at Barrow-in-Furness).

| | |
|---|---|
| Barrow-in-Furness, Lancs. — Abbey-rd., Crosslands, and 13 a. 2 r. 18 p., part f. and part u.t. 44 yrs., g.r. 73*l.* 8s. | £3,100 |
| 95 to 113 (odd), Ainslie-st., f. | 1,260 |
| Ainslie-st., five building plots, area 13,807 yds., f. | 1,804 |

January 26.—By T. LAVINGTON & WATERS & RAWLENCE (at Devizes).

| | |
|---|---|
| Stockley, Wilts.—Freehold house, homestead, and 52 a. 3 r. 23 p. | 2,100 |
| The Allotment and Hobbs Ley, 21 a. 1 r. 14 p., f. | 400 |

January 30.—By CLIMPSON & JOHNSON.

| | |
|---|---|
| Thornton Heath.—36 to 48 (even), Beulah-rd. North, f. | 1,950 |
| Peckham.—188, 190, 192, and 194, Hollydale-rd., u.t. 75 yrs., g.r. 18*l.* | 1,000 |
| Balham.—50 and 52, Sistova-rd., u.t. 78½ yrs., g.r. 14*l.* 14s., r. 66*l.* | 515 |

By ROBSON & PERRIN.

| | |
|---|---|
| Barnsbury.—20, Sheen-grove, u.t. 37½ yrs., g.r. 6*l.*, r. 42*l.* | 260 |
| Hornsey.—Green Lanes, Warden Villa and Newent Villa, u.t. 30 yrs., g.r. 6*l.*, r. 90*l.* | 620 |

By WRIFORD & DIXONS.

| | |
|---|---|
| Twickenham.—The Avenue, Avenue Villa, f., e.r. 60*l.* | 610 |

By J. PLUMER CHAPMAN.

| | |
|---|---|
| Eastbourne, Sussex.—6, 10, and 12, Calverley-rd., f., r. 110*l.* | 2,010 |

January 31.—By DEBENHAM, TEWSON, & Co.

| | |
|---|---|
| Battersea.—2, 6, 8, 22, and 30, Rush Hill-rd., u.t. 73 yrs., g.r. 30*l.*, r. 158*l.* (in lots) | 1,620 |
| Brixton.—Brixton Hill, f.g.r. 30*l.*, reversion in two yrs. | 2,650 |

By C. W. DAVIES.

| | |
|---|---|
| Stroud Green.—142, 146, and 148, Hanley-rd., u.t. 70 yrs., g.r. 25*l.* 4s., r. 120*l.* | 1,265 |
| Higbury.—145, Petherton-rd., u.t. 50½ yrs., g.r. 7*l.* 7s., e.r. 70*l.* | 725 |
| Maida Vale.—11 and 12, Northwick Mews, u.t. 23 yrs., g.r. 10*l.*, r. 60*l.* | 255 |

By DUNCAN & KIMPTON.

| | |
|---|---|
| St. John's Wood.—Cavendish-rd. West, i.g.r. 20*l.*, u.t. 21½ yrs., g.r. nil | 245 |
| Clapton.—21, Reighton-rd., u.t. 79½ yrs., g.r. 6*l.* 10s., r. 36*l.* | 365 |
| Camden Town.—Great College-st., i.g.r. 22*l.*, u.t. 23 yrs., g.r. nil | 280 |

By L. FARMER.

| | |
|---|---|
| Camberwell.—278 and 280, Camberwell-rd., f., r. 110*l.* | 2,625 |

By RUTLEY, SON, & VINE.

| | |
|---|---|
| New Southgate.—Bowes-rd., The Woodlands, f. | 1,020 |
| Holloway.—49 and 51, Marlborough-rd., u.t. 67 yrs., g.r. 14*l.* 14s., r. 80*l.* | 880 |
| Kentish Town.—131, Prince of Wales-rd., u.t. 13 yrs., g.r. 7*l.*, r. 40*l.* | 150 |

By VERNON & SON.

| | |
|---|---|
| Edmonton.—180, Upper Fore-st., f., r. 50*l.* | 1,350 |
| Norwood.—8, 10, 12, and 14, Palace-rd., f., r. 112*l.* | 1,370 |
| Netley, Hants.—1 to 10, Arthur-ter., u.t. 983 yrs., g.r. 7*l.* | 760 |

By F. WARMAN.

| | |
|---|---|
| Canonbury.—4, Alwyne Villas, u.t. 47 yrs., g.r. 10*l.*, e.r. 60*l.* | 500 |
| 32, St. Mary's-rd., u.t. 46 yrs., g.r. 10*l.*, r. 63*l.* | 625 |
| Highbury.—4, Highbury New Park, u.t. 50½ yrs., g.r. 15*l.*, r. 75*l.* | 900 |

February 1.—By H. CHAPMAN & Co.

| | |
|---|---|
| Leyton.—Tyndall-rd., a plot of building land, f. | 550 |

By S. FORTESCUE & SONS.

| | |
|---|---|
| Forest Gate.—547 to 557 (odd), Romford-rd., u.t. 88½ yrs., g.r. 36*l.*, r. 186*l.* | 1,810 |

By S. BRADFORD (at Masons' Hall Tavern).

| | |
|---|---|
| Folkestone, Kent.—"The Rose Hotel," f., with goodwill | 8,750 |

By A. PREECE (at Acton).

| | |
|---|---|
| Kew Gardens.—16 and 18, Clarence-rd., u.t. 68 yrs., g.r. 12*l.* 12s., r. 57*l.* | 585 |
| Acton.—6, 8, and 10, High-st., u.t. 69 yrs., g.r. 16*l.* 10s., r. 96*l.* | 1,025 |
| 5, Birkbeck-rd., u.t. 69 yrs., g.r. 5*l.*, r. 26*l.* | 250 |
| 1 and 3, Mansell-rd., u.t. 61 yrs., g.r. 12*l.*, r. 49*l.* | 470 |

By BALCH & BALCH (at Camden Town).

| | |
|---|---|
| Regent's Park.—3, Kingstown-st., u.t. 48½ yrs., g.r. 5*l.*, r. 30*l.* | 225 |

February 2.—By COOPER & GOULDING.

| | |
|---|---|
| Chiswick.—16, 17, and 18, Hogarth-lane, f. | 750 |
| 1 to 35 (odd) and 2 to 24 (even), Hogarth-av., f., (in lots) | 5,485 |
| 181, 183, 189, 191, 193, and 195, Devonshire-rd., f., (in lots) | 1,135 |
| Devonshire-rd., f.g. rents 14*l.*, reversion in 77 yrs. | 400 |

By STEPHENSON & ALEXANDER (at Cardiff).

| | |
|---|---|
| Cardiff, Glamorgan.—59 and 60, Mount Stuart-sq., area 520 yds., u.t. 52½ yrs., g.r. 10*l.* 8s. 6d. | 6,350 |
| 218, Bute-st., u.t. 52½ yrs., g.r. 11*l.* 1s. 3d. | 1,000 |

By EDWIN EVANS (at Clapham Junction).

| | |
|---|---|
| Battersea.—68, 70, 72, 74, 104, 106, 108, and 110, Sugden-rd., u.t. 87 yrs., g.r. 56*l.*, r. 327*l.* 2s. | £2,505 |
| 45, Marney-rd., u.t. 87 yrs., g.r. 32*l.* | 310 |
| 421 and 423, Battersea Park-rd, and 1a and 2a, St. James-gr., u.t. 66½ yrs., g.r. 6s. | 1,180 |
| 32, Este-rd., u.t. 45 yrs., g.r. 4*l.* | 200 |
| 48, Castle-st., u.t. 78 yrs., g.r. 6*l.*, r. 40*l.* | 510 |
| 22 and 24, Kennard-st., u.t. 70 yrs., g.r. 11*l.* | 405 |
| Wandsworth.—15, Aspley-rd., f., r. 35*l.* | 535 |
| 9, 11, 13, and 15, Maskell-rd., f. | 855 |
| 96 and 98, Sugden-rd., u.t. 86½ yrs., g.r. 14*l.* | 630 |
| 28, 32, 42, 44, 46, and 48, St. Julian's Farm-rd., u.t. 82 yrs., g.r. 44*l.* 2s., r. 182*l.* | 1,515 |
| 133 to 139 (odd), St. James'-rd., f., r. 120*l.* | 1,980 |

*Contractions used in these lists.*—F.g.r. for freehold ground-rent; l.g.r. for leasehold ground-rent; i.g.r. for improved ground-rent; g.r. for ground-rent; r. for rent; f. for freehold; c. for copyhold; l. for leasehold; e.r. for estimated rental; u.t. for unexpired term; p.a. for per annum; yrs. for years; st. for street; rd. for road; sq. for square; pl. for place; ter. for terrace; cres. for crescent; yd. for yard, &c.

## PRICES CURRENT OF MATERIALS.

### TIMBER.

| | | |
|---|---|---|
| Greenheart, B.G. ton | 8/0/0 | 0/0/0 |
| Teak, E.I. ...load | 10/10/0 | 15/10/0 |
| Sequoia, U.S. ft.cu. | 1/9/0 | 2/0/0 |
| Ash, Canada, load | 3/17/6 | 5/5/0 |
| Birch, do. | 3/0/0 | 5/0/0 |
| Elm, do. | 4/12/6 | 5/15/0 |
| Fir, Dantsic, &c. | 2/0/0 | 4/0/0 |
| Oak, do. | 3/5/0 | 3/15/0 |
| Canada | 4/0/0 | 6/0/0 |
| Pine, Canada red | 0/0/0 | 0/0/0 |
| Do. yellow | 4/7/6 | 6/5/0 |
| Lath, Dantsic, fath | 4/10/0 | 5/10/0 |
| St. Petersburg | 4/0/0 | 6/10/0 |
| Wainscot, Riga, &c., log | 3/15/0 | 5/15/0 |
| Odessa, crown | 3/15/0 | 5/15/0 |
| Deals, Finland 2nd & 1st std. 100 | 9/15/0 | 10/5/0 |
| Do. 4th & 3rd | 9/15/0 | 10/5/0 |
| Do. Riga | 8/5/0 | 9/5/0 |
| St. Petersburg, 1st yellow | 11/15/0 | 14/5/0 |
| Do. 2nd yellow | 10/15/0 | 12/5/0 |
| Do. white | 9/15/0 | 11/15/0 |
| Swedish | 9/15/0 | 16/15/0 |
| White Sea | 10/15/0 | 18/0/0 |
| Canada, Pine 1st | 18/15/0 | 25/5/0 |
| Do. do. 2nd | 13/15/0 | 17/0/0 |
| Do. do. 3rd, &c. | 6/0/0 | 10/0/0 |
| Do. Spruce, 1st | 8/10/0 | 10/10/0 |
| Do. do. 3rd and 2nd | 7/5/0 | 8/10/0 |
| New Brunswick | 7/5/0 | 8/0/0 |
| Battens all kinds | 5/0/0 | 16/0/0 |
| Flooring boards, sq., 1 in., prep. 1st | 9/6 | 16/3 |
| Do. 2nd | 8/0 | 13/3 |
| Other qualities— | 6/3 | 7/0 |
| Cedar, Cuba, ft. | /4 | /4½ |
| Honduras, &c. | /3¾ | /4½ |
| Mahogany, Cuba | /5½ | /7 |
| St. Domingo, cargo av. | /5 | 1/3 |
| Mexican, do. do. | /3½ | /4 |
| Tobasco, do. do. | /4 | /6½ |
| Honduras, do. | /4 | /6 |
| Box, Turkey, ton | 4/0/0 | 15/0/0 |
| Rose, Rio | 7/0/0 | 14/0/0 |
| Bahia | 6/0/0 | 12/0/0 |
| Satin, St. Doming. | /5 | 1/0 |

### TIMBER (*continued*).

| | | |
|---|---|---|
| Satin, Porto Rico | 0/0/9 | 0/2/0 |
| Walnut, Italian | 0/0/3 | 0/0/7 |

### METALS.

| | | |
|---|---|---|
| Iron—Pig, in Scotland ...ton | 2/15/3½ | 0/0/0 |
| Bar, Welsh, in London | 6/0/0 | 6/5/0 |
| Do. do. at works in Wales | 5/15/0 | 5/17/6 |
| Do. Staffordshire, in London | 6/5/0 | 7/10/0 |
| COPPER—British cake and ingot | 79/0/0 | 79/10/0 |
| Best selected | 80/0/0 | 80/10/0 |
| Sheets, strong | 81/0/0 | 83/0/0 |
| Chili bars | 74/10/0 | 0/0/0 |
| YELLOW MTL. lb. | 7d. | 7¼d. |
| LEAD—Pig Spanish ...ton | 15/5/0 | 0/0/0 |
| English com. Brands | 15/10/0 | 0/0/0 |
| Sheet, English 6 lbs. per sq. ft. and upwards | 16/10/0 | 0/0/0 |
| Pipe | 17/0/0 | 0/0/0 |
| ZINC—English sheet ...ton | 30/0/0 | 0/0/0 |
| Vieille Montagne | 31/0/0 | 0/0/0 |
| Spelter | 27/12/6 | 27/15/0 |
| TIN—Straits | 108/7/6 | 0/0/0 |
| Australian | 108/15/0 | 109/5/0 |
| English Ingots | 111/10/0 | 112/10/0 |
| Banca | 0/0/0 | 0/0/0 |
| Billiton | 0/0/0 | 0/0/0 |

### OILS.

| | | |
|---|---|---|
| Linseed ...ton | 17/10/0 | 0/0/0 |
| Cocoanut, Cochin | 27/15/0 | 0/0/0 |
| Do. Ceylon | 24/10/0 | 0/0/0 |
| Palm, Lagos | 21/15/0 | 0/0/0 |
| Rapeseed, English pale | 22/15/0 | 0/0/0 |
| Do. Brown | 21/5/0 | 0/0/0 |
| Cottonseed ref. | 15/0/0 | 16/0/0 |
| Oleine | 17/0/0 | 18/0/0 |
| Lubricating U.S. | 0/5/3 | 0/7/6 |
| Do. Black | 0/5/0 | 0/6/6 |
| TAR—Stockholm barrel | 1/5/0 | 0/0/0 |
| Archangel | 0/18/0 | 0/0/0 |
| Turpentine | 31/15/0 | 0/0/0 |

## TO CORRESPONDENTS.

J. and M.—F. C. H. (Amounts should have been stated.)

NOTE.—The responsibility of signed articles, letters, and papers ead at public meetings, rests, of course, with the authors.

*We cannot undertake to return rejected communications.*

Letters or communications (beyond mere news items) which have been duplicated for other journals are NOT DESIRED.

We are compelled to decline pointing out books and giving addresses.

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All communications regarding literary and artistic matters should be addressed to THE EDITOR; those relating to advertisements and other exclusively business matters should be addressed to THE PUBLISHER, and *not* to the Editor.

## TENDERS.

[Communications for insertion under this heading should be addressed to "The Editor," and must reach us *not later than* 10 *a.m. on Thursdays.* N.B.—We cannot publish Tenders unless authenticated by the name and address of the sender; and we cannot publish announcements of Tenders accepted unless the amount of the Tender is given, nor any list in which the lowest Tender is under £100, unless in some exceptional cases and for special reasons.]

ABERDEEN.—For additions to the United Presbyterian Manse, Aberchirder. Mr. R. G. Wilson, architect, 181a, Union-street, Aberdeen:—

| | |
|---|---|
| *Masonry.*—Leslie Gregor, Aberchirder | £180 |
| *Carpentry.*—Alexr. Auld " | |
| *Slating.*—Alfred J. Ross, Macduff | |
| *Plumbing.*—Chas. Duthie, Turriff | |
| *Plastering.*—Geo. G. McKay, Keith | |

ACCRINGTON.—For making a number of streets for the Corporation. Mr. W. J. Newton, C.E., Town Hall, Accrington:—

G. Adams, Oswaldtwistle.*

* Accepted at per schedule of prices.

BEDFORD.—For paving, &c., Bushmead-avenue, for the Corporation. Mr. John Lund, Borough Surveyor, Town Hall, Bedford:—

| | | | |
|---|---|---|---|
| Patent Victoria Stone Co. | £918 | 9 | 7 |
| A. Henman | £899 | 15 | 0 |
| G. S. Jarvis, Bedford* | 859 | 0 | 0 |

* Accepted.

BIRMINGHAM.—For the erection of nurses' mess-room, &c., at workhouse infirmary, for the Union Guardians. Mr. W. H. Ward, architect, Paradise-street, Birmingham:—

| | |
|---|---|
| C. Reeve & Son | £2,681 |
| Smith & Pitts | 2,330 |
| R. Fenwick | 2,279 |
| C. Bryant | 2,240 |
| W. H. Gibbs | 2,175 |
| H. Hemming | 2,100 |
| Whitehouse & Son | £1,997 |
| J. Atkinson | 1,991 |
| T. Elvins | 1,990 |
| W. Robinson | 1,980 |
| Gowing & Ingram, Belgrave-road, Birmingham* | 1,789 |

* Accepted.

BRACKENTHWAITE.—For the erection of two bridges over Hope Beck, for the Cockermouth Rural District Council. Mr. J. B. Wilson, C.E., Council Offices, Cockermouth:—

| | |
|---|---|
| Jno. Bolton | £207 |
| Wren & Lindsay | 164 |
| M. Green, Cockermouth* | £153 |

* Accepted.

CARDIFF.—For the formation of roads, Penllyn Castle Estate Canton. Messrs. Veall & Sant, architects, Cardiff:—

| | |
|---|---|
| Charles Gardner | £3,858 |
| D. Thomas | 2,017 |
| Barnes, Chaplin, & Co. | £1,750 |
| F. Ashley, Cardiff* | 1,561 |

* Accepted.

CARLISLE.—For laying a sewer, Moorville, Stainwix, for the Rural District Council. Mr. Geo. Armstrong, architect, 24, Bank-street, Carlisle. Quantities by architect:—

| | | | |
|---|---|---|---|
| J. & R. Bell | £399 | 2 | 4 |
| M. Green | 377 | 19 | 0 |
| W. Leighton | 330 | 0 | 0 |
| T. Scott | £315 | 0 | 0 |
| J. & W. Baty, Carlisle* | 295 | 0 | 0 |

Accepted.

COLNEY.—For the superstructure of All Saints' Convent Chapel, Colney, Herts. Messrs. George T. Hine and Leonard Stokes, architects, Westminster. Quantities by Mr. E. C. Pinks:—

| | | | |
|---|---|---|---|
| J. Shillitoe & Sons | £45,000 | 0 | 0 |
| Higgs & Hill | 44,500 | 0 | 0 |
| J. Norris & Son | 43,424 | 0 | 0 |
| Miskin & Sons | 43,079 | 0 | 0 |
| J. Howe & Co. | 42,507 | 0 | 0 |
| Foster & Dicksee | 41,831 | 0 | 0 |
| E. Dunham | £41,667 | | |
| Gough & Co. | 40,834 | 0 | 0 |
| Parnell & Co. | 39,365 | 0 | 0 |
| Stimpson & Co. | 39,100 | 0 | 0 |
| W. King & Son, London* | 38,574 | 0 | 0 |

* Accepted.

DARTMOUTH.—For laying footpaths, &c., Ford Cross to Hillside Villa, for the Urban District Council. Mr. T. O. Veale, Surveyor, Council Offices, Dartmouth:—

| | | | |
|---|---|---|---|
| E. P. Veale | £201 | 16 | 8 |
| R. Watts | £196 | 5 | 3 |

[Both of Dartmouth].

DROYLSDEN (Lancs.).—For the construction of sewers, Manchester and other roads, for the Urban District Council. Mr. W. Curry, Surveyor, Council Offices, Droylsden:—

| | | | |
|---|---|---|---|
| H. H. Davison | £3,547 | 19 | 0 |
| W. Briggs | 3,143 | 12 | 0 |
| James Bacon | 3,111 | 17 | 0 |
| John Randall | 2,994 | 7 | 0 |
| G. M. Collins | £2,993 | 5 | 0 |
| Etheridge & Clarke, Manchester* | 2,826 | 14 | 0 |
| R. C. Fish† | 2,494 | 3 | 9 |

* Accepted. † Withdrawn.

EASTDOWN (Devon).—For additions to schools, for the Schoo Board. Mr. James Mayne, architect:—

| | | | |
|---|---|---|---|
| W. Sanders | £494 | 6 | 8 |
| W. C. Latham | 492 | 2 | 2 |
| George Lovering | 488 | 10 | 0 |
| Goss Brothers | 410 | 0 | 0 |
| Wm. Cutcliffe | £397 | 0 | 0 |
| Hussell & Hancock, Eastdown (accepted) | 390 | 10 | 0 |
| I. & J. Phillips | 349 | 15 | 0 |

HENDON (Middlesex).—For the execution of sewerage works, Highwood Hill, for the Urban District Council. Mr. S. S. Grimley, surveyor, The Burroughs, Hendon:—

| — | Best London Stoneware Pipes. | | | Wakefield's Corrugated Socket Pipes. | | | Approved Country Pipes. | | |
|---|---|---|---|---|---|---|---|---|---|
| | £ | s. | d. | £ | s. | d. | £ | s. | d. |
| F. Dupont | 3,221 | 6 | 11 | 3,198 | 10 | 5 | 3,176 | 18 | 1 |
| R. Jackson | 2,584 | 13 | 3 | 2,523 | 8 | 9 | 2,494 | 12 | 9 |
| E. Hollingsworth | 2,227 | 7 | 8 | 2,227 | 7 | 8 | 2,202 | 10 | 3 |
| E. T. Bloomfield | 2,144 | 11 | 2 | 2,113 | 5 | 6 | 2,077 | 15 | 11 |
| Wilkinson Brothers | 2,082 | 0 | 0 | 2,037 | 9 | 0 | 2,030 | 0 | 0 |
| M. S. Kitteringham | 1,945 | 10 | 2 | 1,895 | 3 | 2 | 1,869 | 19 | 8 |
| R. Ballard, Limited | 1,924 | 4 | 10 | 1,884 | 11 | 4 | 1,855 | 15 | 4 |
| A. T. Catley | 1,870 | 0 | 0 | 1,985 | 0 | 0 | 1,840 | 0 | 0 |
| Clift Ford | 1,851 | 0 | 0 | 1,821 | 0 | 0 | 1,792 | 0 | 0 |
| T. Adams, Green Lanes, Wood Green, N.* | 1,798 | 11 | 4 | 1,730 | 1 | 10 | 1,700 | 13 | 8 |
| F. H. White & Co. | 1,511 | 18 | 6 | 1,490 | 16 | 7 | 1,466 | 16 | 1 |

* Accepted.

LONDON.—For new lavatory and alterations to Infirmary, St. George's-in-the-East, for the Guardians. Mr. Wilson, architect:—

| | |
|---|---|
| Vigor | £485 |
| Calnan & Co. | 475 |
| Hearle & Farrow | 463 |
| Darby | 453 |
| Wall & Co. | £435 |
| J. Appleby | 427 |
| Gibbs | 419 |

LONDON.—For additions, &c., to Ratcliffe Workhouse, Salmon lane, for the Stepney Union Guardians. Mr. R. Banks Martin, architect, 103, Plashet-grove, East Ham:—

| | |
|---|---|
| J. G. Horlock | £945 |
| A. Porter | 838 |
| C. Lawrence | 830 |
| T. Willson | 830 |
| W. Stuttle & Son | £807 |
| Gregory & Co. | 797 |
| H. Wall & Co.* | 707 |
| General Builders, Limited | 700 |

* Accepted.

LONDON.—For the erection of St. Mary's Parochial Building, Tottenham, London, N. Messrs. J. E. K. & J. P. Cutts, architects, Southampton-street, Strand:—

| | |
|---|---|
| Bright & Son | £3,995 |
| Humphreys & Son | 3,950 |
| James Stewart | 3,831 |
| Cornish & Gaymer | 3,784 |
| A. Porter | £3,725 |
| S. J. Scott | 3,720 |
| Green & Boxall | 3,680 |

LONDON.—For alterations to the "Duke of York," Downham-road, Kingsland, for Mr. F. Coucher. Mr. Edward Brown, architect, Commercial-street, Bishopsgate:—

| | | | |
|---|---|---|---|
| J. V. Kiddle & Son | £834 | 0 | 0 |
| G. Newton | 814 | 4 | 10 |
| J. & W. T. Inkpen | 770 | 0 | 0 |
| W. Laurence | £475 | 0 | 0 |
| R. Preston | 465 | 0 | 0 |

*Gasfitting.*

| | | |
|---|---|---|
| Vaughan & Brown | £135 | 0 |
| Dupuy, Pottier, & Adams | 132 | 15 |
| J. Steadman | £105 | 0 |

LONDON.—For constructing roads, sewers, and drains at Heathville-road, Crouch Hill, N. Messrs. Wootton & Green, auctioneers, surveyors, and valuers, 36, Gracechurch-street, E.C.:—

| | No. 1. | | | No. 2. | | |
|---|---|---|---|---|---|---|
| Wm. Griffiths | £801 | 14 | 6 | £114 | 12 | 8 |
| E. Rogers & Co. | 689 | 0 | 0 | 115 | 0 | 0 |
| P. A. Jackson & Son | 685 | 15 | 0 | 109 | 12 | 0 |
| J. A. Dunmore | 678 | 3 | 0 | 112 | 7 | 8 |
| Thos. Adams | 676 | 0 | 0 | 111 | 0 | 0 |
| C. W. Killingback & Co. | 670 | 0 | 0 | 109 | 0 | 0 |

LONDON.—For erecting shops and flats, No. 54, Goodge-street, W., for Messrs. W. & A. Curnick. Messrs. White & Page, architects. Quantities by Messrs. Northcroft, Son & Neighbour:—

| | | |
|---|---|---|
| Higgs & Hill | £3,580 | 0 |
| Simpson and Sons | 3,547 | 0 |
| Patman & Fotheringham | 3,441 | 0 |
| E. Lawrence & Sons | 3,157 | 0 |
| Bywaters & Sons | 3,101 | 0 |
| H. Wall & Co. | £3,069 | 0 |
| J. Smith & Sons | 3,055 | 0 |
| Barrett & Power | 3,013 | 0 |
| J. Lidstone & Son | 2,073 | 10 |
| F. T. Chinchen* | 2,694 | 0 |

* Accepted.

LONDON.—Accepted for addition to Battersea Laundry, for Messrs. Spiers & Pond:—

| | |
|---|---|
| Kirk & Kirk, Westminster | £769 |

LONDON.—For the construction and completion of the new street from Fenchurch-street to Crutched Friars, to be called Lloyd's-avenue, for the Corporation of London:—

| | |
|---|---|
| Pedrette | £18,462 ! |
| Jackson | 13,970 |
| Ford & Co. | 12,690 |
| Minter | 12,339 |
| Killingback | £12,317 |
| Dolman | 12,140 |
| Mowlem | 8,980 ! |

LONDON.—Accepted for works at the Northern Hospital, for the Metropolitan Asylums Board :—

*Section 1.—Switchboards, Booster, and Connexions.*

Cox-Walkers, Darlington.......................£463 10
Consulting Engineers' Estimate, £600.

*Section 2.—Battery.*

Hart Accumulator Co., Ltd., Stratford ..£318 12 £15 4*
Consulting Engineers' Estimate, £400.

*Section 3—Electrical Mains.*

Callender's Cable and Construction Co., Ltd., Cannon-street, E.C.......................£773 1 6
Consulting Engineers' Estimate, £1,100.

*Section 4—Steam Exhaust Feed and Drain Pipes.*

R. Taylor & Sons, Marsden, Yorks ..................£840
Consulting Engineers' Estimate, £400.

*Section 5.—Wiring and Fittings.*

G. Weston & Co., Fenchurch-street, E.C.............£2,875
Consulting Engineers' Estimate, £2,850.

* Annual Maintenance for five years.

LONDON.—Accepted for general repairs to 130 houses in the district of St. Luke's. Mr. George Hubbard, architect :—

J. W. Heeps ..................................£1,981

NORMANTON-BY-DERBY.—For additions to school buildings, for the School Board. Messrs. Naylor & Sale, architects, Irongate, Derby :—

| | | | |
|---|---|---|---|
| King & Harrison | £1,831 9 0 | A. B. Clarke | £1,700 0 0 |
| Alfred Smith | 1,790 0 0 | George Wagg, Normanton, Derby* | 1,675 15 6 |
| J. Parker & Son | 1,784 15 0 | Henry Jordan | 1,670 14 11½ |
| J. T. Tomlinson & Co. | 1,770 0 0 | H. J. Robinson | 1,650 0 0 |

* Accepted.

PAUL (Cornwall).—For additions to schools, Churchtown, for the School Board :—

*Masonry and Plumbing.*

Charles Tregensa, Mousehole, near Penzance....£181 19

*Carpentering.*

Thos. J. Harvey, Newlyn, near Penzance ...... 91 0

272 19

PETERBOROUGH.—For the erection of two villas and studio, Park-road, Peterborough, for Mr. Robert Christian. Mr. J. G. Stallebrass, architect, North-street, Peterborough. Quantities by architect :—

| | | | |
|---|---|---|---|
| D. Gray | £1,252 | Sibley Bros. | £1,195 |
| Watson & Lucas | 1,220 | G. Nichols | 1,160 |
| S. Hipwell & Co. | 1,215 | J. Guttridge (accepted) | 1,135 |
| R. J. Nichols | 1,200 | G. Brown | 1,125 |

[Proprietor to provide heating apparatus, grates, locks, &c.].

PICKERING.—Accepted for the execution of water-supply works, Crofton, for the Rural District Council. Mr. J. E. Parker, engineer, Post Office Chambers, Newcastle-on-Tyne :—

Charles Firth, 5, Oak-road, Scarborough..............£1,450
[Twelve tenders received.]

PINNER.—For erecting nine villas at Pinner, for Mr. F. D. Thomas. Mr. T. S. Stephens, architect, 28, Conningham-road, Shepherd's Bush :—

| | | | |
|---|---|---|---|
| I. Parker | £6,010 | A. Wright | £5,290 |
| H. J. Crooks* | 5,400 | | |

* Accepted.

ROCHESTER.—For the erection of a fire-escape station, Station-road, Strood, for the Corporation. Mr. W. Banks, C. E., Guildhall, Rochester :—

| | | | |
|---|---|---|---|
| T. G. Sandford, Jun. | £154 | W. Coker, Halling, Rochester (accepted) | £137 |

SHORTLANDS.—For erecting a residence at Shortlands, Kent, for Mr. J. A. Kurtz. Messrs. Crickmay & Zimmermann, architects, 4, Mincing-lane, E.C. :—

| | | | |
|---|---|---|---|
| Beer & Gash | £1,700 | Kirk & Kirk, Westminster* | £1,600 |
| Duthoit | 1,650 | | |

* Accepted.

SOUTHAMPTON.—For the construction of sewage tanks, &c., for the Corporation. Mr. W. B. G. Bennett, C.E., Borough Engineer, Municipal Offices, Southampton :—

| | | | |
|---|---|---|---|
| B. Cooke & Co. | £6,715 | Roe & Grace | £5,995 |
| G. Bell | 6,491 | Playfair & Toole, Southampton* | 5,870 |
| H. W. Bull | 6,106 | H. C. Dovet | 5,430 |
| Jenkins & Sons | 6,099 | | |

* Accepted. † Informal.

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SURBITON.—For the construction of sewers, Minnie Dale, for the Urban District Council. Mr. S. Mather, C.E., Victoria-road, Surbiton :—

| | | | |
|---|---|---|---|
| R. T. Burnell | £827 14 0 | S. Kavanagh | £510 4 4 |
| C. W. Killingback & Co. | 557 0 0 | S. Atkins, Kingston-on-Thames* | 482 0 0 |

* Accepted.

SUTTON.—For the erection of a house, &c., at Belmont, for Mr. Malcolm Ross. Mr. W. Culling Gaze, architect, 2, Walbrook, E.C. Quantities by the architect :—

| | | | |
|---|---|---|---|
| S. Page | £2,038 6 6 | W. Potter | £1,551 |
| H. Clark | 1,574 0 0 | E. J. Burnand | 1,485 |
| J. B. Potter | 1,566 0 0 | F. S. Shopland | 1,387 |

WALLINGFORD (Berks).—For the erection of a residence, Shillingford, for Mr. Jas. Mitchell. Mr. S. Johns, architect, Wallingford :—

| | | | |
|---|---|---|---|
| C. J. Goodchild | £4,488 0 | Brasher & Sons, Wallingford* | £1,850 10 |
| A. I. Carley | 1,960 0 | | |
| E. Holly | 1,895 10 | | |

* Accepted. Also accepted for boundary walls, deep well and fittings.

WATERVILLE (co. Kerry).—For the erection of a cable station, offices, &c., for the Commercial Cable Company. Mr. J. F. Fuller, architect, Brunswick Chambers, Dublin :—

*For station only. Dwellings for officials postponed.*

| | | | |
|---|---|---|---|
| D. Foley | £5,450 0 0 | S. Hill, Cork* | £4,349 0 0 |
| Collen Bros. | 5,050 0 0 | Jones | 4,317 0 0 |
| Hemmingway | 4,472 2 2 | Healey | 4,296 16 8 |

* Accepted.

WHICKHAM (Durham).—For the construction of sewers, &c., Asylum-lane, Dunston, for the Urban District Council. Mr. J. P. Spencer, C.E., 13, Grainger-street West, Newcastle-upon-Tyne :—

| | | | |
|---|---|---|---|
| W. Craig | £437 11 3 | A. Noble | £386 15 0 |
| G. E. Simpson | 393 2 0 | J. Thompson, Gosforth* | 341 7 0 |

* Accepted.

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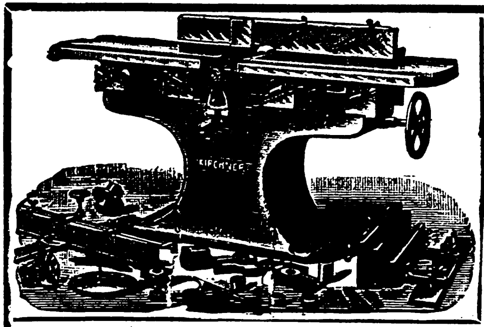

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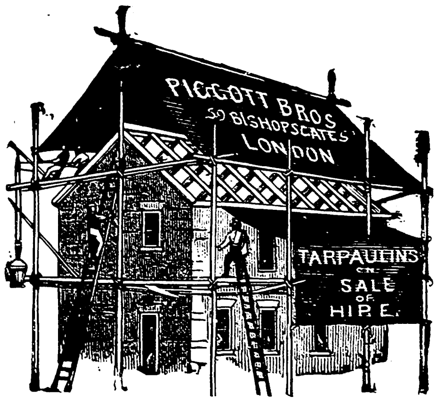

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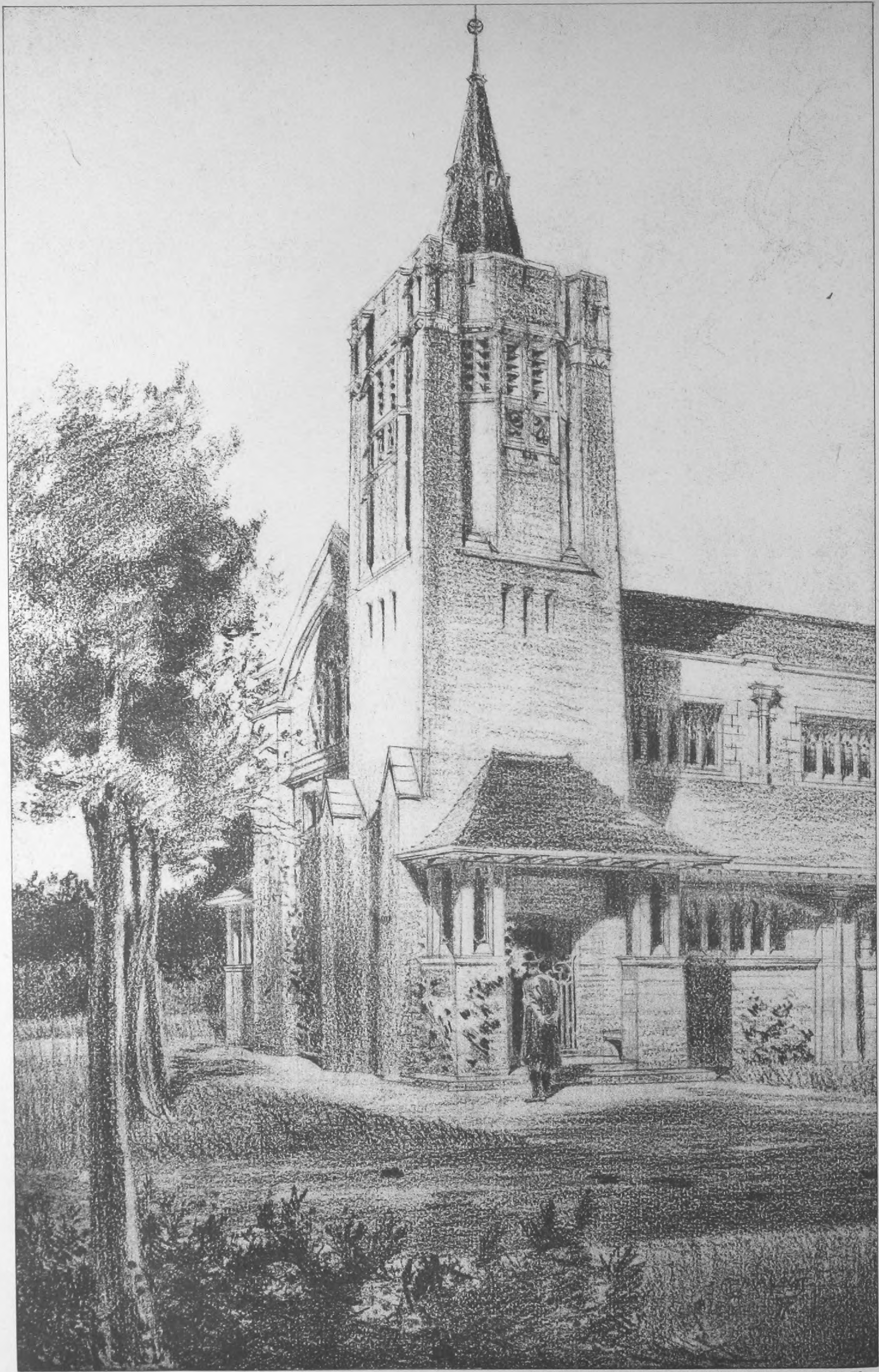

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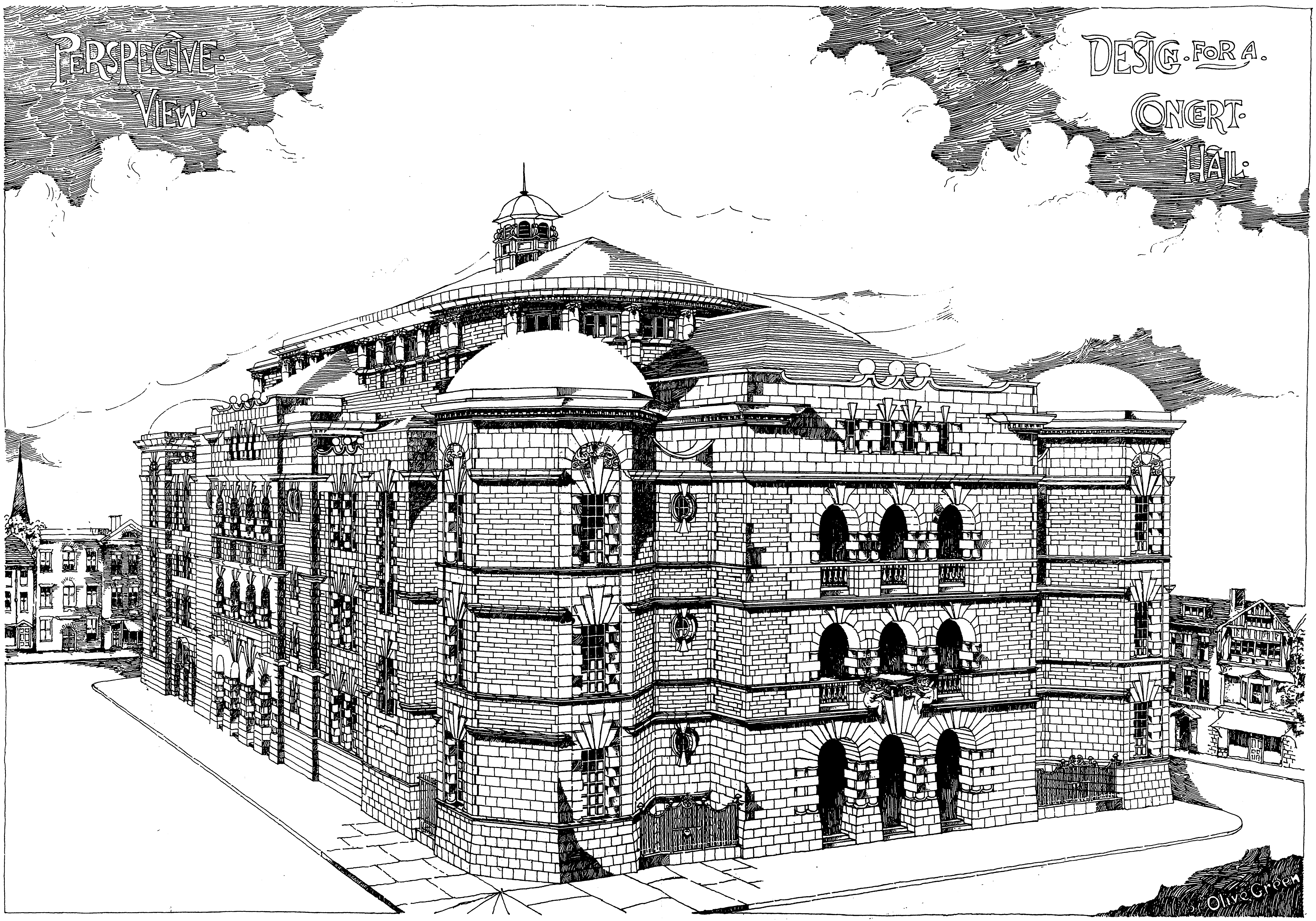
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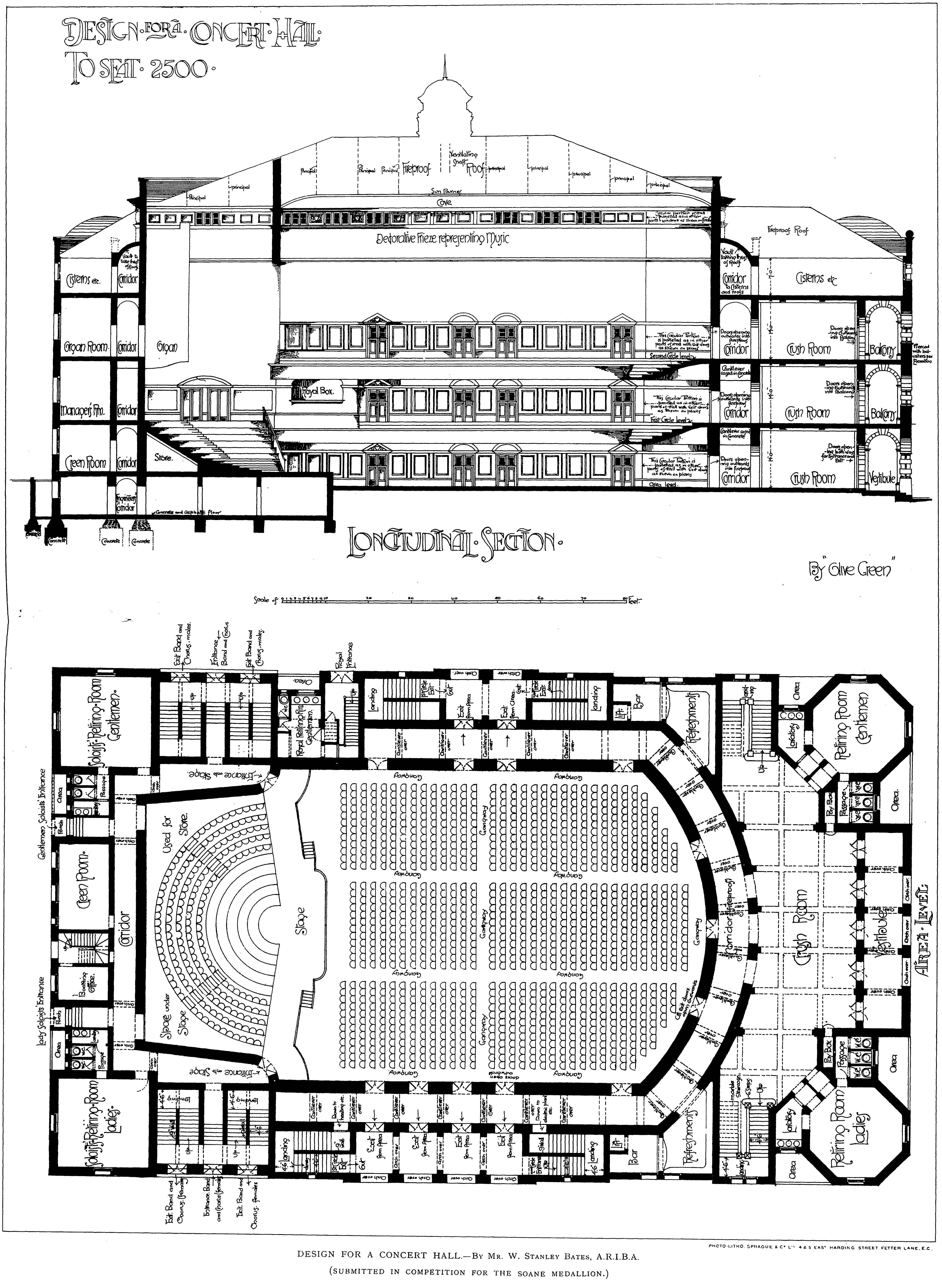
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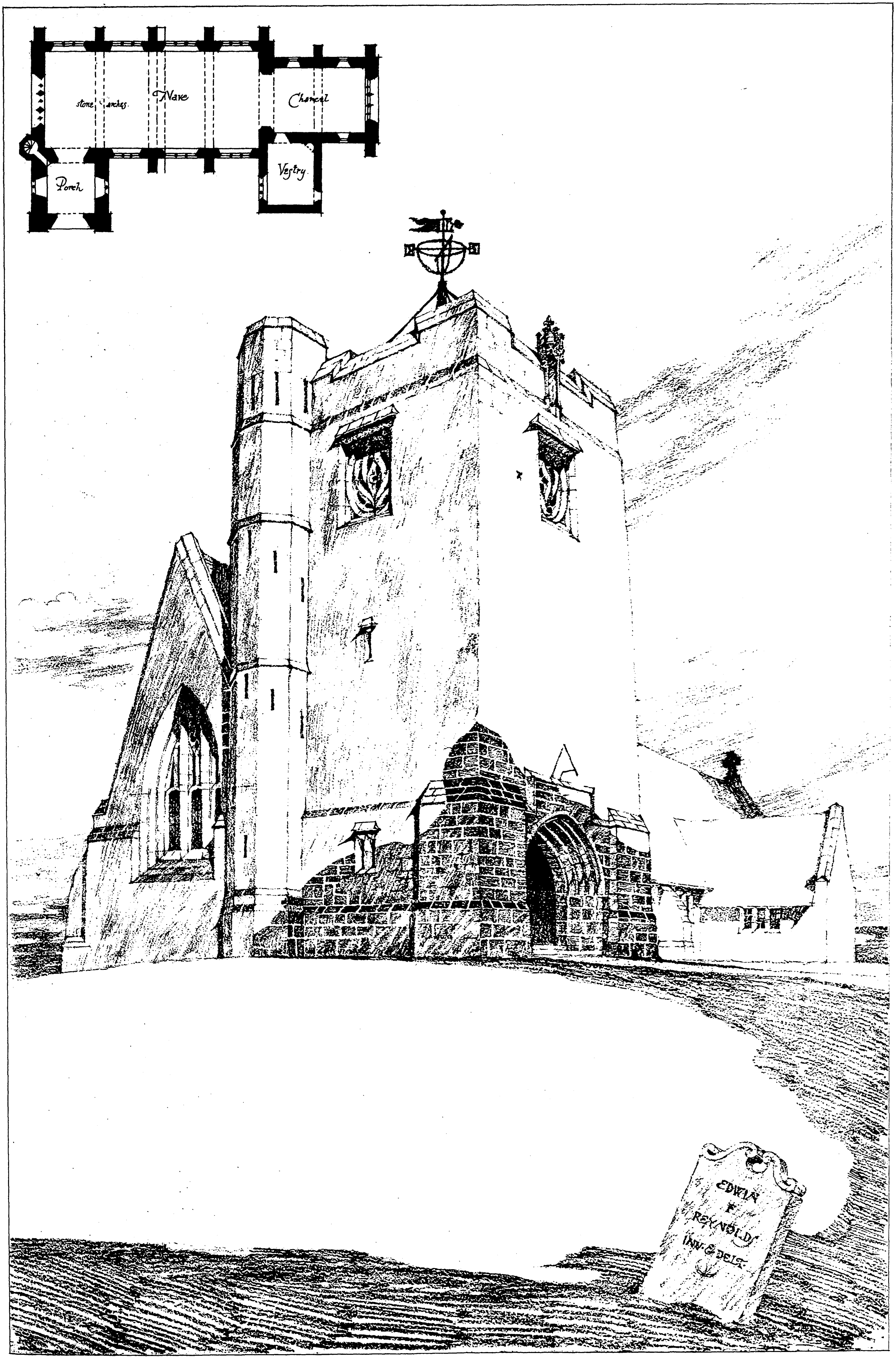
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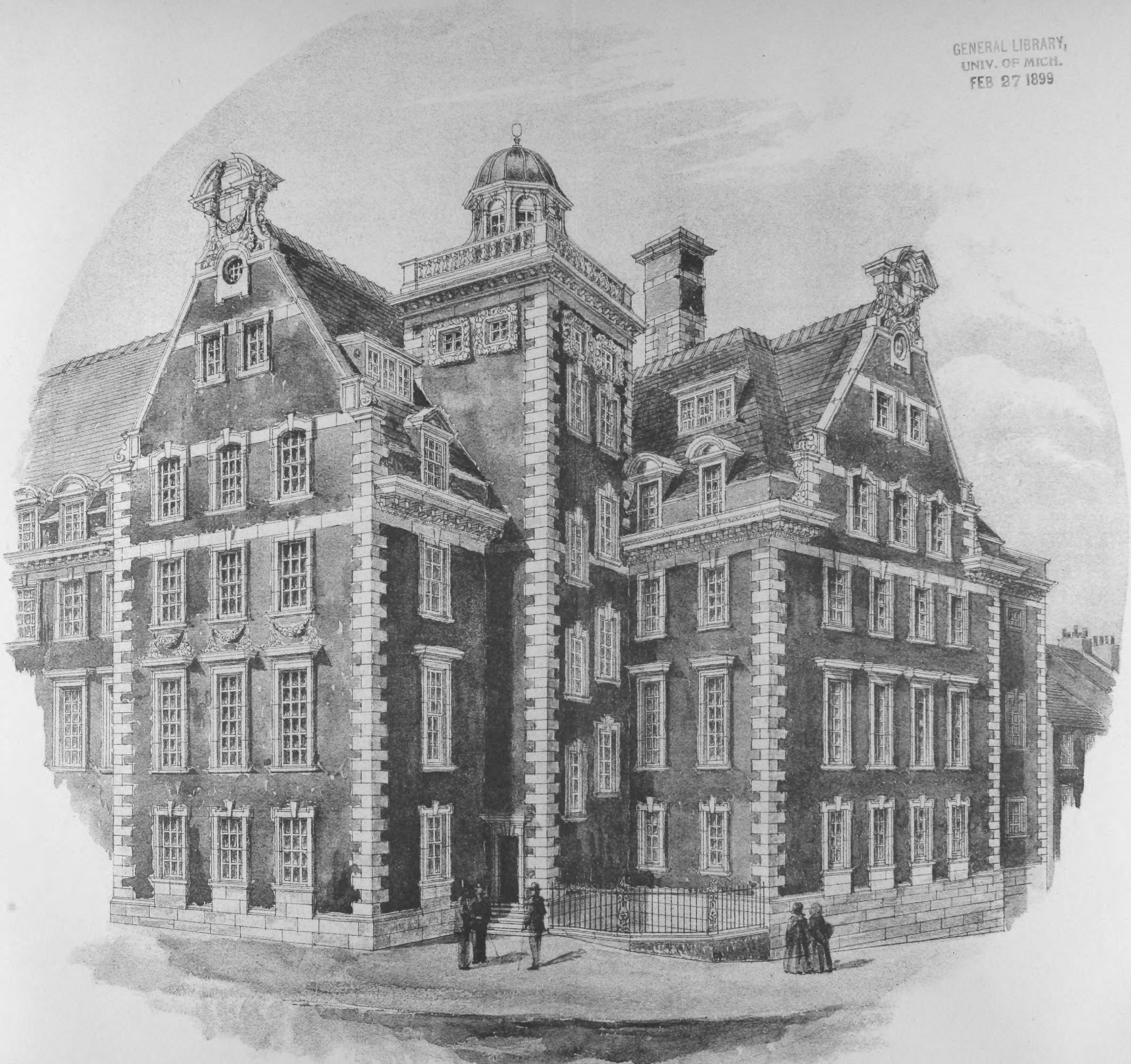

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# The Builder.

VOL. LXXVI. No. 2925.

FEBRUARY 25, 1899.

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Church of St. Aidan, Walton-le-Dale.—Mr. A. H. Skipworth, Architect ........................................Single Page Ink-Photo.
Monument to the Late Bishop Durnford in Chichester Cathedral.—Mr. Thomas Garner, Architect........................................Single Page Ink-Photo.

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### *The Discussion of the District Surveyor.*

THE discussion which has been carried on at considerable length in reference to a paper read in December at the Surveyors' Institution, on the "London Building Act and the Official Supervision of Buildings," has shown that very few of those who took part in it were converted to the views propounded by Mr. Weaver in the paper reported in our issue of December 17; and we are certainly not among those few. It does not appear to us, in fact, that the real object of the paper was quite accurately set forth in the title given to it. To those who read between the lines it must have been pretty evident that the paper was really an attack on the efficiency of District Surveyors and the logical *raison d'être* of their office, written with a view to the impending Bill for the organisation of municipal districts, and with the object of laying the foundation for a claim for the abolition of the district surveyor, as an official responsible to the central municipal body, and the decentralisation of the duties appertaining to the office, in order to get these duties transferred, for each new municipal district, to an official responsible only to the local body.

We can imagine nothing worse for the building government of London. It is to be hoped, no doubt, that the new municipal councils, if formed, would be somewhat superior bodies to most of the existing vestries; with somewhat more of public spirit and somewhat less addicted to the encompassing of private ends. But they would nevertheless be almost certain to be composed of persons having large interests in house property and other building property in the district they represented. It is almost impossible to suppose that their line of action would not be more or less influenced by this fact—even (at the best) without their being quite aware of it themselves. And in the event of the abolition of the present office of district surveyor responsible to the central authority, which is evidently aimed at in Mr. Weaver's paper, and the imposition of his duties on the surveyor of the local authority, the result would be that the whole supervision of London building would be in the hands of a number of officials with separate and limited responsibility, in the pay of the very persons whose property they would in many cases be supervising, and liable to dismissal at the instance of those persons. Such an arrangement would be laying the foundation, at all events offering the temptation, for a great deal of uneven dealing with building property; it would give the opportunity, at all events, of putting private before public interests; and it is hardly to be supposed that such opportunities would never be made use of. Under the present system the district surveyor is a perfectly independent official, who can carry out his duties with reference to buildings in his district without any regard to the personal interests of the building-owner or to the effect of any possible animus of the latter against him for the execution of his duty; for even if the building-owner happened to be a member of the London County Council, one person in such a body would have no such influence as would enable him to get the surveyor under his thumb, or to make any kind of retaliation against him for an inconvenient exercise of his powers.

That it is most important that this practical independence of the district surveyor should be maintained must be obvious enough to any rational and unprejudiced person. But it is also important on structural and architectural grounds that the supervision of London buildings should be in the hands of the officials of a central authority. In whatever way London may, for the convenience of some kinds of administration, be divided up under local authorities, it is in an architectural sense one city; and it would be most undesirable that such points as the alignment of street frontages, the thickness of walls for various purposes, and many other matters of the same kind, should be liable to be dealt with on a different basis in each district. In these respects what is good for one district is good for the whole of London.

We cannot feel the least surprised at a certain amount of strong feeling displayed by some of the district surveyors who took part in the discussion of the paper referred to; on the contrary, we feel inclined to share it. The paper was essentially an attack on the London district surveyors, and a foolish and invidious one, even down to the final shot in Mr. Weaver's reply, in which he intimated that he could not expect much support from a body from whom he was proposing to take away their income. There is a good deal more in it than that. The innuendos made against the district surveyors were uncalled for and perfectly absurd. No body of men could be found who, as a whole, have done their work better and more conscientiously than the district surveyors of London. Nor do we in the least agree with the theory that they ought to be debarred from private practice. On the contrary, we consider that when the London County Council adopted that regulation, which in the course of circumstance has only very partially come into force yet, they made a decided mistake. We do not say that those who have been appointed since that regulation came into force have not fully performed their duty. But it stands to reason that the ultimate result of that rule, if it is maintained, must be that a class of men will be candidates who are not equal to the general level of those who came forward for the office when it was simply an appendage to ordinary architectural practice; and this must in the long run be a disadvantage. It is important that the district surveyor should be an all-round architect, not a mere official surveyor. Such a man is likely to have wider experience and knowledge, and to be more independent of any kind of interference with his duties, than one who is an official surveyor and nothing more; and our advice would be that the County Council should give up that requirement and return to the old system of appointment, under which they could have, and had, the service of eminent architects. Nor can we see the slightest reason to interfere with the system of payment of the surveyors by fees from the defaulting parties. It is a perfectly logical system, and it is far more fitting that the payment should come out of the pockets of those who have made the defaults which have rendered the intervention of the surveyor necessary, than that it should come out of the pockets of ratepayers who are entirely innocent of and unconnected with the breaches of rule which the surveyor is appointed to prevent.

The one point made by Mr. Weaver was as to the inconvenience of the dual control whereby matters of structure are under the jurisdiction of the district surveyor and those of sanitation (or a portion of them) under that of the vestry surveyor. This has resulted, he affirms—and no doubt it may result—in the approval of a plan by the district surveyor in which it was afterwards found that the position of the water-closets was disapproved by the vestry surveyor, as the official authority on this point. That is an inconvenience from which a builder or building-owner may suffer if he is not aware of the dual control, though it may be said that it is his business to be aware of it; and it is an inconvenience in any case to have to submit plans to two officials instead of one. But we should suggest a solution of the difficulty exactly contrary to that suggested by Mr. Weaver. The true course would be to put the drains and sanitary arrangements, everything in short connected with the construction of the building, into the hands of the district surveyor also. The reply of course will be that different parishes are under different circumstances as to drainage and water supply. As to the latter they cannot at present help themselves; but as to the former, it is a question whether drainage and sanitary regulations ought not to be under the same conditions all over London, and whether it is well for parish vestries, or their proposed successors, to have a special control of their own in these matters. But even if things are left *in statu quo* in this respect, the inconveniences of the dual control are a minor matter compared with the disadvantages which would be certain to result from taking the general jurisdiction over building in London out of the hands of the independent officials of a central body, and putting it into the hands of more or less dependent local officials. If such a step as that is taken, the public will unquestionably have cause to regret it.

## THE REFORM OF LOCAL TAXATION.

IN 1896 a Royal Commission was appointed "to inquire into the present system under which taxation is raised for local purposes, and report whether all kinds of real and personal property contribute equitably to such taxation and, if not, what alterations in the law are desirable in order to secure that result." This Commission has now just issued two interim reports of great interest and value. One is concerned with the rating of tithes (with which we do not now deal), the other is on the question of the valuation of property for rating purposes. Every day this question is becoming more important; the tendency of things is to throw greater burdens on ratepayers, hence the basis on which payments have to be made is an essential to a fair system of taxation.

Broadly speaking, this report has two divisions. The first contains a sketch of the history of the subject from an early period, and summarises the various suggestions which have been made for alterations in the system of valuation. The second part contains recommendations for the future, which are now made so that legislation may follow as speedily as may be.

At the present time nothing is more striking than the extraordinary confusion and want of system in regard to valuations—a want of system characteristic of English polity, but none the less injurious and unfair in its results. Two valuations of the same property may be made for the purpose of raising Imperial taxes, namely, one for the Income Tax and one for the Land Tax; and in addition three valuations may be made for the purpose of raising local rates, namely, one for the Poor Rate, one for the County Rate, and one for the Borough Rate.

In London, affairs are in a more business-like state, for the quinquennial valuation under the Valuation (Metropolis) Act, 1869, is the basis not only for Imperial taxes, but for the several local taxes—the county rate, the police rate, the church, highway, and every other rate.

The want of symmetry in London is therefore shown not in regard to the basis of valuation, but in connexion with the bodies by whom it is made; though here, again, things are in a far better state than in extra-Metropolitan districts. "In the County of London there are sixteen unions in which the Guardians appoint the Assessment Committees under the Union Assessment Committee Act, 1862, and fourteen separate parishes in which either the Guardians or the Vestry elect the Committee." There is, therefore, from a practical point of view nothing very serious to be urged against the state of affairs in London, and we are inclined to agree with Mr. Cripps that there is no present need for any alterations, since, to quote from his reservation, "uniformity in the assessment of rateable property in the Metropolis has been substantially secured."

When we come to the recommendations of the Commission we find an attempt made to secure greater uniformity. An obvious beginning—the only reasonable basis—is "that there should be one Valuation Authority in each county, and the Valuation List of that Authority should be the basis on which rates and taxes for all purposes should be raised." This, of course, is on paper a simple remedy for the present state of things. It is obvious, however, that local knowledge cannot be dispensed with, and therefore there follows a secondary recommendation that the Valuation Authority, which in a county shall consist of members appointed by the County Council and by the Councils of Boroughs, and in a borough of members appointed by the Council, shall have power to divide the area into convenient districts. "In each district a committee shall be appointed composed of members of the Valuation Authority and of representatives of Boards of Guardians, Borough Councils, and Urban District Councils." No doubt the subject is one difficult of solution, but the duplication of valuation authorities seems to be undesirable. What may be termed the District Authority will—it seems to us—be the real authority, and the Valuation Authority little more than a local court of appeal. For it is proposed that the Valuation Authority shall hear any objections to the assessment of ratepayers by the Local Authority and that, if necessary, there shall be a further appeal to Quarter Sessions. No doubt local knowledge is usually considered necessary for the preparation of the valuation lists, but this knowledge will, if the recommendations of the Commission are carried out, be less necessary in the future. For one important suggestion is "that the valuation list should be prepared, whenever practicable, by professional surveyors." This recommendation, if carried out generally, would have at any rate the result of adding largely to the general income of a very able body of professional men. On the other hand, in country districts a professional valuer is often less capable of gauging the real value of a house than the local member of the Assessment Committee. Where there are buildings used for commercial purposes, railways, or large mansions, no doubt the professional valuer is far more capable than any one else of arriving at a sound value.

But if there are to be professional valuers for each valuation, one thing is certainly essential. They should be paid by a salary and not by a commission on the valuation. The tendency of the professional valuer is to rate property highly; he is inclined, as it were, to favour his clients the rating authority. Hence also we may fairly expect that professional valuations will have a tendency to increase ligitation. There is nothing more calculated to raise the fighting instinct in the British householder than the idea that he is overrated. On the whole it appears that this recommendation is undesirable, and that each Valuation Authority should be left to decide for itself if a professional valuer's services are required, and over what area.

There are two other recommendations of considerable importance to which attention must also be given. One is "that legislation should provide for a maximum scale of deductions," the other "that legislation should provide for compulsory returns from owners and occupiers of rent paid and other particulars." That the latter recommendation should be incorporated in an Act of Parliament we cannot doubt, for at present valuations are often made much in the dark. The fullest particulars are desirable if a sound judgment as to the value of a property is to be formed. There is no doubt that at present many valuations of dwelling houses in rural districts are haphazard proceedings, and it is desirable that this should be put an end to as speedily as possible.

Various recommendations deal with the collection of the rates; no doubt this part of the matter is also capable of great improvement. But most persons mind little how the rates are collected; what they care for is the basis on which they are levied.

There cannot, we think, be any difficulty in legislation on the lines of these recommendations, for they appear to be entirely in accord with the views of all the witnesses who have given evidence before the Commission. "They (the witnesses) have agreed, and we entirely concur in their opinion, that these conditions (uniformity, equality, simplicity, and economy) are greatly wanting under the systems which now exist in the different valuation Bills throughout the country outside the Metropolis, though there is some difference of opinion as to the precise mode by which such conditions should be secured. A general opinion has been expressed by most of the witnesses in a number of resolutions, which have been forwarded to us by public bodies, that it is desirable to have one valuation authority and one system of arriving at valuations for the whole rating area over which common taxes are raised; that upon such valuation all rates and taxes, both for local and Imperial purposes, should be charged and levied; and, further, that if possible provision should be made to obtain uniformity in valuation throughout the whole country." This is the key-note to the recommendations which have been made by the Commission, some of which we have set out verbatim, while of others we have given the substance. Any legislation on these lines will be the end of a long series of changes, dating from a very early period, some of which are of historical interest. Thus, so late as 1795, it was held that stock-in-trade was liable to be assessed, even "without evidence of usage." It is difficult to imagine the feelings of a large contractor at the present day if he had to pay rates on his stock-in-trade. But it was not till 1840 that the Legislature finally decided that stock-in-trade was not rateable.

Again, as the Commission point out, "the difficulties of applying the principle of rental value to certain classes of properties and commercial and industrial undertakings are apparent, and particularly the difficulty of estimating the rental in each parish of properties extending over a number of parishes, such as railway lines and stations, tramways, waterworks and water mains, gas works and gas mains, docks, electric light installations, and telephones." Here, of course, comes in the desirability, nay, in some places, the necessity, of professional assistance in making the valuation; and the still greater desirability of having one uniform valuation for all taxes, so that commercial undertakings shall be valued and rated on a uniform basis. If this is done it will be an immense convenience to business men. Moreover, it is possible that a better system of valuation may prevent, in some districts, the need for heavier rates. A better system of valuation would probably result in a generally higher level of valuation.

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## NOTES.

**Architecture at the Royal Academy.**

WE understand that there is to be an initiation of a new principle this year in the admission of drawings for the Architectural Room at the Royal Academy. In the first place, original designs only are to be admitted; drawings of ancient work will be excluded. This of course is what the Architectural Room is primarily intended for; and though picturesque representations of ancient work are often among the best of the exhibits, their proper place would rather be in the Water-colour or Black-and-white Rooms. We presume, however, that studies for the restoration of ancient buildings would be considered in a different light, as they are really architectural studies and not mere representations of fact. There ought to be some understanding about this. Otherwise, we welcome the announcement, especially considering the small size of the Architectural Room; and we hope that one result will be the further encouragement of adequate plans of buildings, as well as elevations and perspectives, as at Paris. Another change that is to be looked for is that exhibits offered by firms employing artists will not be admissible under the name of the firm, but only under the name of the actual designer. This is an admirable and most wholesome innovation if it can be carried out; but "Quis custodiet"? Who is to know always by whom a design was actually made?

**Proposed Legislation.**

THE characteristic of the present Government is want of courage in its domestic legislation. It is clear from the statement of the Duke of Devonshire in the House of Lords at the beginning of the week, that the subject of secondary education is to be dealt with in a functional fashion, and that the Government have not quite made up their minds about it. The Bill which Mr. Chaplin introduced on Monday upon the water question, in regard to intercommunication between the systems of the different companies, is a fragmentary measure. It shows that the Government have no fixed policy in regard to the water supply of London, and that they are content to go on bit by bit, letting the question drift. It is noticeable, however, that in this Bill Government interference with the water companies appears to be more marked than heretofore. It may be that things are tending towards the handing over of the water supply of London to the State. London is so different in its conditions from the provincial cities—it is such a huge, complex place that it may be that the solution of this question, which would be most in the interest of the Metropolis, would be to make the water supply of London an Imperial matter, just as the police now is.

**Workmen's Compensation Again.**

EVERY week adds to the novel points brought forward, and to the singular decisions arrived at, in connexion with the new Act. Judgment was given at Newport last week in a case which was decidedly peculiar both as to the circumstances and the award. A ganger employed by a firm of railway contractors was killed by an express train whilst walking to work. It was stated that he had been ordered not to walk on the main line, and had been recommended a safe route. Nevertheless, the judge held that as the accident arose "out of, or in course of," his employment, the representatives of the deceased were entitled to compensation, and awarded them 250*l.* Now, many workmen habitually take "short cuts" to work along or across railway lines—sometimes with the knowledge and consent of the railway company and their employers, often without. They would, however, scarcely be justified in regarding this decision as ensuring them compensation in the event of a similar accident, although it is quite possible that the attempt would be made. The railway companies never grant a person a free "walking pass" without requiring a written indemnity; and without the pass he would, of course, be a trespasser. The case in question would be on a different footing in this respect, the deceased man being employed on the railway company's own works.

**The Manchester Ship Canal.**

THE twenty-seventh ordinary meeting of the Manchester Ship Canal Company was held on Thursday, the 16th inst., and considerable jubilation was shown on account of the continued progress of the undertaking. The net earnings for the half-year amounted to 61,000*l.*, an increase of nearly 50 per cent. over the earnings for the corresponding period of the previous year. After paying the interest on the debentures, the sum of 16,270*l.* was available for interest on the loan from the Corporation of Manchester; this is only a small portion of what is due to the Corporation, but if the present progress is maintained it will not be long before the Corporation's interest in the Canal is a valuable asset. The timber trade showed a slight falling off in 1898, the total for that year being 213,000 tons, while the total for 1897 was 223,000 tons; in 1896, the amount was 180,000 tons, and in 1895 only 94,000. The chairman stated that a similar decrease in 1898 had taken place at most of the ports of the country, but the directors believed that this year they would get as much timber as in 1897, and possibly more. We hope that this is an accurate forecast, as it speaks well for a continuance of activity among architects and builders.

**Royal Insurance Company's Rules.**

THE new rules of the Royal Insurance Company for electrical installations are deserving of special notice, as they are remarkably well arranged, and contain several innovations. Rules are generally dreary reading, but these are enlivened by illustrations showing specimen types of enclosed motors, sketches of motor-regulating switches, new systems of lamp wiring, &c., which will prove helpful and suggestive to both electricians and consumers. There are some very stringent clauses respecting the working of dynamos and motors in factories and places where inflammable materials are used, but we are glad to see that no dogmatic assertions are made about the necessity, or otherwise, of earthing the machines. In our opinion, the rule of the Institution of Electrical Engineers, which insists on the necessity of having motors well insulated from earth, is of doubtful advantage from a fire risk point of view; and where high voltages are employed it is objectionable, as the attendant is very apt to get severe shocks from it. The advice to have no single circuit from a distributing centre greater than that required to carry a current of five amperes is good, as it avoids the necessity of branch cut-outs, and keeps them all on the distributing-board. We would suggest that a simpler rule should be given for the sizes of conductors. It is absurd to say that a 19/14 cable must not carry more than 97·3 amperes for lamps and not more than 77·8 for motors. The insulation test is good, being the first one we have come across which demands not only the measurement of the resistance between the mains, but the insulation resistance of each main to earth. Some years ago we pointed out the necessity of doing this, and gave a simple method of making these measurements, which has been adopted by many leading electricians.

**The Spelling of "Siphon."**

IT is the common though not invariable habit, in architectural books and other publications, to spell this word "syphon." How the mistake arose we know not; probably from some idea that it looked better so. It is wrong, however, and falsifies the origin of the word, which is simply the Greek *σίφων*, signifying a hollow reed or tube. *y* in Latin and English is the correlative of the Greek *u* (*v*); the letter *i* in Greek remains unaltered in Latin and English, except for the dot over it. *Siphon* is therefore the correct spelling, and ought to take the place of the unauthorised "syphon."

**Condition of Swinton and Pendlebury.**

DR. THEODORE THOMSON'S Report to the Local Government Board on the persistence of enteric fever in the Swinton and Pendlebury Urban District, and on the sanitary circumstances and administration of the district, states that the houses in the district are mostly two-storied brick buildings, in the main in fair condition, although there would seem to have been in the past a good deal of "jerry" building in the district, with the result that not a few houses of apparently good exterior are damp, and also admit rain through defective roofs. The condition of house and court-yards leaves much to be desired. Many are paved with cobbles, which allow accumulation of filth between their interstices, and others are unpaved. Many are in a very dirty condition, owing to vegetable and other objectionable refuse cast on the yard surface. The chief method of disposal of excrement and house-refuse is the privy-midden system, the middens being usually capacious structures, capable of containing the excrement and refuse of three or four dwellings contributed during several months; and into these receptacles are also cast ashes, vegetable refuse of all sorts, and not uncommonly animal refuse also. They are usually offensive nuisances. For the most part they are cleansed once every two or three months, although in many instances a longer period than this elapses. The houses drain to sewers which are for the most part of earthenware pipes, jointed in some instances with clay, in other instances with cement. The water supply is good. The general conclusion is that the enteric fever is associated with the filthy conditions too often found in connexion with the surroundings of this class of dwelling in town districts. Unpaved and badly paved yards, allowing refuse, both liquid and solid, to pollute the ground; defective house and yard drains, bringing about a like result; and, above all, large privy middens containing the accumulated excreta of months, much of the more liquid part of which soaks into and fouls the neighbouring soil. "In these various ways the soil on which much of Swinton and Pendlebury stands is liable to serious fouling; and in view of the suitability of soils thus befouled as a medium for the growth and multiplication of the bacillus of enteric fever, it may well be that here is to be found an explanation of the persistence of that fever in the district."

**Electric Railways.**

MR. HOLROYD SMITH, M.I.E.E., in his paper on "Some Methods of Collecting Energy in Electric Railways," read before the Civil and Mechanical Engineers' Society last week, began by pointing out that in the earliest attempts at electric traction primary batteries were used, and that they were therefore doomed to failure. In his opinion primary and secondary batteries are not, and never could be, economical. He then gave the history of the development of the methods employed for collecting energy from the high-pressure conductor. The car wheels rolling on the conductor were tried at first, but this had to be abandoned owing to the sparking caused by dirt getting between the wheels and the conductor. Then a combination of wheel and brushes was tried, and this developed into two brushes kept pressed on each side of the conductor by means of a spring. Afterwards sliding shoes, which are able to accommodate themselves to the vibrations of the car, were used, as in the City and South London Railway, and then, as in the conduit system, the conductor was placed inside a slotted tube in which two shuttles connected by a flexible bar serve as collector. The lecturer described an ingenious arrangement which he had invented to enable the trolly wheel to press uniformly on the wire at all inclinations of the trolly pole. After the lecture there was an interesting discussion.

**New System of Electric Traction.**

AT the Institution of Electrical Engineers last week Mr. Miles Walker read a paper on "Electric Traction by Surface Contacts," with special reference to the system invented by himself and Professor Silvanus Thompson. Although many surface contact systems have been elaborated since Professors Ayrton and Perry devised the first one eighteen years ago, yet a drawback to nearly all of them is the danger that a stud may be left alive after the car has passed over it. So far as safety is concerned, this new system leaves little to be desired, and that it is thoroughly practical the smooth working of the experimental line at Willesden abundantly proves. The most serious drawback seems to be the possibility of losing contact with the high-pressure main. For example, if, owing to dirt or to a piece of paper, the skate underneath the car fails to make contact at any stud, then that stud remains dead. The momentum of the car taking it forward, the preceding stud also becomes dead. In order to make contact in the event of such an accident each car must carry a 500-volt battery, and the difficulty of keeping this battery in order is a serious consideration. This difficulty might be got over by a small rotary converter, or by so modifying the switches that they could be worked by a battery of much lower voltage. We understand that Mr. Walker has been working with considerable success in this latter direction. The switches and general design of the system are more complicated than that invented by Mr. Kingsland, which we described last year. Its safety, however, is, perhaps, greater. In the subsequent discussion several speakers spoke of the enormous leakage which took place from the studs under certain very special conditions, but this seems to us of little consequence, as practically its only effect would be to slightly increase the working expenses.

**Underground London.**

REFERENCE was made at a recent meeting of the Central London Railway Company to the obstacles, both artificial and natural, that were encountered in making some of the stations (which are twelve in all) and the tunnels.* In excavating within the area in front of the Royal Exchange the soil was found to be in a water-sodden condition, attributed to the Wall Brook, in its course from Moorfields to Lothbury, and then by Bucklersbury to Dowgate. There, too, they discovered what are described as the foundations of Gresham's Royal Exchange, and the vaults of a former Bank of England, which had to be chiselled out, bit by bit, that the works might be carried through. As regards the latter remains we may observe that on this spot stood, until about ninety-five years ago, two blocks, known as Bank buildings, separated by Threadneedle-street from the Bank of England, and from the (old) Royal Exchange by Castle-alley, which is plotted in W. H. Toms's plan, of 1760, showing the Exchange with a length of 154 ft. 6 in. between Castle-alley (west) and Sweeting's-alley (east). Nor does it appear that either Gresham's Exchange, designed by Henrycke, a Fleming, or its successor (by Edward Jerman and Cartwright), stood further eastwards than does the present structure. At Davies-street, Oxford-street, progress has been delayed by reason of a very large sewer that passed under the site of the station, to divert which occupied nearly twelve months. There they met with traces of another London stream, and had to adopt air pressure in the working. The Tyburn, flowing between the present Stratford-place and Gee's-court, crossed Oxford-street, and pursued its course down South Molton-lane and Avery-row to Hay Hill, and so to the Brookshot Field and Stone Bridge Piccadilly.

**Changes at the Tower.**

THE main-guard house at the Tower is being demolished for the erection on its site of more suitable and commodious quarters for the Tower guard. The site lies between Wakefield, formerly Hall, Tower (where the regalia has been kept lately) and the south-west angle of the keep or White Tower. That part of the Inner Ward that lay between the White Tower's south side and the curtain of the inner ballium joining the Wakefield and Lanthorn Towers, formed the outer court of the King's Palace. It was entered through Coldharbour Tower, standing (until about fifty years ago) close by the White Tower's south-west angle, on a large portion of the ground now being cleared. Along the outer court's south side, between Wakefield and Lanthorn Towers, stood Henry III.'s Great Hall—its site being, since, that of the Old Treasury House (see Lord Dartmouth's survey, 1681-9), pulled down in 1886*—on the court's north side lay the Jewel House, as in W. Hayward's and J. Gascoyne's plan of 1597. At the time (1726) C. Lemprière made his plan, engraved by J. Basire, the main guard had quarters in a building along the west side of the White Tower, and on the spot we describe stood the Stone House, formerly the Spanish Armoury, which was afterwards converted into a canteen, known as the "Stone Kitchen." The canteen gave place, in 1827, to the guard-house, which in its turn has now disappeared. A picturesque group of gabled and bow-windowed houses, with red brick chimneys and tiled roofs (known as "the Seven Houses of Office") situated between Wakefield and Coldharbour Towers, are mentioned as being then newly erected in the survey made in 1532, and were destroyed in 1827. They formed an interesting example of early sixteenth century domestic architecture. The survey cites also Coldharbour Tower, which had two drum towers flanking a gateway, being very similar to the existing Middle and Byeward Towers through which visitors enter the Tower.

**Old Houses in Hampstead.**

SOME old freehold property which is offered for sale as a building site, covering nearly 10,000 ft. superficial, includes three interesting houses—Romney's house and his painting-room and picture gallery, being the "Holly Bush" tavern, Holly-hill, and the adjoining premises now occupied by the Hampstead Constitutional Club; and New Grove House, in the Grove adjacent, which for many years was the home of the late

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* See also the *Builder*, pp. 166-7, *ante*.

* See *Builder* of July 31, and (with illustration) August 7, 1886.

George Du Maurier. Hayley, in his "Life of George Romney," says that Romney first took lodgings at Hampstead in 1788, going each day to his house (then numbered 32) in Cavendish-square. In October, 1796, he bought the copyhold of the old red-brick house, assessed at 50*l*., on "The Mount," in Heath-street. In 1799 he removed to some premises in the rear, which he had meanwhile built for himself on Holly-hill, opposite Holly-mount, comprising a large gallery for pictures and statues, some living rooms, and what Allan Cunningham describes as "a wooden arcade for a riding house in the garden." Romney spent in all nearly 3,000*l*. on his new home, having sold, in 1798, his house in Cavendish-square. Two years later he disposed of his property on the Mount, in Heath-street, in 1801, to one Mrs. Rundell, the widow of his tenant there; and in 1808 (six years after Romney's death) his residence at Holly-hill was taken by the Committee of the Assembly, or New Subscription, Rooms. The premises are now identified as the "Holly Bush" Inn, and the rooms of the local Constitutional Club—the large club-room, timber-framed, upon a brick basement, being Romney's gallery or studio, converted for purposes of the assemblies. The other parts of the club premises, including the parlour, kitchen, and offices, were added, it seems, about eighty-five years ago, by means of a tontine, for an enlargement of the then Assembly Rooms. The sale we mention extends to the large garden and the three old cottages adjoining.

**The Paris Exhibition.**

IN spite of recent bad weather, the works at the 1900 Exhibition have been actively pursued. The stonework of the large palace on the Champs Elysées has just been completed, and the constructional ironwork is about to be fixed. At the Champ de Mars and the Esplanade des Invalides the iron framework of the building is nearly completed. In the Palais des Machines M. Raulin is continuing the construction of the large Salle des Fêtes of the Exhibition. M. Louvet, the architect in charge of the intermediary portion of the palace of the Champs Elysées, will shortly commence the construction of the grand staircase of two revolutions, the whole of the decorative work of which will be forged in mild steel. M. Louvet is the first French architect who has ventured on the use of steel on such a large scale for decorative work, and the result will be looked to with considerable interest.

**Johnson-court, Fleet-street.**

FOR an extension of Anderton's hotel, and the rebuilding of some premises on the south and east sides of the court, there will be pulled down, shortly, a house that was occupied during eleven years by Dr. Johnson. He removed thither from No. 1, Inner Temple-lane, in 1765, and in 1776 quitted it for No. 8, Bolt-court, "still keeping," as Boswell says, "to his favourite Fleet-street." The house, having latterly served for purposes of the hotel staff, will, we gather, give way to new offices to be erected by the proprietor of the *Lady's Companion* and other publications. Whilst its front has been modernised and fitted with later casements, it remains within as it was in Johnson's time. The houses about to be pulled down have no back rooms, their inner walls are panelled, the stairs have massive balustrades, and the outer doors, it will be noticed, extend to the whole height of the ground-floors; some of the old shutters and the palings in front of No. 8—as depicted in J. Smith's drawing, 1834—may still be seen. In the interval of his residence in the court (it was not named after him) Johnson received the degree of Doctor of Laws from Dublin and Oxford Universities, made acquaintance with the Thrales, wrote the dedication to the King, of Gwyn's "London and Westminster Improved," was appointed Professor of Ancient Literature to the Royal Academy (1769), made his journeys to Scotland and the Western Isles, North Wales, and France, and gave asylum to Mrs. Anna Williams and Robert Levett. Dr. Johnson had seventeen different homes in London; of those that have been identified only two at present are standing.

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## GREEK ARCHITECTURE.*

### THE IONIC AND CORINTHIAN ORDERS.

ALTHOUGH I thought I was bound to give you some lengthy extracts from Vitruvius in my three last lectures, I am not the less conscious that nothing is more dreary to listen to than rules of proportion.

As you have the translation of Vitruvius by the learned Newton, and the one by Gwilt in the Academy Library, I shall on this occasion merely refer to the books and chapter, if I have occasion, and leave you to read the passages yourselves. I may add that I consider it imperative on all architectural students to read through Vitruvius, and in the original text if they are Latin scholars. The careful study of Vitruvius lets us into the secret of how to proportion the whole building, and every part of it, and it is the adherence to this practice that has given, even to Roman buildings, so much repute; there is, too, a great deal of useful and practical information in the book, and much that is entertaining, but, besides this, it prevents our fancying that the present generation knows everything and can look down with contempt on antiquity.

No modern architect that I have heard of knows how to make music and singing heard by vast numbers in the open air by means of bronze vases under the seats, though the experiment was tried with earthen ones in the middle ages, but I believe without success; Wood says one theatre at Ephesus would seat 24,500 people. How few of us, too, would undertake to set out a sun-dial, build a city with its fortifications, give instructions in the making of cannon and the building of ships, as well as design those buildings which we are mostly called upon to do.

Those here who wish to read the Latin text at home, will find an excellent edition in small 8vo, published at Leipzic, for a shilling or two. On every folio of this volume the book and chapter are printed. This is a painful contrast to the scandalous way in which our publishers treat a book of reference; printed with wide margins, steel engravings, and with every appearance of cost and luxury. Gwilt's translation, for example, is 4to, published by subscription; to find out the book and chapter you want, you must look in the general index for the page of the book and hunt out the chapter. It has, it is true, a meagre index to the words, apparently printed from the MSS. without correction from the printed book, so that the pages are generally wrong. In fact great art has been used in most of the more costly architectural works to ensure the greatest waste of time to any one consulting the book: you are referred to the chapter which, being mixed up with the plates, is no easy matter to find; and to render it more difficult the number of the pages is always omitted next the print. There is rarely a verbal index and no description on the plate. I make no objection to a few copies being printed like this for those distinguished collectors who desire to leave behind them a large library of uncut books, but for the simple-minded who only use books for reading and reference, I think a description might be added to the plate as well as a good verbal index at the end.

Although the question of how the Orders arose is not of immediate use to us, it is interesting, and the method that should be pursued in investigating such matters is important. I can best illustrate this by philology. When those of us who learnt the dead languages at school found in them a word resembling an English one, we at once came to the conclusion that the English word was derived from that language. This is not the way in which an etymologist proceeds. He traces back the word as far as he can in English, and he tries to find out what relation there has been between the two nations by conquest, intercourse, or books, or whether it has come through an intermediate nation; and has mostly to dismiss such resemblances as merely accidental, while it may so happen that words with no sound in common have been derived from the older language. For example, *heart*, from the Greek *κηρ*, through Roman cor cordis, and Saxon; the Roman C being either a guttural, as it now is in Tuscany, or converted into one by the Saxons.

In the same way, with architecture we must not jump to the conclusion that because two things are somewhat alike that the more modern must be derived from the more ancient.

There is a rock-cut temple in Egypt said to have been cut about 1800 B.C.; its columns somewhat resemble the Greek Doric, and there are also a few other similar columns of later date, hence the conclusion is jumped at that the Greek Doric came from Egypt, while it quite as possibly came from an adzed tree trunk. There are double curled vertical members on columns at Persepolis that look like two Ionic caps, a small one inside a big one, stuck on end. Nothing seems more plausible than this—that an ingenious Greek saw it and stuck one of them the right way up on a column, and there was the full blown Ionic. The only flaw in the argument is this—that beyond these two bare facts you have nothing to prove it; it is barely possible, though highly improbable, that it might turn out to be true, for fact is stronger than fiction; but until you can get all the connecting links I recommend you to dismiss it from your minds as nonsense.

The belief that the marble Greek temples took their rise from timber ones, probably arose from the contemporary existence of marble and timber ones. You remember that Pausanias, who lived about 174 A.D., saw at Olympia a wooden column said to be from that semi-mythical building, the Palace of Œnomaus, and another oak column actually doing duty in the Temple of Heré at Elis, besides other old temples of oak.

The true archæologist does not rush to the conclusion that because the stone forms ultimately used did not look like wood construction, that they could not have arisen from it, but racked his brains to see how he could get evidence of what the original forms were. Fortunately he hit upon the idea that ancient buildings might be shown on painted vases. He not only examined all the vases he could find, and all the good engravings of them, but got his architectural and archæological friends in other countries to do the same; this was no less a man than Hittorff, the French architect, and one of her Majesty, the Queen's, Gold Medallists, who built that fine station of the Northern Railway in Paris, and was one of the first who maintained the polychromy of Greek architecture. His researches as to the origin of the Greek orders were crowned with success, and he found that Doric and Ionic were both derived from pure wooden forms. The original Doric abacus was the bit of wood that every carpenter puts on a post to shorten the bearing of the supported beam, and the echinus was the cap to the post, the annulets were ropes, thongs, or withes tied round the top of the post to prevent it splitting. The cap was first sloped or rounded at each end, and then the whole cap was cut into a splay down to the shaft, not unlike the echinus we all know. M. Hittorff has not, it is true, found every step up to the time when the abacus was made square and the echinus round, though I dare say that might be done; but when the ultimate form was got in length, it was only a step to make it round, a step, too, that might be taken to-day by an intelligent carpenter who has got two beams, the halves of which overhang on either side.

The Ionic might have been developed in a precisely similar way, only the abacus there was much thicker and longer. It seems first to have been rounded at the bottom just as a carpenter would treat it now, and then cut in a bit at the bottom, until at last some of those pelasgic spirals got painted, scored, or carved on, or in some cases an embossed strip of metal might have been fixed round it. A curious proto-Ionic has been lately found outside a rock-cut temple in Phrygia, published in the *Hellenic Society's Journal*, but there seems every reason to believe that the Ionic was evolved from the lotus capital of the Chaldees, and very probably from those at Cyprus.

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* Professor Aitchison's fourth Royal Academy lecture, delivered on Thursday, February 9.

Nothing is more curious than the fact that the only buildings which antiquity considered worthy of being classed amongst the seven wonders of the world were those of the Ionic order, and were in Asia, viz., the Artemision and the Mausoleum. Ionic was freely used by the natives of Greece, both on the mainland and in the Peloponnessus, as a subsidiary order, as in the Propylæa on the Akropolis at Athens and at Eleusis; in the opisthodomos of the Parthenon, in the Temple of Athene Alea, at Tegea (Pausanias Lib. 8, cap. 45), and in the interior of Apollo Epicurius at Bassæ, but for the exterior peri-styles of temples it seems to be mostly confined to those which might be called chapels. That on the Ilissus is only about 20 ft. by 40 ft., including naos, pronaos, and porticoes, while the Erechtheion and Athené Polias combined were only 35 ft. by 69 ft., exclusive of the portico of the latter, and the caryated temple on the south side. The Temple of Niké Apteros is but about 29 ft. by 20 ft., and it is not till we go to the Ionian colonies that we find temples of this order of any magnitude. Xerxes destroyed all the temples of the Greek colonies in Asia, and those of the mainland of Greece as far as Delphi, sparing this on account of the terror caused by a thunderstorm, when two crags fell down and crushed some of his men, and the Artemisium on account of its magnificence, *i.e.*, the sixth Artemisium, or the last but one preceding our Diana of the Ephesians; and it was to this temple that, according to Vitruvius, Metagenes first used Ionic caps. Besides the peculiarity and beauty of its capital the characteristics of the Ionic column are its deep flutings with fillets, its bases designed with peculiar care and originality, and turned, the slender proportion of its shaft, its entablature mostly without triglyphs (although there is one of Aezani in Phrygia with triglyphs) and mostly with dentils, and also its floral enrichments, sculptured as well as painted; however, the temple on the Ilissus is treated with the same simplicity and dignity that marks the Doric; there are no dentils, no sculptured enrichment except the "turnip stones" on the cymatium, that we call the egg and tongue, and two little honeysuckles between the volutes, and the pendent curve from the volutes in front; it has an epistylium without fascias. Those of the joint temples at the Erechtheion have no dentils either. One quite understands the sculptors, who were a most important body in Greece, objecting to be excluded from floral ornament, and preferring continuous friezes to the square metopes, as enabling a more complete story to be told, though the buildings and the sculptors lost by the exchange. The building lost greatly in composition and contrast by the omission of the triglyphs, *i.e.*, the vertical lines of the columns were not carried into the entablature, nor was there the proper contrast with its long horizontal lines, and the sculptor lost a foil for his sculpture.

As regards the base, the dominant idea was that of a vertical circular plinth; sometimes the lower torus projected a little, sometimes there was no lower torus, and the astragals, with their trochili receded; but the idea of verticality was always suggested. This can be seen in its crudest form in the remains of a large Ionic column at Samos (I could once have said, a glance at that church of Professor Cockerell near the top of Regent-street will exemplify my meaning, but that, alas! is no more).

The base of the order of the Temple of Heré at Samos, is a fluted torus on a concave circular plinth, horizontally fluted; that of the Temple of the Ilissus has a fluted torus, a flat, plain trochilus, and a plain torus. The Erechtheion has a precisely similar treatment to the last, only of different proportions. The Athené Polias at Athens has an attic base only, the upper torus is enriched with snare-work (a guilloche). The Apollo Didymæus at Miletus has a plain torus (possibly meant to be fluted) and three pairs of astragals divided by trochili. The Temple of Athené Polias at Priene is similar in treatment to the Apollo Didymæus only the torus is fluted. That of Bacchus at Teos is attic; that of Apollo Smintheos has a top and bottom torus with two trochili between, divided by a single astragal, and with fillets to the top and bottom toruses. The bases of the Ionic columns at the Mausoleum consist of a fluted torus three brace of astragals divided by trochili. The internal Ionic at Apollo Epicurius at Bassæ has a long and widely-spread apophagee, a plain and narrow torus, and the plinth hollowed in the shape of a reversed cavetto; most of the mouldings of these bases are exquisitely designed, and show great fertility of invention.

I have said a brace of astragals, but I am not sure that the two together were not the original moulding taken from the ankle bone.

We are doubly indebted to the Greek sculptors for claiming their rights over floral ornament, for they have not only preserved for us a great variety of ornament, but the ornament has better preserved the traces of the actual colour than marble or plaster, from which the colours have washed off in the case of marble, and faded on the plaster, when the plaster itself has not perished. I mean the interstices of ornament and points of leaves have preserved the colour there from perishing. The Erechtheum columns have a hypotrachelion left unfluted, and marked as well by a bead and reel at the bottom, this necking is delicately sculptured with what is called Greek honeysuckle.

The most perfect example of the Ionic cap is that of the temple of the Ilissus; it is equal to the finest Doric in exquisiteness of proportion, and is the most beautiful thing of which man can claim the invention. Who was the inspired architect we know not, but "so shines a good deed in a naughty world" that though his name has perished, he has filled millions with pleasure, and set up a standard of perfection that no succeeding architect has ever equalled.

The next in perfection is, perhaps, that inside the temple of Apollo Epicurius, said to be by Ictinus. He felt the inevitable blemish that occurs in bringing a spiral out of a straight line and curved the top; a lovely paraphrase of this by Professor Cockerell may be seen at the Taylor and Randolph buildings at Oxford. Next to these is that of Athené Polias at Athens, and then that of the Erechtheion.

One fancies that the architects of these two last temples had that on the Ilissus before them, and felt like Michaelangelo did about the dome at Florence. "Like you I will not, and better than you I cannot," and so tried to hide by ornament their failure to surpass it, for you know "the world is still deceived by ornament."

As soon as the volutes became small and the lower line straight, the capital became very poor. There is a curious thing in connexion with the Ionic which shows us that to man there is sometimes one necessary conjunction of line to form a perfect whole; doubtless the perfect attic taste deteriorated when it fell under the rule of the barbarous Macedonians. The culminating point of Athenian taste was in that comparatively peaceful period between the time when the whole nation returned victorious and exulting from their encounter with myriads of Persia, until the disastrous end of the Syracusan expedition. After the loss of freedom and power, evil habits and intestine broils completed the ruin of their highest mental powers. The degraded Ionic capital came through the Romans to the Italian architects of the Renaissance, who had probably never seen a perfect attic capital; their æsthetic instinct, however, felt the want of that pendant curve, and supplied it by a festoon between the two eyes. This was a much more clumsy way of solving the problem than the Greek, because that part between the eyes of the capital and the inside of the volutes had its continuity broken; but it was an overwhelming proof of there being only one solution and of the relative taste, training, and æsthetic perfection of the two nations. In many cases the Ionic owed more of its decoration to bronze and gold than the Doric, at least as far as we know; bronze pins and cramps as well as holes for them are found in the capitals at the Erechtheion, and were noticed by H. Inwood and Falkener; and we can almost be certain that the eyes there were of bronze, from that item in the bill of the cost which was cut in marble, viz., "Gold two petals have been bought from Adonis, who lives at Meleto, in order to gild the eyes of the columns, Drachmæ 2," and the eyes of the snare work of the caps were filled with coloured glass beads. According to the translation published by Priestley in 1844, Pausanias (Lib. 1, cap. 18) tells us that the Emperor Hadrian, in the Temple of Olympian Zeus at Athens, lined the walls of the porches with Phrygian stone—*i.e.*, with Pavonazzetto marble—and says:—"There are likewise habitations in these which are fabricated from golden reeds and alabaster stone." Mr. Frazer, who published his translation of Pausanias last year, does not mention the golden reed used in that place, but Wood found between two annulets of the Artemisium two slips of lead with some gold between, which also covered their face (this may be seen at the British Museum), and may have been the remains of one of these golden reeds which Hadrian imitated.

You know that in the temples of Pericles' time the Simæ of Vitruvius, which the Greeks called 'επιτίθιδες, on account of their resemblance to the beams on the ship's bows over which the anchor was cast, only crowned the raking sides of the pediments, just turned the corner, and stopped against blocks on the flanks, thus leaving the whole of the sides of the temples with dripping eaves; subsequently the Greeks and Romans of Asia Minor carried the crowning member along the flanks, forming them into gutters, and letting the water off by gargoyles in the shape of lions' heads. The real gargoyles were over the centres of the columns, so as not to wet those coming through the intercolumniations, and the rest were dummies.

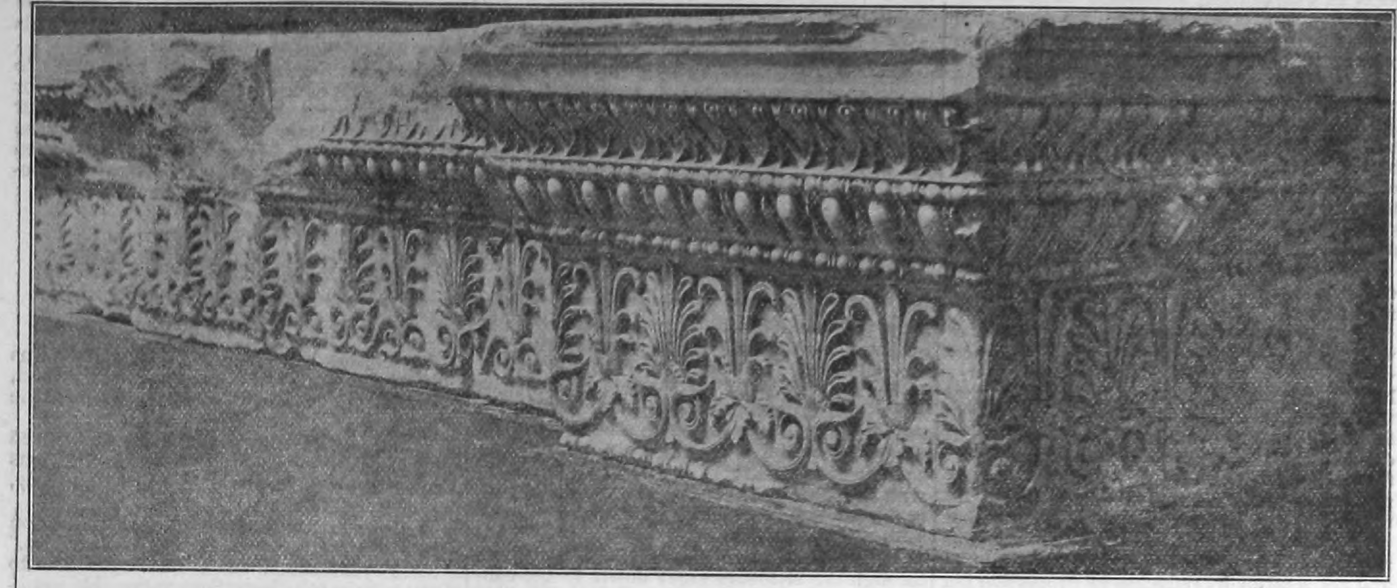
These are Vitruvius' words (Lib. 3, cap. v., sect. 15), "In the Simas, which are above the coronas on the flank of the temples, lions' heads are to be carved, and so placed that one over each column may first be placed, and the rest equally spaced, so that each one may correspond with the centre of each tile. Those, however, which are over the columns are to be bored through to the gutter which receives the rain-water from the tiles. The middle ones are to be solid, so that the abundance of water which comes into the gutter from the tiles may not be poured down in the intercolumniation, nor drench those coming in; but those which are over the columns may be seen to vomit forth water from their mouths."

Fergusson, who had overlooked this passage, gives an opposite reason for the arrangement of the internal columns at Apollo Epicurius. He says: "The object, however, of this arrangement becomes apparent at once, if we assume that they desired that the principal drainage of the roof should fall between the external columns, not against them, so as to corrode them, as otherwise it would inevitably do" ("Principles of Beauty," page 388).

I may here mention that Herr Puchstein, in his learned treatise on the Ionic order, informs us that the early abacus was flush with the channel of the pillow and the volutes, *i.e.*, the whole was flat to the cymatium, and the cincturas were painted. He believes the attic examples of the cap were developed by potters from a painted edging, afterwards worked in stone, but those of the Peloponnesus from a metal strip fastened round, the pendant curves being left plain on account of the difficulty of junction with the volute; and he dwells on the difference between the fluted bolsters of the Athenian example as compared with the central girdle of the Asiatic type, as it is in treating of the foundation of columns and the Ionic order that Vitruvius (Lib. 3, cap. 4 and 5) mentions the *scamilli impares* which so long baffled the ingenuity of architects and scholars; and, as it is the prerogative of English architects to have solved it in this century, I may as well give you some account of them.

Wilkins published his partial translation of Vitruvius in 1812, and, as he rightly understood his author, I give the extracts from his very free translation.

"The stylobate ought not to be constructed upon the horizontal level, but should rise gradually from the ends towards the centre, so as to have there a small addition. The inconvenience which might arise from a stylobate thus constructed, may be obviated by means of unequal scamilli. If the line of stylobate were perfectly horizontal, it would appear like the bed of a channel." The method of constructing the scamilli, and the application of them, is explained by a figure at the end of the Book xx. "In placing the capitals upon the shafts of the columns, they are not to be arranged so that the abaci may be in the same horizontal level, but must follow the direction of the upper members of the epistylium; which will deviate from the straight line drawn from the extreme



*Frieze of Erechtheion.*

points in proportion to the addition given to the centre of the stylobate" (vol. i., pp. 21, 22, and 25).

To Wilkins, therefore, must be attributed the merit of first translating these passages properly, and putting architects on the right scent.

The late Mr. John Pennethorne, who was at Athens in 1832 and 1834, and was investigating the delicacies of Greek proportions and mouldings, and taking the curves of the mouldings, &c., in wax (with whose valuable book you are all probably familiar), then being on the look-out for such things, and had probably read Wilkins' translation, noticed the convex curve of the steps and stylobate of the Parthenon. The Greek Government having partly disencumbered them of the ruins that hid them in Stuart's days. The same convex curve had been observed by Messrs. Ross, Hansen, & Schaubert, Austrian architects, who were there, and they and Mr. Pennethorne worked at this together. In 1837 he again visited Athens, did what he could to get the levels, for the steps were not even then wholly disencumbered, and published a letter on the subject, and, in 1844, a pamphlet. Mr. Penrose subsequently went out and ascertained with extreme accuracy the the exact measurements, and then calculated the curves which were published in his book on the Parthenon in 1851. Thus, by the sagacity of Wilkins, the trained observation of Mr. Pennethorne, and the energy, care, and mathematical attainments of Mr. Penrose, we are able to see how and why the Greeks attained their celebrity, and have read us and the world a lesson that, besides genius, exquisite care, and elaboration, is necessary to ensure undying fame. It is, I think, worth our while to hear what Plutarch says on this subject in his life of Pericles, written some six hundred years afterwards.

"It is said that when Agatharcus, the painter, valued himself upon the celerity and ease with which he despatched his pieces, Zeuxis replied, 'If I boast, it shall be of the slowness with which I finish mine. For ease and speed in the execution seldom give a work any lasting importance or exquisite beauty; while, on the other hand, the time which is expended in labour is recovered and repaid in the duration of the performance.' Hence we have the more reason to wonder that the structures raised by Pericles should be built in so short a time, and yet built for ages; for as each of them, as soon as finished, had the venerable air of antiquity, so, now they are old, they have the freshness of a modern building. A bloom is diffused over them, which preserves their aspect untarnished by time, as if they were animated with a spirit of perpetual youth and unfading elegance."

The ruffian Lucius Mummius wantonly destroyed Corinth about 146 B.C., though it is said he was ordered to do so by the Senate; so we must let them share the infamy between them. If Corinth was the original birthplace of the Corinthian order, the Roman Senate and Mummius between them destroyed every vestige of its beginnings, for they even rifled and dug up the tombs; we, of course, think nothing of this now, but in those days it was considered even more sacrilegious than to sack and destroy the temples. The gods could avenge insults, but the unhappy ghosts were condemned to wander howling on the earth till their bones were buried.

I give you Vitruvius's history of the invention of the Corinthian order, which I have translated myself, to give some of the original quaintness, for, though I fear it is not true, it is certainly pretty (Vitruvius, Lib. 4, cap. 1, sec. 9).

"A maid, a citizen of Corinth, of marriageable age, stricken by disease, died. After her burial, her nurse collected those things in which she delighted when alive, put them in a basket and carried them to her grave, and put them on the top of it, and so that they might last the longer in the open air, she covered the basket with a tile. This basket by chance happened to be put on the root of a thistle. The root of the thistle, pressed by this weight, about spring time brought forth its middle leaves and stalks, its stalks growing to the shape of the sides of the baskets, and, being naturally kept down by the corners of the heavy tile, the ends were forced to curl themselves into volutes. At this time Callimachus, who, because of his elegance and subtlety in the marble art, was called the 'enervating polisher' by the Athenians, passing by the grave, noticed the basket and the growing tenderness of the leaves around it, pleased with the novelty and distinction of its shape, made from it a model for columns among the Corinthians."

Callimachus is said to have lived before 396 B.C., and made the golden lamp in the Erechtheion; hence it has been suggested that the leaves of the Corinthian caps were of metal. At such a late date as this it is impossible that very many Greeks should not have seen Egypt, Persepolis, and Babylon, and hence have seen many belled caps covered with foliage, though it may have been the prerogative of Callimachus to have added an abacus and a volute. This, however, could not have been the case if Ictinus built the Temple of Apollo Epicurius at Bassæ, and used the Corinthian cap there found, for he lived during the supremacy of Pericles, 444-429 B.C. It was, however, invented by some one, and it does not much matter to us now whether he was a Greek, a Phrygian, an Egyptian, a Persian, or a Jew.

Pausanias (Lib. 8, cap. 45), speaking of the Temple of Athené Alea at Tegea, says of the new temple:—"The first ornament of this temple is a triple series of columns, the first of which are of the Doric order; the second of the Corinthian, and the third, without the temple, Ionic, and he before tells us the old temple was burnt 392 B.C. At present it seems hopeless to attempt to give any dates to the remains of the Corinthian caps we have, except to that of the Choragic monument by Lysicrates, about 335 B.C. Here is a fine opportunity for some enterprising young architect who is both an archæologist and scholar to write a monograph on this subject. From the delicacy of the ornament and the undercutting of the Corinthian capital, nothing generally remains but the attached parts of the leaves, and the stumps of the volutes, and caulicoli.

The main ones that are known are, first, the cap of Apollo Epicurius; second, a capital from Apollo Didymæus at Poseidon. This was a capital of one of the attached columns on either side of the door, from the first chamber into the naos, and was inside it; it looks like a late specimen; but the caulicoli are very small, and their tops are about one-third of the height of the bell below the abacus, and the honeysuckle which springs from it finishes below the abacus; the top member of the abacus is carved with the egg and tongue, and the necking is carved into a bead and reel, and all the foliage is of the Greek type. In that at the end of the naos at Apollo Epicurius, at Bassæ, where the abacus was square in section, the caulicoli are attached to the bell just above a row of dwarfed leaves above the necking, with a honeysuckle at the top; third, the Corinthian capital of a pier or pilaster of the entrance to the sacred enclosure of the Temple of Demeter and Persephone at Eleusis. This is a curious example, as instead of the abacus being hollowed out from angle to angle, it is in front hollowed out with two flat curves to the centre, under which is a honeysuckle, and the volutes are replaced by griffins; there are the floral caps of the astronomical building of Andronicus Cyrrhestes, who is supposed to have lived 159 B.C.; but these are only capitals of subsidiary columns, forming the porches in front of the doorways, and, being remarkably ugly, have been much used in modern times. The little Choragic monument of Lysicrates has many peculiarities to which I may draw your attention. The flutes of the columns finish as leaves, and the capitals doubtless had bronze neckings; the abacus is a deep trochilus. The foliage of the cap is by far the most graceful of anything that has come down to us, and the pateræ between the leaves rather suggest metal. A beautiful copy of this once graced a ground floor in Cheapside, and was a delight to look on; but the house had to be rebuilt, and the new architect, feeling he was by no means equal to such work, pulled it down, and built some common-place design of his own. I have not the faintest notion of who the first or second architects were, but I used to think that there was no well-known architect but Professor Cockerell who could have designed the first.

The entablature of the Choragic monument is peculiar in many ways; the architrave is very deep, though the frieze has sculpture; this depth was probably for structural needs. To lessen its apparent height, the fascias of the architrave are sloped inwards at the bottom instead of outwards in the usual way. Looking at this little monument on paper, one is apt to find fault with some of the profiles. The cymatium of the frieze is a big astragal, while the first member of the cornice over it is a heavy ovolo. The moulding over the dentils is a cyma recta, with a small cyma reversa over it. A cyma recta always looks weak as a supporting moulding. The monument has no crowning member above the cymatium of the corona, but just set back, behind its fillet, is a scolloped edge. The tops of the scollop are supposed to have been honeysuckles; and behind that again, and a little above it is a line of waves, so that the effect is like the two lines of pierced woodwork beneath the eaves of a Saracen house, turned upwards. The tholus or dome is carved into leaves, and on these are the magnificent scrolls which rise up to support the floral base for the bronze tripod the owner had won.

It has been the fashion of late to decry the caryatid portico of the Pandrosion, though nothing more beautiful has ever been done.

Here I only want to point out a Greek device which you should all bear in mind. The figures would be squat for columns and wanted a heavy entablature, and this was made more than one-third, *i.c.*, ·384 of the height of the figures. This would have looked mean if divided into three in the ordinary way, so they suppressed the frieze and its cymatium, put dentils above the cymatium of the architrave, and enriched its upper fascia, for it has three with pateræ, so that it almost looks like a frieze. You should bear this lesson in mind and not weaken by reducing in proportion but by omitting one or more members. I do not know that I ever saw any account of how the Greeks treated the Corinthian capital with colour.

I have reserved pilasters (*παρασταςες*) to the end so that they might be treated together, whether they belonged to the Doric, Ionic, or Corinthian order. We all know that the Romans and their imitators merely used a flat order, and some of the architects of the Renaisssance, especially in the Northern countries, not content with putting entasis enough to their columns to make them like attenuated barrels, kept this entasis on the pilasters and diminished them as well; though ugly isolated shafts, swollen in the middle, are scarcely bearable, a swollen pilaster bounded by sloping curved lines is quite unbearable, not to speak of the dulness and ugliness of a round thing flattened into a square one. Its use bespeaks that poverty of invention that excites disgust. The pilaster originally was the end of the wall of the pronaos, made a little wider than the wall to show returns on both sides.

Supposing the Greeks did at first try a flat cap like that of the columns, two things were at once obvious: first, that it projected beyond the abacus of the columns, as it came from a vertical face and not from a receding one; next, the main beauty of the Doric capital arose from the shadow of the square abacus falling on a curved circular surface, and consequently you lost in the pilaster the bay of light on the echinus, and the angular shadow from the corner of the abacus. Herr Puchstein believes the cymatium was first introduced from the cornice to pilasters.

In the Parthenon, the pilasters range with nothing except the flanks of the pronaos and posticum, and are about one-third the width of the columns. The portico of the pronaos is prostyle; the pilaster capital is not quite equal to the abacus of the order, and the capital and fascia below it are together not much more than two-thirds of that of the order to the necking; the abacus has a small ogee for its cymatium; below it there is a hawksbill, and then two flat ovolos, then a fillet and bead. The lower ovolo is carved with the egg and tongue, and the astragal with the bead and reel, and one deep fascia of slight projection finished it. The bottom of the pilaster is without a base.

The temple of Artemis Propylæa at Eleusis and Themis at Rhamnus are both *εν παραστασι* At Artemis Propylæa the capital of the pilaster exclusive of its fascia is about level with the centre of the echinus of the column, and consists of a chamfered cymatium to the abacus, a hawksbill whose hollow or return makes a cyma recta, a splayed fillet, and a long hollow to the necking with two projecting annulets. The necking is a plain fascia above the necking of the columns. These pilasters have a moulded base consisting of an astragal, a cyma reversa, and a shallow plinth. You should note the utter disregard of the lines ranging, provided the whole looked well.

It is not worth while describing every variety of Doric pilaster.

At the temple on the Ilissus the only pilaster that shows in conjunction with the order is a narrow strip not one-third of the width of the column, the mouldings of whose cap and base continue the whole length of the flank of the wall; the cap is composed of an abacus whose cymatium is a narrow astragal and fillet; under it is an ogee and bead; under this is an ovolo and bead, and a deep fascia whose bottom is a little below the column cap; at the top of this fascia a fillet is introduced, forming a band under the lowest bead of the cap. The base is similar to that of the columns, viz., a fluted torus, a trochilus, and a plain torus; but this torus does not correspond with that of the column, but is little more than a big astragal, and the top of this base is nearly on a line with the middle of the upper torus of the column. At the Erectheion the flanking pilaster is only about one-half the width of the column, and the mouldings of its cap run right along the naos wall, and it does not correspond with height of the necking of the column, with the the bottom of the volute, nor with the bottom of the capital; it consists of a plain shallow abacus and cymatium, an ogee carved with those leaves the French call *raie du cœur*, a bead and reel, an ovolo carved with egg and tongue and another bead and reel; the necking is carved with the same ornament as that of the necking of the column, and is finished with a bead and reel.

At the Caryatid Temple the pilaster goes through the stylobate right down to the continuous base of the naos, and the stylobate finishes against the shaft of the pilaster. The Propylæa at Priene is an Ionic tetrastyle and amphi-prostyle building. All the internal supports are square piers; pilasters are arranged along the outside of the walls, while the column cap is only about 10½ in. deep and only about 1 ft. 2 in. to the bottom of the volute; the pier and pilaster caps are 2 ft. 1 in. deep; they are treated with very small volutes with two griffins facing a trophy on the flanks. On the face they have a full-length figure coming out of a base of leaves and holding tendrils in each hand, which come from the sides of the same base. The same caps are used to the pilasters on the flanks. Paraphrases of these caps were once to be seen on the Regent-street chapel by Professor Cockerell, now pulled down. The internal pilaster caps at Apollo Didymæus are similar in shape, though wider and shallower, and have the central part between the volutes filled in with graceful foliage of the honeysuckle type, or with griffins. Those of Athené Pclias, at Priene, are similarly treated, one of which may be seen at the British Museum, so we may conclude this was the usual practice in the Asiatic colonies.

The only pilasters of the Corinthian order that are known are those to the doorways of what is vulgarly called the Temple of the Winds; like the columns, they have no base, and the caps consist of uncarved mouldings of great projection. My chief reason for dwelling so long on pilasters was to draw your attention to the inventiveness and artistic culture of the Greek architects.

In the outside of the temple or building itself the architects seemed to be confined to the following of a certain unmoveable type; the utmost allowance they enjoyed was the slight variation of form in the details; but in all the subordinate parts perfect freedom was given to invention and to what we might call the infringement of rules; all that seemed to be asked of them was to make the whole perfect, and such was the complete mastery over their art that the architects possessed, that columns of various heights and dimensions were used, as at the pronaos of the Parthenon, or the Ionic or Corinthian order was introduced in conjunction with Doric or Ionic, as at the Propylæa of Athens and Eleusis; and in the entrance to the sacred enclosure of the Temple of Demeter at Eleusis. At Apollo, at Bassæ, we have the Ionic and Corinthian together. I think that using of the Ionic, because it was more convenient at the Propylæa, is a boldness that we could only expect from a thorough master of his art; but it does not strike me as a thing that a modern master might not have done. To have the knowledge and boldness combined to have left out the frieze, and made the cornice heavier at the caryatid portico, is a boldness of instinct that we could only doubtfully ascribe to a modern who had, be it remembered, never seen such an expedient adopted before.

To carry down the pilaster so as to mark the caryatid portico as a projection from the main building might have been done by any one who was a master, and subservient to strict induction, but to dare to use the same order on two steps, to make it smaller, to carry it up higher as in the pronaos of the Parthenon, seems to me an audacity that no one would be guilty of whose knowledge was not the most profound, and whose instincts were not verging on artistic perfection.

I think we ought to express our thanks to the Dilettante Society and to Mr. Penrose for clearing up the vexed question of Jupiter Olympius at Athens, which has been the cause of much waste of labour, and much irritation at least from 1486, when the codex of Vitruvius was first printed, to the year 1887.

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## ROYAL INSTITUTE OF BRITISH ARCHITECTS:

### MUNICIPAL AND PUBLIC LIBRARIES.

A GENERAL meeting of this Institute was held on Monday evening at 9, Conduit-street, W., Professor Aitchison, R. A., President, in the chair.

Mr. W. J. Locke, the Secretary, announced the death of Mr. James Murray, who was elected an Associate in 1851, a Fellow in 1867, and retired in 1889.

Papers were then read by Mr. J. M. Brydon and Mr. F. J. Burgoyne on "Public Libraries."

Mr. Brydon explained that his object was to show, with as full illustrations as possible, something of what had been recently done in library building, so that one might learn what to follow in the future. A suitable site was of primary importance. It should be central and prominent, yet quiet; ample in area to allow for future extension; have a good light all round, and be dry.

As regards the building, the free and open system of the ordinary popular library—*i.c.*, reference and loan, combined with reading-rooms—rendered proper supervision essential, and as libraries are usually understaffed, the arrangements of the plan must be concentrated so as to enable the officials to supervise at a glance all the rooms to which the public have access. An ideal plan is to place all the public rooms on one floor. Where this cannot be done, the rooms to which most frequent and rapid access is required should be placed on the ground floor, and those less frequented on an upper floor. The administrative portion of the library, such as the book stores, the librarian's office, and the workrooms for his staff, must be conveniently placed for the service of the department to which they are more particularly attached. The public rooms should be lofty, well-lighted, and thoroughly ventilated.

The planning of a public library is not, however, a complicated problem. The requirements are comparatively few and simple, and lend themselves to a stately and architectural system of design from which some striking effects almost necessarily follow. It must be endowed with a fitting dignity, both in plan and elevation. The reading-rooms, being large, give ample scope for the designer's knowledge of proportion. They should possess that quiet dignity of effect which can only be obtained by good proportion and restraint in design. Fussy little bay windows and other nooks and corners are uncalled for and out of place.

Respecting the lending department, the author considered that an architectural opportunity had been missed in many recent English libraries. Instead of being simply a book store, with a space cut off for the public, the latter might be treated as a hall or lobby by itself, as in some of the American libraries, notably at Boston. There the delivery room is 64 ft. long by 33 ft. wide and 20 ft. high, and is decorated in the most sumptuous manner. Adjoining it is the stack room, to all parts of which application slips are sent through pneumatic tubes. The books come back to the alcove by means of a little electric railway with low wire basket carriages, running at the rate of 500 ft. per minute. The delivery room at the Edinburgh Public Library* (Mr. G. Washington Browne, architect), is modelled on the telling-room of a Scotch bank. The central space is devoted to the public, with counters round three sides, and alcoves behind them for the storage of books. This arrangement gives scope for, and is treated with, considerable architectural effect, a handsome hall being the result. The public library of the future will be the centre of culture and enlightenment of the district in which it is placed, and will wield an influence which must ever become wider and stronger. The building should be of such a character as to assist this influence. The suburban villa type, with its useless turrets and bay windows, should be altogether discarded—in short, the building should be endowed wlth that distinction of style and nobility of purpose which will render it an enjoyment and inspiration to all who hope for the growth of a living interest in architecture as a fine art.

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* For illustrations of this building, see our issue for July 16, 1887.

Having briefly referred to the arrangement of rooms in libraries recently erected in the United Kingdom, plans of all of which were shown, the author turned to the great American libraries, describing in more or less detail the buildings, plan, and notable features of the Congressional Library at Washington, of which an interesting historical sketch was given, the Public Library at Boston, the Columbia University Library, New York, and the public library about to be erected in New York.

The American Government had commissioned American sculptors and painters to the number of fifty to decorate the Washington Library. The result was the most interesting record possible of the scope and capabilities of American art; not only sumptuousness of design, but richness of materials had been pressed into the service — marble, bronze, mosaic, fresco, and choice woods all bear their part. Staircase, hall, and rotunda, or reading-room, are a blaze of rich marbles and decoration. In the rotunda the columns and pilasters of the piers carrying the dome are of red Numidian marble resting on pedestals of dark purple Tennessee marble, their capitals being gilded. The screens between the piers are of yellow marble, and the portrait statues which surmount the balustrade are of bronze. The building is 468 ft. long from north to south, 340 ft. deep from east to west, by 72 ft. high. The rotunda is 100 ft. diameter, 125 ft. high to the top of the dome, and 160 ft. to the domed ceiling of the lantern. The architects were first Mr. Smithmeyer, then General Casey, Mr. Bernard Green, and Mr. Pelz. The building cost 1,272,000*l*. sterling.

The great architectural features of the Boston Library are the Staircase Hall and the Bates Hall—the former notable for its mural paintings by M. Puvis de Chavannes, illustrating Philosophy, Astronomy, History, Chemistry, Physics, Pastoral, Dramatic, and Epic Poetry. Bates Hall is the reference reading-room; it is 218 ft. by 42 ft., and 50 ft. high to the crown of its arched ceiling. It has accommodation for 264 readers at thirty-three tables. Sargent Hall, named after the eminent painter, is 84 ft. long, 23 ft. wide, and 26 ft. high. The ceiling is vaulted, and the hall is lighted from the roof. The decorative painting will be entirely by Mr. Sargent; the scheme, representing the Triumph of Religion, illustrates certain stages of Jewish and Christian history. Some of the work was shown at the Royal Academy in 1894. The interior court, another charming feature, is surrounded on three sides by an open arcade of white marble, similar in design to that of the Cancellaria Palace in Rome. In its centre is a marble fountain, set about with grass-plots; along the walls under the arcade are low oak benches, so that on warm days the court may be used as an open-air reading-room. The building is a careful study of Renaissance thoughtfully and lovingly carried out, reflecting the greatest credit on its architect, Mr. McKim, and the public spirit that called it into being. Many interesting facts and figures in connexion with this library and the branch libraries at Boston were given by the author.

The third library called attention to—that of the University of Columbia, New York—was built and presented to the University by Mr. Seth Low, President of the University, as a memorial to his father. Construction and equipment have cost nearly 240,000*l*. The architects were Messrs. McKim, Mead, & White. In plan it is like a Greek cross, with the great reading-room at the intersection of the arms, and covered by a dome. It has a magnificent approach of terraces and steps leading up to a noble entrance portico of ten Greek Ionic columns. The entrance-hall is adorned with splendid marble columns. The building, of which many interesting details were given, may be taken as an example of a typical University library worked out on modern lines to suit modern requirements—a utilitarian scheme artistically carried out.

The public library about to be built in New York was the subject of a limited competition last year, and copies of the successful design, lent by the architects, Messrs. Carrère & Hastings, were exhibited in the meeting room. In its main lines it somewhat resembles the Boston Library, but in the instructions was this distinction, that though the authorities did not object to external splendour they were rather disposed to favour a simple interior. The winning design has resulted in a good plan, and what promised to be a stately, dignified exterior. A marked feature is the raising of the building on a great terrace. The architects were not content with designing the building alone—it must have a dignified setting; so by means of broad flights of steps, terraces, fountains, and votive columns, the approaches were made to contribute to and enhance the effect of the architectural picture. This, the author thought, was a point to which more attention should be paid in public buildings in England.

In conclusion the author expressed the hope that these American works were not without their lessons for us in more senses than one—not only as libraries, but as public buildings. Would that some of the public spirit and the love of art which animated the founders and designers of those works could be transferred to the hearts of the City Fathers of London and our great provincial towns!

Mr. F. J. Burgoyne then read a paper on the same subject. He commenced by making some observations on the limited income derivable by municipal libraries from the rates, urging that the initial charges for buildings and sites should be paid out of the general rates, and the whole proceeds of the penny rate be available for the current work of the library. The plan of the building should be considered, not only in relation to the public, but also to the probable size of the staff to be engaged. Dividing municipal libraries into three kinds—small, medium, and large—the author indicated the minimum accommodation that should be provided for staff, books, and public, illustrating his points by reference to plans of existing buildings, a large number of which were shown by the lantern. For a small library, the plan generally adopted is a rectangular room, lit chiefly from the top, with newspaper stands and tables in the centre; the walls on one, two, or three sides shelved for books, 15 ft. to 18 ft. in height, and a counter or rail running round the room 6 ft. or 8 ft. distant from the books. Libraries of medium size require a quiet room where books of reference may be consulted. Such a room may be combined with one for reading the higher-class magazines and reviews. If the public rooms are all on one floor, the reference books will be shelved alongside those of the lending department. If on two floors, the reference department is placed upstairs, and the lending and general newsroom on the ground floor. In the larger libraries the work done in the reference department is of the most valuable character, and it is advisable to have, in addition to the ordinary reference reading-room, a smaller room for the use of students of special subjects, or those who are engaged upon original research. The librarian should have a room for his own use—one that may be used if necessary for the meetings of his committee. In large libraries there should be a fireproof strong-room on the same floor as the reference department, in which the rarer books and MSS. can be stored, and rooms for repairing and binding books. There should be mess-rooms for the staff and suitable lavatory arrangements.

The author recommended that before planning a building a clear idea of the method of work to be employed should be obtained from the librarian. The various methods of issue — with indicator, without indicator, and "open access"—require different accommodation and different arrangements, all duly described by the author.

In shelving the books in the lending department, it is important to place them as near the issue desk as possible, in order to facilitate quickness of issue. Reference books, the author considered, were best shelved in a store-room adjacent to the reference reading-room. Room must be allowed for growth in this department. It was estimated that in the larger libraries stock would increase threefold in twenty-one years. To cope with such an accretion the author favoured the adoption of the American "stack system" of packing the books, combined with rolling book-cases for works in least demand. This system was described by the author, and plans and sections were shown of the stack systems in the libraries at Grieswald, Halle, and Strasburg.

The new system of sliding presses in use at the British Museum consists of stacks three tiers in height and about 9 ft. apart. In front of each bookcase a couple of steel girders with flanges are bolted to the iron floor above, at a distance of about 36 in. from each other, and at right angles to the case. From these girders hang a bookcase of the same width, to within a few inches of the floor. It can be filled with books, and is readily pulled away from its normal position close against the front of the fixed bookcase. It can be adopted piecemeal as the necessity arises for greater accommodation in any particular section of the library. A somewhat similar system is in use in the Library of the India Office. The iron bookcases hang from girders, as at the British Museum, but are packed close together, and if a book is wanted the case containing it is pulled out into the central gangway, which is the same width as the sliding case. This is the closest method of shelving yet devised, and very useful for books not much in use. All shelves should be of the same length—36 in. is the most convenient length. No bookcase should be higher than 8 ft.—7 ft. is preferable.

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Mr. F. Pacy, the hon. secretary of the Library Association, said that librarians should congratulate themselves if architects could be induced to see that there is a field for the exercise of their abilities in connexion with libraries. Nothing could be more fatal to the usefulness of a public library than a badly-constructed building in an out-of-the-way place; but a building with bright and attractive rooms, well-ventilated and arranged, was almost sure to be a success. It had been said that it was an ideal arrangement to get all the apartments of a library on the ground floor, but that was not always possible. As to the storage of books, he was not in agreement with Mr. Burgoyne when that gentleman said he preferred storage room as distinct from a reading room. His (the speaker's) sympathies as a librarian were with the arrangement which showed the treasures of a library round its walls, and he thought there was no better furniture or decoration for a library, with all respect to decorators and artists, than books. There was nothing which gave a greater air of comfort to a library than its books. The warming of public libraries was almost invariably done by hot water or steam, the radiators and pipes being placed close to the walls of the building. The effect of that was that often no warmth was obtained at all, as the librarian was obliged to cover the radiators and pipes with bookshelves, and the books suffered in consequence. If architects would warm such buildings from the centre of the rooms that would be a great gain and would remove a defect which was noticeable in many libraries in the country. The question of supervision by the librarian was an important point; but he thought that the result of the librarian and his staff being in the centre of the building, in order to see all that occurs, was often bad from a health point of view. As a consequence, they had to breathe the vitiated air which was all too frequent in a library. He thought that more in the way of tiles or marbles and washable materials might be used in the construction of libraries, which would enable them to dispense with the frequent closing of such buildings for periodical cleaning and decoration. That would be a saving in expense, as well as removing much cause for annoyance. He sympathised with Mr. Brydon's peroration, and said it was a remarkable fact that in this country, which had a literature as old as its history, we had so neglected to provide palaces of learning such as they had erected in America, where their literature was comparatively new.

Mr. J. H. Quinn, Librarian, Public Library, Chelsea, said that it was a great mistake for Library Committees to cut down architects' plans, as they often did. They often did not realise that the needs of a parish would grow, and that they could not build a new library every year. It was desirable to leave space on a site for future extensions of a library, though that was more a question for the authorities than for architects.

Mr. H. H. Statham, in proposing a vote of thanks to the authors of the papers, said that Mr. Brydon had shown that public libraries afforded opportunities not only for utilitarian treatment, but for beautiful architectural treatment as well; while Mr. Burgoyne had satisfied them that the business of librarian did not deaden the sense of humour. Mr. Brydon had referred to a library in which all the windows were closed and air-tight, so as to prevent the entrance of dust; ventilation being supplied by

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other means. But if the windows were closed in order to prevent dust coming in with the ordinary air, what was to prevent dust coming in through the ventilators? If the air were forced through a number of tubes—which were difficult to get at—it seemed probable that there would be more dust than if the air were allowed to come in by the windows. In reference to the Liverpool Library, it was an instance of architectural considerations coming before utilitarian ones. The circular library was built as a sort of monument to Sir James Picton, and it served to connect in a very effective manner, the existing buildings which stood at different angles. But the circular reading room was one in which almost every whisper could be heard, though he thought that, if the scale had been larger that would not have been the case, for in the British Museum, where there was a great deal of unnecessary conversation, the conversation was not very noticeable. As to the materials used for reading rooms, generally the floor was laid with something to prevent the noise of feet. That told rather against keeping the place clean, and he thought it would be almost better to lay down merely strips of material to walk upon. These would be easy to take up and the floor could be regularly washed when the library was closed for cleaning. He remembered a very ingenious suggestion for a library made many years ago by their member, Mr. Fawcett, and which received the unusual honour of illustration in the *Athenæum*, which did not generally publish illustrations. It was a proposal for enabling a library building to be increased *ad infinitum*. It was to commence with a simple circle, to which was added, as occasion arose, a spiral, with cross doors connecting it at right angles. As the need for additional storage of books was felt, the spiral could be continued as far as was required. It was an exceedingly ingenious idea, for the indefinite extension of a library, though he did not know that anything had ever come of it.

Mr. Beresford Pite, in seconding the vote of thanks, referred to the Ryland's Library at Manchester—a very interesting and costly building, he said, which almost baffled description. It was so entirely exotic: it had a gorgeous fifteenth-century vaulted hall, covered with elaborate tracery; deep bays vaulted in stone, with elaborate traceried windows and corridors; and there was a minimum of daylight and the ordinary external air was carefully excluded. He had heard the architect, Mr. Basil Champneys, explain the system by which the external air was excluded—only being admitted through a ventilating trunk and after it had been washed, purified, and cleaned. The air to be admitted into the interior of the building, was, in fact, dealt with very much in the same way as the air of the House of Commons. There was a great deal of architectural difference between buildings for this modern "stuffing machine"—this reading by the assistance of the penny rate—and the comfortable home-like charm which one liked to associate with one's own study or in the hall of a college. The glazed material recommended by Mr. Pacy quite accorded with that idea. The needs were different, and had to be dealt with differently. As to ornament and decoration in crowded and stuffy rooms, one felt little inclined to embark upon architectural fancies for such places, and the only part of an ordinary library left to the architect was the main staircase. He did not feel at all happy with what had been done with recent library buildings in this country. Architects seemed to be altogether at sea, using up details originally designed for Board schools, public baths or wash-houses, and producing, with very little good effect, an ordinary type of vestry building.

The Chairman then put the vote of thanks, which was heartily agreed to.

Mr. Brydon, in reply, said that air was admitted to the Congressional Library, Washington, practically free from dust. He thought the Institute was specially indebted to those American architects who had so cordially and freely sent over those designs which were on view that night, and he thought that a hearty vote of thanks should be awarded to them.

Mr. Burgoyne having briefly replied,

It was agreed, on the motion of the Chairman, that a vote of thanks be passed to the American architects who had sent drawings for inspection.

It was also announced that a special general meeting will be held on March 6 for the election of the Royal Gold Medallist; to be followed by a business meeting for the election of candidates for membership. At the conclusion of the business meeting, a paper will be read by Mr. A. C. Dickie on "Early Christian Churches in Palestine."

The meeting then terminated.

## THE ARCHITECTURAL ASSOCIATION:

### COLOUR DECORATION.

AN ordinary fortnightly meeting of this Association was held on Friday last week in the Meeting-room of the Royal Institute of British Architects, Mr. G. H. Fellows Prynne, President, in the chair.

The minutes of last meeting having been read and confirmed, a vote of thanks was passed to Mr. H. L. Florence for allowing members to visit the Carlton Hotel, Haymarket,* recently.

Mr. E. Howley Sim, Hon. Secretary, announced the donation to the Library of Mr. Francis Bond's book, "English Cathedrals, Illustrated." A vote of thanks having been accorded to the publisher, Mr. George Newnes,

The Chairman announced that Mr. A. H. Hart's classes on "Colour Decoration" will commence on March 8. He (the Chairman) hoped that a large number of the members of the Association would join such an invaluable class. It was a great pity that the subject had been and was still so much neglected, and he hoped that, after the paper they were about to hear from Mr. Cole A. Adams, one of their past Presidents, many of them would enthusiastically join the class.

Mr. Cole A. Adams then read the following paper on "Colour Decoration":—

The subject of colour decoration is a vast one, and the time in which to consider it this evening very little, but even that little may seem long, according to how the lecturer treats his subject. And how to treat it? "That is the question." So much has been written and said about it during the last, say, five-and-twenty years, until I fear there is almost a likelihood of a deaf ear being turned to the preacher.

After careful consideration I came to the conclusion that I would head my remarks, "A Chat about Colour Decoration," and I will endeavour to say something which may haply be of some practical use to my fellow students, for whom I have every sympathy, and the happiest recollections of the years wherein some of us have studied colour decoration together. My discourse is addressed to students, and I shall attempt no dissertation upon the higher flights that have to be ascended in treating so voluminous a subject. I propose to speak of some of the various methods adopted in colour decoration, and to offer a few suggestions which may be of use in your study of the subject.

In our cities and manufacturing towns the architect, in attempting to add the charm of colour to his building, has to encounter the smoke demon, who, no sooner than the building is finished, sets to work to deface it as far as he is able. At present—and I fear so long as he is permitted to work his wicked will—no remedy is possible. Perhaps in the future, when we shall see more use made of electricity, or some means are found to compel manufacturers effectually to consume their own smoke, and householders also, then, when this demon is chained, we may see our buildings decorated with colour of a more cheerful tone than they now possess.

The trials which have been made of glazed earthenware or majolica for both outside and inside architectural treatment are hardly, I think, quite satisfactory. It is an excellent material where cleanliness is a sanitary necessity, but the glazed surface is fatal to that repose that colour when applied to a building seems to demand. It gives a restless appearance which is disturbing to the harmony of colour; and even this material our enemy, the smoke fiend, does not respect. But then you can wash it, say its advocates. So you doubtless can; but do you find in practice it is done? The light falling on the mouldings and ornaments is a disturbing element, and distorts them. It gives a better appearance and is more decorative if the material presents a smooth, non-reflecting surface, and has only a dull glaze. You do not varnish decoration which you apply in oil colour, for the reason that you would lose that quality of flatness and repose which are so important. Detached objects executed in a glazed earthenware are properly so treated; it is when it is applied in large surfaces it becomes distracting. These remarks apply, but in a lesser degree, to polished marble, which, unless introduced with great discrimination, is hardly satisfactory when covering large surfaces.

Mosaic should, I think, be always employed on a concave or convex surface, and is hardly ever pleasing on a flat surface, hence its unsuitability in reredoses, as generally applied.

And here I am tempted to ask how long the custodians of our cathedrals and churches and the worshippers in them, will be content with the sculpture and painting that is generally thought good enough? There are not wanting instances where one sees work which it is a pleasure to find, but such instances are rare. Buildings erected by our best architects contain too often sculpture and painting executed by incompetent and nameless artists. Sedding saw this need for calling on accomplished artists to help him in his work, and all true architects would wish it, instead of having to be content with the poor, lifeless, mechanical productions of advertising firms one generally sees. When we go abroad we are shown some masterpiece of the sculptor or painter's art done at a time when the highest efforts were alone thought worthy of a place in the sanctuary; and yet at the present time men are richer than they ever were, and could the better afford to give. The monuments to the dead in our cathedrals and churches are frequently works of worth and beauty, but we want equally good work dedicated to the service of the living God we worship.

Mention must in fairness be made of the great progress made in stained glass; much of it is admirable. Perhaps it will not be long before the educated and wealthy will call in the aid of artists who will give us work that shall be worthy of the building they are placed in, and worthy of the artists who executed them. There can be no better medium of perpetuating their fame.

In a house in the North where it has been my privilege to stay many times, built for the most part by a man who comes from an artistic race and who himself is artistic in every sense, is a mode of decoration which, as far as I know, is original, and certainly most delightful. The decoration I wish particularly to call your attention to in this house, I will endeavour to describe, and I am indebted to the owner for this description. He was present and saw how the work was done, and the artist who executed it was a Scotchman—by name Cottier—a man of great genius, better known in the North and America than here in London.

The walls and ceilings were prepared in the usual way. They were then covered with a thick coat of oil and whitelead, made the consistency of pudding, and laid upon the walls and ceilings with a trowel. The next process depended upon what the nature of the design was to be. Supposing it was the ceiling to be treated, as a vine trailing over the whole surface; the artist with his thumb boldly draws the leading lines of the design, and then with the end of an ordinary paint brush draws the stalk, leaves, and fruit. Those parts which he wishes to emphasise he modelled in the material—such as the grapes, which are raised in relief; in fact, with the coating which he has been careful not to lay on to a uniform thickness he is able to produce effects, whilst moist, as his fancy dictates. If he wants a more or less geometrical pattern on the walls, he takes a comb and by eye draws in patterns such as you may see done on the outside plaster of old cottages in Suffolk and elsewhere, and also similar to some Japanese patterns with which you are all familiar. Again, on the surface thus prepared, he puts a powdering here and there of small patterns. This coat, which is capable of taking any kind of design the artist may wish and his fancy dictate, is allowed to dry and harden. It is then painted the general colour it is to be, and the artist has various mixings at hand of the same colour and blends them as he goes. Those parts of the design to be gilded are so done and the various colours applied and allowed to dry. Finally the work is dull-varnished and has bronze powder mixed with the varnish, which gives a kind of sheen to the whole. The bright parts in gold are toned down and the colours blended one with the other. This, as far as I could gather, is the process. It is unlike anything with which I am acquainted, and it has great possibilities. It gives somewhat the charm that a picture does in which the colour is laid on unsparingly with brush and palette knife. The burred edges of the patterns, flowers or fruit raised in the process reflect light. The colours running one into the other satisfy the eye by their variety, and the dull old gold effects, mingling again with the bronzes, give a richness and *tout ensemble* which is charming. This work, however, must be done by artists. Executed by the ordinary decorators it would be intolerable.

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* See our issue for February 11 for a brief description of the building.

One striking effect in this house was suggested by the patron: he saw a ceiling after it had been floated with the oil and white lead with the trowel marks left. With a happy inspiration, he told the man to leave it so, and paint it with a deep copper bronze. The result is a most happy one—it has the same charm that beaten copper produces.

In speaking of this decoration—which I am afraid conveys but a feeble impression to your minds—I must tell you that the rooms are for the most part fine and lofty, the floors of parquet, and the house full of the most delightful old woodwork and furniture gathered from many cities at home and abroad; the walls are hung with pictures, and an air of distinction and good taste is prevalent everywhere, which makes a visit to the house an education in itself.

There may be some among you with an eye and love for colour and ornament who might do much worse than take up this branch of architecture as their calling. With the advantages you enjoy of learning your profession, it would be a great gain to you, and you would bring to bear a knowledge of architecture and building construction which would be of infinite use. The want of such acquaintance with this art accounts for the failure one so often sees in modern decoration. If we possessed artists with architectural knowledge, who made it their calling to decorate buildings, it would be a great public good and the public need educating in the matter of good taste. Growing up around us are town halls, picture galleries, free libraries, swimming baths, &c. Do not these offer scope for the artist? There are hundreds of such buildings lately come into existence waiting the hand of the artist. For a moderate sum, depending largely, of course, upon the building and the class of decoration, they might be made more attractive and interesting. Now, what happens? The powers that be call in the local painter and decorator; he sets to work and—paints it. Knowing very little of the principles of decoration, absolutely nothing about architecture, he, of course, cannot apply his decoration architecturally, and as a result, he not only wrongs the building and the architect who designed it, but commits the further crime of offending against good taste. Now, for comparatively a few guineas paid to an architect, who made such work his speciality, or to a skilled decorative artist, the same local painter and decorator might be led to turn out a work which would at once appeal to educated taste and give the public decoration of which they might be proud. I believe if authorities having the care of such buildings knew where they could obtain competent advice and skill in carrying out this class of work, they would avail themselves of it.

There is abroad everywhere a quickening of interest in public life; and the cities and towns are vying with one another in providing buildings dedicated to the use of the public which augurs well; and, as time goes on, we may look for a further extension of this good—as good it is—tending to break down class prejudices and bring peer and peasant together with the happiest results; in good time much may be done to render the lives and homes of the poor happier and better by this process of levelling up. To this end the decorative artist may employ his talent and do good by creating beautiful work that must have a refining influence for good. Few towns there are of any importance that do not tempt our great singers and actors to visit them, few that do not possess some work of an architect of eminence—and it may be that at no distant future—few will be said not to possess some work of art of a great painter or sculptor in a richly-decorated building. Is it not worth working for to become one of them who shall add to the fame of the town who employs him, by his skill in colour decoration, instead of leaving such work to be ignorantly and vulgarly carried out?

Experience in practical decoration may be gained in a way that is probably within the reach of most of you. In the parish in which you reside there will be a school or a parish room, and the parson would doubtless be glad of any one who could be found to volunteer to decorate it. This would give you the opportunity of doing experimental work which would be excellent training, and, at the same time, you will be doing practical good to others. But how to set about it! Parson may not unreasonably object to having his building made use of for experiments. You must first qualify yourselves by learning the handicraft to convince him you know something about the art.

I think one of the best ways to study decoration is to sit down before the object you are engaged upon and try and grasp the notion or leading idea of the artist; how he has treated it and how worked it out; what leading colour or colours he has chosen; in short, its leading characteristics. This sitting down before the object you wish to study, and, so to speak, inhaling it through the pores will not be lost time. It will, moreover, have the great advantage of training you to the habit of recollecting a scheme of design and colour, so that when you come to transmit your thoughts to paper, you will have helped to train the faculty of seeing your design in your mind's eye. To resume: Having taken in the scheme or design, I think the next best thing is—supposing it to be a ceiling, for instance—to make a plan and sections of it; then select that portion which will illustrate how the design or pattern will repeat. These drawings you should sketch as neatly and with as little detail as will express the thing you are at work upon, then put on a few leading dimensions; note the distance from the eye where the decoration is most effective, the distance from the eye, the style, probable or approximate date, place, and, in fact, each and everything that occurs to you as worth noting. I have found by experience the utmost use of thus jotting down particulars of what I am sketching, and I am sure it is a good plan, as (may be years after), it recalls the subject and gives you data which may have passed from the memory. Having made these drawings, which may be more or less elaborated according to what you are engaged upon, you may now proceed to detail the work to a larger scale and draw with the greatest care the ornament. A number or letter referring to where the part is should be noted on the plan or section, so that the details may agree with the drawings. When you have got your details sufficiently forward in pencil you may then proceed to colour them, and this will test your eye for colour. If you have not got your colours with you, or are pressed for time, a simple plan is to put on the drawing a schedule of colours and number them thus, red 1, blue 2, yellow 3, and so on; or you may elect to adopt the heraldic method. Either of these ways will be of use in keeping you in mind of the scheme of colour, and then you can at your leisure colour in your drawing; but the study will be of most use which is painted on the spot. And here I would remark that the habit of noting will be of use in describing how particular effects are produced and where the colouring has been influenced by the hand of time. Some decoration which we find now so charming owes that charm to reasons never dreamt of by the artists who did the work. In fact the work of the past owes a great deal to the hand and palette of good old Father Time.

Of course, in sketching at a museum, for instance, the object is generally detached, and can be embraced in one drawing, but here again I would urge upon you the need of cultivating your power of criticism and observation by noting down any memoranda which the subject may call forth. Let nothing appear too trivial. Attention to seeming trifles trains the mind to greater things, for is not the house built of separate bricks?

It all depends upon what you are sketching, but where the detail would work out very small and not large enough to explain the design, that part should be drawn to a larger scale. As you proceed you will insensibly learn what best shows and illustrates the subject which you are engaged upon.

As excellent examples of studies, I would instance the exhibition of students' drawings for the Owen Jones' Prize, which was on view here recently.

In studying from nature I would suggest to you that the same method should be adopted. And as correctness, beauty, and accuracy of line cannot be learnt better than by study from the living model, the same principle exists in studies made from still life, and no better advice can be given to those studying decoration than to go direct to that source. Every subtlety of line, curve, and contour, every gradation of colour and tint, of light and shade, will be found by those who seek it, in endless variety, and great is the happiness of the search. Store your sketch book with such studies. Take, for instance, a spray of any flowering plant and sketch it in outline with the stalk, leaves, and flowers, with just enough detail to express it. Note the varieties of form and curve, and how the effect is produced. Then sketch the same spray from another point of view, and if you wish to study it further, from yet another. Then detach one of the flowers and carefully draw it in all its parts, if possible to a full size, the plan, elevation, and section. What is the use of all this? is asked. I reply, every use; for the knowledge of parts thus grasped will one day stand you in good stead, and it teaches you the value of patient research, and trains you in the habit of thinking no part of your work too small or insignificant, besides giving you glimpses of the miraculous, and discovering new beauties which you never so much as dreamt of. You must, therefore, train yourself in the habit of close observation, which will in time become a habit. The simplest flowers are the most suitable to study from, and the most useful, the simpler the better. For models of expression in sketching you should study the Japanese. They succeed in that most difficult art of knowing how much to put into the picture to express its meaning. Time spent in studying these drawings will not be lost. Excellent Japanese books can be procured at Mr. Batsford's, bookseller, Holborn, and very inexpensively. In colouring your studies from nature do not attempt more than giving the local colours, and only showing enough to express this. The way the Japanese lay on their colour will best illustrate what I mean; there is no need to spend time in elaborating your studies you do not want to paint pretty picture cards. For the mingling and blending of colour you cannot do better than get hold of a piece of polished agate, marble, alabaster, or other richly-veined stone; note their qualities of line and colour; these studies will require great attention in the execution and, *en passant*, the employment of body colour will be found useful in making them. Then make sketches of birds, beasts, shells, and fishes which present features of decoration, and draw the same object from different points over and over again, till you have driven it into your brain and learnt something of what they have to teach. Note carefully the lines of decoration and colour and the value of contrast. This is what Tennyson writes:—

See what a lovely shell,
Small and pure as a pearl,
Lying close to my foot,
Frail, but a work divine,
Made so fairily well
With delicate spire and whorl,
How exquisitely minute,
A miracle of design!

Butterflies, beetles, and gorgeous insects convey a great deal of teaching, and train the eye to the beautiful harmonies and daring contrasts to be found everywhere in nature, which brings colours together in contrasts of ever-varying beauty. Any dogmatism upon the harmony of colours, and what colours may or may not be used together, is silenced when one sees how nature employs her pallette. In making these studies from nature, do not forget the need of written memoranda, descriptive of what you have before you, and figure the dimensions upon the drawing; in short, give as much information as you can find space for. Bear in mind they are *studies*. You do not need to make pretty drawings to show "your sisters, and your cousins and your aunts." Let your studies from nature and from the works of man run side by side.

You will find it useful to acquire the art of sketching in perspective. You can in less space show so much more of your subject, and if you can readily and easily sketch in perspective, it conveys the intention much better to the lay mind. It has, besides, a *commercial* value, as you may convince a client the more readily if you can show him how a work will look when executed. At the same time, do not let this kind of sketching take too great a hold upon you to the neglect of careful and figured details drawn either by eye or to scale. Drawing in perspective becomes so fascinating that the temptation is to make a picture, and you will learn your lesson better by a hard matter of fact diagram. In making studies of ornament in monochrome, it is most useful training to do so with a brush. You cannot get anything like the freedom or effect by using pencil or pen, and you will come nearer to the Greek and the Japanese if you copy their painting direct with a brush. With a little practice you will find no great difficulty; besides, it is excellent training, and it will let you into the secret of how they produced their effects and why their ornament takes certain forms. If you wish to study the ornament as practised by the ancient Greeks, go to the British Museum, make your way to the vase-rooms, and you will see how, by the employment of simple yet lovely forms, they have produced designs in endless variety and mostly with the use of a single pigment. We frequently hear a great deal about the accuracy displayed by the Greeks in their treatment of ornament. Many of the examples which have come down to us are anything but well drawn, and all that I have studied show an absence of mechanical accuracy, being obviously executed by the eye and hand only.

It is the fashion in employing Greek ornament in decoration of all kinds to do so with geometrical precision, with the result that it is all "Faultily faultless, icily regular, splendidly null." It does not pulsate with life, and to employ Greek ornament thus is to miss half its beauty—which does not consist in perfect accuracy of parts, but in that charm which the trained eye and hand alone can give to all work, and which is lost in mechanical execution.

In the repetition of ornament, where the same pattern is employed over and over again, stencil plates are generally used, and a few remarks upon stencil plates and their use will not be out of place. The great objection to them, is where the pattern to be repeated cannot be cut without leaving "ties," which are used to hold the stencil together, and these "ties" it is seldom possible to touch in afterwards without their being apparent. The whole art of stencil-plate cutting has a rather narrow margin of limitation, and work carried out with the extensive use of stencilling is anything but pleasing. It has a thin, starved, stiff, mechanical appearance. I think we may borrow a hint from the Japanese method of employing stencil-plates as practised by them at the present day.

In a work on the art of the Japanese stencil cutter, by Andrew Tuer, F.S.A., he says:—"The artist-workman takes some half-dozen sheets of tough paper made of mulberry fibre (Broussonetia papyrifera), prepared with the juice of persimmon and waterproofed with a hard-drying oil. On the top he places the artist's design drawn with ink. The sheets firmly secured, he begins cutting with a long thin knife, which he pushes before him in the same way as a copperplate engraver at home uses the burin. Slowly and accurately the keen blade cuts through the little pile of paper following the curves of the design. Where there are punctured holes or dots the knife is superseded by a fine punch, for if pins were used a bur would be formed and the design would not print clean and sharp. When the cutting out is finished, two of the sheets are damped, so that they may expand and—what is of equal importance—contract equally in drying. One is laid down flat and covered with adhesive material. The threads are then one by one put in position, the ends sticking on to the margins. The second stencil is accurately laid over the first by means of upright pins placed in the 'register' holes already mentioned, the two paper plates are brought exactly together and the threads securely imprisoned. The joining of the two plates inclosing the threads is so absolutely perfect that a strong glass fails to disclose any signs of overlapping or unevenness. That any one but a Japanese could execute such difficult work as this is simply impossible.

When the stencil cutter has got through his first pile, he puts a stencilled impression on the top of the next as a guide in lieu of the original drawing which now has no independent existence, and he will continue cutting out the same design until he has a number sufficient for his purpose. From its nature, especially when the design is delicate and finely cut, a paper stencil-plate cannot last very long. Many of the examples in our collection have seen so much service that they cannot again be used."

Now the Japanese employ stencil-plates for the decoration of their textile fabrics, and produce most artistic effects; whether they have any like method in use for wall or ceiling decoration I do not know, but I venture to throw out a suggestion for adapting the principle employed by them, and applying it in a modified sense to our use.

Let the design to be employed in repetition be drawn on fairly stout cartridge paper, and it may be designed without any care for the "ties" which it should be the object to dispense with, so that the plate shall leave the stencil brush finished. Then give the paper a coating each side of patent knotting, and with three or more similarly prepared blank sheets secured together at all available points, place on a sheet of plate-glass, cut out the parts through the several sheets with a sharp knife. Then when you have cut out the pattern, liberate the sheets and insert between two of them a network of very fine wire, which may be made taut by attaching it to a frame (a trifle larger than the paper stencil plate) of stout wire. The two plates, being exactly adjusted, should then be pasted together, and when dry given another coat of knotting. It may be objected that the wire which takes the place of the "ties" will be objectionable and will show in the colour, but with skill in manipulation it may be made, if you will, to become part of the design. I do not think it will be any detriment, and at all events the plan will admit of a much wider, artistic, and more extensive use of stencilling. By having on your palette several mixings of the colour of varying tints, and two or more stencil brushes in use, it is very easy to blend the colours of the stencilling in executing it, and to remove the harsh mechanical appearance one so often sees. By a series of plates effects can be produced, on the same principle as wall papers or printing in colours is done, and much of the objection to stencilling will vanish by adopting this method of the Japanese.

The difficulties that beset a decorative artist are very great, and he must be ever studying so as to store his brain and keep abreast of the times. I think a student can hardly do better than commence his studies of decoration of the different styles with copying from the decoration of savage tribes, of which the British Museum and most museums contain a goodly collection. I advise this as affording illustrations of what the untutored man does in ornament and colour and there is a marked likeness in the early efforts of different nations or tribes; lines, circles, dots, zig-zags, herring-bone, and the employment of the primaries of colour.

Then the styles should be taken, commencing with the Egyptian as the earliest. Let me suggest a visit to the Crystal Palace at Sydenham, where an object lesson may be learnt from the courts decorated in the different styles. Unfortunately in this country we have but few examples of ancient decorated buildings to study from and have to be content with the fragments in our museums and the various objects to be found there. Still one must take things as they are and be content; but however beautiful the various fragments are, they have not the teaching that applied decoration to a building possesses; to obtain this you will have to go abroad and study the style you wish to become acquainted with in its own home, with all the surroundings which so influence the art. Much and most useful information is to be gathered from the splendid works which have been published, and which you may see at the museums and in the library of the Institute and Architectural Association. They are magnificently illustrated, but the colours can only faintly show the effect that the building produces under the ever-varying light and shade. As it is hardly possible to study all the styles in the land where they have had their birth, you must study from those specimens which we possess and from books.

One of the uses of possessing a knowledge of the styles is, that you never know when you may be called upon to make use of this knowledge, and you should look upon it as part of your education, and that there is no better way of familiarising yourself with them than by such study. Your sketch-book studies should include all the information you can acquire from books, and let that information be culled from the best writers on the subject; but bear in mind, a closer and more thorough study will have to be made of those styles in which you are thinking of working.

What is the best style to adopt for *fin de siècle* decoration? asks the bewildered student. The hum from the battle of the styles fought in the sixties is now at rest, and we are content to admit in the nineties whatever is the fancy of the day, until maybe, at no long future, an Architectural Association student will be found, sketch-book in hand, lost in admiration of the severe simplicity of Gower-street architecture.

Yes, all is changed, and we are agreed that there is now no style in architecture which is worth dying for. For some years past men's faith in thirteenth century work as the *ne plus ultra* has been rudely shaken, and the influence of a younger school of clever architects, led by Sedding, changed our faith, or, say, admitted into it greater latitude, and in the Church of the Holy Redeemer, Clerkenwell, and Holy Trinity Church, Sloane-street, we feel this force of Sedding's power and recognise what his teaching was; that we were free to adapt from the various styles what seemed most fitting and to cast aside the bonds of formalism, which required chapter and verse for every feature introduced into a building. He declared trumpet-tongued that he, for one, would not be "cribbed, cabined, and confined" by canons which the older men had laid down, and maintained that salvation was also to be had in the "flat and pointed" with a little Classic, of a kind that would have made the men of the schools smile and wonder. Yet under Sedding's inspiration we feel, and more especially those who knew and loved him, the influence of his magic; and even though we refuse to go all the way with him, we cannot but recognise the power and that *something* which it is difficult to define, but which we call *genius*.

What Sedding's status will be in the hierarchy of art, we must leave to the future; with the restraint that his genius imposed, what we feel, perhaps, inclined to condemn, we are compelled to condone. It is in his followers that we have to look for results, and we have not had to wait long for them; the illustrations published in the professional journals are many of them strange and eccentric. They exhibit a likeness to the work of the master, but the spirit is wanting in them. But though these efforts may fail, are they not the outcome of the cry for freedom from the shackles of formalism? If men, in the joy of this freedom, may here and there stray into the paths of licentiousness, let us not be too severe in our condemnation.

As Architecture is the mother of arts, so she must influence for good or evil her daughter Decoration. No longer will men tolerate a cold, lifeless revival of the past, a grinning skeleton galvanised into life. Sedding's gospel of freedom is heard and felt, and what he taught finds many disciples.

In every known style under the sun there is truth and beauty, and a likeness which makes them all akin, and as the bee sucks the honey from every flower, so may we gather the sweets where we will. Who shall say that we are not to make use of ornament, no matter where we find it, if we have the wit: not a mere copying, but ideas worked out from it, "whatsoever was written aforetime was written for our learning," may we not employ the words without irreverence? Evolution is at work now as it ever was and ever will be.

And what a perplexing state of things exists in our midst, and what difficulties it creates. The artist-decorator may, in the course of his practice, be called upon to decorate a church built in the Classic style, the Renaissance, the Romanesque, the Byzantine, the Mahommedan, or the Gothic; he will be required to do so in the correct style, as it is called, of the period of which the particular church is an example. Another time it will be a theatre, a concert or ball room, or mansion where maybe particular rooms are to be decorated in particular styles; such a house I came across some time since in the north decorated by that clever artist, whom I have before mentioned, the late Mr. Cottier, but, with his skill and inspiration, one was forced to be pleased. Is it not, however, appalling this demand upon the artist? No wonder if he bewails the age in which he has been born, and, from sheer weariness, closes his eyes and dreams of a time in which one style was in vogue, and one only; no newspaper critics, no art journals, no books on art, no cant and jargon of the stereotyped order—the one style, which yet gave infinite latitude to the ordered mind and the inventive genius. Small wonder that, with time to work out his idea, the Greek artist excelled in beauty of design which never lacked grace, and that quality of fitness and repose are also to be found in the best Japanese art, which, alas! in its turn threatens now to become a thing of the past.

But our dreamer awakes to the fact that he can only in dream world live in Greece or Italy in their period of greatness, and that he is obliged to pass his days at the end of the nineteenth century in a murky atmosphere, with all its hurrying and skurrying; to enter the lists with his fellows and compete for the prizes; and the prizes are to the skilled and the strong. Surely it is wiser not to be troubled over much about what style to adopt, *i.e.*, any of the various styles of decoration; more important surely to cultivate a good style—to study the old styles and try to absorb the principles to be found in them. Then if you elect to follow any one style in particular, to do so in the spirit in which it is conceived, and not to attempt the impossible or to revivify the past; here is unlimited scope. Take English as it is spoken at the present day—a language rich in its antiquity; and yet how many words and phrases are borrowed from other nations! And in America how much more is this the case; and Americans, less trammelled than we, are producing work the best of which is distinctly modern and original in character.

One of the problems in colour decoration is to employ only those colours which will look well both by daylight and artificial light. These will be influenced again by the amount of daylight which is obtainable in the place which is to be decorated. Here only experience will guide you correctly, and here I may say how very difficult it is to prepare any sketch or drawing to show what you propose. Some artists positively refuse to do so, and no wonder. Still there are clients who insist on having an idea of what the design is to be, and who will see a sketch first, and to a young artist just starting on his career, not to show what he is going to do may be fatal to his employment. Therefore, if it is insisted on, show as little colouring as possible, enough to give the general scheme, and guard yourself by saying that circumstances may compel you to alter as you go along. When the client has approved of a scheme, the best thing that can happen for both client and artist is, that the former shall go abroad for a short time and not see the work through all its stages until finished; for should the client not absent himself, but look in to see how the work is going on, he will in all probability destroy his own peace of mind and that of the artist.

Now interiors have to be used by daylight or by artificial light, and by both day and artificial light. By daylight, as picture galleries, banks, Courts of Justice. By artificial light, as theatres, ball-rooms, and other places of amusement, and by both day and artificial light, as churches, assembly and concert rooms, &c., and private houses.

Under these conditions of lighting come others, and in the way in which they are met will depend largely whether the decoration is successful or otherwise. A quiet half-hour in the place you are called upon to show your skill, with sketch-book in hand, will be time well spent.

If the place is used by daylight, note what amount you have at your disposal, or will have when the windows are upholstered; what is the aspect, north, south, east, or west. Then for what use the apartment is to be put, and whether it is wanted for summer or winter use. Then, again, at what time of the year you see it, so as to judge of the amount of light; if a sombre and subdued effect is sought for, or a bright and cheery one. If, again, the apartment is to be used at night, obviously your colours must be tried by artificial light, and make your experiments by that kind of light which is to be adopted. If for day and night use you must use those colours which look well by day and night. The design thought out, you must first try the colours you are proposing to use upon the walls or ceiling, noting whether they are what you intended, and how one colour goes with another, always judging of this at the distance it will be when executed, and settling this upon the spot. This trial of colours upon the spot is of the first importance, as many are the changes that take place, and what looks well in one place looks bad in another. The experiments may be in colour only, without any design upon them, or you may, better still, put up full-size coloured cartoons *in situ*, and judge of the effect. It is a good plan to leave them up for a day or so, frequently it happens that after an interval you come upon the design with a fresh mind, and can form a better judgment than at first, and decide in what points you think they need amendment, and whether, as is very probably the case, you may omit some of the detail, strengthen and accentuate those parts which require it, and send back or bring forward others. Do not hurry over this stage of your work; it may take you hours only trying the colours and effects. Decoration needs the exercise of all the virtues, and patience in particular, and you cannot properly decide questions of colour with watch in hand nearing the hour at which your train starts. Let him who thinks of embarking on the pursuit of decoration think on these things. When you get the colours and the design settled somewhat to your liking, you may consider yourself happy; vigilance will still be required, but the worst is over. If you have a good, intelligent, and honest foreman of painters, another great weight is taken off your shoulders; and by all means in your power interest those who are carrying out the work for you, and do not spurn their advice.

It may be that you have to collaborate with some figure or landscape artist, and then your whole scheme of colour has to be subservient to his work. In fact no two cases will be alike, and it will call forth all your powers of intelligence to meet and overcome the many difficulties that may arise.

And the payment for all these years of study spent upon decorative work? Your payment must be in the first place the delight of doing colour and design, for it is seldom you are paid adequately for the labour and time it involves. You will sometimes find clients who are under the impression that the five per cent. will cover your expenditure of brains and time, and be genuinely surprised when you tell them that such payment is *totally* inadequate. A gentleman connected with a large firm of decorators once told me that they reckoned 20 per cent. in their estimates for the "brains" and for good work requiring special skill and much time, this is not excessive. Where a price is given for the work complete, a man knows what he is spending—stock, lock, and barrel—and pays the bill cheerfully. But if *plus* the actual cost of the decoration, a client has to pay the architect for his brains, skill, and time on the designing, he frequently feels aggrieved. Unreasonable, is it not? But a fact.

Perhaps the best advice, from a purely commercial view, is to get what you honestly can, acquire a name and fame by judicious self-advertisement, strive to cultivate a manner, to become the fashion, by letting it be known far and wide by the blast of the sound of your own trumpet, that *you* are the artist to employ, and then Society will pay you anything in reason—and out of reason—you like to ask.

I fear that what I have said will appear to be as "bald unjointed chat," but if I have succeeded in dropping some seed which, falling upon fruitful soil, may grow, it will not be in vain that I have set down some thoughts that occurred to me, though I could have wished they were in a better setting, more worthy of your acceptance and of those who did me the great honour of asking me to give a paper on colour decoration.

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The Chairman, in opening the discussion, said they were all grateful to Mr. Cole Adams for giving them another lecture on colour decoration. Many of them had passed through the lecturer's classes on colour in past years, and those who had done so were able to speak as to the value of them. The low relief decoration in the house in the north must be very beautiful, judging from the lecturer's description, but it was not altogether new. He (the Chairman) knew that the treatment had been adopted by others in several cases; but the way in which the colour decoration was, according to Mr. Cole Adams, applied was certainly novel. As to the lecturer's remarks about mosaic, surely it was a little too sweeping to say that mosaic was never satisfactory on a flat surface. It certainly was in many cases far better on a concave or convex surface, but when properly used a very good effect could often be got on a flat surface; some of the work at St. Paul's Cathedral indicated that the flat treatment of mosaic was not altogether a failure—in fact, much of the flat mosaic decoration there was very beautiful; but then, much of it was entirely out of sympathy with the architecture. They could not deny the value of stencil. In repeat work, especially, which could only otherwise be done slowly and laboriously, it could be used with great advantage; but it was quite easy for a real artist to put a good deal of feeling into it by mixing his colours so as not to get one dead tone of colour. The advice Mr. Cole Adams had given as to studying examples of executed work and trying to grasp the feeling of the artist who did it, was most valuable, as was also his advice as to Japanese or Oriental work—work which was too much neglected by us. The Orientals and Japanese used primaries and secondaries without fear, and got wonderful harmony without apparent effort; it seemed to come naturally to them. They would have been glad had the lecturer given them his ideas as to the kind of colours he liked to use in domestic or church work in England. It was useful to have brought before them occasionally the experience of different men as to the use of colour and as to processes in this dark, damp, dingy climate of ours. We could not but be struck with the fact that in bright, sunlit countries the brightest colours were used. In Venice, for instance, primaries and secondaries were used quite freely, but in duller countries the contrast with such colours was so great that a certain amount of toning-down was necessary. In mediæval times in this country absolute primaries were undoubtedly often used in screen and roof work, &c., vermilion being used in harmony with other colours. Time had aided such work, and had helped in toning it down, and students, in studying colour decoration, should not forget that the colour we see in mediæval work was originally much brighter in hue. Moreover, in actual work, especially in church work, much brighter colour must be used than in studio work. In our damp climate it was necessary to study and thoroughly learn the best way to treat walls. He thought that a wax preparation, the colour being amalgamated with it, would be found satisfactory, for it kept back the damp. Students, in setting to work in decoration, must bear in mind the desirability of having a large scale scheme before them—at least 1 in. to 1 foot—so as to get the contrasts and harmony in their general scheme of colour. As to sympathy between artist and architect, the artist ignored the architect, and perhaps the architect did not sympathise with the artist as he should. But artists did not appear to think it was part of their education that they should understand the lines of architecture in a building. They treated architectural details as so much canvas—simply as wall-space for their decoration, which was applied wholly independently of the lines of architecture. This was fatal to both the architecture and the decoration. The more artists and architects talked such matters over and agreed as to treatment, the more successful would architectural decoration become. There must be more sympathy with the artist as to unbroken surfaces, but artists must get more into sympathy with architecture, and must follow the leading architectural lines, otherwise there could be no really successful fresco painting or mosaic decoration in buildings.

Mr. L. A. Shuffrey, in proposing a vote of thanks, said that students in studying decorative examples should not be content with copying. The sketches that one sometimes saw were very beautiful in their colouring and very life-like, but colour must be carried farther than that. Copying did not bring into play the imagination, and it was very important that imagination should be combined with the practice of colour, either on walls or in work on a clean piece of paper. It was important that a student who wanted to get a good grip of colour should do something in actual work. The suggestion that Mr. Adams made, that architectural students who had a taste for colour and form should take up that branch of artistic work was an excellent one; there was plenty of room for artists in that direction. At the start, there was the difficulty of remuneration, and unfortunately nowadays very few people would embark on any work without knowing beforehand what the cost would be; that hampered decoration—as it did everything else—very much indeed. It was an unfortunate fact that that tendency had led to the introduction of the "firm" who were willing to make estimates for a work and take risks. A client then, in going to a firm, saw the head of a department, who did not understand decoration, for instance, in the least, but the client did not seem to mind so long as the work was executed within the estimate. Another difficulty was that clients had ideas of their own sometimes, and that was most difficult to contend against. It would be a very good thing for a young architect who wanted to get some experience in the use of colour to tackle his own office! It was astonishing what a number of years an architect could go on without getting acquainted with the actual practice of ordinary painting. Two or three weeks actually doing such work would give a man a better acquaintance than could ever be gained in superintending the erection of buildings. As to glazed tile work, he did not like it in any form whatever, though it was being used now in internal surface work, with a semi-glaze, with some success; but he could not agree with what Mr. Adams had said as to marble. Marble could be polished, and the more it was polished the more beauty one got out of it: polishing gave a beautiful transparency and depth, and he was pleased that marble was being used more now than formerly. It was a difficult thing to use together satisfactorily two marbles of different colour, and it was a good method to get a strong dividing line between them. The opportunities of studying executed work were limited, but they were available, and the benefits to be gained in connexion with the Architectural Association visits were considerable, especially when the buildings visited were in an almost finished state.

Mr. J. D. Crace, in seconding the vote of thanks, said he was glad the hear the Chairman remark that those who undertook decoration should begin by endeavouring to pay respect to the architectural intention in a building. That was the first and principal rule which every decorator should be guided by; and all studies of schemes of colour, &c., were comparatively insignificant if respect were not paid to a building which had any title to respect. He agreed with the Chairman, that the artist should endeavour to put himself more in sympathy with the architecture of the building he was decorating. Every building of any importance had received from its architect a great amount of study as to the effect to be produced, and if the architect were a man of ability he would in most cases devote a great deal of consideration to the effects to be got by light and shade, and the accentuation of form. Great injury, therefore, was often done to a building by the failure of the artist to get into sympathy with the architectural intention of a building. He believed that nothing could more help a young architect to realise what decoration is, and what was expected of him in decoration, than to inspect a building before it was decorated and try and realise where and how colour should be employed. Harmony could only be acquired by actual study and practice—constant practice from nature. He would like to emphasise the great importance of trying to realise what system of colour would best bring out features which were intended to be the expression of form in the building itself. As to the fact that a greater amount of brilliancy of colour was tolerable in strong sunlight compared with what could be used in the kind of broken light got in this country, as a rule, it was largely to be explained by the mechanical action of the retina of the eye. Directly the eye looked at a bright light, it protected itself as by the stop of a photographic lens, by reducing the size of the opening. The opening being reduced, the radiating effect of bright colour was reduced correspondingly, and the eye was then less sensitive to a brilliant light. As to fresco work, and finding a material which would resist our atmosphere, in large cities one had to deal with the fact that the atmosphere was full of a free acid, which even ate into stone. Was it surprising, therefore, that fresco was affected also? In the country this was not so. He agreed with Mr. Adams that, as a general principle, a concave or convex surface was better for mosaic decoration than a flat one. Mr. Adams was rather hard, however, on the trade decorator, and he must not forget that Mr. Cottier, whose work he so much admired, was a trade decorator, and a very successful one. He (the speaker) was sorry that so much attention was drawn to "fancy" methods of decoration, for they were rather apt to lead a beginner astray, and to go astray in a material composed of white lead and oil was no joke; nothing short of pulling down the whole plaster could remedy an error, for the material set as hard as iron. The hand of time was very kind to all colouring, but it must not be assumed that the old artists left everything to time. He certainly thought that the study of birds and flowers was extremely valuable in acquiring a knowledge of how colours might be brought together, and what little niceties of tone constituted the means of bringing them together. Students were well advised to constantly refer to nature, but he could not quite agree that studies should be made in local tints. He thought that the harmony between flower and foliage largely depended upon shadows in the foliage. A green leaf and a pink or red flower were not strikingly harmonious when laid out flat together, but the introduction of shadows so toned the green that the flower was thrown into beautiful harmony and relief. When they were studying flower forms they should study them without shadow, but when for colour they should study them with all shadows. Mr. Adams' advice to students to go abroad to study examples was very valuable, for the number of examples of beautiful colouring in this country was very limited. The next best thing to going abroad was to study some of the beautiful things in South Kensington Museum, where models of some of the finest works of the Italian decorators were to be seen. He might mention that the Painters' Company gave a travelling studentship of the value of 50*l*. for foreign travel (of not less than six weeks) for the study of colour decoration. He felt that students of colour could not do better than compete for that studentship, for even six weeks of travel and study of good examples could not fail to make a difference in a man's career.

Mr. H. W. Pratt said that as one of those who helped to start the Colour Class of the Association twenty-five years ago, when there was a good deal of enthusiasm for colour, he was greatly disappointed that the subject had not been taken up in the present day with similar enthusiasm by students. If it had not been for men like Mr. Adams and Mr. Crace—who gave up so much of his time to the work of the class—the Colour Class of the Association would have died years ago. He (the speaker) hoped that the course of study in colour in the new curriculum of the Association would be successful, and that it would be attended by more than the comparatively few students who now supported it. Materials used in the construction of buildings play a great part in regard to colour, and the increased use of coloured materials. in them the last twenty years had done a great deal to improve our architecture, especially domestic architecture. As to the relation between architects and artists, the architect certainly ought to be in the position of master in any scheme of colour or decoration in his own building. But the truth was that he rarely had an opportunity of acting in that capacity, for it was generally some long time after a building had left the architect's hands that anything was done in regard to a scheme of decoration. When such work was undertaken the trade or the art decorator was called in, and the architect had nothing whatever to do with the work and no chance of combining with the decorator in the treatment of the building, and so emphasising those features of the building that required it. When the architect had the chance it was to his and the decorator's advantage to work together. But that was not possible in the case of important buildings which were to be decorated, the architects of which had departed; and in such cases he thought that some architect should be called in to act in conjunction with the artist who might be decorating the building. In the case of the decoration of St. Paul's Cathedral, for instance, it seemed an unfortunate thing that Sir Christopher Wren was not alive to see the havoc that was being made with his magnificent building. It was time to stand up in protest against a method of decoration which one might safely say was never intended by the architect, and as to which one dreaded what next was going to be done to still further ruin the architectural features and character of much of the interior of St. Paul's. Unfortunately, one was not able to judge very well what was being done, because much of the work was covered up and it could only be seen piecemeal; but it was a case, as far as he understood, of an artist being at liberty to do what he liked with a great building, without any direction, advice, or control as to its treatment. It was a case of a good man being called in, but with nobody to look after him,

Mr. Crace said that he felt very much in agreement with Mr. Pratt as to the decoration of St. Paul's. Some time ago he went on the scaffold with Sir William Richmond, when he observed that the volute scroll which formed the base of the architrave of the clearstory windows was gilt and cut up into little squares in imitation of mosaic. He called Sir W. Richmond's attention to it, and that gentleman replied: "Yes, I want to suppress those hideous things as much as possible!" The future would determine whether Wren or Sir W. Richmond was the greater man, but Wren was great enough to justify respect being paid to those features of his architecture which are of importance and a serious part of his design. No artist was justified, however great, in altering features which were a definite part of a great man's building.

Mr. E. Howley Sim said he had once belonged to Mr. Adams' colour class and he had found the study of colour of the greatest possible interest. But there was one drawback to the study of colour, it was un-English: there was no style of colour decoration in England. In mediæval times colour decoration consisted principally of the use of primaries, for picking out mouldings and in diaper work, and the only use of colour in external English architecture was in green shutters. During the last forty years colour decoration had very much revived, but there was very little previous to that; whereas continental countries had a colour history of their own. We live in a grey country, and grey was the general colour of our buildings. As to inside decoration, that was generally confined to wall paper in this country and in domestic rooms. It was quite possible to use very brilliant colours and yet obtain a decidedly quiet effect.

Mr. Matt. Garbutt said he could not agree with Mr. Sim that there had been no art of colour decoration in England. A great many examples occurred to show that there had been a lot of good colour decoration in past times in this country. Many old churches were painted right through, and in Somersetshire he had seen a great many remains of colour decoration. It was true that there had been a long interval since colour was generally used in our public buildings, but we were now taking to it more. The question of expense accounted for much of the neglect of colour in our buildings. One reason why more colour decoration was not used in our private buildings was because ordinary rooms were so full of furniture. In dwellings in most eastern countries there were no lofty pieces of furniture covering up the walls as in England. Our architectural decoration had to consist principally of backgrounds, and the architect never or rarely knew what the furniture would be or how it would be disposed. The gentleman who did the colour decoration of the room in which they were assembled had treated it in a very modest manner, and as that was the home of architecture in this country he (the speaker) supposed they had the best scheme obtainable.

The Chairman said he thought they must all agree with Mr. Shuffrey's remarks about firms, but as to what Mr. Pratt said, it was not a question of "the master-architect." What was wanted was the artist to be in sympathy with the architect, and the two working hand-in-hand together. Architects themselves were a good deal to blame in the matter. They had to a large extent ignored the subject of colour decoration, and, as a consequence, their opinion was ignored by artists who generally refused to regard the architect as a leader in the matter because the architect too often did not know much about it.

The vote of thanks having been put to the meeting and heartily agreed to, and Mr. Adams having briefly replied, the Chairman announced that the next meeting would be held on March 3, when Mr. A. Saxon Snell will read a paper on "Public Baths."

The meeting then terminated.

## THE ARCHITECTURAL ASSOCIATION SPRING VISITS:

### NEW ROMAN CATHOLIC CATHEDRAL.

ON Saturday last week about seventy members attended at the new Roman Catholic Cathedral now in course of erection in Ashley Gardens, Victoria-street, Westminster, by the kind permission of Mr. J. F. Bentley, the architect, who was, however, unfortunately unable to be present as he had intended. The party was conducted over the building by Mr. J. A. Marshall, Mr. Bentley's assistant. The building at present has reached nearly to the level of the springing of the domes which are to roof it in. The plan consists of a nave divided into three great bays, each about 60 ft. square and which are to be ceiled and roofed with a low segmental dome. The sanctuary forms another bay about 53 ft. square, also to be covered with a dome. Under this is the position of the high altar, and beyond the latter is the apse extending another 50 ft. (internal) and containing the accommodation for the choir. On each side of the first and second bays of the nave, on entering, are processional aisles about 11 ft. wide, and beyond these chapels ; on each side of the third or last bay of the nave is a transept, and these occupy the width of the aisle and chapels. To right and left of the sanctuary are respectively the chapel of the Blessed Sacrament and the Lady Chapel. There are also a series of porches, narthex, and baptistery at the entrance (north) end and a crypt under the choir at the south end, besides two sacristies one above the other : these lie to the west of the crypt and choir.

The total outside length of the building is 360 ft. and the width 156 ft. The height from floor to the springing of the main arches is 60 ft., to the crown of the soffits 90 ft., and the segmental domes, which spring from about 2 ft. above that point, rise to a height of 112 ft. The tower will be about 280 ft. high by 30 ft. square.

The exterior of the building is faced with specially made narrow bricks from Messrs. Thos. Lawrence & Sons, of Bracknell, in combination with Portland stone dressings, and granite is used in the plinth and various other parts. The interior at present is entirely of brick and this will eventually be covered on the lower parts with marble veneer to harmonise with the small columns of solid marble which will support the galleries, and with mosaic on the whole of the surfaces above 37 ft. from the floor.

The design may perhaps be called Byzantine in feeling, and will no doubt be very grand, though at the same time very simple when complete. The foundation of the old Tothill Fields Prison, a bed of concrete 9 ft. thick, has been used for the foundation of more than two-thirds of the building. The southern portion of the site was found to be very soft, and the new foundations there had to be taken deep. The damp courses, both horizontal and vertical, have been formed of blue Staffordshire bricks. The domes are to be constructed of concrete, consisting of one part of Portland cement to four parts of brick broken to the "size of nuts." The pendentives, with the exception of a small portion at their points, which is to be of brick, will also be composed of concrete. The domes will vary from 2 ft. thick at the springing to 15 in. at the crown. They will be covered externally with slabs of artificial stone, formed specially to fit, and laid on ribs of concrete formed on the back of the real dome, thus leaving a space of 6 in. between the outer skin and the real dome. The latter will thus be protected from rain, and the church will also be kept cooler. The concrete will be laid on a continuous and complete centering, a model of which was on view, though not entirely finished.

The very elaborate and carefully executed model of the whole building was also on view. This was made in Messrs. Farmer & Brindley's workshops, and cost about 180*l.* Numerous working drawings were also to be seen, and were studied by those present with great interest.

The excavation and all works up to the ground level were carried out by Messrs. Perry & Co., and the superstructure is being executed by Messrs. Shillitoe, under a measure and value arrangement, on a contract schedule of prices.

Much information was kindly given by Mr. Mullis, the clerk of the works.

## *ARCHITECTURAL SOCIETIES.*

SHEFFIELD SOCIETY OF ARCHITECTS AND SURVEYORS.—The usual monthly meeting of this Society was held on the 14th inst., at the School of Art, Mr. R. W. Fowler in the chair, when Mr. P. Marshall, F.S.I., gave a lecture on "Surveying." The lecturer prefaced his remarks by giving advice to the students upon the necessity of being careful and particular in all the work appertaining to the profession of a surveyor. He then proceeded with a detailed description of the work done by surveyors of 150 to 200 years ago, and the character and beautiful workmanship of the finished plans of that period, and illustrated the manner in which the surveys were carried out from that period to the beginning of the present century, and explained how the plans were prepared by these early surveyors and the various details connected therewith, contrasting the amount of labour expended upon the finished plans of that period with those prepared in these hurried times. After referring to the work done by the surveyors in the enclosures of the commons and waste lands of England, he gave a detailed description as to how the surveys of these commons were made, the manner of laying out the roads and dealing with the rights of way across the same, also the way in which the surveyors valued the commons for dealing with the commoners' rights, and also the allotting and setting out the plots apportioned to them. He also gave an outline of the work done by the Commissioners and the hearing of claims, and as to what these claims consisted of, being for various rights, such as those of pasture, horses, and sheep, the rights in respect of ancient enclosures, the tithe owner and the lord of the manor and his manorial rights, and explained how the lands were allotted in lieu of those rights. The different methods adopted in meeting the expenditure incurred by the Commissioners in their work were then shown. He described the various systems of modern surveying, and their application to the surveys of country estates and property in towns, and specially explained the applicability of traversing with the theodolite for these surveys, with advice as to how the same should be carried out. Proceeding, he laid down what in his opinion was the best mode of preparing Parliamentary plans for engineering and other uses, and in particular the making of the surveys required for the working plans for railways and other works. He next gave advice as to preparing the cartoons for Parliamentary and other purposes, whichare used in the illustration of works before committees of the Houses of Parliament and other tribunals, concluding his paper with a brief description of how the ordnance survey of England was carried out, and the details shown on the published maps. On the motion of Mr. Fred Fowler, seconded by Mr. C. Hadfield, and supported by Mr. H. Vickers, a hearty vote of thanks was given to the lecturer.

BRISTOL SOCIETY OF ARCHITECTS. — The monthly meeting of this Society was held at the Fine Arts Academy on the 15st inst., when the question of the competition for the proposed new library was discussed, and after hearing the report of the deputation to the Libraries' Committee, it was resolved that, in default of an independent professional assessor being appointed, the original determination not to compete be adhered to. Surprise was expressed that the Libraries' Committee had refused to accede to so reasonable a request, the ostensible intention of the competition being to obtain the best design. Mr. Arthur Lee, J.P., then read an interesting paper on "Marble Decoration," profusely illustrated by lantern views. He remarked that an eastern traveller once said that until he went to India he did not at all understand the artistic beauty of marble. As he spoke, he had before him the magnificence of the Taj Mahal, the most priceless and wonderful monument in the world, raised by the Emperor Shah Jehan to the memory of his wife. The Makrana marble, of which the Taj Mahal was built, looked its best under the gilding of the Indian sun or lit up by the softer rays of the moon in the marvellous manner which could only be witnessed in eastern climes. It was under such circumstances that a highly crystalline substance like marble obtained an added charm. Centuries before the building of the Taj Mahal, long before it was said of a Roman Emperor that he found Rome of brick and left it of marble, the Indian workers had attained a high degree of skill, and it was probably through eastern influence by way of Persia and Greece that the Romans obtained such a strongly pronounced taste for marble decoration. The importation of marble into ancient Rome must have been enormous, for during the whole of the Dark Ages, and down to comparatively recent times, Rome was the marble quarry of the world. Some of the early Popes were said to have destroyed more Roman buildings for their churches than the Goths, the Huns, and the Vandals put together. One of the earliest examples of this traffic was probably the Baptistry of St. John in Florence, although some authorities were of opinion that this building was more directly of Roman origin. Many of the columns and the marble used in the mosaics at the Church of St. Miniato, also of Florence, were undoubtedly of Roman origin. It was in the eleventh century that a custom grew up that had more or less since been practised in Italy, of decorating the walls of buildings in bands of striking contrast. Knight put this custom down to Saracenic influence. The Cathedral of St. Mark's at Venice was one of the richest illustrations of marble work in Europe. It contained more than five hundred pillars of Verde Antico, Porphyry, Serpentine, and some of the rarest marbles. Exterior and interior, ceiling and pavement, were encrusted with the rich materials. All that was not gold or bronze or mosaic was covered with the choicest marbles. One of the best known pieces of marble work in the Ducal Palace is the celebrated Giant's staircase, a fine piece of fifteenth century work. It was, perhaps, unfair to compare work of this kind with that which passed for decoration in some most pretentious buildings in this country. The owners of a fashionable London theatre, only recently, proudly stated that they were the possessors of "the best imitation of marble set up in this country," and to crown all that, "many competent judges have been deceived by it." One could imagine the criticism of the author of "The Stones of Venice" upon such a boast. At the seat of Earl Spencer, at Althorp, in the entrance hall there was an excellent specimen of what could be done with simple white marble. Another was to be found in Mayfair, at the house of Lord Burton, where the staircase was of Sicilian marble, and the hall paved with the same material, relieved with bands of dove. Gosford House, the seat of the Earl of Wemyss, was originally designed by the Brothers Adam, but it was left to an architect of our time, Mr. William Young, to convert it into a beautiful palace, and to erect the charming marble staircase which was its chief feature. Numidian marbles all took a high polish, and many of them were of singular beauty. In ancient times they were greatly prized by the Romans, but after the fall of the Empire the sources of supply were lost sight of, and these have only recently been re-discovered. Colonel Playfair, H.B.M. Consul at Algiers, was of opinion that the Roman Emperors carefully guarded the secret of these quarries, and that only comparatively small pieces were taken away. They were probably worked up into mosaics or used for other fine decorative purposes. Swiss cippolino had been used in the marble decoration of the Pump Room at the Clifton Spa. The quarries were situated in Switzerland, and a large capital had recently been sunk in opening them out, in making roads, and laying down plant. It is well to bear in mind that the beauty of coloured marble was seen to the best advantage in plain surfaces, and they ought generally to abstain from enriching mouldings with carving. In many of the darker marbles the effect of colour was so overpowering as to practically obliterate the forms of moulding executed in them ; but whether light or dark marbles were used in mouldings, they should be uni-coloured and free from markings and veins, which destroyed the effect of mouldings by crossing them by inharmonious lines. It was a pity that Irish marbles were not more generally adopted. A beautiful green marble was obtained from quarries near Recess, co. Galway. It was serpentine, like the green marble of Genoa. Repeated attempts had been made to establish the quarrying industry in Galway, but the want of appreciative demand had hitherto been always in the way.

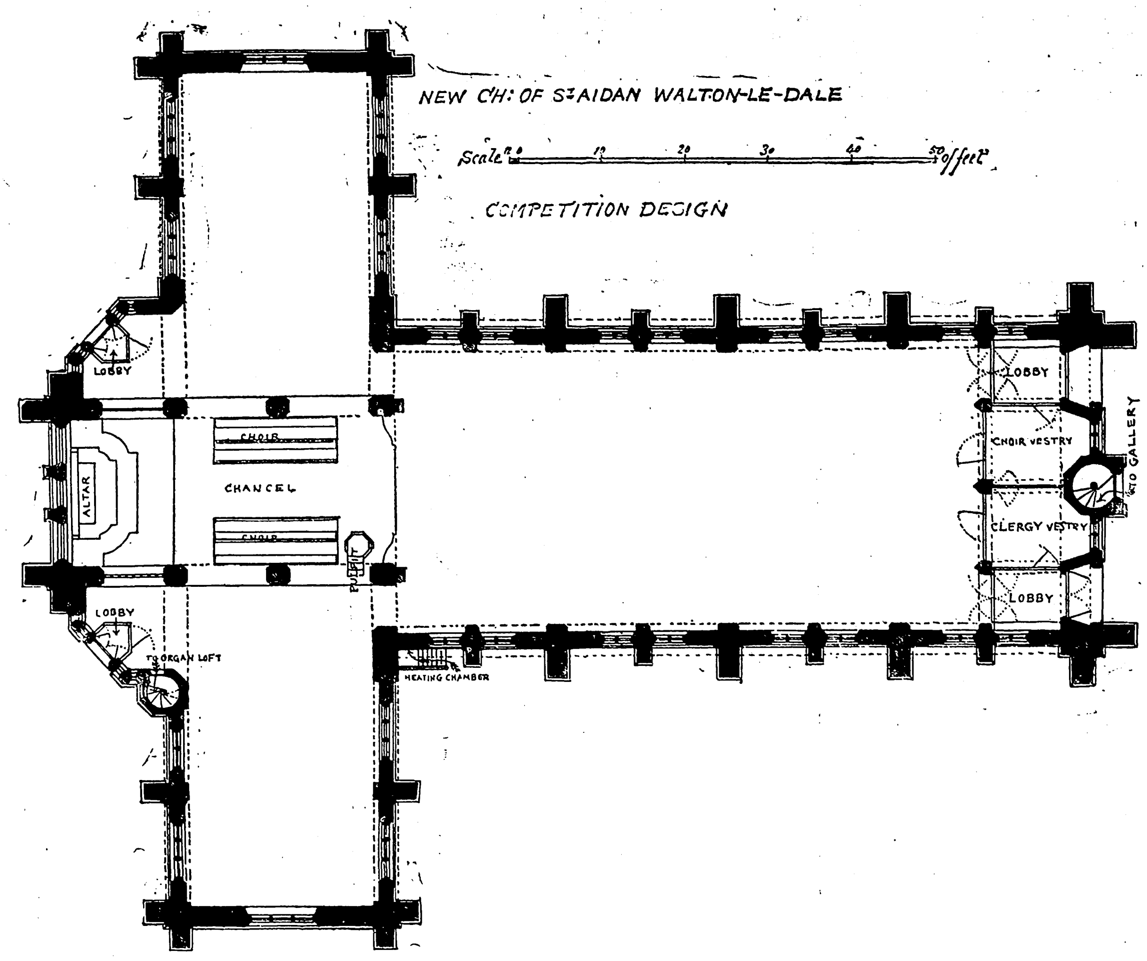
## *COMPETITIONS.*

FIRE STATION, BRADFORD.—The premiums offered for plans for the new fire station at Bradford have been awarded by the Watch Committee as follows :—1st, Messrs. Mawson & Hudson, Bradford ; 2nd, Mr. W. J. Morley, Bradford ; 3rd, Mr. Owen Roberts, Liverpool. Forty-four sets of plans were sent in for the competition.

THE REBUILDING OF THE OLD BAILEY.—The City Surveyor (Mr. A. Murray) and Professor Aitchison (the President of the Royal Institute of British Architects) are engaged in preparing the instructions to the six competing architects who will be asked to submit the plans for a new sessions house in the Old Bailey.—*City Press.*

## BOOKS RECEIVED.

DILAPIDATIONS. By Banister Fletcher. Fifth Edition. (B. T. Batsford.)



# Illustrations.

## ILLUSTRATIONS OF GREEK ARCHITECTURE.

WE give illustrations, from some excellent photographs lent by Professor Aitchison, of the remains of the Temple of Jupiter Olympius at Athens, a portion of the Doric order of the Propylæa, and the upper portion of the Ionic order of the Erechtheion. These may be of interest to turn to in connexion with some of the remarks in Professor Aitchison's Royal Academy lectures. The lecture printed in this issue being on the Ionic and Corinthian orders, the remains of the Erechtheion and the Jupiter Olympius furnish the finest examples of the details of these two orders. The Jupiter temple, it is true, was built under Roman rule, but probably by a Greek architect.

The example of the Doric of the Propylæa is taken from rather an unusual point, behind one of the short return colonnades at right angles to the main front, one of the columns of which is seen beyond The architrave thus appears with only the plain fillet above it, the triglyphs not existing on the inner side.

## BRANCH BANK, BEDMINSTER, BRISTOL.

THE materials used in the front of this building are Bath stone and 2 in. red bricks, with a wide mortar joint. The woodwork and ironwork are painted white, except the front door, which is of teak.

The work was carried out by Messrs. Stephens & Bastow, of Bristol, under my supervision.

WALTER CAVE.

## PROPOSED FRONT, 40, JAMES-STREET, LONDON.

IT is proposed to face this house with a rich green glazed brick; the bay to be of Portland stone or fine faced Portland cement; the gable, stack, cornices, &c., of Portland stone, and the woodwork painted white.

The interior of this house dates from 1683, this date being found on a stone let into the base of the chimney stack, and on an interesting lead cistern, which is further enriched with panels and flowers.

The plan is of interest as a specimen of the arrangements of a small house during Wren's time; the large stack, about 9 ft. square, occupying nearly the centre of the house.

WALTER CAVE.

## COMPETITION DESIGN FOR THE CHURCH OF ST. AIDAN, WALTON-LE-DALE.

THIS design, by Mr. A. H. Skipworth, was sent in competition for a proposed new church at Walton-le-dale.

The conditions were that the church should accommodate 400, with a provision for adding an extra 400 later on. The transepts were thrown out to provide the extra seating—200 each. For economy, the vestries were placed in the body of the church at the west end, the space over forming a gallery. The whole was to be built in stone, with some red brick bands on the exterior.

The design was exhibited at the Royal Academy in 1897.

## DURNFORD MONUMENT, CHICHESTER CATHEDRAL.

THIS monument, to the memory of the late Bishop Durnford, was designed for erection under the easternmost of the two arches by which the chapel of St. Clement opens into the south aisle of the nave. These chapels at Chichester are a singular feature of the cathedral, and do not exist in other English Cathedrals, though they are common abroad. It is proposed to restore this, as well as the other chapels, in the future.

The materials employed in the monument are clunch from the Tottenhoe quarries, and Purbeck marble. The ceiling of the monument, forming the canopy over the figure, is richly groined. Each end is treated in three compartments, the side ones pierced, and the centre one occupied by a niche and figure; St. Richard, Bishop of Chichester, at one end, and St. Wilfred, Apostle of this part of England, at the other end. The tracery of the head contains shields with the arms of the diocese and province.

The work was carried out by Messrs. Farmer & Brindley, from the design and under the superintendence of Mr. Thomas Garner. The effigy of the Bishop was modelled by M. Chevalliaud. The cost of the whole has been about 2,000*l*.

Ths drawing was exhibited in the Royal Academy of 1897.

## THE SURVEYORS' INSTITUTION:

### THE MANAGEMENT AND VALUATION OF BRICKFIELDS.

AN ordinary general meeting of the Surveyors' Institution was held on Monday in the temporary premises of the Institution, Savoy-street, Victoria Embankment, W.C., Mr. T. M. Rickman, Vice-President, in the chair.

The minutes of the last meeting having been read and confirmed, and some donations to the library and library fund having been announced,

Mr. J. L. Crouch read a paper on "The Management and Valuation of Brickfields." He gave some account of the geology of brick-earth; mode of taking specimens; analysis; a resumé of brick-making as practised near the Metropolis, and a description of the implements in use; the covenants of a brickfield licence; the assessment and rating of a brickfield; and, lastly, the valuation. As to the geology of brick-earth, brick-earths might be classified under three distinct heads—viz., clays, loams, and marls. They were all formed by the same process of Nature, being deposited either by the sea or rivers, and accordingly named marine and fluviatile deposits respectively. Taking the brick-earths individually, there were, firstly, the clays, which were in technical language termed hydrous silicates of alumina. The purest form of clay was termed kaolin, and was commonly known as china clay. The general percentage theoretically of clay was:—Alumina, 39·8 per cent.; silica, 46·3 per cent.; water, 13·9 per cent. This was the theoretical percentage, but in practical analysis the percentages would be found to vary considerably. The minimum and maximum percentages of the components of kaolins in general below which or above which the material ceased to be regarded as kaolin were:—Alumina, from 37·7 to 40·7; silica, from 43·6 to 46·53; water, from 9 to 14·54; iron oxide, from 0 to 1·5; lime, from 0 to 3·5; magnesia, from 0 to ·44; potash, from 0 to 1·9. It was important to remember that this pure clay would shrink and crack in drying and firing in proportion to the excess of alumina to silica. This could be remedied by adding sand. The distinctive characteristic of clay was its plasticity, which depended upon the interstitial but not chemically combined water; for though a powdered brick would absorb a great deal of water, it was impossible to make it in the least degree plastic. The degree of plasticity depended upon the fineness of the particles in the clay. Kaolin was derived from the decomposition of granite occurring in two stages known as china-clay and china-stone, and granite, to go a little further back in geological order, was composed of three minerals, quartz, felspar and mica. In the process of decomposition from granite into kaolin the quartz remaining unchanged was mechanically washed away, as for instance by the action of running water. At a later stage than the felspar mica chemically changed to some extent, but it should be either absent (from the same mechanical washing away) or should be colourless and non-ferruginous. The difference between china-stone and china-clay consisted mainly in the greater softening in the latter of felspar, by conversion into clay. Felspar in granite was an anhydrous (or nearly so) silicate of alumina with a silicate of potash and occasionally soda. Kaolinising was a term used for the process of decomposition, and was generally described as resulting from the action of carbonic acid in the atmosphere upon the silicates of potash or soda, removing them as soluble carbonates, whilst the moisture in the atmosphere united with remaining silicates of alumina to form kaolin.

Having given further information about, and described the process of manufacture of, china-stone and china-clay, the author dealt with pipe, and pottery clays. In the manufacture of porcelain the kaolin and other ingredients were ground up into an impalpable powder, flint and lime being added and worked up together in water by spades and mallets and kneaded by the workmen. In this state it was called dough, and was kept damp till required for the potters' wheel and lathe. When moulded, the articles were slowly dried, and afterwards taken to a kiln for preliminary baking into what was termed "biscuit." In the well-known Sèvres ware the proportions were:—Kaolin, 63 per cent., and 70 per cent.; felspar, 22 per cent., and 15 per cent.; flint, 10 per cent., chalk, 5 per cent. or 6 per cent. For coarse pottery, the clay was worked with water and tempered. The shaping was done on a wheel and the article dried under cover. The glazing was generally effected with a cream of pulverised galena, that was lead sulphide or the ordinary lead ore. After being again dried, it was gradually heated, and in this process the sulphur of the galena was driven off, producing an oxide of lead which formed, in chemical combination with the alumina, a lead glass. For the Staffordshire ware, known as stoneware, common salt was an ingredient in the glazing. For a still finer glaze than any of these, a composition was made of red and white lead, felspar, silica, and flint glass, in varying proportions. Loams were mixtures of clay and sand, and geologically must have had a sufficient quantity of sand to allow water to percolate through to prevent binding. Marls were defined as "clays containing a distinct proportion of lime," and a great authority had placed the maximum limit of lime in marls for brickmaking at 2 per cent.

The author then gave the ingredients of fire-clays and the result of analyses. A fire-brick of excellent quality, selling from 50s. to 55s. per thousand, was composed of 40 per cent. of silica, 37 per cent. of alumina, 2 per cent. of magnesia, 9 per cent. of potash, and 12 per cent. of water. In the Dinas fire-clay from South Wales, the ingredients were 91·95 of silica, and 8·05 of alumina. Samples of the earths could be taken by test holes or by boring. Before visiting the ground for the purpose of obtaining samples, it was desirable to ascertain, if possible, the nature of the soil, if any, overlaying the clay; this might save the carrying of unnecessary tackle. The borers were simply large gimlets, some being spiral others straight, and used according to the nature of the work to be performed. It would be found that the straight or straight-grooved work the easier, though the specimens taken were not so well preserved by them. The spiral would take out a complete section of the earth bored without disarrangement, but the straight borers were apt to break the specimens by their action forcing the earth up the groove instead of merely taking out a complete section as the spiral borer would do. If the object was only to ascertain the depth of the earth the straight borers were sufficient, but in other cases preference might perhaps be given to the spiral form. The borer was fitted at the top with a screw hole to take lenthening bars. It was generally 5 ft. long, the twist or gouge being about 2 ft. or 3 ft. of this length, and the remainder of it square, and a handle was attached by nuts and bolts. Two assistants then proceeded to drive the borer into the ground by screwing it in the same fashion as an ordinary gimlet by revolutions. It would generally be found advisable to surround the bore-hole with boards for the assistants to walk upon in order to prevent the earth being pressed into the hole when the borer was withdrawn. About 1 ft. of earth was the most convenient amount to remove at one time; the borer should then be carefully withdrawn by pulling or lifting it out. If too stiff to pull out by hand it could generally be raised with the shoulder under the handle. Just before the borer finally left the hole any loose earth round the mouth should be brushed away to avoid any of the top soil becoming mixed with the sample. The surveyor must use his own discretion as to the number of sections he took, but clay varied so considerably in many cases within a short distance, that nothing was lost by taking several specimens. It was not as a rule homogeneous over large areas, even in adjoining fields, and in the same field might vary to a considerable extent in composition, texture, and colour, frequently containing layers or pockets of gravel or very coarse sand. No doubt the best test of the quality of the earth was the quality of the brick or other article it would make; a practical test was therefore desirable. It must be borne in mind that a good deal of the value of the clay depended upon the cost of getting it; therefore care was essential in noting the nature and thickness of any overlaying soil. Having, however, attended to all these matters, the analysis had to be made. It would be found that no chemical analysis was required; except in the case of the alkalies soda and potash, which were analysed chemically. The usual method, other than chemical, employed for a qualitative and quantitative analysis of the materials was then dealt with by the author, after which he dealt with the actual manufacture of bricks as carried on in the neighbourhood of London, with an account of the materials and plant in use. Marl was suitable for manufacture into bricks without any addition; this had placed it in great demand and accounted for its present scarcity. As a substitute, an artificial marl had been made for making the best qualities of bricks by mixing chalk and clay together, which, after being reduced to pulp, was run off into pits and allowed to remain till sufficient consistency was obtained. The clays used for brick making around London were mostly loams, and they had to be treated according to the varying proportion of clay and sand. Silica should be present to the proportion of three-fifths, alumina one-fifth, the remaining fifth being made up of iron, lime, manganese, magnesia, soda, and potash. If too sandy, lime or chalk was added as a flux, preventing the shrinking and warping which would otherwise occur in drying and burning. If too stiff—that was too clayey—sand was added to the required amount. The chalk to be added was always reduced in a mill to the consistency of cream. The final colour of the brick was determined partly by the proportion of hydrated oxide of iron and partly by the degree of the heat in the burning. If lime be absent the moderate heat would produce a red colour, the iron oxide being the colouring matter, the intensity of the red varying with the proportion of the iron. This iron could be added mechanically in the form of oxide. With intense heat the red brick becomes a blue brick. The presence of lime acted upon the oxides, producing the cream brown or yellow colour of the ordinary stock brick, and uniformity of colour was frequently attained only by a too generous addition of chalk (or lime) at the expense of soundness and durability. Magnesia arrests the development of the red. If the earth was found to be free from stones or pebbles, it could be used without washing; but should either of these be present in such quantities as to render manual labour insufficient, a process known as washing must be resorted to, which was at once tedious and expensive. It consisted of filling a trough with the clay, and adding sufficient water to run the clay through a grating or sieve into pits, where it remained until the necessary consistency was arrived at by evaporation and drainage.

The actual brickmaking was commenced about April, but the clay should be dug up the previous autumn for the purpose of allowing the winter frosts to break it up. A considerable saving of labour was effected by this operation, and it was absolutely essential to the proper preparation of the earth, neglect of it being attended by the Nemesis of inferior bricks. The process of burning bricks in open clamps (the name by which the stacks were known) was peculiar to the London brickmaker, and to make the process successful it was considered necessary to mix the fuel with the brick earth. The fuel known as "soil" consisted of the ashes from the dust-bins of adjacent towns. These were sifted through a screen, mixed up thoroughly, and incorporated with the brick-earth. When the moulded brick was put into the clamp, the soil itself actually burns. It was said that the ashes, which give off sulphur, improve the colour of the bricks; they also assisted in arresting contraction, so altogether they might be considered a very useful and ingenious addition. About thirty-five chaldron are used in 100,000 bricks. The moulder was the man who actually moulds the clay, and his work was confined to the summer months, and during this time he would mould somewhere about 750,000 to 1,000,000 of bricks. The moulder stands in front of a table, and close in front of him is placed the pug mill. This was a conical-shaped tub with the larger end uppermost, fitted with a spindle to which were attached knives arranged horizontally, with the blade fixed in a slanting direction. In addition to the knives, the spindle was fitted with spikes. The soiled earth was put into the pug mill by the temperer, and the spindle was caused to revolve by horse-power or machinery as the case might be. The earth by this means became thoroughly mixed up, and was forced by the action of the knives to the bottom of the mill, and thence through a hole, a convenient-sized piece being cut off with a knife called a cuckhold by a boy who lifted it on to the moulding-table, to the right of the moulder. The moulder had on his left the stock board, fixed to the table. This was the bottom of the mould, and was made of wood shaped to produce the frog or indentation to the brick. Over this was placed the mould; this was the width and length of the intended brick; the depth was generally greater, and to obtain the requisite thickness nails were driven into the table at the four corners of the stock board, and upon these the mould rested, the nails being fixed higher or lower in order to regulate the thickness. The moulder now took sifted sand which had been thoroughly dried and threw some into the mould to prevent the clay sticking to the mould. This sand assisted in giving a face to the brick and answered other practical requirements. The moulder next took a piece of clay and threw it violently into the mould, pushing it thoroughly home with his fingers. The spare clay was then removed by a striker. When this was done, the moulder placed a pallet on top of the mould. Pallets were plain pieces of board usually about three-eighths of an inch thick, of the same width as the mould, but slightly longer. With this the newly-moulded brick was taken off the stock board and put, pallet undermost, on to a little erection called a page, a contrivance formed of two rods of iron about three-eighths of an inch wide and about six or seven inches apart, nailed to a board sloping away from the moulder. The moulder then pushed the pallet a few feet down the page whence it was removed and placed upon the off-bearing barrow, which was of a special design, consisting of a light frame on springs to avoid, so far as possible, injuring the newly-made brick. These barrows usually took twenty-six bricks in two rows. The barrow, sometimes called a hack-barrow, was then wheeled to the drying ground, where the bricks were placed in long lines, known as hacks, the length depending upon the space available, and about 11 ft. apart from centre to centre. Along the length of the hacks were placed lengths of sheet-iron about ⅜ in. thick and 6 in. wide, on which the barrows were wheeled. When the raw bricks were sufficiently dry they were put into the clamp to burn, and when thoroughly burnt they were removed in crowding barrows to the carts, barge, or other conveyance. In laying out a brickyard it was advisable to place the clamp in a lower part of the field than the stool, the intermediate distance being occupied by the hack-ground. Circumstances might, of course, prevent this, but this arrangement would be found to save considerable labour in wheeling. It must not be understood that there were no other methods of manufacturing bricks. Red bricks were extensively made by machinery and moulded by hand and baked in kilns, but into the many different methods and the many different machines he could not enter. In some factories the earth, after being dug, was never touched again until the completed bricks tumble out four at a time as fast as they could tumble.

The author then dealt with the covenants of a lease of a brickfield, the rating of brickfields, and the valuation of a brickfield.

On the motion of Mr. Josling, seconded by Mr. F. B. Butland and supported by Messrs. G. Wragg and T. Robson, a vote of thanks was unanimously passed to Mr. Crouch.

The meeting then terminated.

## *ARCHÆOLOGICAL SOCIETIES.*

British Archæological Association.—At the meeting of this Association, held on the 15th inst., Dr. W. de Gray Birch in the chair, Mr. Andrew Oliver exhibited a fine example of a bronze mortar, date 1598, beautifully chased with Renaissance ornamentation, also an altar cross of wood of the seventeenth century. Mr. Dack, of Peterborough, brought for exhibition some examples of valentines of the early years of the present century. Professor McKenny Hughes, of Cambridge, gave a most interesting lecture, being the substance of a paper he had prepared upon "The Fens," intended to have been read during the recent Congress at Peterborough had not unavoidable circumstances intervened. The Professor first explained the changes in the physical geography of the district which had resulted in the formation of the land-locked area over which the fen deposits had been laid down and the changes of level which had affected it. He then gave a sketch of the inhabitants of the fen land and its borders from the earliest appearance of man to the present day. He did not recognise eolithic or palæolithic man, and referred palæolithic man to an age before the fens as we knew them existed; no traces of palæolithic man having been found in the peat or the associated deposits. The neolithic and bronze folk were the people of the time of the greatest development of the fens. The Romans began to modify the fens and control the upland and tidal waters by embankments. After the natives had been defeated in battle came a time of peace and progress, and well-to-do Romans and Romanised British lived in and around the fens in safety. The Professor traced their distribution and that of the succeeding people by their remains, and indicated upon several large scale maps the various districts colonised by them and concluded by noticing some of the characteristics of the Fenland and the dwellers therein at the present day. Many objects of great interest found in the fens illustrated the lecture, consisting of prehistoric flint and bone implements. A neolithic flint implement was found sticking in the skull of a urus, but no palæolithic implement had been met with sticking in any animal. The skull of a man of the early bronze age, in good preservation, and several horse shoes, large and very broad for the purpose of giving a firmer footing on the yielding soil, were amongst the exhibits. In the discussion following the paper, Dr. Birch, Mr. Blashill, Mr. Kayson, Mr. Dack, Mr. Cecil Davis, Mr. Park Harrison, and others took part.

Society of Antiquaries of Scotland.—The usual monthly meeting of this Society was held in their library at the National Museum of Antiquities, Queen-street, on the 13th inst., the Hon. John Abercromby, V.P., in the chair. In the first paper, Mr. Thomas Ross, architect, F.S.A.,Scot., gave a notice of James Gifford, a local sculptor, who practised his calling at West Linton in the latter half of the seventeenth century. Several of his works still remain in the village, and a number are in the possession of Sir James Ranken-Fergusson, Bart., at his mansion house of Spitalhaugh. The paper was illustrated by drawings of the principal works of Gifford still remaining in Tweeddale. In the second paper, Mr. F. C. Eeles gave a notice of a portion of a sculptured slab bearing a Celtic cross recently found in the churchyard of Kinneff, and now presented to the Museum. Kinneff Church, famous as the place of concealment of the Regalia of Scotland in the seventeenth century, is one of the oldest foundations on the east coast of Scotland, although its early history is very obscure. The original dedication appears to have been to St. Adamnan. The fragment of this sculptured slab was found among stones taken from the north wall of the church, and bears on one face a cross of the usual Celtic form, with semi-circular hollows at the intersections, and having a small boss in the centre, with corresponding bosses on the arms and summit. Comparing the cross with that sculptured on St. Wolde's Stone at Logie Coldstone, which it most nearly resembles, the author came to the conclusion that it must be assigned to a rather late date in the second Celtic period. In the third paper Mr. Angus Grant, Drumnadrochit, described a curious stone cup, with a footstalk, the whole exterior of which was boldly carved with leafage, which was ploughed up about twenty years ago on the farm of Balmacaan, Glenurquhart. In the fourth paper, the Rev. George Wilson contributed a list of the antiquities of Glenluce, Wigtownshire, with plans and descriptive notes, from materials accumulated during many years, but chiefly between 1868 and 1882, enumerating them under the heads of old castles or manor houses, ecclesiastical remains or sites, including sculptured stones and holy wells, mote hills, forts, hut circles, lake dwellings, standing stones, and cairns. In the last paper, the Rev. R. S. Mylne gave an account of the King's Master Gunners of Scotland, with the writs of their appointments from 1512 to 1703.

## THE DISPUTE IN THE LONDON BUILDING TRADE.

On the 1st of this month the National Association of Master Builders addressed a letter to the Secretary of the Plasterers' Union requesting an official and definite assurance that certain objectionable practices complained of by the masters should be discontinued. A reply to this letter was desired by the 14th inst., and on the 15th inst. the Standing Committee of the Masters' Association met at Derby to discuss the answer received. The letter sent by Mr. Deller, the plasterers' secretary, was not considered at all satisfactory, and the meeting decided to give the union a few days in which to reconsider its decision.

A special meeting of the Standing Committee of the National Association of Master Builders was held at the offices of the Central Association, in Bedford-street, Strand, on Wednesday, for the purpose of finally deciding upon the line of action to be taken in the dispute. The meeting was presided over by Alderman Holdsworth, of Bradford, and all the members of the Standing Committee elected specially to deal with the matter were present.

The correspondence which has passed within the course of the past few weeks between the officials of the Masters' Association and the secretary of the Plasterers' Union was brought up for consideration. From this it appeared that the employers had asked for an assurance from the National Association of Operative Plasterers that the following objectionable practices should be discontinued :—

1. *(a)* The persistent attempt to coerce foremen of plasterers or superintendents of plasterers into the membership of the National Association of Operative Plasterers; also *(b)* the threat to withdraw all members from the building firms employing such foremen or superintendents. 2. The limitation of apprentices. 3. *(a)* The practice of boycotting certain building firms and employers of plasterers, in spite of the fact that such firms adhere to the rules agreed between the Master Builders' Associations and the National Association of Operative Plasterers; *(b)* the practice of printing and circulating, amongst the members of the N.A.O.P., a list of such firms for whom they are forbidden under penalty to work. 4. The refusal to work on buildings where some of the workmen employed may not belong to a trades union. 5. (*a*) The refusal to accept the decision of the employer as to which workmen shall do certain work, in cases where plasterers dispute with other trades as to their right to do such work; (*b*) The practice of withdrawing all their members when such work may not be placed in the plasterers' hands. 6. The objection to submit all trade disputes to discussion at a conference, between employers and employed, with a view to arrive at an amicable settlement prior to any strike or withdrawal of workmen.

The letter of the National Association Secretary, asking for this assurance, stated that the agreement of the Plasterers' Union to this course must be intimated by February 21, otherwise a general lock-out would be declared at an early date.

In reply, Mr. Dellar stated that a ballot of the whole of the plasterers on the questions in dispute would be taken on February 25, and the result would be made known on March 1. The ballot was to be separate from and subsequent to the original ballot, which only asked the members to decide upon the withdrawal of the non-union foremen protest.

With these letters before them on Wednesday, the representatives of the Masters' Association resolved to send a reply to Mr. Dellar in the following terms :—

> "Unless there exists a determination on the part of your association to persist in the objectionable practices set forth in my letter of February 1, 1899, there can be no reason why the assurances required should not have been given at once. I am, therefore, instructed to inform you that my association has decided to declare a lock-out against the members of your association on Monday, March 6, and that this lock-out will remain in operation until your association will guarantee that the said objectionable practices shall cease. In the meantime, any communication received from you will, of course, receive the attention of my association."

This letter was signed, on behalf of the masters, by the National Association's secretary.

A manifesto was issued by the executive of the Plasterers' Union on Wednesday, placing before their members the steps leading up to this dispute. Reference was made to a fund established by the employers.

> "Hence," continues the manifesto, "we presume, the reason they have included in their demands terms which they know perfectly well cannot be accepted by any body of trades unionists without sinking the manhood of its members. . . . Their first demand having been granted, we turn to the limitation which is something that somewhat puzzles us, seeing such limitation, if any, is entirely on their part; they are actually refusing to apprentice any boys to plastering, stating their ability to obtain a sufficient number of plasterers from the provinces to meet their demands. So you will see that upon their own showing the supply is equal to the demand. No. 3 (*a*) is in itself absurd, to think that any union would boycott any firm who adhered to the rules as laid down by its members and their employers; and No. 3 (*b*) is equally so, inasmuch that no respectable and honest firm can possibly have any objection to our publication of a list of firms and members against whom we, as an association, have a temporary objection, which is also our legal right and one freely adopted by the objectors, as we have in the past had ample evidence. No. 4 comes under a similar category, and we challenge them to point to any instance where our association has acted in such a manner simply because some other workmen, presumably of other trades, were not members of a trade union. No. 5 (*a*) is clearly answered in our reply, but we would add that there are possibilities that a large number of builders are not practical workmen of any grade in the building trade and therefore unable to act as competent judges in these matters. No. 5 (*b*) needs no further comment than our reply thereto, neither does No. 6. . . ."

## THE INCORPORATED INSTITUTE OF BRITISH DECORATORS.

The idea of forming an Institute for those engaged in the Art and Business of Painted Decoration, and having objects allied to those with which the Institutes such as those of Engineers, of Architects, and of Surveyors have been formed, seems to have originated within the present decade, and to have taken more definite shape at a meeting of the "National Association of Master Painters" at Manchester in 1894. Endeavours were made to obtain a charter last year; but, objections being found, it was decided to incorporate the Institute under the non-trading clauses of the Limited Companies' Act; and, after some years of persevering effort, the Institute was finally registered as incorporated on January 21 this year. The first meeting of the Provisional Council since incorporation was held at Painters' Hall on February 8. This Council, consisting of twenty-five members, is representative of England and Wales, Scotland and Ireland, Mr. Crace, of London, being President. It at once proceeded to elect officers and arrange for the organisation and working of the Institute. Mr. W. H. Pitman was elected treasurer; Mr. G. Petter, auditor; and Mr. F. W. Englefield (of Messrs. Pritchard, Englefield & Co., solicitors) secretary. The first general meeting is appointed for March 23 at Painters' Hall, Little Trinity-lane, where the new Institute's headquarters will for the present be situated.

In noticing the definite formation of this Institute, we may add that we are informed that although it will have its headquarters in London, its origin and preliminary organisation are almost entirely due to the initiative and the persevering efforts of representatives of the northern counties, and also of Scotland, where Mr. Thomas Bonnar of Edinburgh and Colonel Bennett of Glasgow have been its constant and energetic supporters; most valuable assistance has also been rendered by the interim secretary, Mr. W. B. Crawford, of Glasgow.

## THE LONDON COUNTY COUNCIL.

THE usual weekly meeting of the London County Council was held on Tuesday, in the County Hall, Spring-gardens, Mr. T. McKinnon Wood, Chairman, presiding.

*Loans.*—On the recommendation of the Finance Committee, it was agreed to lend the St. Pancras Vestry 12,000*l.* for electric lighting purposes; the Islington Vestry 14,285*l.* for the same purpose; and the Poplar Overseers 2,500*l.* for alterations and additions to the Town Hall.

*Stabling at Tramway Depot.*—The Highways Committee reported, and it was agreed:—

"That the estimate of 17,000*l.* submitted by the Finance Committee be approved; and that the Council do sanction the expenditure of a sum not exceeding 17,000*l.* in respect of the erection by the North Metropolitan Tramways Company, under the supervision and to the satisfaction of the Council's architect, and in accordance with plans to be approved by him, of additional stabling accommodation over the car-shed at the Cressy-road, Hampstead, depot, the freehold property of the Council and leased to the Company, such additional stabling being required for the use and accommodation of the company under its lease from the Council, dated October 14, 1897."

*Battersea Park-road Widening.*—The Improvements Committee recommended, and it was agreed:—

"That the Council do apply in the next session of Parliament for exemption from the operation of the 92nd Section of the Lands Clauses Consolidation Act, 1845, to enable the Council to acquire merely the forecourts of the properties Nos. 326 and 328, 330, 332, 334, and 336, Battersea Park-road, numbered 7, 6, 5, 4, and 3 on the deposited plan of the Battersea Park-road improvement (parish of St. Mary, Battersea) sanctioned by the London County Council (Improvements) Act, 1897."

*Drainage, &c., Works.*—The following recommendations of the Main Drainage Committee were agreed to:—

"That the estimate of 2,000*l.* submitted by the Finance Committee be approved, that an additional gas-engine and centrifugal pump be obtained and erected at the Heathwall pumping station, and that the Engineer be instructed to prepare the necessary drawings and specifications."

"That the supplemental estimate of 200*l.* submitted by the Finance Committee in respect of the electric light installation at the Crossness outfall be approved; that an expenditure of 150*l.* be sanctioned by the Council for the work of laying foundations for the engines and dynamos; that the tender of Mr. E. Proctor, amounting to 195*l.*, for the formation of the accumulator room be accepted. . . ."

"That the tender of Mr. Benjamin Goodfellow, amounting to 22,400*l.*, for converting four beam engines at the Crossness outfall into triple expansion engines be accepted. . . ."

"That the tender of Mr. J. M. Henderson as amended, and amounting to 213*l.* 10s., for the manufacture, delivery, and erection of a five-ton over-head traveller at the North Woolwich pumping-station be accepted. . . ."

*Horton Estate.*—The estimate of 2,000*l.* was approved for the acquisition of land for the purposes of railway siding No. 1 on the Horton Estate. The Asylums Committee reported as follows in reference to the Horton Asylum:—

"On July 19, 1898, the Council decided, on our recommendation, that the erection of the superstructure of this asylum should be carried out without the intervention of a contractor, and referred the plans and specification to the manager of the Works Department for this purpose, the manager's estimate for the work being 284,445*l.* We now report for the information of the Council that we have decided that certain improvements of the original plans shall be carried out. These improvements consist of the enlargement of the ward sculleries throughout the asylum, the provision of additional coal places, the re-arrangement of the housing of the assistant medical officers, matron and other female officers, and the building of a separate nurses' block, together with a few minor alterations. Though the variations are considerable, involving about 40,000*l.*, the architect estimates the cost of extras over omissions at approximately 4,500*l.* only. Mr. Hine, the architect, agreed to prepare the plans and supervise the carrying out of the work of this asylum for an inclusive fee of 5,750*l.* in consideration of the plans being duplicates of the Health Asylum (Bexley) design. As, however, the before-mentioned alterations will necessitate a re-modelling of the plans, and will affect more or less the majority of the working drawings for which new elevations, plans, and sections will have to be made, we have agreed to pay him a commission of 5 per cent. on all new work involved, such commission, however, not to exceed the sum of 1,000*l.*"

*Light Railways.*—The Parliamentary Committee recommended that they, in conjunction with the Highways Committee, be instructed to take the necessary steps to oppose the Finchley, Hendon, and District; Hampstead, Finchley, and Edgware; and Highgate, Finchley, and Wood Green Light Railway orders.

The recommendation was agreed to.

*Mechanical Traction on Tramways.*—The Highways Committee recommended, and it was agreed:—

"That, subject to the passing of the annual maintenance votes for the year 1899-1900 in respect of matters under the charge of the Highways Committee, the Council do approve the expenditure of the sum of 630*l.* for expert advice and assistance to be rendered by Mr. A. Kennedy, F.R.S., with reference to the system or systems of mechanical traction, other than steam or cable, most suitable for experiments upon the Council's tramways, such sum to include the expenses of investigation being made by him into the systems of mechanical traction in use in other cities and towns."

*Electric Lighting for the Victoria Embankment and Westminster Bridge.*—The same Committee recommended, and it was agreed,

"(*a*) That the tender of Messrs. McClure & Whitfield for the supply, for the sum of 3,726*l.* 5s., of the dynamos, switchboards, &c., required in connexion with the electric light installation for the Victoria Embankment and Westminster Bridge, be accepted; that the solicitor do prepare the necessary contract to give effect to the tender; and that the seal of the Council be affixed to the said contract when ready.

(*b*) That the tender of Messrs. J. E. H. Andrew & Co., Limited, for the supply, for the sum of 1,900*l.*, of the gas-engines, &c., required in connexion with the electric light installation for the Victoria Embankment and Westminster Bridge, be accepted; that the solicitor do prepare the necessary contract to give effect to the tender; and that the seal of the Council be affixed to the said contract when ready."

Having transacted other business, the Council adjourned.

## APPLICATIONS UNDER THE LONDON BUILDING ACT, 1894.

AT the meeting of the London County Council on Tuesday, the Building Act Committee brought up the following list of applications under the 1894 London Building Act. Those applications to which consent has been given are granted on certain conditions.*

### *Lines of Frontage.*

*Marylebone, West.*—Additions in front of Paddington Chapel, Marylebone-road, St. Marylebone (Mr. A. Conder, for the Rev. J. O. Davies).—Consent.

*Marylebone, West.*—Two four-story bay windows to No. 8, Northumberland-street, St. Marylebone (Mr. B. Pite, for Messrs. Matthews Brothers).—Consent.

*Brixton.*—An iron and glass shelter at the Empress Theatre, Brighton-terrace, Brixton Rise, Brixton (Messrs. Wylson & Long, for Messrs. Burney & Grimes).—Consent.

*Greenwich.*—Buildings on the south side of Dutton-street, Greenwich, to abut also on Maidenstone Hill (Mr. A. Roberts for Messrs. Nokes & Nokes).—Consent.

*Hampstead.*—That the application of Dr. J. R. Day for an extension of the periods within which the erection of a house with a projecting bay-window and porch, and also the erection of stabling, &c., on the west side of Frognal, Hampstead, at the corner of Arkwright-road, was required to be commenced and completed, be granted.—Agreed.

*Hampstead.*—A church on the northern side of Agincourt-road, Gospel Oak, Hampstead, at the corner of Lisburne-road (Mr. B. Pite for the trustees for the erection of the Gospel Oak Wesleyan Chapel).—Consent.

*Islington, South.*—An angle turret to a proposed building on the site of Nos. 40 and 41, Richard-street, Islington, at the corner of Liverpool-road (Messrs. Bird and Walters for Mr. W. A. Hayward).—Consent.

*Lewisham.*—Re-building of the "Two Brewers" public-house on the west side of Perry-hill, Catford, at the corner of Clarens-road, and the erection of four houses with shops on the west side of Perry-hill, adjoining the public-house (Mr. R. Cruwys for Mr. E. J. Janes).—Consent.

*Southwark, West.*—A one-story building upon part of the forecourts of Nos. 24, 26, and 28, Gravel-lane, Southwark (Messrs. Nevinson & Newton for Messrs. Stevenson & Howell, Limited).—Consent.

*Strand.*—Three temporary wood and glass show cases in front of No. 1, Piccadilly-circus, St. James's (Mr. A. Oldcorn).—Consent.

*Woolwich.*—Two cottages on the south side of Nightingale-vale, Woolwich, between Dicey-street and Jackson-street (Mr. J. O. Cook for Mr. H. S. Brading).—Refused.

*Brixton.*†—That Mr. G. Baines be informed that the Council is not prepared to accede to his request for consent to retain a wooden porch at the Old Baptist Union Hall, 5, Sidney-road, Stockwell, beyond the general line of buildings, and that the solicitor do continue the proceedings directed to be taken in the matter.—Agreed.

*Brixton.*—An iron and glass illuminated sign at the "Grosvenor Arms," public house, Sidney-road, Stockwell (Mr. J. C. Christie for Mr. G. R. Park).—Refused.

*City of London.*—Two angle turrets to a proposed building on the site of Vulcan Wharf, on the south side of Upper Thames-street, City, adjoining Puddle-dock (Mr. C. Reilly for Mr. A. Bird).—Refused.

*Clapham.*—One-story shops on part of the forecourts of Nos. 181 and 183, Lavender-hill, Battersea (Mr. C. H. Brodie for Mr. H. B. Atkinson.)—Refused.

*Clapham.*—An iron and glass shelter at the entrance to No. 21, Macaulay-road, Clapham (Messrs. H. & C. Davis & Co., Limited, for Mr. J. T. Young).—Refused.

*Hackney, Central.*—Two blocks of residential flats, with shops, on the west side of Lower Clapton-road, between Holly Lodge and Maitland House (Mr. A. Bedborough for Mr. W. Andrews).—Refused.

*Islington, East.*—A one-story shop at the side of No. 368, Essex-road, Islington, to abut upon Ockenden-road (Mr. R. Jay).—Refused.

*Kensington, South.*—That Messrs. Richardson & White be informed that the Council is not prepared to accede to their request on behalf of Messrs. Campbell, Johnstone, & Co., Limited, for permission to retain certain projections (illuminated signs) at the "Duke of Sussex" public-house, Uxbridge-street, Kensington, unlawfully extended from a building beyond the general line of buildings in the street, and that the solicitor do continue the proceedings directed to be taken in the matter.—Agreed.

*Norwood.*—Buildings on the western side of Herne-hill, Lambeth, between No. 36 and Rollscourt-avenue (Mr. H. A. Brown).—Refused

### *Width of Way.*

*Newington, West.*—A billiard-room at the rear of the "Virginia Plant" public-house, No. 82, Great Dover-street, Newington, within the prescribed distance from the centre of Lawson-street (Messrs. F. J. Eedle & Meyers for Mr. H. A. Weston).—Consent.

*Rotherhithe.*—A one-story building on the east side of Tulip-place, New Church-street, Bermondsey (Mr. W. Freeman for Messrs. Mackey, Mackey, & Co., Limited).—Consent.

*Bethnal-green, South-west.*†—A building on the south side of Newport-street, Bethnal-green, to abut also upon Coventry-street (the Rev. A. R. Clemens).—Refused.

*Clapham.*†—A one-story building at the rear of No. 81, Altenburg-gardens, Lavender Hill, Battersea, at less than the prescribed distance from the centre of Green-lanes (Mr. H. Bignold for Mr. H. Hubbard).—Refused.

*Hackney, South.*—The rebuilding of No. 21, High-street, Homerton, at the corner of Plough-lane, and certain deviations from the plans certified by the District Surveyor (Mr. I. Mason for Mrs. C. Rix).—Refused.

*Southwark, West.*—A building on the yard in front of No. 17, Bankside, Southwark (Messrs. Fowler & Hill for Messrs. Beck & Pollitzer).—Refused.

### *Space at Rear.*

*Clapham.*—That the Council, in the exercise of its powers under Section 41 of the London Building Act, 1894, do not allow a modification of the provisions of that Section with regard to open spaces about buildings, so far as relates to the proposed rebuilding of No. 124, High-street, Clapham, with a two-story bakehouse at the rear (Mr. H. G. W. Brinsley for Mr. J. A. Taylor).—Agreed.

### *Deviation from Certified Plans.*

*St. Pancras, South.*—Deviations from the plans certified by the District Surveyor, under Section 43 of the London Building Act, 1894, so far as relates to the proposed rebuilding of the "Globe" public-house, No. 15, London-street, Tottenham Court-road, St. Pancras (Mr. J. G. Ensor for Messrs. Watney, Coombe, Reid, & Co., Limited).—Consent.

### *Lines of Frontage and Width of Way.*

*Dulwich.*—A house with bay-windows on the north side of Piermont-road, Peckham Rye, to flank upon a footpath next Peckham Rye Park (Mr. W. Stair for Mr. C. W. Chessell).—Consent.

*Norwood.*—An additional story to a public library building to be erected on the site of Nos. 39 and 41, Westow-hill, Upper Norwood, to abut upon Beardell-street (Mr. E. Haslehurst for the joint committee of the Vestry of Lambeth and the Corporation of Croydon).—Consent.

*Norwood.*—That the application of Mr. E. Haslehurst for an extension of the periods within which the erection of a public library building on the site of Nos. 39 and 41, Westow-hill, Upper

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* Names of applicants are given in brackets. Buildings are new erections unless otherwise stated.

Norwood, to abut upon Beardell-street was required to be commenced and completed, be granted.—Agreed.

*Hackney, North.*—One-story shops upon part of the forecourts of Nos. 1 to 6 (inclusive), Clissold Park-villas, Church-street, Stoke Newington (Mr. F. Parsons for Mr. J. Jones).—Refused.

*St. George, Hanover-square.* — Projecting oriel windows, porches, and bay-windows to a proposed building upon the site of Nos. 1 and 2, Grafton-street, St. George, Hanover-square, at the corner of Hay-hill (Messrs. Boehmer & Gibbs).—Refused.

*Strand.*†—Retention of an inclosed iron and glass porch at the buffet entrance to the Adelphi Hotel, John-street, Strand (Mr. W. Emden).—Refused.

*Wandsworth.*—Two one-story shops on the south side of Greyhound-lane, Streatham, adjoining No. 102 (Mr. J. Johnson for Mr. J. Piggott).—Refused.

*Westminster.*†—A one-story addition at the rear of "The White Horse and Bower" public-house, No. 86, Horseferry-road, Westminster, to abut upon Monck-street (Mr. H. W. Budd for the New Westminster Brewery, Company, Limited).—Refused.

### *Line of Frontage, Width of Way, and Space at Rear.*

*Strand.*—That the Council, in the exercise of its powers under Sections 13 and 22 of the London Building Act, 1894, do not consent to the position and frontage of an addition to Drury-lane Theatre, and of a block of residential flats in connexion therewith with shops on the ground floor on the south-west side of Drury-lane, St. Martin-in-the-Fields, between Russell-street and a proposed diversion of Marquis-court (Mr. P. E. Pilditch for the Theatre Royal, Drury-lane, Limited).—Agreed.

*The recommendations marked † are contrary to the views of the Local Authorities.*

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## Correspondence.

*To the Editor of* THE BUILDER.

### NEW VAUXHALL BRIDGE.

SIR,—Your publication of January 7, being chiefly attractive with illustrations and account of Dublin architecture, was not without other interesting illustrations, but it contained one set so unlike the usual exhibits of the *Builder*, in a guise of such vulgar mechanical draughtsmanship, as to induce many architects to throw them aside with distaste. Yet, on turning to these again, there is recognised a design for a very remarkable bridge.

Architecturally I could conceive nothing more hideous, and presented with more complacent ignorance of any sentiment for mere architecture. It is, however, as to the constructional daring of this novel sort of structure that some mere architects would desire some light and leading from engineers who may be above their heads in science.

There is "concrete at 8 to 1," "concrete at 6 to 1," "concrete at 4 to 1," "pivots," "steel rails," "expansion ½-in. joints," &c., distributed in the sections with a confident discrimination that the ignorant, unversed in such cocksure subtlety of construction, would like to have some reason for. Is there any precedent, one would like to know, for employment of homogeneous concrete in such great bulk and spans in the superstructure of a bridge? What is the behaviour to be expected of it with its nicely devised parts of concrete of various admixtures and strength, its "pivots," "steel rails," and "½-in. expansion joints"?

I write in all ignorance of such grand designs, being but a constructor in concrete of small buildings chiefly of domestic importance, but an observer—and with some experience—of the perplexing qualities of expansion and contraction of cement concrete under varying temperatures; even of its irreconcilable actions in parts of the same structure, arising out of differing temperatures of the seasons at which parts had been laid and set.

The architectural student asks me for explanation of the dead knowledge displayed in a curiously-sectioned shore abutment of "4 to 1 concrete." Wherein, he asks, lies the virtue of semicircular arching of sleeper spandrel walls, which would employ about 1½ miles of centreing moulds and a lot of labour, with no relevance to concrete construction? I cannot answer these questions.

Architects at large will deplore that the beautiful river should be outraged with such a feature as this bridge would be—a sham presentment of an impossible stone bridge, with truly "a lie on the face of it," if ever there were one in a design; but interest in the construction lies behind the undeceptive untruth of its exterior all the same. I pigeon-hole the *Builder's* illustration, and pray to live to see this remarkable outcome of triumph of British engineering of the twentieth century realised, and, perhaps, add a tribute of acknowledgment of it. On the other hand, I reserve the right, if I happily survive, to remind the *Builder* of this correspondence, and of the "Faith that lives in honest doubt."

THOMAS DREW, F.R.I.B.A.

*Dublin*, February 20, 1899.

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### BRADFORD CENTRAL FIRE BRIGADE STATION COMPETITION.

SIR,—We shall feel obliged if you will allow us to draw the attention of your readers to the most unusual manner in which this competition is being conducted. The sub-committee appointed to make a selection met on Thursday, February 16. The drawings were exhibited to the public on February 17 and 18 in the Free Library, Bradford; no official notice was sent to competitors of this exhibition; it, therefore, appears to us manifestly unfair and unjust that those persons chiefly interested should be kept in ignorance of what is taking place, and be prevented examining the merits of the designs submitted.

Upon a competitor (who by the merest chance happened to discover this state of affairs) asking an official at the public exhibition where the premiated designs were, he took him to the Art Gallery and pointed out the three selected schemes; he pointed out to the official that the first premiated design embraced three distinct schemes, and asked him which of them had been selected by the sub-committee; he thereupon replied, "no single scheme has been selected, but the whole three collectively." How, we would ask, Sir, can three schemes collectively be compared with any one other scheme in a competition?

There are other singular features about the actual selection made, which we think would provoke a great deal of adverse criticism and dissatisfaction in those concerned.

The selection made has not yet been confirmed by the Corporation, and we would, therefore, suggest to other competitors that they at once combine to enter a strong protest against this method of procedure, and endeavour to prevail with the authorities to appoint the professional assessor alluded to in the conditions; a suggestion which under these circumstances they will probably see the wisdom of adopting, and to hold a more extended exhibition of the drawings to enable all competitors to inspect the various designs submitted.

Mr. Ernest E. Fetch (20, John-street, Adelphi) will be happy to receive the names of those who competed, at as early a date as possible.

(Signed)
FORSYTH & MAULE,
H. W. WILLS & JOHN ANDERSON,
G. P. ALLEN & SHIELDS,
BEST & CALLON,
ERNEST E. FETCH,
H. INIGO TRIGGS.

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### THE THREE-COLOUR PRINTING PROCESS.

SIR,—In the review of the *Magazine of Art*, in your issue of February 11, you refer to the frontispiece, representing a study by Millais for "The Ransom," as "chromo-lithograph." Will you allow me to point out that this description is incorrect? The plate is an example of the new three-colour process, which is, in fact, the main point in connexion with its issue in the magazine. We have wished to show how absolute is the facsimile afforded by this process in its more successful examples, and we have the gratification of knowing that the facsimile is so absolute that it is difficult, apart from close examination, to detect the copy from the original. There are certain qualities of paint which it is practically impossible to reproduce accurately in chromo-lithography. This, I think, is not the case with this process.

THE EDITOR OF THE *Magazine of Art*.

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### MR. WHALL'S PAPER AT THE ARCHITECTURAL ASSOCIATION.

SIR,—In reading your admirable report of the Architectural Association meeting on Friday, the 3rd inst., I notice that I forgot to answer Mr. Hooper's criticism of the pupils' work at the Central School, to the effect that—

"In some of the drawings before them the leads were so shown that it would be impossible to carry out the design, and he did not think that students should be allowed to work in that unworkmanlike manner."

As this criticism reflects on the efficiency of the school, may I ask for space to point out that it was made under a misapprehension?

Seeing the work from across the room, Mr. Hooper evidently failed to realise that the specimens shown were not all of them designs for complete *leaded lights*, but were most of them patterns made for diapers, "apparels," clasps, jewellery, &c., on robes; for quarries, canopy and such details, which enter so largely into the production of figure work in stained glass.

C. W. WHALL.

## The Student's Column.

### ARCHITECTURAL HYGIENE.

#### VIII.—DRAIN VENTILATION, INCLUDING SIPHONAGE AND TRAPS.

DRAINS, like human beings, require fresh air in order that they may remain thoroughly clean and harmless. It is here proposed to go shortly into the reasons for this necessity, because, as we shall see, the ventilation of drains is not only necessary in order to keep them wholesome, and for the prevention of standing air; but also to prevent the siphonage of traps and the entrance of sewer gas into the house. These are most important points, and are often ineffectually coped with in old houses. Our next section is "sanitary fittings," and before dealing with these this seems a fitting place to consider the subject of siphonage, as in considering the *fittings* we shall take care to see that the principles enumerated are applied in their construction.

The principal objects to be sought in ventilating drains are, to prevent bad air accumulating, as mentioned above; but if any such does accumulate, to so construct our system that it is immediately led away to the outer air, at such a point as to prevent it being drawn into the house through the windows or other openings.

It is necessary, therefore, to produce throughout the whole system a current of fresh air which shall be continually moving. In order to produce this current we have to think of two natural phenomena. The first of these is the fact that air when heated expands and rises. Now, every drain is laid to a fall, and the vitiated air which naturally accumulates therein, owing to chemical decomposition, is warmer than the atmosphere and its specific gravity is less; it therefore has a tendency to rise to the higher end of the drain. If there is an outlet at this latter end, and an inlet for fresh air at the lower end of the system of drainage, a current is at once produced which, in ordinary circumstances, will be effective in preventing the stagnation of noxious gases.

Another factor which is useful in ventilating drains is the fact that air in motion is lighter and more rarified than air which is at rest; therefore, if a ventilating pipe is carried up well above the ground, if possible to the ridge level of the house, a self-acting exhaust shaft is obtained, because the air at the top end of the pipe is more in motion and less dense than that at the lower end, and hence an upward draught is produced. One system, therefore, which is generally adopted is to have a short inlet pipe at the lower extremity just before the connexion with the main sewer, for the admission of fresh air, and a long outlet pipe at the head of the drain, and off each branch drain (when it carries the drainage from a water-closet or is of any considerable length) carried as mentioned above to such a height that it cannot be a nuisance. The outlet pipe may be either finished with an open end fitted with a galvanised iron wire cage to prevent leaves falling down or birds building in it; or it may be fitted with any of the numerous up-draught cowls, some of which certainly do tend to increase the upward current of air, and many, if they do not effect this, at least prevent a down draught.

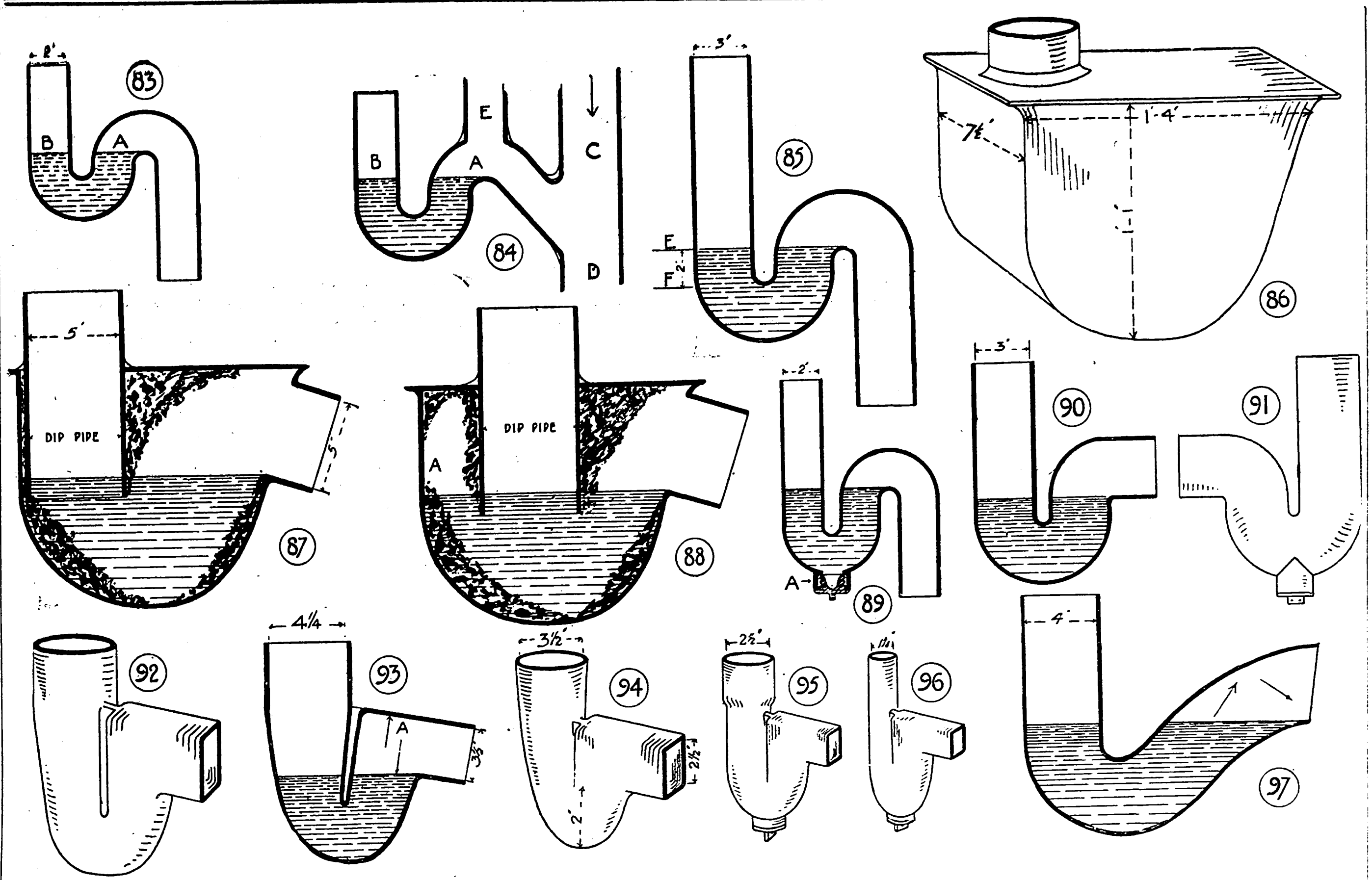
Many architects, however, prefer the open pipe fitted with a wire cage which, as explained, should be an exhaust in itself, under most conditions of the atmosphere.

As to the size of the outlet pipe, it should be of the same diameter as the soil pipe of which it is a continuation.

An outlet pipe which is not a soil pipe should not be less than 4 in. diameter, and should be as far as practicable without any bends in its entire length.

The inlet pipe is usually placed with its opening about 6 ft. from the ground. It is kept as far away as possible from any door or window opening of the house, and is generally fitted with a mica flap valve so placed that it only allows air to enter, any back current of air from the drain causing the valve to shut. This inlet pipe in town houses is taken into the manhole nearest the sewer, by which means the fresh air is admitted into the lower pipes of the drain and can find its way up all the sections of the system.

The inlet pipe should have a sectional area equal to the sum of the various outlets of the main and branch drains in order to be effective.



*Illustrations to Student's Column.*

Very often a 4 in. inlet pipe is considered sufficient for a large system, whereas a little thought ought to show that it must be perfectly inadequate.

It is important that the inlet and outlet pipes should be made of some material which will not decay, and so clog up the pipe, and in which a perfectly air-tight joint can be made. For this reason it is doubtful whether iron, even when galvanised, should be used, as if there is any defect in the galvanising, rust will form, and eventually collect in the bottom of the pipe and completely choke it up. A case quite recently occurred in a hospital in which the rust had so accumulated as to completely stop the circulation of the air, and the drains had to be opened out to find the defect, when half a pail full of rust chippings were extracted from the bottom of the ventilation pipe. It seems best, therefore, that both inlet and outlet pipes should be made of stout drawn lead pipes of not less than 8 lbs. lead (*i.e.* lead weighing 8 lbs. to the superficial foot). Lead soil or ventilating pipes should be protected up to 6 ft. from the ground by a galvanised sheet-iron shield to protect them from injury.

In country houses, with the inspection-chamber at some distance from the house, the drains are best ventilated by covering the inspection chamber with an open grid, thus admitting as much air as possible (see fig. 59 in a previous article). No air-tight cover is necessary as in towns, where the inspection-chamber is often in a front area, or even in some cases unavoidably placed in the basement itself.

The system described above, although the one usually preferred, yet has its defects, which can now be briefly pointed out.

Under ordinary circumstances, when no discharges are taking place from water-closets or other sanitary fittings, the upward current of air mentioned is not disturbed, but let us consider what takes place when the contents of a water-closet basin are suddenly discharged down a soil or waste-pipe. When this occurs a downward current of air is produced, which upsets all the arrangements of inlet and outlet; that is to say, that during certain times of the day the ventilation system is nullified. Beyond this, it acts in a dangerous way on the whole system, by forcing the air in the pipes downwards, and forcing the bad air through any defects in the fittings of the mica valve of the inlet pipe (which is always liable to be imperfect). If this pipe happens, as is often the case in London, to be near a door or window, the foul air emitted will probably find its way into the house. If the inlet pipe is at a sufficient distance from the house no harm will result.

In this case, therefore, the safest means of ventilation would be to carry both inlet and outlet pipes above the roof level, and, if possible, causing one or other to be more exposed than the other in order to cause an updraught. By placing one on the north side and the other on the south side of the house, the air in the latter, being warmer, would naturally rise and draw the foul air from the whole system. We should also make use of the current of the sewage which would draw the air after it, and would therefore constitute a mechanical power in aid of the system.

*Siphonage.*—Beyond the necessity of well ventilating drain pipes to keep them clear of foul air, there is another reason which will render it necessary here to make a few remarks on the effect which a sudden discharge from the water-closet or other fitting has on the water seal of traps.

This leads us to the consideration of the mechanical principle of siphonage, which must be thoroughly understood by the student. The siphonage (*i.e.*, the emptying the trap of its water) may occur in two ways, which will be best explained by reference to the fig. 83. This shows an ordinary S trap filled with water. If a discharge of water occurs through the trap itself which is sufficient to fill the sectional area of the pipe, the trap would either remain emptied or a vacuum would be left at the outgo of the trap at A, but nature abhors a vacuum and the pressure of the atmosphere at B being greater than at A, would cause either part or the whole of the water to be forced out of the trap, which would be useless as a preventive for the inlet of foul air; or, in other words, the trap would be *siphoned.*

The water seal of the trap may also be interfered with in another way, such as when two closets are planned one above the other and discharge into the same down pipe C (fig. 84). In this case the air following the discharge down the pipe would also draw the air in the portion AD along with it, thus lessening the pressure on the water in the trap at A, which would cause it to become unsealed by the pressure of the atmosphere at B.

The student can easily satisfy himself on all these points by means of model traps made of glass and joined with glass down pipes by means of indiarubber rings, when the effect can be readily seen.

Both of these causes of unsealing may be prevented by ventilating the trap at its outgo by means of the ventilating pipe E (called the anti-siphonage pipe) which should, in order to be effective, be of the same diameter as A, and should be carried up higher (generally about 6 ft.) than any of the branch pipes AD, when it may be taken into the ventilating pipe CD, which in turn is carried above the roof level. By the introduction of Mr. Hellyer's anti-D traps, described later on, the evils of siphonage were much reduced.

*Traps.*—The use of traps in a drainage system is imperative, and the principles upon which they should be constructed may be briefly outlined. Earthenware traps placed underground have been already dealt with in a previous article.

A trap in its simplest state is merely a bend in a pipe which retains water and prevents air from passing through it. The illustration (fig. 85) shows a simple S trap, the space between E and F being the water seal. The depth of this seal is important. It should never be less than 1½ in. But a water seal alone is not sufficient to prevent the passage of gas through a trap. The reason of this is that water will absorb such gases and give them off again; for instance, ammonia has been found to pass through the water of a trap in a quarter of an hour. It is necessary, therefore, that the water in a trap should be changed tolerably frequently, and also that the trap itself should be ventilated on its upper side, so that noxious gas may be immediately led away and not press against and saturate the water of the trap. A trap may also be rendered useless by means of evaporation. Ventilation of a trap is required, therefore, in order to secure its efficiency as a trap, as well as for other reasons, which we shall touch on presently.

We give a selection of various types of traps used in the sanitary fittings of a house. Those in the underground drainage have already been discussed under house drainage. They should all be designed so as to be as nearly as possible self-cleansing, to have an effective seal, and to be free as possible from all angles that may retain filth.

Some bad types which do not fulfil these conditions are first given. The "Bell" trap, which was formerly used for scullery sinks, has been already explained, and its defects pointed out in regard to yard drainage. The old D trap was probably one of the worst kinds ever invented, and was so called from its shape. Fig. 86 shows a view of one of these, and figs. 87 and 88 sections of two different kinds.

The "dip" pipe is projected into the water of the trap about $1\frac{1}{2}$ in. In fig. 88 it will be observed that this pipe is some distance from the back of the trap A, where the soil congregates and adheres to the trap. Fig. 87 is a less objectionable section, but even in this form the soil clings to the sides. The trap is full of corners for the collection of filth, as is evidenced by examining any old D trap which is taken out of a house. If the dip-pipe becomes eaten away the trap itself is entirely destroyed.

Some of the better forms of traps are now enumerated. These are generally called after the letter they represent. The S-trap is shown in fig. 89. It is made of stout drawn lead, generally of 8 lbs. to the superficial foot. It will be observed that it is useful for a vertical waste, and is made in sizes of $1\frac{1}{4}$ in. to 4 in. internal diameter. The smaller kinds are fitted with a screw inspection cap at A as shown, so that in case of stoppage they can easily be cleared out.

The P trap (figs. 90 and 91) is useful for cases in which the waste is horizontal for a certain length, and is constructed similarly to the S trap. Both the P and S traps are largely used to form the traps of baths, sinks, and lavatories. In such cases they are made with an enlarged mouth. This is necessary in order that the trap and waste pipe may be thoroughly flushed out, the full bore of the discharge not being interfered with by the plug and grating from the basin.

These traps are made of the ordinary circular section.

An improvement was, however, made by Mr. Hellyer in introducing his well-known anti-D traps. These were introduced to prevent the water of the trap being driven out by the momentum of the water discharge, and also to secure the thorough scouring of the trap itself. By a series of experiments Mr. Hellyer found that this could be obviated by so shaping the trap that the water-holding portion is contracted and the outgo is larger and square in section. This is useful in preventing siphonage. This square outgo has, however, in some cases been found to collect filth in the angles of the square section. Several illustrations, figs. 92, 93, 94, 95, and 96 show the principles on which these are designed. These traps have a water seal of $1\frac{3}{4}$ in. The larger size is used for water-closets, and the smaller ones for the wastes of baths, lavatories, and sinks. The smaller ones are generally provided with an "inspection cap" which can be unscrewed in case of stoppage.

It will be observed that the water way of the trap is reduced in size, which increases the scouring of the lower part of the trap and the removal of all refuse, while the outlet, being larger, prevents the pipe filling full bore and causing siphonage. Another advantage which the anti-D trap has over such a section as fig. 97 (which is a bad form) is that the water rushing through the trap would have a tendency to hit the upper edge of the outlet at fig. 93 and fall back into the trap, instead of being drawn down the waste pipe by the easy outgo, as shown in fig. 97.

In a number of experiments made by Mr. Hellyer the anti-D trap was completely cleaned out with one flush, while the round-pipe traps sometimes required two flushes.

All traps should be ventilated at their outgo if more than one fitting empties into one waste pipe, and even with only one fitting it is best to ventilate it. Some of the experiments made by Mr. Hellyer are interesting as showing the necessity of having the traps ventilated.

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## *GENERAL BUILDING NEWS.*

St. Mark's Church, Barnet.—The first portion of St. Mark's Church, Barnet, was consecrated recently by the Bishop of St. Albans. The late Mr. J. L Pearson, R.A., was engaged at the commencement of the undertaking, but the work has been carried out under the superintendence of his son, Mr. Frank Pearson. The plan of the church is a parallelogram, about 108 ft. long and 51 ft. wide, divided into a nave, 74 ft. long and 20 ft. 6 in. wide, a chancel, 34 ft. long and the same width as the nave, and with north and south aisles both to the nave and chancel; transepts, 16 ft. wide, and projecting some 10 ft. beyond the aisle wall; vestries, &c., on the north side of the chancel. Flint is used for the walls, with quoins of Little Casterton stone. The windows, doorways, arcades, and all other dressings are also of Little Casterton stone. The main roofs are to be covered with tiles, those of the aisles with lead. The nave is the portion which has been erected. It is divided longitudinally into five bays, with clustered shafts supporting lofty arches. The chancel is divided into three bays, which are narrower than those of the nave, and have corresponding pillars and arches. The chancel arch, as designed, partakes of the same character, and rises to a height of 32 ft. The east window will be of seven lights, and the west window of five lights. The end windows of the aisles are of five, and the side windows of nave and chancel are of four and three lights respectively; that of the south transept of four lights. A circular window fills the gable of the north transept; the space below is reserved for the organ. The entrances are in the western bay of the aisles north and south, and are protected by projecting porches. There are no buttresses to the side walls, but the gables have massive buttresses, with terminating pinnacles. The gable ends are diapered with alternate squares of stone and flint. A bell gable for two bells marks the commencement of the chancel. The roofs of nave and chancel are of oak timber. The chancel will have the usual fittings. The floors generally will be tiled with wood-block flooring under the seats or chairs. The walls inside are to be plastered. A tower is contemplated, but this is not comprised in the present undertaking. Mr. E. T. Price was clerk of the works. Messrs. Henry Willcock & Co., of Wolverhampton, are the builders; Mr. Richard Bradford was manager to the contractors.

Re-opening of Holy Saviour's Church, Tynemouth.—Tynemouth Church, which has been closed for several months for extensive repairs, was re-opened recently. The church, which was built from the designs of the well-known architect, Dobson, of Newcastle, some sixty years ago, was, until the recent alterations, ceiled with a flat ceiling, with very heavy mouldings of plaster. These had showed ominous cracks in many places for some time past, and last summer, at the request of the vicar and churchwardens, Mr. Hope, of Hope & Maxwell, Newcastle, architects, made an examination of the structure, with the result that the ceiling was reported to be in a dangerous condition, and the roof timbers cracked and strained so much so that he recommended the removal of the entire roof of the nave. It was determined to carry out the whole of the recommendations of the architect. The system of lighting the church with brass pendant gasaliers instead of the old standards has been adopted. A new heating apparatus, whereby the church is warmed by hot water instead of hot air, has been introduced. The contractor for the work was Mr. Miller, Tynemouth; Mr. Green, of Newcastle, was the decorator; Messrs. Dinning & Cooke supplied the hot-water apparatus; and Messrs. Tweddell the plumbing and gasfitting.—*Newcastle Journal.*

St. Faith's Church, Waterloo, Liverpool.—This building is being erected as a Jubilee gift to the diocese of Liverpool, at the expense of Mr. D. Horsfall. The architects are Messrs. Grayson & Ould, and the contractors are Messrs. Roberts & Robinson, both of Liverpool. The nave will provide sittings for 650 worshippers, and the total sitting accommodation, including choir and transept, will be 800. The material being utilised is red Runcorn stone and red Accrington bricks, with hammer beam roof.

Sunday Schools, Biggleswade.—The new Sunday schools of the Biggleswade Old Meeting were opened recently. The building, which is of white brick relieved by the use of red brick, has been erected in Foundry-lane. The main hall is 40 ft. long by 27 ft. wide, with a height of 20 ft. from the floor to the wall-plate. Eight class-rooms of various sizes open into this hall, and a library and a kitchen have also been provided. The building has been erected by the executors of the late Mr. D. Ruffell, from the plans of Mr. Handley, architect.

Proposed Higher-grade School, Aberdeen.—Plans of a proposed extension of the Central School, Aberdeen, prepared by the School Board's Architect and Master of Works, Mr. J. Ogg Allan, have been approved of Aberdeen School Board, subject to conference with other educational bodies. The plans show a four-story building of light-grey granite, with a frontage to Schoolhill of 120 ft. and a depth of 120 ft., while the height from the street level to the apex of the roof would be 70 ft. The estimated cost is 17,000*l.*

Sedgwick Memorial Museum.—At a Congregation, held on the 10th instant, of the Senate, Cambridge University, it was resolved to proceed with the plans and designs prepared by Mr. T. G. Jackson, R.A., for the Museum to be erected in memory of the late Dr. A. Sedgwick, F.R.S., who was elected Woodwardian Professor of Geology in 1818. The estimated cost of the Memorial Museum is 36,500*l.*, towards which a sum of about 24,000*l.* has been raised by subscriptions to the memorial fund.

Free Library, Newtown, Montgomeryshire.—This library will be erected at the corner of Broad-street and Severn-street. It will contain a news-room on the ground floor, with entrance at the corner. On the first floor will be the lending-library and reading-room or reference-library, with librarian's office adjoining. Retiring-rooms for gentlemen are in the basement; for ladies, in a mezzanine floor leading from the first landing. There is also provided a dwelling-house for the librarian. The building will be heated on the low-pressure hot-water system. The walls will be of red brick, with Grinshill stone dressings and oak timber work. The roofs will be covered with Broseley tiles. The corner doorway will be in stone with projecting pediment hood, from which the angle will be corbelled out above, and on which will be sculptured figures of Literature and Progress. Architects were invited to send plans in competition, and those prepared by Mr. Frank H. Shayler, of Welshpool and Newtown, were selected.

Scottish Temperance Assurance Buildings, Aberdeen.—It is proposed to erect in Aberdeen offices for the Scottish Temperance Life and Accident Assurance Company, Limited. The new building will occupy the site of the dwelling-house, 154, Union-street, next to the Royal Bank. The architects are Messrs. Jenkins & Marr, Aberdeen. The building in height will be 70 ft., with a width of 34 ft., and it will have a depth to Diamond-lane of 92 ft. The basement will be occupied with cellars and stores, and on the ground floor there will be two shops, with saloons behind. These shops will be on either side of a central door, giving access to the upper floors. On the first floor there are two sets of offices in the front, and one in the back of the building. On the second floor there is a slightly different arrangement, there being two offices in the front and two at the back. The third floor and attics will be let as a dwelling house. On the level of the third floor there is a laundry and washing-house. The building will be of granite.

Manufacturing Works, Warrington.—New manufacturing works for Messrs. Fletcher, Russell, & Co., in Wilderspool-road, Warrington, have just been opened. The premises cover an area of twelve and a half acres, and have been erected at a cost of 50,000*l.*, including the purchase of the site. The buildings consist of moulding and passing shops, pressing shop, machine pressing shop, smiths' fitting and machine shops, large warehouse, lowering shop, engine and furnace houses, gas testing department, grinding shop, boiler house, offices, store, and show-rooms. The works have been fitted with the electric light. Mr. Alexander Neil, Vice-Chairman of the Directors, designed the works, it is stated, and they have been architecturally carried out by the Mayor of Warrington (Mr. J. E. Wright), and assistance has been rendered by Mr. William R. Neil. Mr. Davonport was the builder, and Mr. Broadhurst clerk of the works.

Bank, Paddington.—New premises for the National Bank, Limited, have been erected in the Harrow-road. The exterior of the building is of terra-cotta. The building throughout is lighted by electricity, and heated by hot water. The strong-room downstairs is reached by a lift. The architects were Messrs. Edmeston & Gabriel, of London, and the builders, Messrs. Tennant & Co., of Willesden-green. Messrs. Chubb provided the doors, &c., in the strong-room; the Measham Terra-Cotta Company, the terra-cotta blocks. The opalite walls were by the Opalite Company, of Harrow-road. The asphalte flooring in the basement is by the Val de Travers Company; the lift to the strong-room by Messrs. Waygood & Co.; the electric lighting by Mr. H. M. Leaf; hot water and heating apparatus by Messrs. Jeffries, Queen-street; Messrs. Tickner & Co., Kensal-rise, the wrought-iron railings; and Messrs. Diespeker & Co., the mosaic floor work. The whole of the work has been under the personal supervision of Mr. F. W. Gabriel, one of the architects, with Mr. F. W. Carman as clerk of the works.

Stonehaven Corporation Model Lodging-house was formally opened on the 14th inst. The architects were Messrs. J. & J. A. Souttar, Aberdeen.

Wesleyan Sunday Schools, York.—Memorial stones of new Wesleyan Sunday Schools, situate between, and having entrances in, St. Nicholas-street and Milton-street, Hull-road, York, and to be called St. George's Wesleyan Sunday Schools, were laid on the 15th inst. The buildings will consist of four rooms, one 50 ft. by 30 ft., another 30 ft. by 20 ft., and two class-rooms, and they are expected to cost about 1,200*l.* Mr. Edward Taylor is the architect, and Mr. H. E. Turner the builder.

Technical Institute, Kingston-on-Thames.—The new School of Art and Technical Institute erected in the St. James's-road, Kingston, was opened on the 11th inst. The new building is 129 ft. long, and is of red brick, the dressings being of terra-cotta. On the front elevation, facing the Kingston Hall-road, are five gables, two at each end and one in the centre. Each of the two pairs of end gables is surrounded by a shield in terra-cotta, bearing the arms of the borough, quartered with those of the county. The principal entrance is through a door of panelled oak. On the right of the vestibule is the porter's room. To the right hand is the secretary's office, and a doorway close by will lead to the proposed county examination hall. At right angles to the entrance hall is a long corridor, which leads to a dress-cutting room. Next to this is a laboratory or physics class-room. Situated next to this is another class-room, whilst to the left of the corridor is a lavatory, provided with hot and cold water. Leading from the entrance hall is a series of three flights of Portland stone steps, by which access is obtained to the first floor. On the top of the stairs are two wrought-iron grills, ornamented with bronze circular medallions bearing the borough arms. The first room on this floor is intended for the use of the art master. Next to this is situated the clay-modelling room, while in the centre is the advanced studio, and at the end is the elementary room, 58 ft. $10\frac{1}{2}$ in. by 31 ft. 6 in. The rooms on this floor provide accommodation for 100 students. The building is heated by the low-pressure system, the boiler being in the basement. The architects were Messrs. Lainson & Son, Brighton, and the builders Messrs. Potter Brothers, of Horsham. The electric light has been installed by Messrs. Prestwick & Burt, of Kingston.

Proposed New Workhouse Infirmary, Dorking.—To meet the requirements of the Local Government Board, the Guardians of the Dorking Union some time ago resolved to erect a new workhouse infirmary, and they have provisionally accepted the tender of Mr. G. Cummings, of Betchworth, for carrying out the undertaking at an outlay of 7,366*l.* 16s. The structure will be of a total length of 185 ft. The site chosen is at the rear of the workhouse buildings. The infirmary will be a red brick block, the centre part being carried a story higher than the two side wings. The ground floor will be approached by a vestibule and entrance hall, on the left-hand side of which will be the female wards, bath-rooms, &c. On the right-hand side are shown the male wards and similar offices, and there are also rooms for males and females, and doctor's room, and sculleries. The first floor will be approached by two staircases. Here the wards are divided into two blocks, one for males and the other for females, there being also separate wards for patients of both sexes in acute suffering; each set of wards being provided with its own bath-rooms and sanitary annexes. The second floor is devoted to the nurses' bedrooms, sitting-rooms, bath-room, &c. Altogether there will be accommodation in the infirmary for about sixty patients, and in addition there will be a lying-in ward on the ground floor at the rear of the main building, at each end of which will be a tower, forming the sanitary offices. The largest wards are those on the first floor, which measure 36 ft. by 24 ft., those on the ground floor being about 24 ft. by 24 ft. The premises will be heated by Shorland's Patent Manchester stoves and hot water coils. Mr. Percy Adams, of London, is the architect, and the quantity surveyors are Messrs. F. Bargman & Benison, of Dorking.

## *SANITARY AND ENGINEERING NEWS.*

Municipal Work in Norwich.—The City Engineer of Norwich, Mr. A. E. Collins, has issued a statement of the principal works carried out by his department during the year ended December 31 last. The works referred to do not include the new sewerage operations, either in the streets, at Trowse, or at the New Mills, nor special works, such as the Technical School, the restoration of the Sessions Court, the repairs to and maintenance of Corporation buildings, bridges, gardens, &c. From the report it appears that during the year 800 superficial yards of new granite sett pavement have been laid, and 554 lineal yards of kerbing have been relaid. Of new wood pavement 1,580 superficial yards have been laid, and of new granite kerbing 660 lineal yards. Of new granite sett channels in surburban roads, principally on hills, 9,235 lineal yards have been laid, 77 iron street gullies, of the City Engineer's pattern, have been laid by the Corporation; these gullies are fitted with cleansing liners and special traps which do not become unsealed when the gullies are cleansed. A large number of similar gullies have been fixed by private persons in private streets. The broken granite used on macadamised roads amounts to 2,640 tons, representing an approximate area of 40,000 yards scarified, coated, and rolled. This gives an average finished thickness of $1\frac{1}{8}$ in. of new granite over the surfaces dealt with. Broken flints used 1,894 cubic yards, representing an approximate area of 22,728 yards, coated 3 in. thick and rolled. Road shingle used 1,948 cubic yards, representing an approximate area of 23,376 yards, coated 3 in. thick and rolled. Broken stones from depots 400 loads, representing an area of 4,800 yards, making a total of 90,904 superficial yards. New tar-paved footways have been made to the extent of 4,426 superficial yards. Negotiations having been completed by the Streets Improvement Committee, street widenings have been effected in King-street, Mount Pleasant, and St. Benedict-street. In connexion with the tramway works extensive street widenings and street widening works are in progress. Old paths have been refaced with tar and limestone chippings or iron slag to the extent of 9,647 superficial yards. There have been 470 superficial yards of tar-paved carriageway made, and 835 yards of new concrete footways, while 2,530 superficial yards of flags had been used for re-instating existing footways. Plans for 586 houses and 65 warehouses, &c., were approved, as also were plans for the laying out of six new streets. 431 dwelling-houses were erected during the year, and 45 factories, and the new buildings and other works in progress on December 31, 1898, was 297. Eighty per cent. of the houses erected in 1898 have water closets, and 20 per cent. pan closets. The statement gives details of other works carried out, and Mr. Collins adds that the sample slop water apparatus fixed some three years since at cottages in Lower Westwick-street continues to give entire satisfaction. Notwithstanding a stringent watch, no waste of water has been observed in consequence of its construction, and at no time has it been a nuisance in any way. In every respect the slop water-closet is a very great advance on the pan-closet it replaced; it is much superior to a bin or pan-closet, and in many respects for outdoor closets is preferable to water-closets. The slop water-closet requires absolutely no supply of water whatever beyond the ordinary waste of the household; it is not subject to being put out of action by frost; the concentrated flushes tend to keep the house drains in good working condition.

Proposed Bridge, Cox Green, Sunderland — The Barmston Council have waited on the Durham County Council as to erecting a bridge across the River Wear, at Cox Green, midway between Cox Green and Washington stations on the North-Eastern Railway, the only available means of access at present being by the ferries, which are often dangerous in flood times. The bridge has been designed by Messrs. D. Balfour & Son, of London and Newcastle, and consists of a steel arched bridge, having a span of 150 ft., and, to allow of shipping facilities, a height of 30 ft. above high-water mark is required.

## *FOREIGN.*

France.—The Government has decided to abandon the Pavillon de Flore at the Louvre, and give it up to the Museum. With the same object, the Marine Museum is to be transported to the Hôtel des Invalides, to leave the space free for pictures.——The plan for the Salons, which will be held, as last year, in the Galerie des Machines, is now made. The ground for the sculpture exhibits will be much as before. For paintings, the Old Salon will have thirty-six rooms instead of thirty. The New Salon will organise some new rooms at the back of the Galerie des Machines on the Avenue Suffren side.——M. Formigé has been commissioned by the Vieux Paris Committee to make further excavation, in the garden of the archbishop's palace in search for traces of the Merovingian fortification wall.——The Société des Artistes Français has addressed to the French Government a demand for the erection of a museum of modern art to take the place of the inadequate galleries at the Luxembourg.——At the Durand Ruel Gallery there is open the sixth exhibition of "Peintres Orientalistes Français," including an interesting collection of the works of Guillaumet; and at the Georges Petit Gallery there is a small exhibition of the works of MM. Besnard, Cazin, Monet, Sisley, and Thaulow.——The jury of the competition opened by the Municipality of Commercey for the construction of a Savings Bank have awarded the first premium to M. Chenevier, of Verdun, and the second to MM. Médard and E. Médard, of the same town.——The "Midi" Railway Company have obtained powers for the construction of several new branch lines, to the extent of 110 kilomètres; among others one from Auch to Lannemez, and one from Biarritz Town to Biarritz.——The death is announced, at the age of fifty-six, of M. Léon de Thorel, member of the Société Centrale des Architectes, a former pupil of the Ecole des Beaux-Arts. He was architect for the restoration of the church of St. Merci and of numerous buildings in Paris, especially a well-known hydropathic establishment—"Le Balneum."——M. Gustave Deloye, the sculptor, has died, at the age of fifty-three. He was a pupil of Jouffroy and Dantan, and obtained a Second Grand Prix de Rome in 1862. All his exhibits at the Salon attracted notice, and he received several important commissions from the State. Among his numerous works may be named the Caryatides of the châteaux of Boissière and Chénonceaux, the busts of Frederic Lemaître, Littré, and Count Andrassy, and more than 200 medallion portraits, among them one of the Princess of Wales. His extreme rapidity of production perhaps rather militated against the higher character of his work, which, however, possessed a great deal of force and individuality.

## *MISCELLANEOUS.*

Professional and Business Announcement.—Mr. W. Scrivener and Mr. Joseph William Scrivener, of 8, Fitzroy-road, Regent's Park, hitherto in partnership as builders under the firm of "W. Scrivener & Co.," have dissolved partnership by mutual consent. The business will hereafter be conducted by Mr. J. W. Scrivener at the same address.

Automatic Smoke Preventer.—This is an apparatus specially for boiler furnaces, patented by Messrs. Henry Rossell & Co. (Sheffield). It consists of a series of panels which are opened by the action of opening the furnace door to coal, thus introducing a large supply of air at the proper moment. On the furnace door being closed, the panels are left to close gradually by the action of the cylinder, not stopping the admission of the extra air supply till the black smoke has all burned off. The apparatus is on true scientific principles and ought to answer the aim proposed.

Horncastle Stanhope Memorial.—An octagonal Gothic structure, 32 ft. in height and 7 ft. in diameter, standing upon a platform of steps, has been lately unveiled in the town of Horncastle. It has been erected by public subscription in memory of the Rt. Hon. Edward Stanhope, M.P., late Secretary of State for the War Department, and contains a bronze medallion likeness. It consists of three stages; the lower one being solid, of Monks Park stone with diaper panels between polished red granite shafts and crocketted pediments above. The middle stage is an open arcading with polished red granite shafts with carved Monks Parks caps and a double set of trefoiled work above, the third stage consisting of a lantern covered with lead, supported by gun-metal shafts and finished by an ornamental finial of the same material. The design was selected in open competition, and is the work of Mr. E. H. Lingen Barker, of London and Hereford, the contractors being Messrs. Walter & Hensman, of Horncastle, and the sculptor Mr. C. J. W. Ladds, of West Keal.

Old Scarborough.—It is stated that in pulling down the "Newcastle Packet" inn, on the Sandside, which is supposed to have been originally built more than three hundred years ago, a piece of the old town wall has been discovered, together with a considerable amount of ship's timber, in good state, of which the inn was partly constructed. A neighbouring house is said to be that wherein Richard III. lodged when he visited the town.

Winchester Cathedral.—The Dean of Winchester makes an appeal for contributions towards a sum of about 4,400*l.*, which is still needed to pay for the repairs now completed and for the projected repair of the south aisle roof (estimated at 1,060*l.*), the flat roof of the retro-choir and its aisle (1,065*l.*), and that of the south transept's eastern aisle (435*l.*) The executed repairs (costing in all 11,918*l.* 11s.) include the main roof of the nave, whose stone vaulting was in a dangerous condition, the north transept and its aisles, the choir and its south aisle, and the timber-work of the central tower, carried out by Messrs. Thompson, of Peterborough, under the superintendence of Mr. Colson, of Winchester, with whom Sir J. Wolfe Barry acted as consulting engineer in respect of the nave roofing and the relieving the pressure of the timber upon the vaulting below.

Reid's Brewery, Clerkenwell.—Consequently upon the recent amalgamation of three old-established brewery firms, the directors of Messrs. Watney, Combe, Reid, & Co., have decided to dispose of their freehold property on the south side of Clerkenwell-road, formerly Liquorpond-street. The entire property covers an area of 156,500 ft., being just $3\frac{1}{2}$ acres, with side and rear frontages to Leather-lane, Hatton-wall, and Portpool-lane, and includes thirty blocks of brewery buildings, with eight houses and shops. An old plan shows that Reid's (formerly Meux's) brewery in Liquorpond-street was established at the "Old Boar's Head" brewhouse, which, with three adjacent houses in the then Gray's Inn-lane, belonged to the Corporation of Bristol.

Portland Cement in the United States.—The last issue of the *Journal of the Society of Chemical Industry* contains an extract from a paper by R. W. Lesley (Franklin Inst.) upon the history of Portland cement in the United States. The manufacture of natural cement first became established in the States owing to the extending construction of canals, and increased from three million barrels in 1882 to eight and a half million barrels in 1896. Saylon, of Allentown, was the first to make Portland cement in America, shortly after 1870; others followed, and the manufacture is now extensive. American practice differs in some respects from that prevailing in Europe. Dry materials, such as the hydraulic cement, water limestones, and lime rocks of the Lehigh district are ground together to a powder, which is made into bricks by machinery or by hand, and kilned. Mills dealing with marls and clays and wet materials are, however, beginning to run them, directly after mixing, into *bassins de dosage*, such as are used on the Continent, and thence into revolving kilns. The distinctive American kiln is a rotatory kiln, which is an adaptation of that invented by Ransome, but never successfully developed in England. Many works using dry materials are doing well with the dome kilns so often employed in Europe, whilst others prefer the German continuous kilns, with which the consumption of fuel is lower, but the cost of labour higher than with the dome kilns. Others, again, working the Lehigh materials, or marls or clays, introduce the finely ground raw materials (wet or dry) into rotatory kilns, where they at first lose their moisture and carbon dioxide, and are finally delivered in the form of clinkered nodules. This kiln presents the advantage of obviating the necessity of bricking the material. The grinding of the clinker was, quite early in the history of the American industry, accomplished by means of millstones directly driven by belts and encased in iron frames. But since then millstones have been superseded by iron or steel grinding apparatus of the Sturtevant and other types. The Griffin mill, introduced about 1887, is now largely used, as are American Gates crushers and coffee mill crushers. The raw material is obtained chiefly from the laminated lime rocks forming part of the Silurian argillaceous limestones at and around Coplay, on the Lehigh river, near Phillipsburg, New Jersey.

Property Sales.—A freehold ground-rent of 800*l.* per annum, secured upon St. Magnus House, near the Monument, with reversion in eighty-nine years, has been sold at a price realising almost twenty-nine years' purchase. It is believed that the block of offices in question marks the site of the house of Farryner, the King's baker, where the Great Fire of London broke out. An inscribed stone—now preserved in the Guildhall Museum—was set (1681) in the front of the house, No. 25, Pudding-lane, erected there after the Fire; the inscription mentions the confession of Robert Hubert who, when under arrest, professed to identify the spot which, as he said, he had been suborned to set in flames. The freehold of Nos. 3-4 Chesterfield-gardens, Mayfair, has lately changed hands for a price but little less than 100,000*l.*

Sale of St. Luke's, Birmingham.—The fabric of the condemned Church of St. Luke in Bristol-road has been sold to Mr. Thomas Hancocks, contractor, of Sparkhill, but the transaction is on lines quite different from those which marked the sale of Christ Church. The only points of resemblance are that the purchase value is the same, 5*l.*, and that the fabric is to be taken down, and the material removed. The contractor has undertaken not to make use of the church as either a show or an advertisement hoarding. The Vicar of St. Luke's has retained from the sale the font, bell, clock, mural tablets, communion rail, and the contents (if any) of the cavity beneath the foundation-stone. The contract provides that the work of demolition and clearance shall be completed by the end of May. —*Birmingham Gazette.*

Lincoln and the Electric Light.—On the 15th inst., Mr. W. O. E. Meade-King, M.I.C.E., Inspector for the Local Government Board, held an inquiry at the Guildhall, Lincoln, relative to an application of the Lincoln Town Council to borrow 19,000*l.* for purposes of electric lighting. Mr. Vesey Brown is the electrical engineer.

Wolverhampton Electric Lighting.—Mr. George W. Willcocks, M.Inst. C.E., held an inquiry on the 15th inst., at the Town Hall, Wolverhampton, into the application of the Town Council to the Local Government Board for sanction to borrow 29,740*l.* for the purposes of electric lighting. The Town Clerk said the present application was to enable the scheme adopted by the Corporation last October to be carried into effect. Evidence was given by Mr. C. E. Shawfield, electrical engineer, in support of the application. The inspector then visited the generating station in the Commercial-road.

The Decoration of the Royal Exchange.—On the 16th inst., the scheme for filling the panels surrounding the quadrangle of the Royal Exchange with paintings representing scenes of historical interest in the City was carried a further step towards completion by the unveiling of the picture which has been presented to the Gresham Committee by the Sun Fire Insurance Company. The subject of the painting, which is by Mr. Stanhope Forbes, A.R.A,, is the great fire of London. It is a day view of the fire, and depicts the efforts of the occupiers of threatened houses to remove their goods and families from danger by means of river barges.

Chancel-Screen, Parish Church, Mortimer, Berks.—A chancel-screen has just been erected in the parish church, Mortimer. The screen is of English oak, and was executed by Messrs. Cornish & Gaymer from the design of Sir Arthur Blomfield.

Memorial Monument, Candie, Guernsey.—A new monument has been recently erected in the Candie Cemetery, Guernsey. The monument is constructed of hard white Carrara marble, and consists, standing upon a pedestal, of a Scriptural figure representing the "Angel of Glory." The figure is surrounded by a marble kerb, while over the greensward a plain cross lies in a reclining position. The work was executed by Messrs. Harry Hems & Sons, of Exeter.

Southampton Master Builders' Association.—The annual dinner of the Southampton and District Builders and Decorators' Association was held at the Swiss Café Restaurant, Southampton, on the 15th inst. Major Brinton, ex-President of the Association, presided. The chairman submitted the Royal toast, which, having been duly honoured, Mr. H. N. Jenkins submitted the toast of "The Trade and Commerce of Southampton," coupled with the name of Mr. Peter Stewart, who replied. "The Mayor and Corporation and Borough Officials" was the next toast, and it was proposed by Mr. G. Franklin. The toast was coupled with the names of the Mayor, the Junior Bailiff, and the Borough Engineer, Mr. W. B. G. Bennett. The Mayor and Junior Bailiff Doggrell having replied, the Borough Engineer said that in 1600 there were 400 houses in Southampton, nearly all under the ancient walls. In 1830 there were 4,500 houses, and a population of 19,000. About twenty-five years later there were 14,000 or 15,000 houses, and a population of 57,000, whilst at the present time there were 22,000 houses and a population of over a hundred thousand.—The toast of "The Architectural Profession" was then given by the Vice-President, Mr. H. Cawte, and Messrs. A. F. Gutteridge, W. E. Mitchell, and S. Kelway Pope briefly responded. Mr. Thomas Costigan then proposed the toast of the evening, "Master Builders and Decorators' Association and Kindred Associations." He said that things were transpiring all round which might have serious and far-reaching effects. He could not open his mind to his hearers, nor could he disclose correspondence which he had with him, but whatever might be the result of the present agitation, one lesson must come home to them, and that was that their salvation and very existence depended on combination, because if they were selfish, and did not consider their fellows engaged in the trade, they must eventually be snuffed out of existence. He asked them as men of intelligence and education to realise the great lesson to be learned from combination. Their workmen had shown them what combination meant. If twenty per cent. of the working classes of England were able to exercise such sway and power by trades unions, what would twenty per cent. of the master builders, if combined, be able to do? The working man admired no one more than the man who would stand up and fight for his own and his right. He coupled with the toast the names of Mr. A. T. Doggrell and Mr. S. Minty. —Mr. Doggrell, in reply, gave a brief résumé of the work of the Association during the past year. He referred to what had been done in regard to the Workmen's Compensation Act, and said that after a deal of negotiation and consultation, they as an Association had accepted the terms of the Globe Company, of Manchester, and the majority of the members had insured with that office. The hon. secretary also referred to the fact that there had been several vexatious disputes, in fact, unauthorised strikes, which had not had the sanction of the trades union officials, and he also mentioned the fact that one case had gone to the Higher Court involving an important principle. Mr. S. Minty also briefly responded. Other toasts included "The Visitors" and the "Chairman."

The Development of Central Leeds.—Already the Leeds Estates Company have altered the aspect of Briggate, and the present year will witness a further improvement of property in the neighbourhood of that important thoroughfare. The syndicate have just deposited plans, and they have been approved by the Building Clauses Committee of the Corporation, for the development of the north side of Wood-street. The scheme includes the erection of twenty-one shops, with gables and towers, terra-cotta dressings and facings, and granite pilasters, harmonising with the style of architecture adopted in the new buildings on the opposite side of the street. Starting from the centre of the block of property will be a cross arcade, communicating ultimately with two other arcades—one at the end of the Empire Theatre buildings and the other between the north side of Wood-street and the Bay Horse-yard—and connecting in a direct line Briggate and Vicar-lane. The length of the arcade will be 390 ft., and the width 18 ft., and the space above the ground floor will be set back so as to form a gallery on each side. Over forty shops will be provided inside and at the main entrances. The elevation will be of an ornate character, the façade in Briggate being in keeping with the front design of the buildings adjoining the Empire Palace Theatre. In regard to the elevation in Vicar-lane, there will be three towers and three gables, and a series of bays, with terra-cotta dressings and granite and terra-cotta pilasters. The height of the arcade inside will be 35 ft. It is expected that before very long the Building Clauses Committee will be invited to consider plans for the laying out of some of the remaining property acquired by the Estates Company, and that the result of combined private and Corporate enterprise will be a serious effort to form the new thoroughfare running parallel with Wood-street, and thus providing through communication between Albion-street and Vicar-lane and George-street, adjoining Kirkgate Market. This alternative route has been conceived with the object of relieving the traffic along Commercial-street and Kirkgate.—*Yorkshire Post.*

"Sell's Directory of Registered Telegraphic Addresses."—This directory (published annually, with three quarterly editions) is compiled from official lists supplied by the Post Office, and the issue for 1899 is well up to date. We have previously described the features of this very useful and well-arranged work, with the present issue of which is a map of the Chinese Empire in colours, showing the latest railways and other developments. Amongst the subsidiary contents of the volume will be found special articles on British trade and foreign competition, and a digest of the main features for 1898 of the following industries:—Iron and steel, engineering, shipbuilding and shipping, coal, petroleum, textiles, chemicals, &c.

Aberdeen Corporation Tramways.—The Town Council has agreed to fit up the Woodside section of the city tramways for electrical traction (overhead trolly system), at a total cost—including the reconstruction of the northmost portion of line—of 33,300*l.*, according to the plans of Mr. J. A. Bell, electrical engineer, and Mr. W. Dyack, C.E., Borough Surveyor, Aberdeen.

Hull Street Improvements.—A Local Government Board Inquiry was held at the Hull Town Hall on the 16th inst., by Mr. W. O. E. Meade-King, M.Inst.C.E., one of the Local Government Board's Inspectors, regarding the petition of the Hull Corporation to the Board to issue a provisional order to put in force the powers of the Land Clauses Acts with respect to the purchase and taking of lands otherwise than by agreement, with reference to certain lands required by them for the purpose of (1) constructing new streets and widening existing streets between Whitefriargate Bridge and Drypool Bridge (2) constructing a new street continuing Brook-street to Anlaby-road, and (3) widening and improving certain parts of the Anlaby-road, Great Passage-street, Holderness-road, Hessle-road, Clarence-street, and Great Union-street. The scheme was explained in detail by the City Engineer, Mr. A. E. White.

Commons Preservation Society.—A meeting of the executive committee of the Commons Preservation Society was held at 1, Great College-street, Westminster, on Monday, under the presidency of the Right Hon. G. J. Shaw-Lefevre. Amongst others present were Sir Charles Dilke, Sir John T. Brunner, Sir Robert Hunter, the Hon. T. C. Farrer, Mr. Edward North Buxton, and Mr. L. W. Chubb (Secretary). The Honorary Solicitors (Messrs. Horne & Birkett) reported that arrangements had been made with the promoters of the Bexhill and Rotherfield Railway Bill by which the surface of Hazards Green, Ninfield, would be restored, and that no enclosure of the common land affected should take place. The St. David's Water and Gas Company had agreed to limit their interference with Morfa Common, St. David's, to the acquisition of an easement only; it appeared that over forty-two acres of common were within the limits of deviation of the proposed works. Negotiations were pending with the promoters of several other Bills, and it was hoped that they would result in satisfactory arrangements being made for the protection of the public interests. Among these Bills are the Great Eastern Railway (General Powers) Bill, which proposes to absorb 19 acres of Lammas land in the Lea Valley, the Great Western Railway Bill, the Uxbridge and Rickmansworth Railway Bill, under which power is sought to acquire 2 acres of Ickenham Green, a Metropolitan common in Middlesex, 6 acres being within the limits of deviation. At the request of the Society, Sir John Brunner agreed to give notice of opposition to several Bills, including the Omnibus Bill of the London, Brighton, and South Coast Railway, which seeks to absorb two acres of Earlswood Common, a regulated common at Redhill, and the Burley-in-Wharfedale Urban District Water, Horsforth Waterworks and Menstone Waterworks Bills, which propose to acquire in the aggregate over 300 acres of Burley Moor, in Yorkshire. It was also determined to oppose the East London Water Bill and the Bradford Tramways and Improvement Bill. Under the former Bill 194 acres of Chingford, Sewardstone, Broken and Naze Marshes, and Patty Pool Lammas lands, situate in the parishes of Chingford and Waltham Holy Cross, will be absorbed, and it was felt that if the Bill were allowed to pass, the promoters should be pressed to make a considerable addition to Epping Forest, which borders upon the land affected, in exchange for the common land which would be extinguished. The Society was of opinion that the Bradford Tramways and Improvement Bill was open to grave objection in its present form, as it takes power to authorise the sale of 100 acres of Baildon Moor, contrary to the provisions of the Commons Act, 1876. The proposals of the Crown with regard to the New Forest and to the Forest of Dean were also considered, and it was resolved to hold a special meeting to decide what action the Society should take concerning them. It appeared that nearly fifty general cases of interference with common land, roadside waste, rights of way, and open spaces, in all parts of the country, were also receiving the attention of the Society.

National Registration of Plumbers.—The tenth annual meeting of the District Council for Forfar, Perth, and Fife was held at the Town House, Dundee, on Saturday. Mr. Walter M'Gregor presided, and there was a large attendance. The secretary's annual report stated that there were at the present time sixty-nine masters and 153 journeymen upon the register. The classes at the Technical Institute, Dundee, and in Perth, had been well maintained during the year. In the Dundee classes there were forty-five on the roll. It was greatly to be desired that three or four of the journeymen should take the opportunity of joining the class for teachers to be held by the Plumbers' Company at King's College, London, next summer. The meeting then re-elected the retired public representatives on the Council, adding Mr. James Mitchell, organising secretary to the Fife County Council, and substituting Dr. Robertson, Medical Officer of Health for Perth in the room of Dr. Simpson, deceased. The retiring master plumbers' representatives were elected, with the addition of Mr. James Littlejohn, Arbroath. Messrs. Dewar, Fimister, Goldie, and Mackay, were re-elected operative plumber representatives, with the addition of Mr. Hutton. The retiring office bearers were re-elected, viz., President, Lord Provost M'Grady; Vice-Presidents, Ex-Provost Basinghall, Councillor Elliott, Dr. Templeman, and Dr. Lennox; secretary, Mr. J. J. Henderson.

Builders and the By-Laws Concerning Soil Pipes.—A question of considerable importance to London builders and sanitary engineers has arisen consequent upon applications having been made to the Vestry of St. James, Westminster, for permission to place soil pipes inside instead of outside new buildings. The subject originally arose in connexion with the drainage system of the Carlton Hotel, and at the last meeting of the Vestry the Public Health Committee stated that, in view of such applications, they had had under consideration the desirability of steps being taken to amend the by-laws made by the London County Council under the Public Health (London) Act, 1891, which provided that the soil pipes shall be placed outside the buildings. Having regard to the fact that no discretionary power is given to the sanitary authority in the matter, the Committee recommended the Vestry to draw the attention of the London County Council to the objections, and to suggest that action should be taken to amend the law, so as to give such discretionary power, and that the London vestries and district boards should be asked to support the views of the Vestry on the subject. A long discussion followed the submission of the recommendation, and in the course of the debate it was stated that the medical officer, Dr. Edmunds, the surveyor, Mr. Monson, and the sanitary inspectors, had expressed the opinion that the by-law on the subject was bad. It was further stated that the bulk of the London Sanitary Authorities honour the by-law by the breach; whilst, on the other hand, it was contended that the by-law should be enforced until it is shown to be defective, and that no evidence on this point has yet been brought forward. It was eventually decided to adjourn for three months the consideration of the recommendation of the Committee, and in the meantime to ask the London County Council whether any complaints have been made as to the working of the by-law; and, if so, whether the County Council think Local Authorities should be given any discretionary power in regard to the matter.

**THE TRIANGULAR BRIDGE, CROWLAND.**—It is stated that considerable damage has been accidentally done to this structure by a passing vehicle, and that large portions of the masonry are dislodged. The bridge, of which we published a view from a drawing by Mr. Arnold B. Mitchell, on January 26, 1889, spans the confluence of the Nene, the Welland, locally known as the Wash, and the Catwater Drain, in the town near the Abbey. It is supposed to have been originally built by the monks of the Benedictine monastery which Ethelbald, over-lord of Mercia, founded, A.D. 714, in place of Guthlac's hermitage and over his tomb, in the marshes south-east of Deeping Fen. The bridge, whose three pointed arches have, apiece, three moulded stone ribs, and spring from beneath abutments at the angles of an equilateral triangle, is mentioned in a charter, 943, but the present structure—cited by Stukeley as "being too steep to be commonly rode over; horses and carriages go under it"—is generally ascribed to Edward II.'s day. The seated figure, 6 ft. high, seen in the drawing, and vulgarly known as Oliver Cromwell, who was well remembered there, as at Stamford, with a penny loaf, is variously taken to be a statue of Saxon workmanship, of Ethelbald, who sought refuge with Guthlac from Ceolred, or of King Alfred, or his brother Ethelbald II., son of Ethelwulf, *ob.* 860. Other views of the bridge and the statue will be found in vol. i. of John Carter's "Specimens of Ancient Sculpture and Painting, &c.," fo., 1782-6, which also contains drawings, made in 1780, of the statues around the west window, and of the bas-reliefs around the west door, of the Church of SS. Bartholomew and Guthlac, formed out of the Abbey as reinstated by Abbot Jofferhaed in 1112.

**ARTISANS', LABOURERS', AND GENERAL DWELLINGS COMPANY.**—From the thirty-second annual report of this company we get the statement of the present extent and nature of the house property in hand, and the new works contemplated. At Shaftesbury Park, Battersea, they own 30 shops, 1,135 single houses, 33 double houses (two tenants each), and 1 block of 22 tenements. At Queen's Park, Harrow-road, W., 116 shops, 2,072 single houses, 108 double houses (two tenants each), and a public hall. Four houses have been repurchased during the year. At Noel Park, Wood Green, 85 shops, 1,076 single houses, and 174 double houses (two tenants each), covering altogether about half the area. At Leigham Court, Streatham, 231 houses and 309 maisonettes are let and occupied; besides these, 72 houses and 57 maisonettes are finished or structurally complete, all of which will be ready for occupation during the year. Nineteen shops are structurally complete, 7 of which are let. It is intended during 1899 to build 8 additional houses and proceed with 110 maisonettes, so as to complete Barcombe-avenue; also, on receiving the approval of the London County Council, to lay out the roads on the east side of Hillside-road. The Rev. W. H. Booth, Vicar Designate of St. Margaret's, Leigham Court, is desirous of proceeding with the erection of the nave, aisles, and baptistry of the permanent church. The directors commend to the proprietors Mr. Booth's appeal for assistance for providing the necessary funds.

**GLADSTONE BUST FOR OXFORD.**—It has been decided that the memorial of the past and present members of the Oxford University Union Society to Mr. Gladstone shall take the form of a bust, to be placed in the Debating Hall. The work has been entrusted to Mr. E. Onslow Ford, R.A.—*Daily Chronicle.*

**WHITEHALL IMPROVEMENT.**—Mr. Robert Vigers, President of the Surveyors' Institution, who acted as arbitrator in the case of Meynell & Pemberton *v.* The Office of Works, has issued his award. This was a claim by a firm of solicitors for 30,000*l.* as compensation in respect of the leasehold interest in 20, Whitehall-place. The claim as Crown lessor (for ninety-nine years from July, 1820, at a rental of 96*l.* 6s. 9d.) was settled privately for 14,000*l.* The amount awarded by the arbitrator is 3,478*l.*

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## *CAPITAL AND LABOUR.*

**YORKSHIRE PLASTERERS' WAGES.**—The operative plasterers of Spen Valley, Dewsbury, Batley, Morley, &c., have given notice to their employers' representatives of a demand for an advance of 1d. per hour in wages, to take effect on July 1. Their present rate of payment is 8d., and the hours are forty-nine and a half per week.

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## *LEGAL.*

### THE ACTION AGAINST THE LONDON COUNTY COUNCIL.

THE case of Bayley & Co. *v.* the London County Council, reported in the *Builder* of the 18th inst., was mentioned to Mr. Justice North in the Chancery Division of the High Court of Justice on the 17th inst. It will be remembered that the case came before Mr. Justice Romer (taking motions for Mr. Justice North) on the 11th inst., on a motion by the plaintiffs for an *interim* injunction to restrain the defendants, the London County Council, till the trial, or further order, from trespassing on the plaintiffs' premises, No. 13, Warwick-street, and from interfering with the party wall, &c., and Mr. Justice Romer, after hearing Mr. Henderson in support of the motion, and Mr. Kenyon Parker, for the defendants, granted an *interim* injunction, restraining the defendants over the 17th inst., from interfering with the plaintiffs' premises so as to affect their right to support.

On this day, the 17th inst., it was stated that the evidence was not yet complete, and it was arranged that the case should stand over till the 24th inst., the *interim* injunction granted by Mr. Justice Romer being continued over that day.

### IMPORTANT CASE UNDER THE LONDON BUILDING ACT, 1894.

THE case of the London County Council *v.* Dixon which came before a Divisional Court of the Queen's Bench, composed of Justices Lawrance and Channell, on the 15th inst., raised an important question under Sections 7 and 8 of the London Building Act, 1894. The case came before the Court in the form of a special case, stated by the Metropolitan Police Magistrate at Greenwich, from which it appeared that an information was laid against the respondent, Mr. John Dixon, charging him with having, in May, 1898, at Sandhurst-road commenced to form a street for carriage traffic leading out of Sandhurst-road without having obtained the sanction of the County Council, contrary to the London Building Act, 1894. It appears that Sandhurst-road is a new street laid out upon property belonging to a gentleman named Corbett, and in May, 1898, a row of houses had been erected in that road. In that month the respondent commenced the erection of six shops upon land bought from Mr. Corbett, and the shops were erected with a frontage to Sandhurst-road, and upon the same side of it as the row of houses already referred to. A space of 40 ft., as is required by the Act for a carriageway, was left between the last of the houses and the first of the shops, and this space was what was alleged to be the street commenced by the respondent. The shop at the corner has a doorway at the angle, and a shop window and other windows of the house over the shop look into the space. There is also a door opening into the space at a distance of 10 ft. or 12 ft. from the Sandhurst-road, and five coach-houses and stables have been erected at the back of the premises, the only access to which for horses and carriages is by an entrance 80 ft. down the alleged street. This alleged street is the property of Mr. Corbett, and a certain portion of it is used as a cart track communicating with some brick-fields situated at the end of the alleged street, which is about 90 ft. in length. There was no evidence that Mr. Corbett had entered into any agreement with the respondent that the space forming the alleged street should be left open; but this alleged street was marked on the estate plan of Mr. Corbett's estate as "proposed street." Nothing had been done by the respondent to form or lay out the alleged street, except the building of the shops and stables. The requirement of Section 7 of the Act, it was said, was not complied with. This Section enacts that before any person commences to form or lay out any street he shall make an application to the County Council for their sanction to the formation or laying out of such street. Section 8 provides that for the purpose of the part of the Act which includes Section 7, "A person shall be deemed to commence to form or lay out a street if he erect a fence or other boundary, or lay down lines of kerbing, or level the surface of the ground so as to define the course or direction of a street, or . . . if he form or lay out the foundations of a house in such manner and in such position as that such house will or may become one of three or more houses abutting on or erected beside land on which a street is intended to be or may be thereafter laid out or formed. Provided that no person shall be deemed to commence to form or lay out a street, if he do any of the acts in this Section mentioned for some purpose other than that of forming or laying out a street." The magistrate found as a fact that, in the circumstances, a new street for carriage traffic had been commenced to be formed and laid out; but that though the respondent undoubtedly erected the shops in the expectation that the space would be a new street, yet he did not commence to form it, on the ground that he had no control of the roadway of the alleged street. Hence the present appeal by the County Council.

Mr. Horace Avory (with him Mr. Daldy) for the appellants, contended that the person who commenced to form and lay out the street was the respondent. The Act was framed to enable the County Council to take steps to enforce the provisions of the Act before any expense had been incurred by owners or builders, and also framed to catch the builder who built on land adjoining a proposed street, as well as the owner of the roadway.

Mr. R. C. Glen having addressed the Court on behalf of the respondent, their Lordships dismissed the appeal.

Mr. Justice Channell said that the Section was framed in the broadest way, and without the proviso it would include cases which created an absurdity, because any house built upon any land might at some time or other become one of three or more other houses abutting upon land on which a street might at some time be laid out or formed. The proviso, however, saved the Section from this vagueness. In the present case the respondent had obtained his land on such terms that he was entitled to a right of way to his stables; but, knowing that the land over which the right of way passed was likely to become a street, he so built his house as to be suitable in that eventuality.

### DISPUTE BETWEEN ELECTRICAL ENGINEER AND ARCHITECT.

A DIVISIONAL COURT of Queen's Bench, composed of Justices Bruce and Ridley, on the 18th inst. delivered judgment in the case of Stegmann *v.* O'Connor, on the plaintiff's appeal from the decision of an official referee, on the ground that the referee's decision was against the weight of evidence. It appeared that the defendant, in 1898, required an electric-light installation put down at his house at Clapham, and his architect prepared the specification. The contract was given to the plaintiff, an electrical engineer, and he proceeded to execute it. During the course of the work, however, a complaint arose that the work was not being done according to the specification, and there was also a complaint that the plaintiff was not finishing the work in the time allowed by the contract, and the defendant's architect then called in another electrical engineer, and the work was completed by him. The plaintiff then brought the present action to recover the amount of his contract, alleging that the work was done according to the specification. The Official Referee, while allowing the plaintiff a certain amount for the actual value of the work taken over by the engineer, awarded the defendant 50*l.* as a penalty for the non-completion of the work by the plaintiff in the time specified by the contract, and entered judgment for the defendant on the claim and counter-claim for 38*l.* 1s. Hence the present appeal by the plaintiff.

Their Lordships now gave judgment, affirming the decision of the Official Referee, and dismissed the appeal with costs.

### ST. GEORGE'S (BRISTOL) BY-LAWS CASE.

ON the 10th inst., at the Bristol Police-court, before Messrs. E. B. Colthurst and J. W. Arrowsmith, the case of Yabbicom *v.* King came up for decision. In March, 1898, Edward King, a builder, of Grove Park, Fishponds, was summoned under the Bristol Improvement Acts that in December, 1897, at Glen Park, Bell Hill, St. George, he unlawfully did erect a certain house contrary to the provisions of the Bristol Improvement Acts, 1847, inasmuch as he omitted to build parapets to the said house. The case was adjourned until April 22, and then April 28, and decided by the magistrates on May 10 in defendant's favour. Mr. Wise, who prosecuted, asked to be allowed to state a case, and this was granted; and the appeal came on for hearing on January 13 this year, when the decision of the magistrates was reversed. The chairman of the magistrates explained that the case arose out of an information preferred by the City Surveyor, Mr. Yabbicom, against the defendant, Edward King, under Section 35 of the Bristol Improvement Act, 1847, charging that the defendant unlawfully did erect a certain house contrary to the provisions of the said Act, inasmuch as he omitted to build a parapet to the said house. The case was heard and determined by that court on May 10 last, and upon such hearing it was dismissed. It was then proved that the defendant erected the house in accordance with certain plans approved by the Urban District Council of St. George, prior to such district being included in the city and county of Bristol. It was also proved that such approval was contrary to the by-laws of the District Council. By Section 15 of the Bristol Corporation Act, 1897, it is enacted "that all plans of new streets, and of new buildings within the added area, approved by the urban district councils or the local authorities respectively, before the commencement of the Act, shall be valid for the period of two years." In dismissing the information the bench came to the conclusion that the defendant had erected the house upon a plan duly deposited and bearing upon it the approval of the District Council, and in so doing they were of opinion that he was legally entitled to do, and that they had no right to inquire into the validity of the approval. The City Surveyor was dissatisfied with their decision, and on his application they stated a case for the opinion of the Divisional Court, and the same came on for argument on January 13 last, the result being that the Court were of opinion that they should have convicted the defendant, and in pursuance of that ruling the magistrates did now convict him; but in view of the whole circumstances of the matter they felt that the justice of the case would be met by the infliction of a fine of 1*l.* and costs. Mr. Wise then made an application with regard to costs. He remarked that Mr. Sibly was allowed 3*l.* in addition to the court fees, and now they were proved to be in the right he asked to be allowed the same amount. Mr. Sibly objected, as the circumstances were very different. Mr. King was pitched upon as a test case, and it would be very hard upon him if he had to pay the costs, and he had hoped that Mr. Wise would not have asked for them. The bench allowed only the court fees and that of one witness.—*Bristol Times and Mirror.*

## DISPUTE ABOUT A SMOKE-CURING APPARATUS.

In the Westminster County Court on Tuesday his Honour Judge Lumley Smith, Q.C., tried the case of Germaines *v.* Kettners, Limited, in which the plaintiff, who is the inventor and patentee of a smoke-preventing apparatus, sued the defendant company, who are the proprietors of a well-known West End restaurant, to recover the sum of fifteen guineas in respect of a patent smoke-preventing apparatus, and also a further charge for fixing.

The plaintiff was called, and said that in January of last year he met the manager of the defendant firm at the office of the Strand District Board of Works, and after some conversation it was agreed that he (plaintiff) should go round to the defendant's restaurant with a view to fixing up one of his patent chimneys. The order was duly given and the work was carried out, but from that day to this he (plaintiff) had been unable to get payment. He had made several applications for payment, but the defendant had put him off with various excuses and finally refused to pay at all. In cross examination, the witness said his invention was intended to reduce the amount of smoke and cure smoky chimneys and he denied that it had the opposite effect by increasing the amount of smoke.

The defendant's manager was called, and admitted having given the order for the apparatus, but said that the effect of it was that there was as much smoke as ever, and that what was far worse was, that a large proportion of it was driven back into the kitchen. The thing was given a fair trial, but it was found to be absolutely useless, and he (witness) had to employ another firm to remove it. It had been lying on the roof ever since, and the plaintiff could have taken it away at any time.

Cross-examined: He denied ever having promised the plaintiff payment, but what he did say was that if it was satisfactory he would get a cheque on the following Wednesday after fixing.

After hearing the evidence of several witnesses as to the uselessness of the apparatus, his Honour said he thought the defendant's order was definite, and did not provide that the thing should be satisfactory. Judgment therefore would be for the plaintiff for fifteen guineas and costs.

## CASE UNDER THE WORKMEN'S COMPENSATION ACT.

At the Clerkenwell County Court on Thursday last week Judge Edge was occupied in hearing an action brought under the Workmen's Compensation Act, 1897. Jane Goulding, Camden Town, claimed compensation from Messrs. Geo. Longden & Son, contractors, Sheffield.

In this action it was stated that the deceased workman was engaged on the defendant's building, Theatre of Varieties, Holloway-road, N., as a scaffolder. On December 24 last he was at work adjusting and readjusting some of the poles of the scaffolding for the purpose of raising material from below to the various heights of the building. He was asked by some of the labourers to change a pole in order that the work might be done more rapidly. He was fixing a pulley at the top of the scaffolding, and while leaning over he fell on an iron girder and died the same night in the Hospital. It was contended that the deceased was not engaged in his proper employment, as he ought not to have interfered with the pulley, and that the defendants, therefore, could not be held liable for the accident.

His Honour, however, gave judgment for the plaintiff for 155*l.* — 75*l.* for the widow, 50*l.* for the younger child, and 30*l.* for the elder one. The case had been taken up by the Union, of which deceased was a member; but his Honour said he should have preferred that an effort had been made to settle the case with the respondents. He therefore made no order as to costs

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## MEETINGS.

### Friday, February 24.

*Institution of Civil Engineers (Students' Meeting).*—Mr. R. Gordon Mackay on "The Loss of Heat from Buildings." 8 p.m.

### Saturday, February 25.

*Lecture Theatre, South Kensington Museum*—Mr. William Burton on "Pottery." I. 3.30 p.m.

*Royal Institution.*—The Right Hon. Lord Rayleigh on "The Mechanical Properties of Bodies." III. 3 p.m.

*Builders' Foremen and Clerks of Works' Institution.*—Annual dinner, King's Hall, Holborn Restaurant. 6 p.m.

*Sanitary Institute.*—Inspection and Demonstration for Sanitary Officers at the Aylesbury Dairy Company's premises, St. Petersburg-place, Bayswater. 3 p.m.

*London and Provincial Builders' Foremen's Association.*—Monthly Meeting, Memorial Hall, Farringdon-street, E.C. 7.30 p.m.

*Edinburgh Architectural Association.*—Visit (1) to Milton House Works, Abbeyhill; (2) Holyrood Palace.

### Monday, February 27.

*Royal Academy.*—Lectures on Greek Sculpture, by Dr. A. S. Murray. III.—"Victories." 4 p.m.

*Carpenters' Hall, London Wall (Free Lectures on Matters connected with Building).*—Mr. William Poel on "English Playhouses in the Sixteenth, Seventeenth, and Eighteenth Centuries." With lantern illustrations. 8 p.m.

*London Institution.*—Professor W. Ramsay on "Recently Discovered Gases of the Atmosphere." Illustrated. 5 p.m

*Sanitary Institute (Lectures for Sanitary Officers).*—Lecture by Dr., W. A. Bond. 8 p.m.

### Tuesday, February 28.

*Northampton Institute, Clerkenwell.*—Lectures on Mediæval Architecture, by Mr. Francis Bond. VIII.—"Towers and Spires." 7.45 p.m.

*Institution of Civil Engineers.*—Mr. W. T. Douglass and Mr. J. A. Purves on "Improvements in Dioptric Apparatus for Lighthouses." 8 p.m.

### Wednesday, March 1.

*Royal Archæological Institute.*—(1) Mr. H. S. Cowper, F.S.A., on "The Influence of the Roman Occupation on the Distribution of Population in Cumberland and Westmoreland." (2) Mr. W. H. Knowles on "An Effigy of a Knight in Warkworth Church, Northumberland." 4 p.m.

*British Archæological Association.*—The Rev. W. S. Lach-Szyrma, M.A., on "Thoughts on Ancient British Costume." 8 p.m.

*Society of Arts.*—Mr. Wilton P. Rix on "Leadless Glazes." 8 p.m.

*Sanitary Institute (Demonstrations for Sanitary Officers).*—Inspection in the Parish of St. George's, Hanover-square. 2 p.m.

*Northern Architectural Association.*—Mr. J. W. Taylor on "The Bricks used in Northumberland and Durham." 7.30 p.m.

*St. Paul's Ecclesiological Society (Chapter House, St. Paul's).*—Mr. J. Lewis André, F.S.A., on "The Mural Paintings of Sussex Churches." 7.30 p.m.

### Thursday, March 2.

*Royal Academy.*—Lectures on "Greek Sculpture," by Dr. A. S. Murray. IV.—"Bronze Charioteer at Delphi." 4 p.m.

*London Institution.*—The Rev. Canon Benham on "St. Alban's Abbey." 6 p.m.

*Society for the Encouragement of the Fine Arts.*—First Conversazione, at the Galleries of the Royal Institute of Painters in Water Colours, Piccadilly. 8.30 p.m.

*Sanitary Institute (Lectures for Sanitary Officers).*—Professor A. Bostock Hill on "Trade Nuisances." 8 p.m.

*Institution of Electrical Engineers.*—Mr. G. Marconi on "Wireless Telegraphy." 8 p.m.

*Institution of Civil Engineers.—Students' Visit* to the works of Messrs. Maudslay, Sons, & Field, Westminster Bridge-road, S.E. 2.30 p.m.

### Friday, March 3.

*Architectural Association.*—Mr. A. Saxon Snell on "Public Baths.' 7.30 p.m.

*Glasgow and West of Scotland Technical College (Architectural Craftsmen's Society).*—Mr. James M'Kissack on "Half-timber Work." 8 p.m.

*Institution of Junior Engineers (Westminster Palace Hotel).*—Paper on "Carbon Consuming Batteries and their Possibilities," by Mr. W. R. Cooper, B.Sc., illustrated by experiments. 8 p.m.

*Royal Institution.*—The Right Hon. Lord Rayleigh on "The Mechanical Properties of Bodies." IV. 3 p.m.

*South Kensington Museum (Lecture Theatre).*—Mr. William Burton on "Pottery." II. 3.30 p.m.

### Saturday, March 4.

*British Institute of Certified Carpenters.*—Visit to the Prudential Assurance Offices at 3 p.m. Mr. H. A. Davey on "Shoring," at 6 p.m., at Carpenters' Hall.

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## RECENT PATENTS:

### ACCEPTED SPECIFICATIONS.

*Open to Opposition until April 15.*

[1897.]—26,343, Maxim, Filaments for Electrical Lamps. [1898]—533, Hills, and 3,563, Brown, Electrical Arc Lamps. 555, Platt, Apparatus for Soldering, Brazing, Burning off Paint, &c. 3,450, Spence, Treatment of Sewage. 3,668, Stilwell, Soldering Aluminium Joints. 3,916, Furneaux, Windlasses. 4,235, Ham, Valves or Gates for Sewers. 4,282, Byng & Angold, Automatical Cut-outs for Arc Lamps. 5,497, Hoiid, Production of Acetylene Gas. 5,769, Askham, Wilson, & Slack, Grinding, Crushing, Pulverising, and Disintegrating Machines. 5,907, Verver, Domestic Fire-places or Stoves. 6,174, Pollak, Incandescent Light Burners for Liquid Hydro-Carbon. 6,421, Sargents, Means for Rapidly Securing Ropes, Cables, &c. 7,124, Allan & McRobbie, Cleaning Appliances for Incandescent Gas Lamps. 7,199, Tate, Wall Socket and Plug for Electrical Fittings. 7,581, Oliver, Wall Paper, &c. 7,637, Restall, Method of, and Apparatus for, Clearing, Cleaning, Lining and Painting Drain and other Pipes. 7,820, Briggs, Crampton, & Edward, Means for Preventing the Accumulation of Soot in Flues and Shafts. 7,877, E. Bailey and Others, White Lead. 8,012, Beardshaw, Drills and their Holders. 8,054, Moores & Farrell, Fixing or Fitting Incandescent Electrical Lamps into Lanterns. 8,229, Carroll, Spanner or Wrench. 8,340, Rhodes & Gaunt, Flushing Cisterns. 8,827, Murat, Roofing. 8,884, Spencer, Spencer, & Smallman, Junctions for Pipes and Tubes. 9,041, Arnold, Sanitary Dustbins. 9,049, Myers, Weighing Apparatus and Computing Scales. 15,322, Burden, Portable Fire-Extinguisher. 17,659, Bergmann, Electricity Meters. 18,221, Sample, Capstans or Winding-Engines. 22,878, Smith, Cowls for Chimneys, Ventilating Shafts, &c. 25,654, Griffin, Incandescent Gas Burners. 25,931, Horton & Bradley, Trusses and Bridges. 26,088, Sutherland, Cements and Plastic Compositions. 26,548, Settle & Padfield, Taps and Cocks. 26,641, Nikles, Combined Adjustable Spanner and Pipe Wrench. 26,720, Karg, Plaited or Basket Work for Use as a Building Material, also in the Construction of Retaining Walls, Revetments, &c. 26,797, Trueman, Means for Closing Junction Inlets or Outlets in Stoneware Pipes when not in use, also Applicable for Joining Pipes. 26,878, Callaway, Moulding Presses. 27,061, Sievert, Sheet Glass. 27,547, Kleine & Stapf, Fire-Proof Concrete Ceilings and Floors. 27,549, Ettles, Roof, Rooflight and Cupola-Light Glazing. 27,628, Hopkins, Apparatus for Preventing the Bursting of Water-Pipes by their Freezing. [1899].—92, Weeks, Hydraulic Jacks. 196, Ree, Apparatus for Use in the Settling and Ornamenting of Ridge Tiles. 574, Pape, Handle-Securing Device.

### ABSTRACTS OF PATENTED INVENTIONS.

23,480.—Bath Supply Fittings: *H. Schmidt.*—A casing, with an outlet, receives the hot and cold water supply pipes, the supply being regulated by means of ports in a hollow tube which are so spaced that the casing shall take its supply from either or both of the pipes; by a modification the pipes are placed around a central cylindrical plug, and a pipe may be applied, instead of the casing, to the middle port of the tube.

23,492.—Burglar-Alarms: *J. R. Spicer.*—The mechanism of the apparatus (which may be attached to a window, &c., by a removable bracket) is contained in a casing, and consists of a spring clockwork train which operates the hammer of a bell by means of an escapement; the casing has corrugated arms which can be pressed together on a V-spring and be thus inserted into the key-hole; a spring engages an arm on the hammer to keep it normally locked, whilst another spring, controlled by a crank, which is moved if a key is inserted into the key-hole, releases the hammer; the former spring has a lateral stud that projects through the casing for relocking the mechanism.

23,547.—Acetylene: *A. Wartenweiler & R. Spengler.*—The descent of a gas-holder supplies water automatically to the generators that hold carbide. The generators are divided into compartments and fitted with covers. For regulating the water supply, a valve has a long arm, to which is attached a cord that supports the balance-weight of the gas-holder. The gas passes to a washer and thence to the holder. When the carbide in one of the first generators is exhausted, the water overflows into the additional generator. A pipe, and a valve which is closed when one half part of the apparatus is being re-charged, connect the additional generators together, and a U-tube, for removal of water is fitted on to the pipe which conveys gas from the holder.

23,559.—Detachable Gas Fittings: *J. Findlay.*—The object is to supply gas from a bracket, &c., for both heating and lighting purposes. Instead of the usual light-burner or nipple is devised a fitting which has a lighting burner and an extension for supplying a heating burner, together with either separate cocks for regulating the two supplies, or a four-way cock in the bulb which carries the extension.

23,565.—Soldering Lamps: *M. Eulner.*—The lamp handle carries two tubes whereof one is open at the top, and the other is closed but has an aperture, whilst each contains a wick for saturation with spirit; generation of vapour in the closed tube is produced by igniting the spirit at the other tube's open end, and as the vapour escapes under pressure through the aperture it forms a blow-pipe flame on the wick in the open tube.

23,590.—Stoves and Fire-places: *J. E. Russell.*—The register stoves have ornamented side-plates, which are joined by a rail and (at the top) curved plate, the fire-back is canted forward and the flue, transversed by the gases, may be contracted by pushing back a hinged plate; a small door gives access to the chimney, additional heating surface is obtained by means of a chamber formed above, and in front of, the flue, and the bottom of the grate is composed partly of grate-bars and partly of fire-brick.

23,623.—Electrical Lamps: *C. Howard & R. Mayer.*—The long neck, to which the bulb is fixed, may be divided and fused or otherwise joined again without injury to the cap, a piece of glass connects two straight wires of platinum or nickel upon which the filament is placed, and the wires are joined to the leading-in wires by tightly-fitting sleeves of thin copper tube or helically coiled wire—or they may be held together by screwed or rivetted blocks, or fixed by tapered pins in oval sleeves; a slotted screw-cap fits against a shoulder on the long neck, and is secured by a band or wire wound around it; the contrivance admits of the ready replacement of a damaged filament.

23,767.—Roofing Tiles: *G. E. Evans.*—The tiles, curved lengthwise and having projections or hanging nibs, are moulded by similarly curved dies, and recesses in the end of the convex die take the plastic material that forms the ribs.

23,771.—Water-closet Flushing and Siphon Discharge: *M. J. Adams.*—So that only one ball-cock shall be needed, and the flushing of a series of closets simplified, the cisterns are made to intercommunicate; to enable the flush to rise in the basin before the discharge begins, a weeping-hole is made in the outlet.

23,793.—Carbides: *C. J. Lundstrom.*—The carbides are covered, for their preservation, with a material that is for the most part insoluble in water—for example, oil or turpentine, or oil and turpentine together; when they are needed for use they are subjected to heat or to a solution that will decompose the oil or other coating, namely, boric acid solution or soda lye; water mixed with boric acid, soda, &c., will serve to decompose the carbides so coated.

23,807.—**ENAMELLED GLASS AND OTHER PLATES, &c., FOR WALLS, CEILINGS, AND PANELLING**: *N. E. Geile.*—The glass, in the form of coloured or uncoloured sheets, is coated with enamel, and, having been fired, presents a marbled, frosted, or crackled opaque appearance; enamelled glass mouldings, or frames embedded in the backing, secure the sheets or panels in position, and the roughened enamel at the panel's back causes it to adhere to the wall; similar mouldings or frames will secure earthenware panels or plates in the same manner.

23,945.—**ORNAMENTATION OF WOOD**: *A. Wilcke & A. Karpau.*—The surface, polished or varnished, is evenly covered with a non-drying adhesive substance—say, a mixture of yellow wax (1), mutton tallow (1), and raw linseed oil (5)—on to which a thin metal stencil is rolled; plaster of paris or other powder is used to remove the material which is not covered by the stencil, and a mixture of oil of tar or paraffin (1), with fusel oil (5), and wood alcohol (5), is applied to remove the polish or varnish; the wood surface is then cleaned with benzine, and, if need be, coloured; plaster or French chalk will serve to be rubbed on the adhesive material for its removal.

23,993.—**ARTIFICIAL STONE, CEMENTS, AND CONCRETES**: *C. G. J. Frosell.*—A binding material or cement is composed of burned magnesite or dolomite and magnesium or zinc chloride, mixed together with phosphates, carbonates, and stannates, or other soluble salts, with stannic acid, and with sulphates of magnesia or other bases. For making artificial sandstone, sand is mixed with the powdered magnesite and stirred about with a solution of magnesium or zinc chloride, the partly stiff mass is treated with a solution of phosphate of soda, &c., and is then hardened, either in air or under water; the cement is described as being capable of resisting heat.

24,017.—**COMBINED WRENCH, SCREWDRIVER, AND NAIL EXTRACTOR**: *H. A. Burton & L. V. Kennerly.*—The notched and bevelled end of the adjustable wrench serves as a nail extractor, and a screwdriver is fitted on to a handle attached to the cam of the lower jaw. The lower jaw, sliding upon the stem, can be reversed, so that its toothed face can be used for pipes, &c., and its smooth face for nuts. The fixed jaw is toothed, whilst the other jaw has teeth to engage with teeth on the stem by means of the cam.

24,072.—**HOT CLOSETS OR OVENS**: *J. Keith.*—The closet or oven is heated by hot-water steam radiators, as are described in No. 19,233 of 1894; its ends are formed into one or more radiator sections connected by radiators having shorter columns, or by cross tubes. An outer casing serves to retain the hot air.

24,073.—**ELECTRICAL SWITCHES**: *F. W. Heaton & H. Smith.*—The connecting arm works on each side of an insulating block, which is fitted between the fixed contacts; a bracket on the block or wall carries a pin on which the handle and its arm work loosely, the handle being shaped so as to force the arm into position against the action of a spring plunger giving a quick break.

24,078.—**SLIDE RULES**: *R. C. Smith.*—Flexible transparent plates cover the rule's body and slides which are held together by clamps that may slide on the plates and will also serve as an index; to these may be added auxiliary scales, and a rod passing through the sliding clamps may hinge two rules together; the scales themselves can be composed of flexible materials, for use upon curved surfaces.

## PRICES CURRENT OF MATERIALS.

| TIMBER. | | |
|---|---|---|
| Greenheart, B.G. ton | 8/0/0 | 0/0/0 |
| Teak, E.I. ....load | 10/10/0 | 15/10/0 |
| Sequoia, U.S. ft.cu. | 1/9/0 | 2/0/0 |
| Ash, Canada, load | 3/17/6 | 5/5/0 |
| Birch, do. | 3/0/0 | 5/0/0 |
| Elm, do. | 4/12/6 | 5/15/0 |
| Fir, Dantsic, &c. | 2/0/0 | 4/0/0 |
| Oak, do. | 3/5/0 | 3/15/0 |
| Canada | 4/0/0 | 6/0/0 |
| Pine, Canada red | 0/0/0 | 0/0/0 |
| Do. yellow | 4/7/6 | 6/5/0 |
| Lath, Dantsic, fath | 4/10/0 | 5/10/0 |
| St. Petersburg | 4/0/0 | 6/10/0 |
| Wainscot, Riga, &c., log | 3/15/0 | 5/15/0 |
| Odessa, crown | 3/15/0 | 5/15/6 |
| Deals, Finland 2nd & 1st std. 100 | 9/15/0 | 10/5/0 |
| Do. 4th & 3rd | 9/15/0 | 10/5/0 |
| Do. Riga | 8/5/0 | 9/5/0 |
| St. Petersburg, 1st yellow | 11/15/0 | 14/5/0 |
| Do. 2nd yellow | 10/15/0 | 12/5/0 |
| Do. white | 9/15/0 | 11/15/0 |
| Swedish | 9/15/0 | 16/15/0 |
| White Sea | 10/15/0 | 18/0/0 |
| Canada, Pine 1st | 18/15/0 | 25/5/0 |
| Do. do. 2nd | 13/15/0 | 17/0/0 |
| Do. do. 3rd, &c. | 6/0/0 | 10/0/0 |
| Do. Spruce, 1st | 8/10/0 | 10/10/0 |
| Do. do. 3rd and 2nd | 7/5/0 | 8/10/0 |
| New Brunswick | 7/5/0 | 8/0/0 |
| Battens all kinds | 5/0/0 | 16/0/0 |
| Flooring boards, sq., 1 in., prep. 1st | 9/6 | 16/3 |
| Do. 2nd | 8/0 | 13/3 |
| Other qualities— | 6/3 | 7/0 |
| Cedar, Cuba, ft. | /4 | /4½ |
| Honduras, &c. | /3½ | /4½ |
| Mahogany, Cuba | /5½ | /7 |
| St. Domingo, cargo av. | /5 | 1/3 |
| Mexican, do. do. | /3½ | /4 |
| Tobasco, do. do. | /4 | /6½ |
| Honduras, do. | /4 | /6 |
| Box, Turkey, ton | 4/0/0 | 15/0/0 |
| Rose, Rio | 7/0/0 | 14/0/0 |
| Bahia | 6/0/0 | 12/0/0 |
| Satin, St. Doming. | /5 | 1/0 |

| TIMBER (*continued*). | | |
|---|---|---|
| Satin, Porto Rico | 0/0/9 | 0/2/0 |
| Walnut, Italian | 0/0/3 | 0/0/7 |
| METALS. | | |
| Iron—Pig, in Scotland ton | 2/14/6½ | 0/0/0 |
| Bar, Welsh, in London | 6/0/0 | 6/5/0 |
| Do. do. at works in Wales | 5/15/0 | 5/17/6 |
| Do. Staffordshire, in London | 6/5/0 | 7/10/0 |
| COPPER—British cake and ingot | 77/10/0 | 78/0/0 |
| Best selected | 78/0/0 | 79/0/0 |
| Sheets, strong | 80/0/0 | 81/0/0 |
| Chili bars | 72/0/0 | 0/0/0 |
| YELLOW MTL. lb. | 7d. | 7½d. |
| LEAD—Pig Spanish ton | 14/15/0 | 0/0/0 |
| English com. Brands | 15/0/0 | 0/0/0 |
| Sheet, English 6 lbs. per sq. ft. and upwards | 16/0/0 | 0/0/0 |
| Pipe | 16/10/0 | 0/0/0 |
| ZINC—English sheet ton | 30/0/0 | 0/0/0 |
| Vieille Montagne | 31/0/0 | 0/0/0 |
| Spelter | 27/17/6 | 28/2/6 |
| TIN—Straits | 107/5/0 | 0/0/0 |
| Australian | 107/15/0 | 108/5/0 |
| English Ingots | 110/0/0 | 111/0/0 |
| Banca | 0/0/0 | 0/0/0 |
| Billiton | 0/0/0 | 0/0/0 |
| OILS. | | |
| Linseed ton | 17/10/0 | 0/0/0 |
| Cocoanut, Cochin | 27/15/0 | 0/0/0 |
| Do. Ceylon | 24/10/0 | 0/0/0 |
| Palm, Lagos | 21/15/0 | 0/0/0 |
| Rapeseed, English pale | 22/15/0 | 0/0/0 |
| Do. Brown | 21/5/0 | 0/0/0 |
| Cottonseed ref. | 15/0/0 | 16/0/0 |
| Oleine | 17/0/0 | 18/0/0 |
| Lubricating U.S. | 0/5/3 | 0/7/6 |
| Do. Black | 0/5/0 | 0/6/6 |
| TAR—Stockholm barrel | 1/5/0 | 0/0/0 |
| Archangel | 0/18/0 | 0/0/0 |
| Turpentine | 32/10/0 | 0/0/0 |

## SOME RECENT SALES OF PROPERTY:

### ESTATE EXCHANGE REPORT.

| | |
|---|---|
| February 2.—By EDWIN EVANS (at Clapham Junction). | |
| Wandsworth.—69, 71, 85, 87, 89, 93, 95, 97, 101, 102, 103, 104, 106, 110, 111, 112, and 116, Bramfield-rd., u.t. 90 yrs., g.r. 119l., r. 589l. | £5,915 |
| 9, 11, 49, 53, 55, 57, 61, and 63, Kelmscott-rd., u.t. 90 yrs., g.r. 56l., r. 272l. | 2,780 |
| 24, 28 to 36 (even), and 36a, The Grove, u.t. 94 yrs., g.r. 43l., r. 216l. | 1,940 |
| By F. MILLER & REID (at Clapham Junction). | |
| Wandsworth.—34b, Earlsfield-rd., u.t. 95 yrs., g.r. 8l. 10s., r. 40l. | 450 |
| 62, Westover-rd., u.t. 94 yrs., g.r. 7l. 10s., r. 36l. | 375 |
| By ROBERTS, SON, & TORY (at Wareham). | |
| Wareham, Dorset.—South-st., freehold business premises with warehouses, workshops, &c., area 7,000 ft. | £1,850 |
| North-st., Dorset House, u.t. 890 yrs., g.r. 8s. | 450 |
| February 7.—By WESTON & SONS. | |
| Brixton.—63, Arthur-rd., u.t. 64 yrs., g.r. 5l. 5s., r. 32l. | 360 |
| 67, Arthur-rd., u.t. 64 yrs., g.r. 5l. 5s., r. 34l. | 380 |
| By ABERCROMBIE & EDMUNDS. | |
| Kilburn.—127, Cambridge-rd., u.t. 66½ yrs., g.r. 8l. | 400 |
| 128, Cambridge-rd., u.t. 75¾ yrs., g.r. 6l. | 450 |
| By C. H. BROWN. | |
| Wandsworth.—15 and 17, Conroy-st., u.t. 61½ yrs., g.r. 7l. 10s. | 310 |
| 5 and 7, Wilcox-rd., u.t. 33 yrs., g.r. 7l. 16s., r. 76l. | 645 |
| Fulham.—5, Fulham Park-rd., u.t. 79 yrs., g.r. 9l., e.r. 50l. | 445 |
| Peckham.—185, Peckham Rye, u.t. 34 yrs., g.r. 5l., e.r. 70l. | 490 |
| By NOTT & CARTWRIGHT. | |
| Notting Hill.—6, Telford-rd., u.t. 69½ yrs., g.r. 8l., r. 45l. | 350 |
| Fulham.—58, Townmead-rd., u.t. 96 yrs., g.r. 6l. 15s., r. 50l. | 460 |
| Tooting.—97, 99, 101, and 103, Graveney-rd., u.t. 80 yrs., g.r. 18l. | 600 |
| By T. B. WESTACOTT. | |
| Caledonian-rd.—No. 223, u.t. 42 yrs., g.r. 8l., r. 48l. | 465 |
| Holloway.—32 and 33, Ashburton-gr., u.t. 41 yrs., g.r. 8l., r. 55l. | 450 |
| By PERCY H. CLARKE. | |
| Pimlico.—37, Cumberland-st., u.t. 35 yrs., g.r. 8l. | 570 |
| Chelsea.—34, Burnaby-st., u.t. 78½ yrs., g.r. 7l. 17s. 6d., r. 40l. | 420 |
| 31, 32, 33, and 34, St. Leonard's-ter., u.t. 52½ yrs., g.r. 45l., r. 230l. | 2,000 |
| Battersea.—32, Park-rd., u.t. 31 yrs., g.r. 5l., r. 30l. | 290 |
| Fulham.—9 and 11, Goodson-rd., f., r. 65l. | 740 |
| Chelsea.—31, Glebe-pl., u.t. 42 yrs., g.r. 6l., r. 34l. | 350 |
| 32, Upcerne-rd., u.t. 83 yrs., g.r. 6l. 16s. | 315 |
| Fulham.—5, Edith-grove, u.t. 27½ yrs., g.r. 5l., r. 45l. | 470 |
| Wimbledon.—17, 19, 21, and 23, Palmerston-rd., u.t. 78½ yrs., g.r. 20l. | 640 |
| Clapham.—28, 30, 32, 34, 36, 38, and 40, Abbeyville-rd., u.t. 95½ yrs., g.r. 77l., r. 475l. | 5,600 |
| By S. & G. KINGSTON (at Spalding). | |
| Whaplode, Lincs.—Park Coates Farm, 99 a. 3 r. 21 p., f. | 4,400 |
| By J. J. HILL & WEAVER (at Masons' Hall Tavern). | |
| Holloway.—Hornsey-rd., "The Railway Hotel," u.t. 66½ yrs., r. 100l., with goodwill | 20,600 |
| By WHETHERLEY & HASLETT (at Masons' Hall Tavern). | |
| Fulham.—Estcourt-rd., "The Redan" b.-h., u.t. 14 yrs., r. 24l., with goodwill | 11,610 |
| By Messrs. SPELMAN (at Norwich). | |
| Norwich.—160, Queen's-rd., u.t. 52 yrs., g.r. 2l. 2s. 6d., r. 16l. | 240 |
| Aylsham, Norfolk.—Town-lane, six freehold houses and gardens, r. 40l. | 710 |
| By BOULTON & COOPER (at Malton). | |
| Cawton, Yorks.—The Cawton Estate, 535 a. 3 r. 7 p., f. | 11,462 |
| Acklam, Yorks.—A freehold farm, 69 a. | 2,145 |
| February 8.—By W. H. BROWN & CO. | |
| Regent-st.—No. 302, Lease for 20½ yrs., r. 280l. | 1,500 |
| By CHARLES CANEY. | |
| Camberwell.—73, Knatchbull-rd., u.t. 68½ yrs., g.r. 9l., e.r. 55l. | 500 |
| 1, Northway-rd., u.t. 74 yrs., g.r. 5l. 10s. | 280 |
| Peckham.—2, Firbank-rd., u.t. 70 yrs., g.r. 4l. 10s. | 300 |
| By BOYCE & EVENS. | |
| Old Ford.—236, Roman-rd., f., r. 35l. | 730 |
| Dalston.—16, Alvington-cres., u.t. 68 yrs., g.r. 6l., r. 36l. | 400 |
| Kentish Town.—88 and 90, Carlton-st., u.t. 62 yrs., g.r. 12l., r. 64l. | 610 |
| By H. J. BROMLEY. | |
| Norwood.—1, Auckland Hill, u.t. 63 yrs., g.r. 10l., e.r. 50l. | 300 |
| 10, Romany-rd., u.t. 71 yrs., g.r. 5l. | 190 |
| 147 and 149, Romany-rd., f., r. 38l. 4s. | 530 |
| 72 and 74, Gipsy Hill, u.t. 24½ yrs., g.r. 14l. 10s. | 425 |
| By VINCENT S. LEIGH. | |
| Hackney.—54, College-av., f., r. 39l. | 425 |
| Ball's Pond.—29, Baxter-rd., u.t. 60 yrs., g.r. 5l. 5s., e.r. 35l. | 320 |
| Bethnal Green.—1 to 5, Corwall-pl., u.t. 76 yrs., g.r. 20l. | 520 |
| By BENNETT, MILLARD, & LLOYD (at Wedmore). | |
| Wedmore, Somerset.—Freehold house and shop, r. 18l. | 325 |
| A close of pasture, 1 a. 2 r. 36 p., f. | 125 |
| Meare, Somerset.—A close of pasture, 11 a. 1 r. 11 p., f. | 375 |
| February 9.—By FAREBROTHER, ELLIS, & CO. | |
| Hampstead.—4, Thurlow-rd., u.t. 52¾ yrs., g.r. 10l., r. 85l. | 950 |
| By HARDS & BRADLY. | |
| Tooting.—Park-rd., Lyncote, f., r. 30l. | 440 |
| Norwood.—8, 8a, 9, 9a, 10, 10a, and 11, 11a, Fairview-ter., f. | 1,850 |
| Greenwich.—13 and 15, Billingsgate-st., f., r. 39l. | 370 |
| By G. PEARCE & SONS. | |
| Hackney.—3 and 5, Brunswick-st., f., e.r. 70l. | 900 |
| Hoxton.—86, Bridport-pl., u.t. 33 yrs., g.r. 4l. 4s., r. 34l. | 295 |
| By STIMSON & SONS. | |
| Newington.—163, Newington Butts, f., r. 85l. | 1,920 |
| Kennington.—348, Kennington-rd., f., e.r. 80l. | 1,400 |
| Bermondsey.—331 and 333, Southwark Park-rd., u.t. 19 yrs., g.r. 7l. 4s., r. 66l. | 295 |
| Balham.—11 and 15, Rossiter-rd., u.t. 78 yrs., g.r. 14l. 14s., r. 56l. | 485 |
| Norwood.—12, 14, 16, and 18, Cobden-rd., u.t. 66 yrs., g.r. 16l. 16s. | 450 |
| Peckham.—20, Fendick-rd., and 83, Graylands-rd., u.t. 66 yrs., g.r. 6l. | 270 |
| Bow.—7, Balmer-rd., u.t. 74 yrs., g.r. 3l. | 205 |
| Finchley.—6 and 8, Hamilton-rd., u.t. 80 yrs., g.r. 7l. | 190 |
| Clapham.—75, Landor-rd., u.t. 69½ yrs., g.r. 7l. 5s., r. 36l. | £350 |
| 29 and 31, Willington-rd., u.t. 46½ yrs., g.r. 10l., r. 59l. | 450 |
| 19 to 27, and 51, 52, and 53, Cottage-grove, u.t. 46½ yrs., g.r. 61l., r. 344l. | 2,510 |
| Poplar.—5, 5a, 7, 9, 11, 13, and 47, Vesey-st., f. | 2,050 |
| By NEWBON, EDWARDS, & SHEPHARD. | |
| Islington.—Upper-st., f.g.r. 30l., reversion in 27 yrs. | 1,600 |
| Camden-passage, "The Druid's Arms" b.-h., f., r. 50l. | 1,300 |
| 10, Noel-st., f., r. 49l. | 860 |
| 42 and 43, Colebrooke-row, f., r. 125l. | 2,230 |
| 8, Oxford-ter., u.t. 353 yrs., g.r. 8l., r. 44l. | 520 |
| Temple.—2, Mitre-court, f., r. 2[illegible]2l. | 3,700 |
| Holloway.—11, Brook-rd., u.t. 64 yrs., g.r. 5l. 10s., e.r. 35l. | 305 |
| Stroud Green.—37, Stapleton Hall-rd., u.t. 81 yrs., g.r. 8l. 10s., r. 42l. | 520 |
| Dalston.—10, Stannard-rd., r. 45l.; also l.g.r. 6l., u.t. 53 yrs., g.r. 6l. | 520 |
| Caledonian-rd.—163, 165, and 167, Copenhagen-st., u.t. 41 yrs., g.r. 58l., r. 140l. | 690 |
| February 10.—By DOLMAN & PEARCE. | |
| Stroud Green.—4, 6, 10, 12, and 14, Mount Pleasant-villas, u.t. 76½ yrs., g.r. 42l. 12s., r. 225l. | 2,130 |
| By J. R. THORNTON. | |
| Ealing.—70 and 72, Ranelagh-rd., f., r. 95l. | 1,570 |
| February 13.—By ALFRED RICHARDS. | |
| South Tottenham.—156, West Green-rd., f. | 1,620 |
| 158, 160, 162, and 164, West Green-rd., f., r. 88l. | 1,560 |
| 65 to 73 (odd), Summerhill-rd., f., r. 104l. | 1,170 |
| Walthamstow.—Hoe-st., two plots of building land, f. | 175 |
| By ALFRED SAVILL & SON. | |
| Spitalfields.—36, Dorset-st., and 7 to 12, Little Paternoster-row, u.t. 63½ yrs., g.r. 80l., r. 210l. | 2,600 |
| Chadwell Heath, Essex.—Romford-rd., a plot of building land, 1 a., f. | 570 |
| Romford-rd., Elgin Lodge and 1 a. 1 r. 32 p., f., r. 50l. | 1,400 |
| By THOMAS MARTIN (at Exeter). | |
| Exeter.—12, Sivell-pl., f., r. 10l. | 125 |
| 23, Mansfield-rd., f., r. 15l. | 200 |
| 7, Smythen-st., f. | 150 |
| February 14.—By COCKETT & HENDERSON. | |
| Bethnal Green.—34, Sale-st. and 4, Menotti-st., f. | 860 |
| 112, 114, and 116, Old Bethnal Green-rd., f. | 1,150 |
| By MAPLE & CO. | |
| Barnsbury.—138, Hemingford-rd., u.t. 43½ yrs., g.r. 2l., r. 50l. | 600 |
| By HAMILTON & MIALL. | |
| Maida Vale.—65, Carlton-vale, u.t. 52½ yrs., g.r. 10l., r. 38l. | 340 |
| Hoxton.—1 and 3, Whitmore-rd., u.t. 20 yrs., g.r. 4l. 0s. 6d., r. 48l. | 385 |
| Leytonstone.—121, 123, 125, 127, 131, and 133, Colworth-rd., u.t. 98 yrs., g.r. 33l., r. 180l. | 2,018 |
| Brompton.—68, Finborough-rd., u.t. 64 yrs., g.r. 10l. | 400 |
| Pimlico.—19, Ponsonby-pl., u.t. 26¼ yrs., g.r. 6l., r. 44l. | 345 |
| By ROGERS, CHAPMAN, & THOMAS. | |
| Kennington.—30 and 31, Kempsford-rd., u.t. 28¼ yrs., g.r. 12l., r. 68l. | 530 |
| Clapham.—3, Santley-st., u.t. 76 yrs., g.r. 6l. 15s. | 375 |
| South Kensington.—64, Redcliffe-gardens, u.t. 67 yrs., g.r. 30l. | 960 |
| 6, 8, and 10, Westgate-ter., u.t. 53½ yrs., g.r. 45l., e.r. 180l. | 1,265 |
| By DAVID BURNETT & CO. | |
| Croydon.—8 to 18 (even), Dennett's-rd., u.t. 82½ yrs., g.r. 29l. 3s. 6d. | 670 |
| Tottenham.—28 to 44 (even), Park-lane, u.t. 82 yrs., g.r. 31l. 10s. | 1,830 |
| Hornsey.—42 to 56 (even), Hampden-rd., u.t. 82½ yrs., g.r. 60l. (an undivided 133-707ths share) | 300 |
| Brixton.—Barnwell-rd., &c., i.g.r. 253l. 4s., u.t. 73 yrs., g.r. 2l. (in lots) | 5,690 |
| By REYNOLDS & EASON (at Masons' Hall Tavern). | |
| Battersea.—5, Newcomen-rd., f., r. 30l. | 345 |
| By THOMAS MARTIN (at Exeter). | |
| Exeter.—St. David's Hill, "Beech Hill" and 3¼ a., f. | 3,500 |
| February 15.—By FOSTER & CRANFIELD. | |
| City of London.—Monument-st., f.g.r. 800l., reversion in 90 yrs. | 23,000 |
| By HENRY HENDRIKS (at Birmingham). | |
| Birmingham.—182 to 189, Ashted-row, f., r. 233l. 4s. | 3,050 |
| Ashted-row, "The Brewery Inn," f., r. 50l. | 1,050 |
| 60 and 61, Francis-st., f. r. 39l. | 560 |
| Smethwick, Staffs.—87 to 90, Lightwood's-rd., u.t. 98 yrs., g.r. 14l. | 925 |
| By J. M. LEEDER & SON (at Neath). | |
| Neath, Glamorgan.—94 to 105, Windsor-rd., f. | 3,000 |
| 104 to 108, Clifton-ter., u.t. 66 yrs., g.r. 7l. 14s. | 700 |
| 82, Britonferry-rd., f., r. 52l. | 1,200 |
| 43, Britonferry-rd., also l.g.r. 15l., u.t. 59½ yrs. g.r. 23l. 10s. | 950 |
| 44 to 52, Crytham-ter., u.t. 59½ yrs., g.r. 13l. 10s. | 1,125 |
| 6, Marshfield-rd., u.t. 59½ yrs., g.r. 1l. 10s. | 145 |
| Pontardulais, Glamorgan.—Fernhill, u.t. 47½ yrs., g.r. 3l., r. 25l. | 900 |
| February 16.—By H. J. BLISS & SONS. | |
| Bethnal Green.—138 to 146 (even), Cambridge-rd., f. | 2,770 |
| 64, Three Colt-lane, beneficial lease for 13 yrs., r. 50l., with goodwill | 145 |
| Victoria Park.—330, Old Ford-rd., u.t. 55 yrs., g.r. 4l., r. 34l. | 420 |
| Old Kent-rd.—No. 737, u.t. 12¼ yrs., g.r. 10l., r. 65l. | 245 |
| Clapton.—26, Pembury-rd., u.t. 45½ and 43 yrs., g.r. nil, e.r. 100l. | 870 |
| By C. RAWLEY CROSS & CO. | |
| Ealing.—Elmwood-gardens, f.g.r. 87l. 3s., reversion in 98 yrs. | 2,700 |
| By FIELD & SONS. | |
| Norwood.—Canterbury-grove, the High View Park building estate, 16 a. 1 r. 10 p., f. | 14,500 |
| Canterbury-grove, a plot of building land, 2 a. 0 r. 5 p., f. | 1,620 |
| Blackfriars.—2, Queen's Arms-court, c. | 225 |
| Camberwell.—93, Grove-lane, u.t. 19 yrs., g.r. 30l., renewable for further 99 yrs., fine 30l. | 500 |
| D'Eynsford-rd., f.g.r. 11l., reversion in 54 yrs. | 335 |
| D'Eynsford-rd., f.g. rents 11l. 10s., reversion in 58 yrs. | 370 |

# COMPETITIONS, CONTRACTS, AND PUBLIC APPOINTMENTS.

## COMPETITIONS.

| Nature of Work. | By whom Advertised. | Premiums. | Designs to be delivered. |
|---|---|---|---|
| *Concert Hall, Reading Room and Lavatories | Ramsgate Corp. | 50*l.*; 20*l.*; and 10*l.* | April 30 |

## CONTRACTS.

| Nature of Work or Materials. | By whom Required. | Forms of Tender, &c. Supplied by | Tenders to be delivered |
|---|---|---|---|
| *Road Making, &c. | Chingford U.D.C. | W. Stair, The Parade, Chingford | Feb. 27 |
| Four Houses, Butterknowle, co. Durham | ........ | W. Perkins, Archt. Bishop Auckland | Feb. 28 |
| Enlargement of Pumping Station, Dalton-street | Birmingham Corp. | E. A. Lees, 44, Broad-st. Birmingham | do. |
| Four-roomed Houses | Devonport Dockyard Dwellings Co. Ltd. | W. N. Richards, Archt. 29, St. Aubyn-st. Devonport | do. |
| Superstructure of College | Leeds Sch. Bd. | J. M. Bottomley, Archt. 13, Bond-st. Leeds | do. |
| Club House, Thurnscoe, near Doncaster | ........ | Athron & Beck, Archt. Doncaster | do. |
| Sewers | Glasgow Corp | Warren & Stuart, Engr. 115, Wellington-street Glasgow | do. |
| Additions to Park School | Sheffield Sch. Bd. | C. J. Innocent, Archt. 22, High-st Sheffield | do. |
| Road Stone | Bridgwater T.C. | Boro Surv. Town Hall | do. |
| Fire Station | Weston-super-Mare U.D.C. | H. Nettleton, Surv. Town Hall, Weston-super-Mare | do. |
| Granite Road Metal | Huntingdon R.D.C. | M. Lewin, Surv. Newtown, Huntingdon | do. |
| Rebuilding Wagon & Horses Inn, Bradford | ........ | F. Fielding, Archt. 7, Fountain-st. Halifax | do. |
| Flints | Walmer (Kent) U.D.C. | F. W. Hardman, 5, Park-st. Deal | do. |
| *Street Works | Cty. Boro. of West Ham | Lewis Angell, Town Hall, West Ham, E. | do. |
| *Works and Materials (various) | Lewisham B. of W. | Town Hall, Catford, S.E. | do. |
| *Road Works, &c. Tyrwhitt-road, Lewisham | do. | Surv.'s Dept. Town Hall, Catford, S.E. | do. |
| *Road Works, &c. Ringstead-road, Catford | do. | do. | do. |
| *Drainage Works | Willesden D.C. | O. C. Robson, Public Offices, Dyne-road, Kilburn | do. |
| *Jobbing and Mason's Work | do. | do. | do. |
| Three Cottages, Laughaunstown, Killiney | Rathdown Union | C. Draper, C.E. 26, Grosvenor-rd. Rathmines | Mar. 1 |
| Stables, &c. Sandylands | Morecambe Omnibus Co. | S. Wright, Surv. Townley-st Morecambe | do. |
| Buildings, Bangor, co. Down | ........ | Graeme-Watt & Tulloch, Archt. 77A, Victoria-st. Belfast | do. |
| Two Houses, Barriper, Camborne | ........ | J. S. Pearce, Barriper-rd. Camborne | do. |
| Waterworks, Pycombe | Cuckfield R.D.C. | J. Johnston, 12, Bond-st Brighton | do. |
| Twelve Cottages, Londesborough-st. Hull | N. E. Ry. Co. | W. Bell, Archt. York | do. |
| Warehouse, Brownroyd Brewery, Bradford | ........ | Milnes & France, Archt. Bradford | do. |
| Villa, Cymle-road, Neath | ........ | S. O. Jones, Great Western-chmbrs Neath | do. |
| Pair Villas, High Casterton, near Kirkby Lonsdale | J. J. Richardson | J. Kassell, Archt. Kirkby Lonsdale | do. |
| Underground Convenience | Scarborough T.C. | H. W. Smith, Boro Engr. Town Hall | do. |
| Flagging, Paving, &c. | Birkenhead Corp. | C. Brownridge, C.E. Town Hall | do. |
| *Brick and Pipe Sewers | Leicester Corp. | E. G. Mawbey, Town Hall, Leicester | Mar. 2 |
| Electric Light Station | Bristol Corp. | T. A. Peace, Engr. 19, Queen-sq. Bristol | do. |
| Business Premises, Bull Green, Halifax | ........ | Utley & Co. Archt. 10, Waterhouse-st. Halifax | do. |
| Sewering, Levelling, &c. Westminster-road | Morecambe U.D.C. | J. Bond, Surv. Council Offices | do. |
| Footbridge over River Ember | East Molesey U.D.C. | J. Stevenson, Surv. Walton-rd. East Molesey | Mar. 3 |
| Drainage Works | Uxbridge R.D.C. | J. Anstie, C.E. 10, Marchwood-crescent, Ealing | do. |
| *Drainage Works | Uxbridge R.D.C. | J. Anstie, C.E. 10, Marchwood-crescent, Ealing | do. |
| *Guernsey Granite | Gravesend T.C. | Borough Surveyor | do. |
| *Chimney Stack | Edinburgh and Leith Gas Commrs. | W. R. Herring, Gasworks, Edinburgh | Mar. 4 |
| Hartshill Stone (2,310 tons) | Thame R.D.C. | J. Goodenough, Surv. Thame | do. |
| Street Works, East View | Wakefield Corp. | City Surv. Town Hall | do. |
| Additions to Schools, King's Lynn | ........ | L. F. Eagleton, Archt. Bank-chmbrs. King's Lynn | do. |
| Granite Road Metal, &c. | Oswestry R.D.C. | C. H. Bull, Council Offices | do. |
| Alterations to Laundry, Gloucester-road | Littlehampton Steam Laundry Co. | H. Howard, Archt. Town Offices, Littlehampton | do. |
| Cast Iron Main Pipes | Ashford U.D.C. | Stevenson & Burstal, Engr. 38, Parliament-st. S.W. | do. |
| *New Gas Works, &c. | Shoeburyness-on-Sea Gas Co. Ltd. | H. J. Robus, 20, Bucklersbury, E.C. | Mar. 6 |
| Street Works, East Back, Nansen-st. &c. | Jarrow U.S.A. | J. Petree, Boro. Surv. Jarrow | do. |

## CONTRACTS—*Continued.*

| Nature of Work or Materials. | By whom Required. | Forms of Tender, &c. Supplied by | Tenders to be delivered |
|---|---|---|---|
| Pair Villas, Rochestown, co. Cork | ........ | W. H. Hill & Son, Archt. 28, South Mall, Cork | Mar. 6 |
| Shop, Ripponden, Yorks. | ........ | R. Horsfall & Son, Archt. 22A, Commercial-street, Halifax | do. |
| Six Houses, Low Westwood, Blaydon-on-Tyne | .. | G. T. Wilson, Archt. 121, Durham-rd. Blackhill | do. |
| Alterations to Infirmary | Bailieborough Union | H. Clarke, Poor Law Office, Balieborough | do. |
| *Hospital Buildings | Tiverton Hospital Board | J. Siddalls, Tiverton | do. |
| *Articles and Works | Tottenham U.D.C. | Offices, 712, High-road, Tottenham | Mar. 7 |
| Warehouse, Sowerby Bridge | J. Sykes & Co | Jackson & Fox, Archts, 7, Rawson-street, Sowerby Bridge | do. |
| *Road Making | ........ | E. Monson, Acton Vale, W. | Mar. |
| *Works and Materials | Hornsey U.D.C. | E. J. Lovegrove, Offices, Southwood-lane, Highgate, N. | Mar. 9 |
| *Hot Water and Kitchen Fittings | Islington Guardians | W. Smith, 65, Chancery-lane, W.C. | do. |
| Sewers, Great Eccleston | Garstang (Lancs.) R.D.C. | F. Dixon, C.E. Council Offices | do. |
| Alterations to White Horse Hotel, Rawtenstall | J. Kenyon, Ltd. | R. Neill, Archt, 9, Grimshaw-st. Burnley | Mar 13 |
| Electricity Station | Hereford T.C. | J. Parker, C.E. Hereford | do. |
| Additions to Station, Omagh | G. N. Ry. Co. (Ireland) | T. Morrison, Amiens-st. Terminus, Dublin | do. |
| Electric Power House, Dublin | do. | do. | do. |
| *Erection of Coal Stores | Cowes U.D.C. | Engineer, Council Offices | do. |
| *Men's Conveniences | L.C.C. | Archt's. Dept. 13, Spring-gardens, S.W. | Mar. 14 |
| *Railing, Gates, &c. | do. | do. | do. |
| School, Bala, Merioneth | ........ | H. Teather, Archt. 83, Whyle-cop, Shrewsbury | do. |
| Granite Flags, C.I. Pipes, &c. | Littleborough (Lancs.) U.D.C. | G. A. Wild, Surv. Council Offices | do. |
| House, Bridlington Quay | Dr. E. H. Batchelor | Brodrick & Co. Archt. Central-chmbrs. Bridlington Quay | do. |
| Widening Southgates Bridge, King's Lynn | ... | H. J. Weaver, C.E. Guildhall, King's Lynn | do. |
| *Fencing | Metropolitan Asylums Board | Treadwell & Martin, 2, Waterloo-place, S.W. | Mar. 15 |
| Well Sinking, Cadoxton, Glam. | Barry U.D.C. | E. W. Waite, C.E. Gas Offices, Barry | do. |
| Surveyor's Materials | St. Helens (Lancs.) Corp. | G. J. C. Broom, C.E. Town Hall | do. |
| *Infirmary, &c. at Workhouse | Kingston Union | W. H. Hope, Union Offices, Portsmouth-rd. Kingston-on-Thames | Mar. 23 |
| Additions to Asylum | Ipswich Corp. | E. Buckham, Boro. Surv. Town Hall | April 1 |
| *Granite, Granite Chippings and Dust | Middlesex C.C. | H. T. Wakelam, Guildhall, Westminster, S.W. | April 4 |
| *Cartage of Granite and Gravel | do. | do. | do |
| Asylum Buildings, Ranceby, nr. Sleaford | Visitors | G. T. Hine, Archt. 35, Parliament-st. S.W. | do. |
| *Superstructure of Lunatic Asylum | Kesteven County Asylum | G. T. Hine, 35, Parliament-st. S.W. | do. |
| Houses, Brown's-square, Belfast | ........ | W. J. Moore, Archt. Ann-st. Belfast | No date |
| Road Works, Heckington, Sleaford, Lincs | ........ | Huskinson & Son, Epperstone, Notts | do. |
| Three Houses and Shops, Morecambe | ........ | J. Hartley, Archt. Morecambe | do. |
| Schools, Hurst Brook, Ashton-under-Lyne | ........ | S. Shirt, Mount Pleasant, Ashton-under-Lyne | do. |
| Eighteen Cottages, &c. Shipley, Yorks. | ........ | J. W. C. Atkinson, Archt. 1, Ivegate, Bradford | do. |
| Stabling, New Inn, Eccleshill, Yorks. | ........ | J. Jackson, Archt. Barry-st. Bradford | do. |
| Bank House, New Deer, Aberdeen | Town and County Bank | R. G. Wilson, Archt. 181A, Union st. Aberdeen | do. |
| Church, Old Colwyn, N. Wales | ........ | Douglas & Minshall, Archt. Chester | do. |
| Villa, Otley, Yorks. | ........ | Fairbank & Wall, Archt. 3, Manor-sq. Otley | do. |
| Additions to Red Lion Inn, Overton | J. May & Co. Ltd. | R. S. Wallis, Surv. Basingstoke | do. |
| Additions to Schools, Todmorden | ........ | J. Horsfall, Archt. Todmorden | do |
| Sewering, Paving, &c. Carr and Reed streets | Keighley Corp. | W. H. Hopkinson, C.E. Boro. Engr. | do. |

## PUBLIC APPOINTMENTS.

| Nature of Appointment. | By whom Advertised. | Salary. | Application to be in. |
|---|---|---|---|
| *Assistant Surveyor | Acton D.C. | 2*l.* 10s. per week | Feb. 28 |
| *Building Inspector | do. | 2*l.* per week | do. |
| *Building Inspector | Southend-on-Sea Corp. | 125*l.* per annum | Mar. 3 |
| *Clerk of Works | Cty. Boro. West Ham | 4*l.* 4s. per week | Mar. |
| *Clerk of Works | Festiniog County Sch. | ........ | do. |
| *City Engineer | Municipality of Calcutta | 1,800 Rupees per month | See advt |
| *Engineering Assistant | Southport Corp. | 150*l.* per annum | No date |

*Those marked with an asterisk (*) are advertised in this Number. Competitions, p.* iv. *Contracts, pp.* iv. vi. viii. x. & xxi. *Public Appointments, pp.* xix. & xxi.

| | |
|---|---|
| Deptford.—22, Strickland-st., u.t. 46 yrs., g.r. 2*l.* | £320 |
| By GREEN & SIMES. | |
| Brixton.—Millbrook-rd., i.g.r. 38*l.* 10s., u.t. 23 yrs., g.r. 2*l.* 10s. | 480 |
| By MARLER & MARLER. | |
| Notting Hill.—33, Ladbroke-gr., f., r. 100*l.* | 2,000 |
| Chelsea.—1 and 3, Dartrey-rd., u.t. 78 yrs., g.r. 12*l.*, r. 86*l.* 4s. | 780 |
| By MARTIN, CLARKE, & CO. | |
| Highgate.—85, 87, and 89, Dartmouth Park-hill, u.t. 81 yrs., g.r. 15*l.* | 445 |
| By WORSFOLD & HAYWARD (at Dover). | |
| Dover, Kent.—1 and 2, King's-villas, f. | 520 |
| 87 and 87a, High-st., with blacksmith's forge in rear, f. | 1,370 |
| 2, Bowling Green-hill, f. | 250 |
| 2, Union-rd., f. | 210 |
| 11, 16, and 17, Barton-gardens, f. | 1,050 |
| 33 and 34, Council House-st., u.t. 85 yrs., g.r. 15*l.*, r. 50*l.* | 470 |
| Priory Hill, Belle Vue, u.t. 67½ yrs., g.r. 3*l.* 14s., r. 24*l.* | 335 |
| February 17.—By WAGSTAFF & SONS. | |
| Highbury.—9, Gillespie-rd., u.t. 78 yrs., g.r. 6*l.* 6s., r. 30*l.* | 285 |

*Contractions used in these lists.*—F.g.r. for freehold ground-rent; l.g.r. for leasehold ground-rent; i.g.r. for improved ground-rent; g.r. for ground-rent; r. for rent; f. for freehold; c. for copyhold; l. for leasehold; e.r. for estimated rental; u.t. for unexpired term; p.a. for per annum; yrs. for years; st. for street; rd. for road; sq. for square; pl. for place; ter. for terrace; cres. for crescent; yd. for yard, &c.

## TO CORRESPONDENTS.

O. K.—W. H.—W. P. (Below our limit). J. S.—E. C.—S. & P (Amounts should have been stated).

NOTE.—The responsibility of signed articles, letters, and papers read at public meetings, rests, of course, with the authors.

*We cannot undertake to return rejected communications.*

Letters or communications (beyond mere news items) which have been duplicated for other journals are NOT DESIRED.

We are compelled to decline pointing out books and giving addresses.

Any commission to a contributor to write an article is given subject to the approval of the article, when written, by the Editor, who retains the right to reject it if unsatisfactory. The receipt by the author of a proof of an article in type does not necessarily imply its acceptance.

All communications regarding literary and artistic matters should be addressed to THE EDITOR; those relating to advertisements and other exclusively business matters should be addressed to THE PUBLISHER, and *not* to the Editor.

## TENDERS.

[Communications for insertion under this heading should be addressed to "The Editor," and must reach us *not later than* 10 *a.m. on Thursdays.* N.B.—We cannot publish Tenders unless authenticated by the name and address of the sender; and we cannot publish announcements of Tenders accepted unless the amount of the Tender is given, nor any list in which the lowest Tender is under £100, unless in some exceptional cases and for special reasons.]

ASTON MANOR.—For the erection of walls, piers, &c., Uppe Witton, for the Urban District Council. Mr. H. Richardson, C. Council House, Aston Manor:—

| | With Concrete Coping. | With Brick Coping |
|---|---|---|
| Hulbert & Ladbury | £1,268 4 0 | £1,301 14 0 |
| Oldfield & Jeacock | 1,191 0 0 | 1,160 0 0 |
| G. Law | 1,175 0 0 | 1,175 0 0 |
| T. Elvins | 1,150 0 0 | 1,130 0 0 |
| W. Hopkins | 1,110 0 0 | 1,130 0 0 |
| Currall & Lewis | 1,117 4 2 | 1,122 8 8 |
| R. Merton Hughes | 996 0 0 | 994 0 0 |
| W. & A. Heaps | 967 6 6 | 967 6 6 |
| G. Trentham | 908 7 6 | 1,099 18 6 |
| E. Garfield, Birchfield-road, Aston Manor (accepted) | 905 10 0 | 917 0 |

BANBURY.—For additions to public swimming-baths, for the Town Council. Mr. N. H. Dawson, C.E., Town Hall, Banbury:—

| | |
|---|---|
| J. S. Kimberley | £1,478 |
| Orchard & Son, Banbury (accepted) | £1,393 |

BAKEWELL.—For the erection of an infirmary and additions to workhouse, for the Union Guardians. Mr. E. M. Longsdon, architect, Town Hall, Bakewell. Quantities by the architect:—

| | | | |
|---|---|---|---|
| T. Allsop & Son | £6,572 | Henry Jordan, Horsley Wood House, Derby* | £5,794 |
| Cox, Wilson, & Son | 6,381 | | |
| Geo. Knowles | 6,058 | | |

* Accepted.

BRADFORD.—For the erection of a combing shed and warehouse, Dudley Hill. Mr. F. Holland, architect, 11, Parkinson's Chambers, Hustlergate, Bradford:—

| | |
|---|---|
| *Masonry.*—J. Sugden | £261 |
| *Joinery.*—R. Raper | 380 |
| *Ironfoundery.*—Roberts & Co. | 716 |
| *Slating.*—J. Smithies | 173 |
| *Plumbing.*—W. Pickard | 140 |
| *Plastering.*—A. Taylor | 213 |
| *Painting.*—O. Binns | 34 |

[Revised Tenders.]

CARDIFF.—For the extension of the Higher Grade School, for the School Board. Mr. E. Seward, architect, Queen's-chambers, Queen-street, Cardiff:—

| | | | |
|---|---|---|---|
| D. Thomas & Co. | £218 10 6 | G. Griffiths | £149 16 0 |
| S. Shepton & Sons | 190 10 0 | C. Price & Sons. | 149 0 0 |
| Latty & Co. | 179 0 0 | W. Thomas & Co. | 147 10 0 |
| E. Brown | 163 8 6 | J. Thomas, 30, Charles-street* | 142 0 0 |
| Knox & Wells | 161 0 0 | | |
| Gough Bros. | 156 16 0 | | |

* Accepted.

CRANFORD.—For alterations and additions to the "Berkeley Arms" Hotel, for Mr. L. Hopkins. Mr. J. Hume, architect and surveyor, Chiswick:—

| | | | |
|---|---|---|---|
| Robinson | £1,470 | Keen | £1,430 |
| Smith | 1,445 | Speechley & Smith* | 1,422 |

* Accepted.

EGHAM.—For erecting a new post-office and private residence, Egham, for Mr. W. H. Gardener:—

| | | | |
|---|---|---|---|
| W. Beauchamp | £3,030 0 | H. Channan | £2,400 0 |
| C. Buckeridge | 2,898 0 | Loe & Howard | 2,350 0 |
| W. Satchwell | 2,680 10 | G. Gray, Egham* | 2,127 0 |
| A. Simpson | 2,650 0 | | |

* Accepted

GATESHEAD.—For the erection of a nurses' home, Coatsworth-road:—

| | | | |
|---|---|---|---|
| M. R. Draper & Son | £2,321 4 7 | J. Ross | £1,929 7 3 |
| A. Pringle | 2,221 0 0 | G. T. Manners | 1,896 0 0 |
| T. & R. Lamb | 2,068 0 9 | Turner Bros. | 1,887 0 0 |
| Morrison & McBean | 2,053 18 0 | J. Wales & Co. | 1,850 0 0 |
| Woodall & Wilson | 2,042 5 0 | J. C. Mather, Gateshead (accepted) | 1,797 18 3 |
| H. & B. Arkless | 1,938 7 0 | | |

HASTINGS.—For the erection of workhouse buildings, Cackle-street, for the Union Guardians. Messrs. Jeffery & Skiller, architects, 5, Havelock-road, Hastings:—

| | | | |
|---|---|---|---|
| T. Salter | £50,674 | Padgham & Hutchinson | £47,620 |
| J. Lester | 49,795 | Peter Jenkins, St. Leonards (accepted) | 47,500 |
| A. H. White | 49,786 | | |

ILKLEY.—For erecting four houses, Richmond-place, Ilkley. Mr. E. Barton Johnson, architect, Ilkley:—

| | |
|---|---|
| *Masonry.*—Waugh & Ripley, Skipton-road | £955 0 0 |
| *Joinery.*—Gill & Pease, Regent-road | 459 12 0 |
| *Plumbing.*—J. Lawson, Brook-street | 185 16 0 |
| *Plastering.*—J. Walsh, Guiseley | 129 0 0 |
| *Slating.*—R. Nelson, Wharfe View | 72 10 0 |
| *Painting.*—J. G. Boden, Wells-road | 25 7 6 |

LEAMINGTON.—For the erection of a refreshment buffet, Jephson-gardens, for the Corporation. Mr. F. Foster, architect, 4, Euston-place, Leamington:—

| | | | |
|---|---|---|---|
| Dawkes Bros. | £670 | C. R. Atkins | £522 |
| G. F. Smith & Sons | 610 | R. P. Gathercole, Clarendon-avenue (accepted) | 470 |
| R. Bowen | 579 | | |

LEEDS.—For erecting cottage for Mr. J. W. Reeder, at Lidgett-park, Roundhay, Leeds. Mr. E. Barton Johnson, architect and surveyor, Ilkley:—

| | |
|---|---|
| *Masonry.*—Kitchen Bros., Gledhow, near Leeds | £310 6 8 |
| *Joinery.*—J. Wilson, 177, Woodhouse-street, Leeds | 118 6 6 |
| *Plumbing.*—Carter & Crossland, Lower Head-row, Leeds | 36 7 6 |
| *Plastering.*—T. Moore, Concord-street, Leeds | 51 10 0 |
| *Slating.*—Watson & Worsnop, 25, Whitehall-road, Leeds | 34 0 0 |
| *Painting.*—Roylance & Horsman, St. Mark's road, Leeds | 9 16 0 |

LONDON.—Accepted for new drainage, alterations, and decorations, &c., to 2, Bryanston-place, Bryanston-square, W. Mr. Dennett H. Barry, surveyor, 14, Bell-yard, Temple Bar, W.C.:—

| | |
|---|---|
| Bartholomew & Co. | £375 |

LONDON.—For alterations and additions to 145 and 147, King-street, Hammersmith, for Messrs. Beckett & Tarvener. Mr. J. Hume, architect and surveyor, Chiswick:—

| | | | |
|---|---|---|---|
| Pope | £498 10 0 | Bendon | £436 10 9 |
| Speechley & Smith | 485 0 0 | L. L. Leeder | 434 7 0 |

MEXBOROUGH (Yorks).—For sewering, levelling, &c., Helena-street, for the Urban District Council. Mr. G. Fenwick Carter, C.E., District Council Offices, Mexborough:—

| | |
|---|---|
| Joseph Rothery | £617 10 0 |
| George Eyre, 135, Western-road, Crookes, Sheffield* | 549 10 6 |

* Accepted.

NELSON (Lancs.).—For additions, &c., to Zion Baptist Chapel, Elizabeth-street. Mr. H. Whitaker, architect, 21, Market-square, Nelson:—

| | | | |
|---|---|---|---|
| Cunliffe, Bennet & Brockbank | £567 0 | C. Metcalf | £509 10 |
| Matthew Hawley | 555 0 | A. Robinson, Brierfield, near Burnley* | 507 0 |
| S. & W. Dearden | 518 15 | | |

* Accepted.

NEWMILNS (N. B.).—For the construction of a storage reservoir, Auchruglin Burn. Mr. P. C. Hart, C.E., 134, St, Vincent-street, Glasgow, and 32, John Finnie-street, Kilmarnock:—

| | |
|---|---|
| William Simpson, Bonhill, Dumbartonshire | £1,292 15 0 |
| Glenfield Company, Ltd., Kilmarnock (valves, &c.) | 82 8 0 |

PENGE.—Accepted for addition and alterations to 152 and 154, Beckenham-road, Penge, for Mr. Charles Rutter:—

| | |
|---|---|
| Henry Leney | £485 |

PENGE.—For alteration of premises for the purpose of a Free Library, for the Commissioners for the Hamlet of Penge. Mr. Perciva Brown, architect:—

| | | | |
|---|---|---|---|
| Josoline & Young | £707 | Robson | £595 |
| Ellis | 642 | H. Leney (accepted) | 559 |

PETERBOROUGH.—For the erection of two houses, &c., Vergette-street, for Mr. G. Markham. Mr. Hall, architect, Huntley Grove, Peterborough. Quantities by architect:—

| | | | |
|---|---|---|---|
| Bailey | £943 11 8 | Sibley Bros. | £790 0 0 |
| Guttridge | 850 0 0 | D. Grey, Cromwell-road* | 750 0 0 |
| Hicks Bros. | 801 0 0 | | |
| Nicholls | 795 0 0 | | |

* Accepted.

ROGERSTONE (Mon.).—For the erection of fourteen houses at Rogerstone (Mon.), for Mr. A. Dardis. Messrs. Swalwell & Creighton, architects and surveyors, Dock street, Newport (Mon.) Quantities by the architects:—

| | A | B |
|---|---|---|
| W. P. Forward | £4,900 0 | £5,035 9 4 |
| Newport Gen. Bldrs., Ltd. | 4,850 0 | 5,000 0 0 |
| Powell & Mansfield | 4,800 0 | 5,099 0 0 |
| Newman & James | 4,665 12 | 4,779 12 0 |
| D. Jones | 4,562 0 | 4,781 12 0 |
| D. Lewis | 4,500 0 | 4,769 0 0 |
| W. Sier | 4,500 0 | 4,700 0 0 |
| Thomas & Son | 4,500 0 | 4,680 0 0 |
| C. H. Reed | 4,450 0 | 4,650 0 0 |
| A. S. Morgan & Co. | 4,450 0 | 4,750 0 0 |
| D. J. Davies | 4,436 6 | 4,570 0 0 |
| A. Lawson | 4,300 0 | 4,510 0 0 |
| J. Jenkins | 4,180 0 | 4,343 0 0 |
| J. Moore | 4,176 13 | 4,333 14 0 |
| W. Bambury | 3,795 0 | 3,950 0 0 |
| W. Baglow | 3,780 0 | 3,850 0 0 |
| J. Partridge | 3,700 0 | 3,950 0 0 |
| J. Leadbeater | 3,650 0 | 3,865 0 0 |
| G. Martin & Son | 3,577 0 | 3,695 0 0 |
| J. Pritchard | 3,549 0 | 3,669 0 0 |
| I. Lewis | 3,157 0 | 3,297 0 0 |
| Smith Bros., Newport* | 3,070 0 | 3,220 0 0 |

* Accepted.

Estimate A faced all round with stock bricks.

Estimate B faced all round with best pressed acing bricks.

SALISBURY.—For the erection of a railway hotel and stables for Messrs. Gibbs, Mew, & Co., Limited. Messrs. John Harding & Son, architects, 58, High-street, Salisbury. Quantities by architects:—

| | | | |
|---|---|---|---|
| Stephens, Bastow & Co. | £3,998 | E. Hale | £2,750 |
| Annett & Son | 3,500 | Wort & Way | 2,690 |
| Jenkins & Sons | 3,046 | T. Dawkins, Barford-St.-Martin, Salisbury* | 2,458 |
| Long & Sons | 2,875 | | |
| Webb & Co. | 2,800 | | |

* Accepted.

SWANSEA.—For the execution of brick and pipe sewerage works, &c., Morriston, for the Urban Sanitary Authority. Mr. W. H. Wyrill, engineer, Guildhall, Swansea:—

| | |
|---|---|
| Bennett Bros., Swansea* | Hy. Billings |
| J. & F. Weaver, Swansea† | Griff. Davies |
| Jno. Williams | Thos. Watkins & Co |

* Accepted for Contract No. 25.

† Accepted for Contract No. 26.

[Work tendered for on schedules of prices.]

SWINDON.—Accepted for the erection of "Even Swindon Hotel." Mr. W. H. Read, architect, Corn Exchange, Swindon:—

| | |
|---|---|
| C. Williams, Swindon | £3,065 |

TWICKENHAM.—For the formation of a new road, St. Margarets, for Mr. H. P. Edwards. Mr. Ernest Pennington, surveyor, Richmond:—

| | | | |
|---|---|---|---|
| Adamson | £950 0 0 | H. Dally* | £765 0 0 |
| Thompson | 851 16 7 | | |

* Accepted.

WALLINGFORD.—For the erection of children's quarters, for the Wallingford Board of Guardians. Messrs. Charles Smith & Son, architects, 164, Friar-street, Reading:—

| | | | |
|---|---|---|---|
| Bartlett Bros. | £3,910 10 0 | J. H. Margetts | £3,295 0 0 |
| Wm. Stokes | 3,569 0 0 | Higgs & Sons | 3,250 0 0 |
| Walden & Cox | 3,468 16 6 | Spear & King | 2,975 0 0 |
| T. J. Kingerlee | 3,397 0 0 | W Hawkins | 2,955 0 0 |
| E. C. Hughes | 3,324 0 0 | Brashur & Sons, Wallingford* | 2,937 0 0 |
| G. H. Tucker | 3,300 0 0 | | |

* Accepted subject to the approval of the Loca Government Board

CARDIFF.—For the execution or private improvement works, for the Corporation. Mr. W. Harpur, C.E., Town Hall, Cardiff:—

| Streets. | James Rich. | Thos. Rees. | Frank Ashley. | Wm. Ellis. | Chas. Davies. | Eliz. Osmond. |
|---|---|---|---|---|---|---|
| Colwin-place | £181 8 11* | £196 13 9 | £222 2 9 | £194 9 5 | £185 5 11 | £186 18 3 |
| Corbett-lane | 69 4 6 | 70 3 6 | 105 5 0 | 78 14 7 | 71 11 0 | 67 1 2* |
| Beacon-street | 137 13 10* | 149 14 6 | — | 140 10 6 | 140 14 1 | 144 11 9 |
| Meadow-street | 184 14 5* | 200 10 9 | — | 188 16 4 | 189 1 2 | 194 6 11 |
| Bloom-street | 160 17 8* | 174 13 0 | — | 167 11 4 | 164 15 6 | 168 19 3 |
| Romilly-lane | 125 12 1 | — | — | 127 8 8 | 125 17 6 | 115 18 4* |
| Singleton-road | 401 13 5 | — | — | 393 19 4 | 387 2 2* | 398 12 10 |
| Moorland-road | 457 8 1 | — | — | 445 2 4 | 439 19 1* | 452 19 8 |
| Pontypridd-street | 117 16 2 | — | — | 113 19 8 | 113 8 5* | 117 0 4 |

* Accepted.

LONDON.—Supply of timber (portion only) for M.T. centres on running contracts, for the London Schoo Board:—

| — | E. J. Fitzgerald. | W. H J. R. Hunter. | Illingworth, Ingham & Co. | Ingram Perkins & Co. | J. Latham. | W. Oliver & Sons | E. P. Trenchard & Sons. |
|---|---|---|---|---|---|---|---|
| | s. d. | s. d. | s. d. | s. d. | s. d. | s. d. | s. d. |
| American Walnut (not less than 9 in. wide):— | | | | | | | |
| ¾ in. per ft. super | 0 10 | 0 7 | 0 6½ | 0 6¾ | 0 6 | 0 7½ | 1 0 |
| ½ in. ,, | 0 9 | 0 5 | 0 4½ | 0 4⅝ | 0 4½ | 0 5½ | 0 11 |
| ⅜ in. ,, | 0 8 | 0 4¼ | 0 3⅝ | 0 3¾ | 0 3¾ | 0 5 | 0 10 |
| ¼ in. ,, | 0 7 | 0 3 | 0 3 | 0 2¾ | 0 2¾ | 0 4½ | 0 9 |
| Cedar:— | | | | | | | |
| ⅜ in. ,, | 0 9 | 0 3¼ | 0 3¼ | 0 3 | 0 3 | 0 4½ | 0 9 |
| ¼ in. ,, | 0 8 | 0 2 | 0 2¼ | 0 2 | 0 2¼ | 0 4 | 0 8 |

*** Accept tender of J. Latham for American walnut, and tender of Ingram Perkins & Co., for cedar.

LONDON.—Supp'y of the ollowing articles on running contracts:—Modelling Stools; Cupboards—No. 3; Cupboards—Science; Tables—3 ft. 6 in by 2 ft 6 in. (additional contract), for the London School Board:—

| Names. | Modelling Stools. Per dozen. | Cupboards, No. 3. Each. | Cupboards, Science. Each. | Tables, 3 ft. 6 in. by 2 ft. 6 in. Each. |
|---|---|---|---|---|
| | £ s. d. | £ s. d. | £ s d. | £ s. d. |
| H. Bouneau | 7 0 0 | *6 18 6 | *8 13 6 | — |
| T. Cruwys | 9 18 0 | *7 10 0 | *8 12 6 | 1 19 6 |
| Educational Supply Association, Ltd. | 9 12 0 | — | — | 3 12 6 |
| Foster, Cooper, & Foster | 5 5 0 | 11 5 0 | 12 8 0 | 2 12 6 |
| J. Garvie & Sons | 5 15 0 | 7 19 4 | 9 4 3 | — |
| G. M. Hammer & Co., Limited | 5 2 0 | *7 17 0 | 9 0 0 | *1 14 0 |
| W. H. Lascelles & Co. | 5 5 0 | 9 15 0 | *8 13 0 | 2 2 0 |
| London School Furniture Co. | *5 2 0 | — | — | 1 17 6 |
| J. H. W. Martin | 6 18 0 | 8 14 0 | 11 0 0 | 2 10 0 |
| E. Spencer & Co. | 6 3 0 | 9 10 0 | 10 0 0 | — |
| T. J. Syer & Co, | — | — | — | 2 11 0 |

* Recommended for acceptance.

LONDON.—Repairs to heating apparatus, on a schedule of prices, on running contracts, for the London School Board:—‡

| Name. | Group 1. | Group 2. | Group 3. | Group 4. | Group 5. | Group 6. | Group 7 | Group 8. | Group 9 | Group 10. | Group 11. | Group 12. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | per cent. | per cent. | per cent. | per cent. | per cent. | per cent. | per cent. | per cent. | per cent. | per cent. | per cent. | per cent. |
| Bates & Pearce | — | +15 | — | — | — | — | — | — | — | — | — | — |
| Z. D, Berry & Sons | +25 | +25 | +20 | +25 | +20 | +15 | +10 | +10 | +10 | +20 | +10 | +20 |
| G. & E. Bradley | — | +17½ | — | +15 | +15 | — | — | — | — | — | — | — |
| W. G. Cannon & Sons | +15 | +15 | +15 | +15 | +15 | +15 | +15 | +15 | +15 | +15 | +15 | +15 |
| Comyn Ching & Co. | — | — | — | — | *At Schedule. | At Schedule. | — | — | — | — | — | — |
| W. James Cooper | +20 | +20 | +20 | +20 | +20 | +20 | +20 | +20 | +20 | +20 | +20 | +20 |
| G. Davis | — | — | — | + 2½ | — | *- 2½ | *+ 2½ | — | — | — | — | — |
| Duffield & Co | +17½ | +17½ | +17½ | +15 | +12½ | +10 | +12½ | +12½ | +17½ | +20 | +20 | +20 |
| J. C. & J. S. Ellis, Lim. | +15 | +15 | +15 | +15 | +12½ | +15 | +15 | +12½ | +15 | +15 | +15 | +15 |
| J. Esson | +22½ | +22½ | +22½ | +22½ | +22½ | +22½ | +22½ | +22½ | +22½ | +22½ | +22½ | +22½ |
| J. Gray | +27½ | +27½ | +27½ | +27½ | +27½ | +25 | +25 | +27½ | +27½ | +27½ | +27½ | +27½ |
| J. Grundy | +35 | +35 | +35 | +35 | +35 | — | +35 | +35 | +35 | +35 | +35 | — |
| Lewis Hill | — | +25 | — | +25 | +25 | +25 | — | — | — | — | — | — |
| A. J. Kallaway & Co., Lim. | +10 | +10 | +10 | +10 | +10 | +10 | +10 | +10 | +10 | +10 | +10 | +10 |
| C. Kite & Co. | — | — | — | + 5 | + 5 | — | — | — | — | — | — | — |
| T. S. Knight & Sons | — | — | — | *At Schedule. | At Schedule. | At Schedule. | — | — | — | — | — | — |
| H. C. Price Lea & Co. | — | +15 | +15 | — | — | — | — | — | — | — | — | — |
| J. & F. May | — | — | — | — | +60 | — | — | — | — | — | — | — |
| Russell & Co. | +15 | +15 | +15 | +15 | +15 | +15 | +15 | +15 | +15 | +15 | +15 | +15 |
| Sharp, O'Brien, & Co. | At Schedule. | At Schedule. | *At Schedule. | — | — | — | — | — | — | — | — | — |
| W. Simmons | +10 | — | — | — | — | — | — | — | — | — | — | — |
| A. H. Skinner & Co. | — | — | +15 | — | +15 | +15 | +15 | — | — | — | — | — |
| †G. W. Tomlinson & Milan, Lim. | — | — | — | — | — | — | — | — | — | — | — | — |
| Wenham & Waters, Lim. | *- 5 | *- 5 | - 5 | - 5 | - 5 | - 5 | - 5 | *- 5 | *- 5 | *- 5 | *- 5 | *- 5 |
| J. Wontner-Smith, Gray, & Co. | +15 | +10 | +10 | +10 | +10 | +15 | +15 | +15 | +15 | +15 | +20 | +20 |

* Recommended for acceptance. † These contractors have not tendered on the lines laid down by the Board.

WALTHAM ABBEY.—For sewering, making-up, and paving Lee-road, for the Waltham Holy Cross Urban District Council. Mr. C. W. Wiggs, Surveyor :—

| | | | |
|---|---|---|---|
| Ketteringham | £1,400 | W. Gardener | £950 |
| J. Critcher | 1,224 | Walter Lawrence, Waltham Abbey* | 899 |
| E. J. Betts | 1,134 | | |
| Griffiths | 1,110 | | |

* Accepted.

---

WALTHAM CROSS.—For the erection and completion of stables and offices for the Coal Co-operative Society, Limited. Mr. W. Richards, architect :—

| | | | |
|---|---|---|---|
| Matthews & Son | £1,009 9 6 | Walter Lawrence, Waltham Abbey* | £895 0 0 |
| W. Gardener | 950 0 0 | | |
| J. Bentley | 898 0 0 | | |

* Accepted.

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WALTHAM CROSS.—Accepted for the erection of a boiler house for the Waltham Abbey and Cheshunt Gas Company :—

| | |
|---|---|
| Walter Lawrence, Waltham Abbey | £287 |

---

WIMBLEDON.—For the erection of an isolation hospital, Gap-road, for the Urban District Council. Mr. C. H. Cooper, C.E., Council offices, Broadway, Wimbledon :—

| | | | |
|---|---|---|---|
| Tonge | £25,292 | Speechley & Smith | £22,100 |
| Minter | 23,534 | Chessum | 21,521 |
| Lorden | 23,333 | Garratt | 21,489 |
| Godson | 22,612 | Bulled & Co., Croydon* | 20,197 |
| Pattinson | 22,326 | Gough | 19,964 |
| General Builders, Ltd. | 22,179 | | |

* Accepted.

---

WIMBLEDON.—For new depot, Haydon's-road, Wimbledon, or Messrs. Eastwood & Co. Mr. O. Maxwell Ayrton, architect :—

| | | | |
|---|---|---|---|
| Parson & Co. | £1,560 | Holdstock & Mould | £1,278 |
| F. G. Minter, Westminster* | 1,469 | | |

* Accepted.

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## LONDON SCHOOL BOARD TENDERS.

AT the last meeting of the London School Board, the Works Committee submitted the following lists of tenders :—

BROWNHILL-ROAD SITE.—Removing three temporary iron buildings, &c., from the Lee-street site and re-erecting them upon this site :—

| | | | |
|---|---|---|---|
| T. Cruwys | £1,450 0 0 | J. Mitson & Co. | £1,221 0 0 |
| Humphreys, Ltd. | 1,348 0 0 | J. & W. T. Hunter | 1,150 0 0 |
| W. Harbrow | 1,320 0 0 | T. J. Hawkins & Co., Ashford, Middlesex* | 1,092 7 6 |
| Croggon & Co. | 1,250 0 0 | | |

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CRANBROOK-ROAD.—Improvements—Halls or boys, girls and infants; infants' teachers' room on arches; re-arranging stepping and lighting to centre class-rooms; providing stock-rooms for all departments. Revised accommodation :—Boys, 464; girls, 464; infants, 574; total, 1,502. (Rooms interfered with placed on seat basis) :—

| | | | |
|---|---|---|---|
| J. Chessum & Sons | £6,010 | F. & F. J. Wood | £5,670 |
| McCormick & Sons | 5,828 | E. Lawrance & Sons | 5,338 |
| W. Shurmur | 5,733 | Willmott & Sons | 5,200 |
| J. Grover & Son | 5,695 | C. Cox* | 5,189 |

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HEBER-ROAD.—Erecting manual training centre (on arches) for forty boys, and drawing class-room :—

| | | | |
|---|---|---|---|
| Kirk & Randall | £2,984 | F. & H. F. Higgs | £2,799 |
| A. White & Co. | 2,935 | J. Garrett & Son | 2,782 |
| W. J. Mitchell & Sons | 2,930 | J. & C. Bowyer | 2,693 |
| J. Smith & Sons | 2,912 | J. Marsland | 2,637 |
| G. E. Wallis & Sons | 2,887 | E. Triggs | 2,630 |
| W. Johnson & Co., Ltd. | 2,810 | Edwards & Medway* | 2,592 |

---

KENMONT-GARDENS.—Enlargement—Boys, 52; girls, 52; infants, 40 (seat basis); total, 144. Providing halls for all departments, new girls' staircase, additional water-closets for girls, new boys' teachers' water-closet; removing galleries from infants' room, and providing new Kindergarten gallery in babies' room, and stepping floors; and removing, adapting, and refixing infants' partition, also providing new drainage scheme :—

| | | | |
|---|---|---|---|
| C. Wall | £7,054 | E. Triggs | £6,274 |
| T. J. Green | 6,797 | O. Craske | 6,205 |
| T. Gregory & Co. | 6,647 | J. Longley & Co. | 6,182 |
| J. & M. Patrick | 6,607 | R. A. Yerbury & Sons | 6,161 |
| W. Scrivener & Co. | 6,343 | Lathey Bros.* | 6,011 |

LANGFORD-ROAD.—Erecting two additional offices for girls and female infants respectively, and one for male infants with the necessary new drain and connexions with existing chambers. Also forming new entrance, with screen to girls' closets :—

| | | | |
|---|---|---|---|
| H. & G. Mallett | £271 | W. Hammond | £247 |
| Rice & Son | 259 | J. Carmichael | 244 |
| Lathey Bros. | 257 | E. Triggs* | 237 |

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RUSHMORE-ROAD.—Removing and rebuilding offices (all departments) further away from the school building to allow for the provision of halls, and providing new drainage :—

| | | | |
|---|---|---|---|
| G. Munday & Sons | £2,733 | E. Lawrance & Sons | £2,475 |
| G. S. S. Williams & Son | 2,683 | Stevens Bros. | 2,392 |
| L. H. & R. Roberts | 2,596 | F. Bull* | 2,318 |
| W. Akers & Co. | 2,589 | | |

* Accepted.

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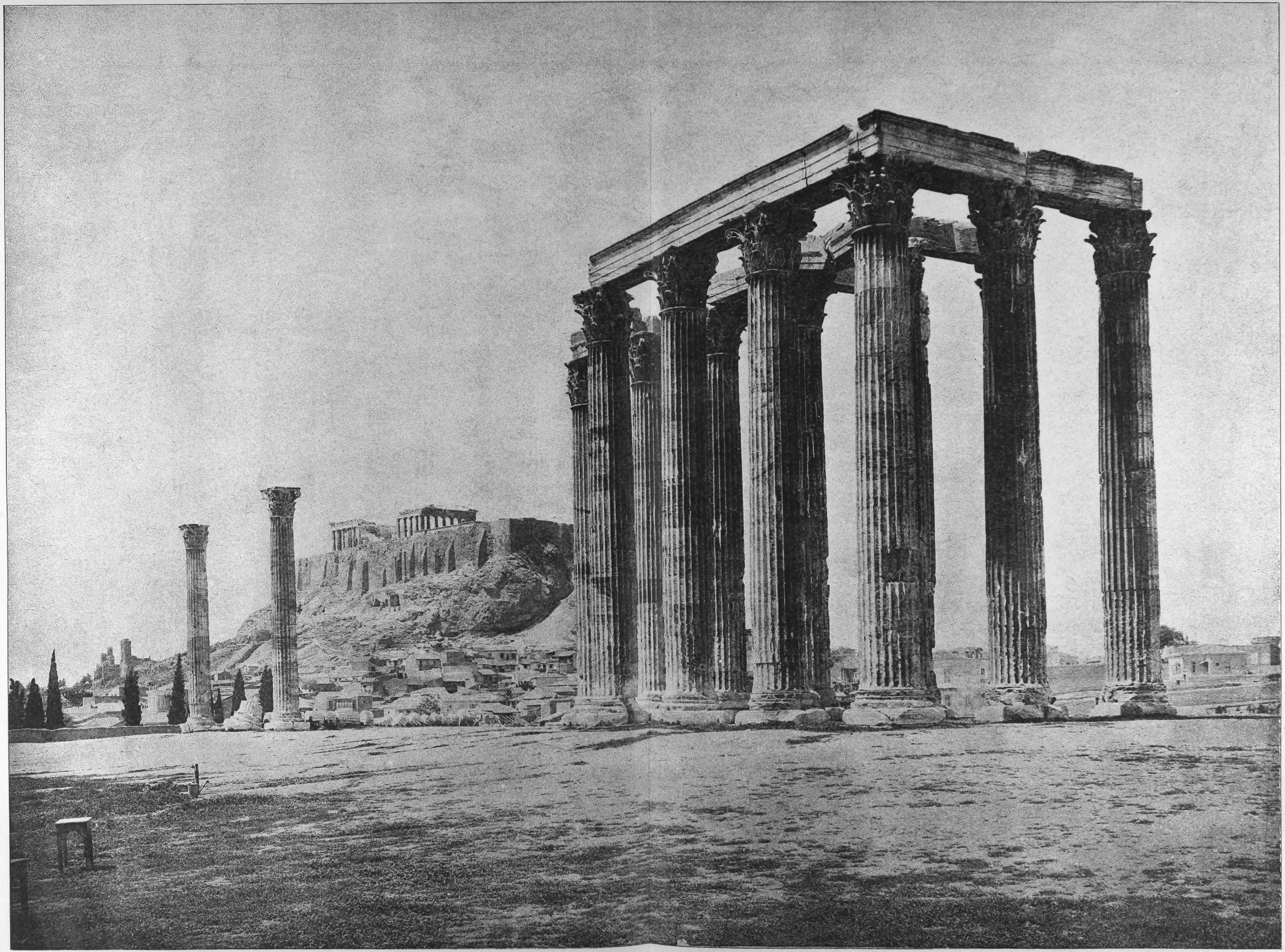

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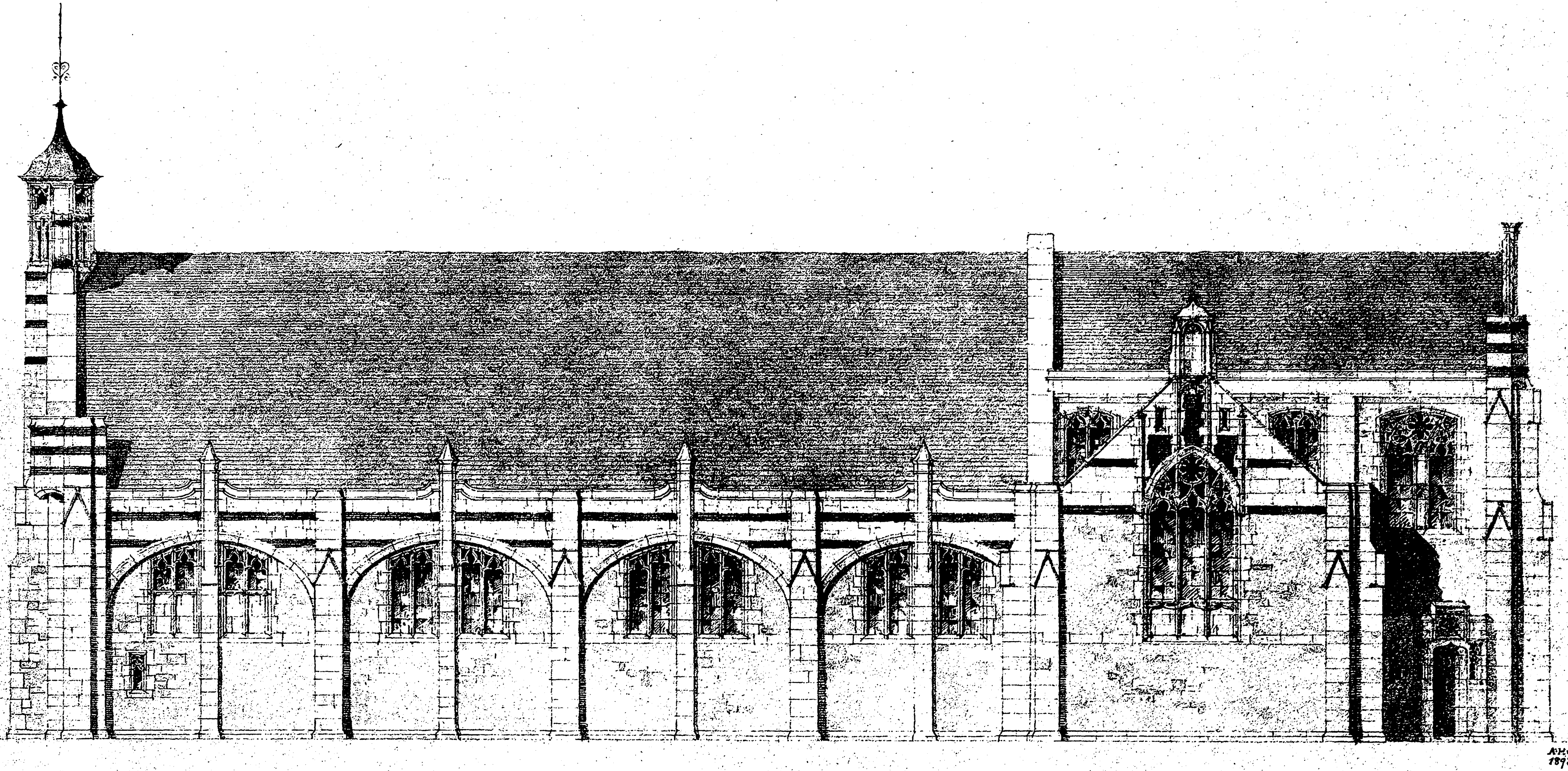
TEMPLE OF JUPITER OLYMPIUS.

*(In illustration of Professor Aitchison's Lectures on Greek Architecture.)*

# NEW CHURCH OF ST AIDAN - WALTON-LE-DALE : COMPETITION DESIGN :

Scale 12 0 5 10 20 30 40 of feet:



South elevation:

A.H. Skipworth. Archt.
5 Staple Inn. London.

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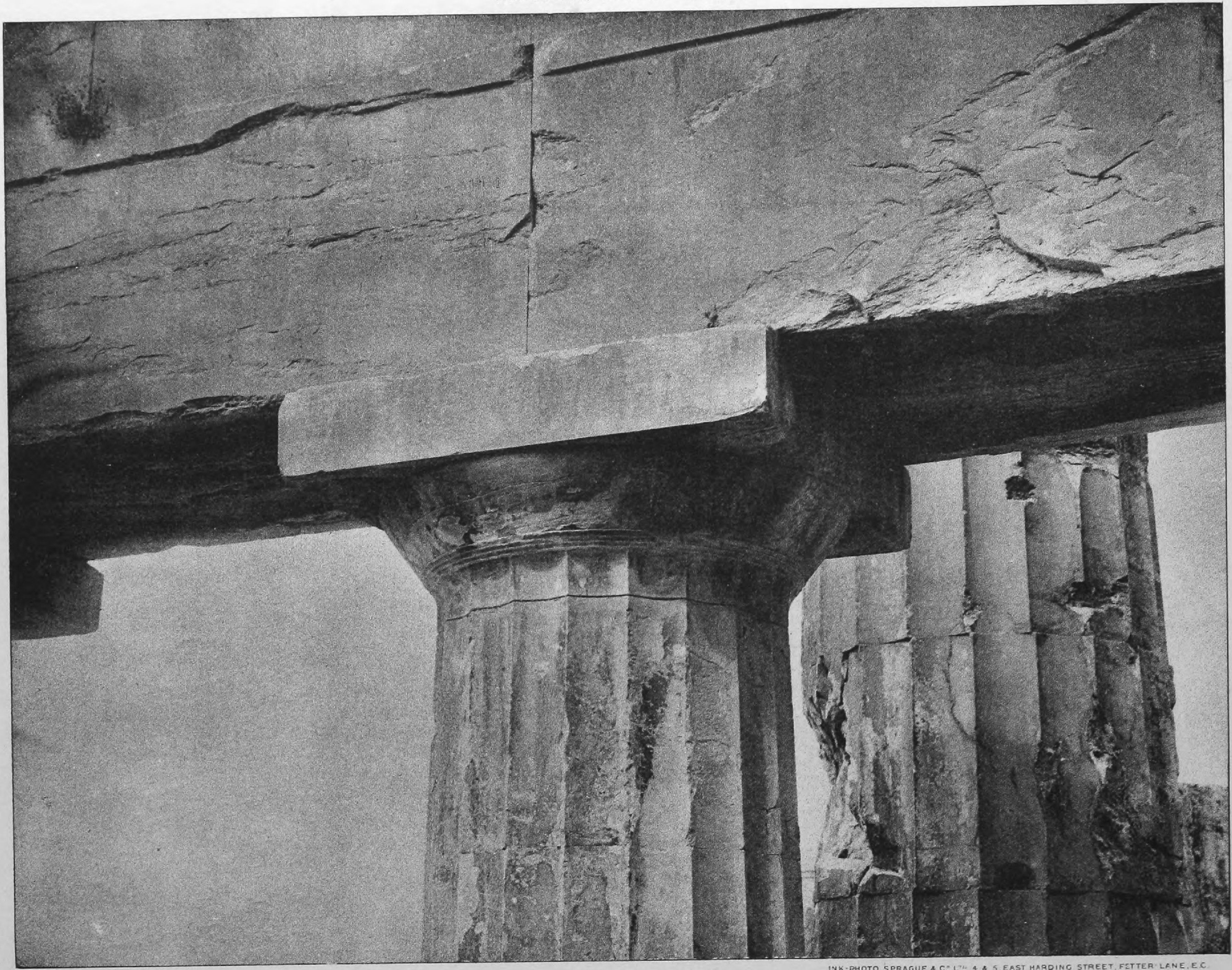

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CAPITAL AND ARCHITRAVE OF THE RETURN WING OF THE PROPYLÆA.

*(In illustration of Professor Aitchison's Lectures on Greek Architecture.)*

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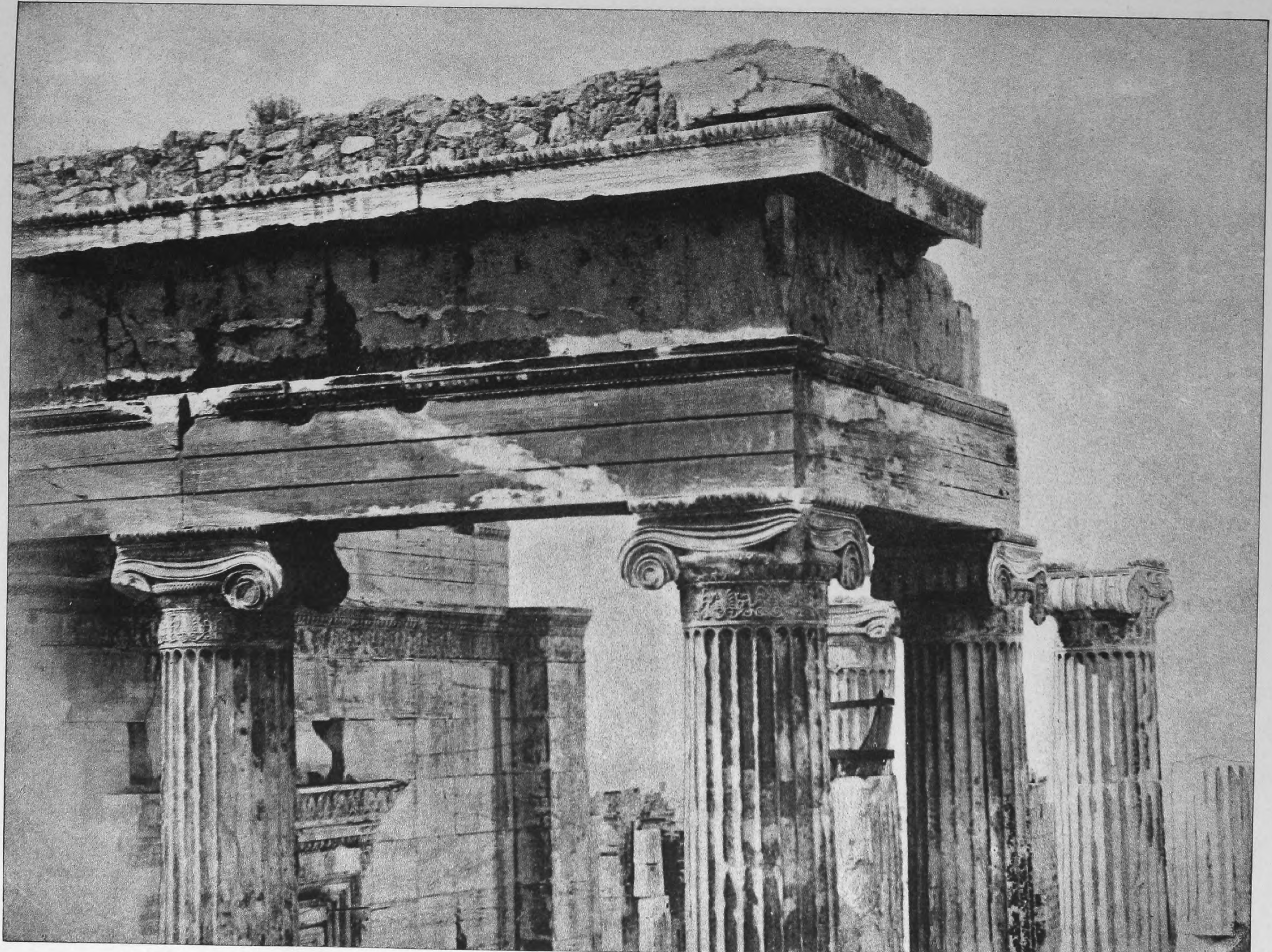

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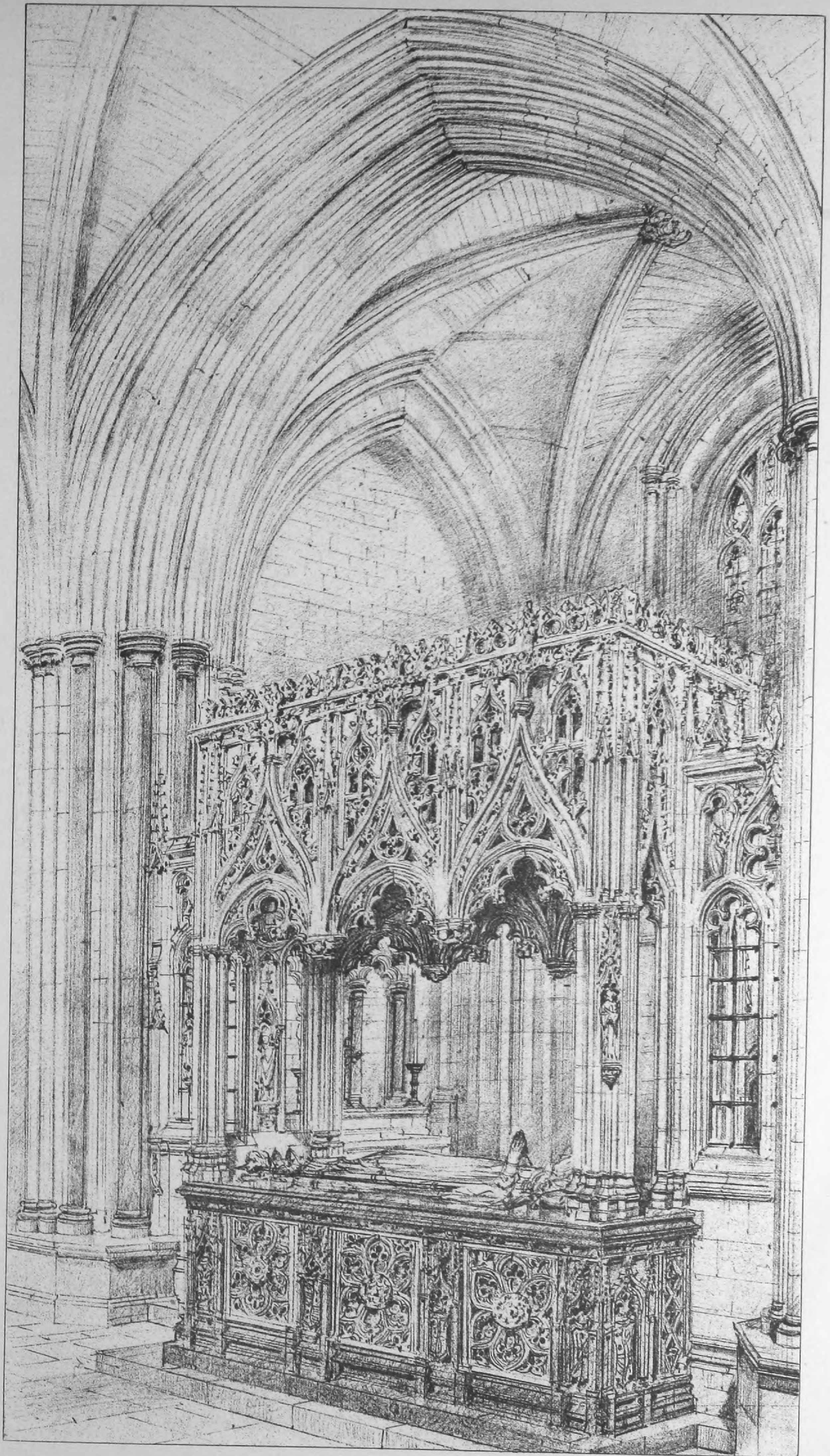
*(In illustration of Professor Aitchison's Lectures on Greek Architecture.)*



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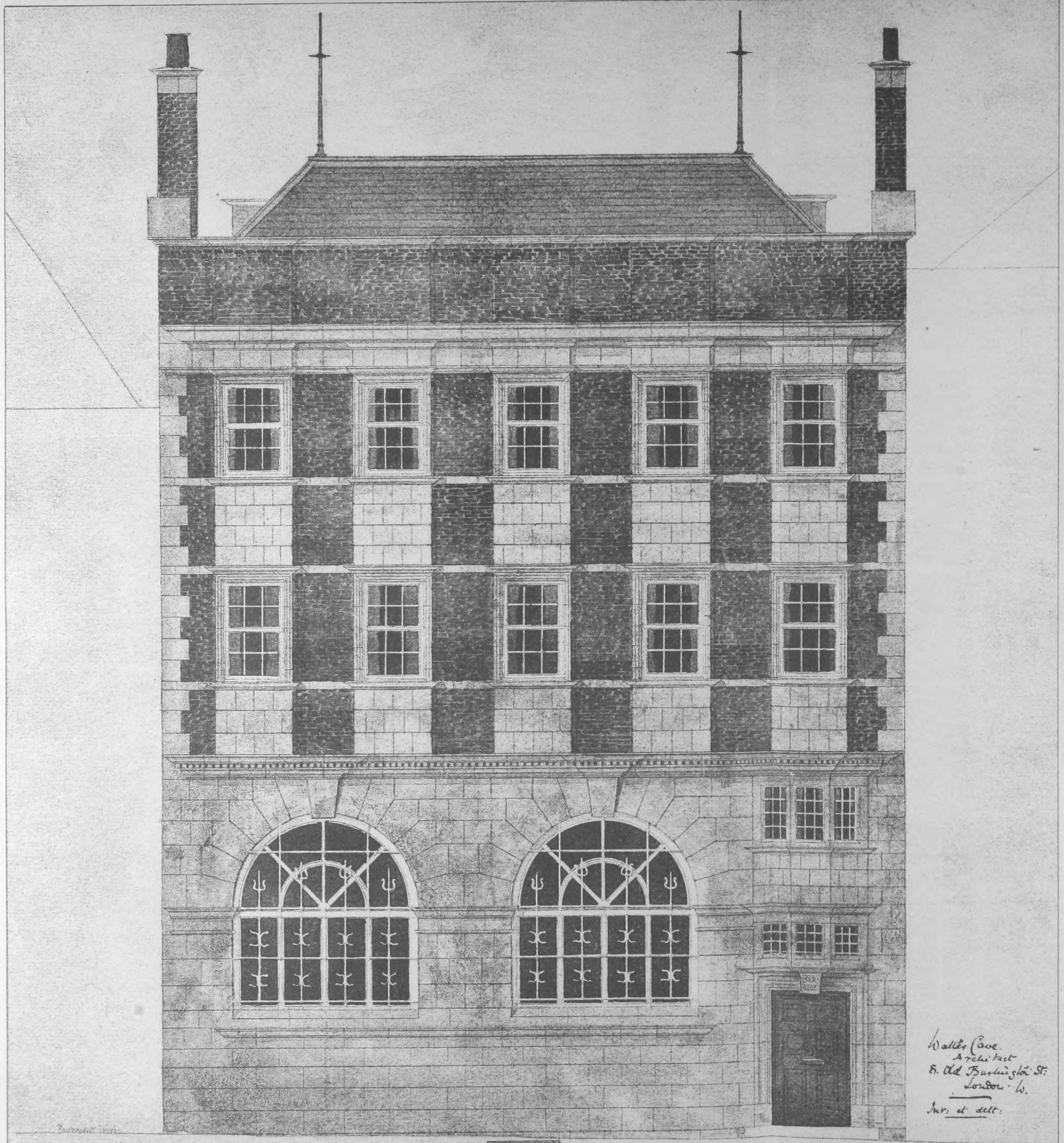
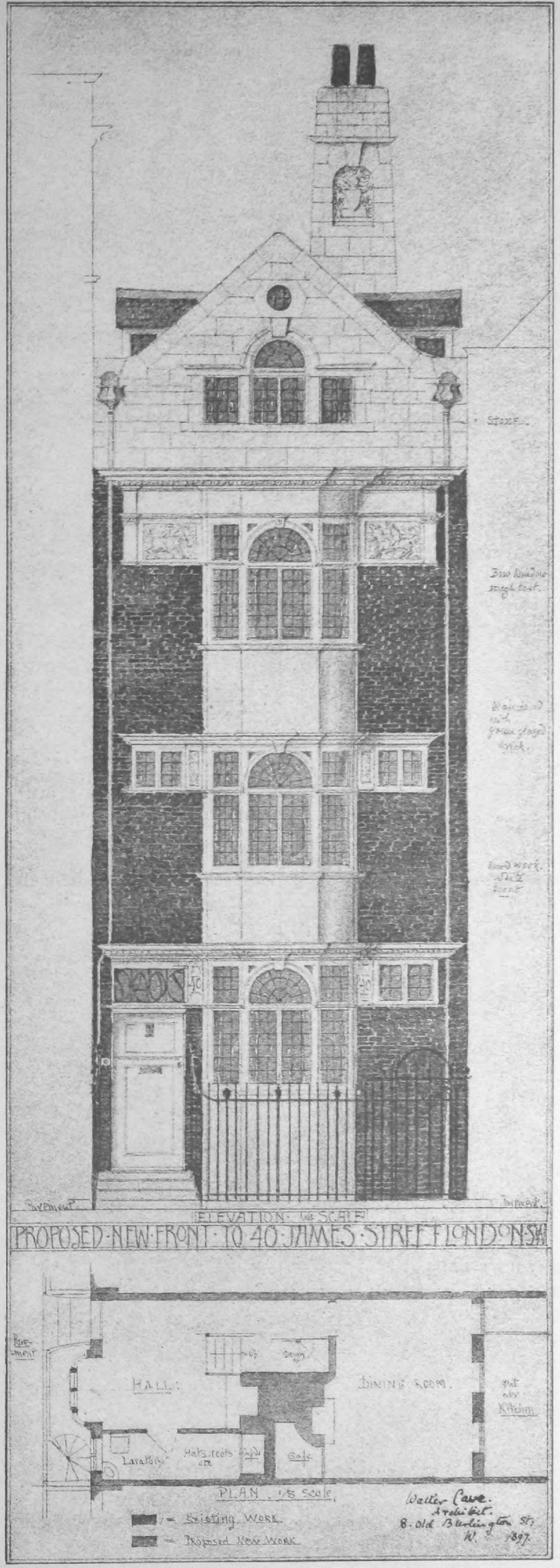
MONUMENT TO THE LATE BISHOP DURNFORD IN CHICHESTER CATHEDRAL.
Mr Thomas Garner, Architect.


Pavement level
Walter Cave.
Architect
8. Old Burlington St:
London. W.
Inv: et delt:
¼ SCALE

BRANCH·BANK·BEDMINSTER·BRISTOL·FOR·MESSRS·PRESCOTT·&·CO·1896


Stone.
Bow window rough cast.
Pavement
Pavement
ELEVATION ¼ SCALE
Pave-ment
Up
Down
HALL:
DINING ROOM.
Kitchen
Lavatory
Hats, coats etc
Safe
PLAN. 1/8 Scale
= Existing Work
= Proposed New Work
Walter Cave.
Architect.
8. Old Burlington St:
W. 1897.

PROPOSED·NEW·FRONT·TO·40·JAMES·STREET·LONDON·SW

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# The Builder.

VOL. LXXVI. No. 2926. MARCH 4, 1899.

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"The Croft," Totteridge, Herts.—Mr. T. E. Collcutt, F.R.I.B.A., Architect..........} Double-Page Ink-Photo.
Country House.—Mr. G. O. Scorer, A.R.I.B.A., Architect..........}
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## *Earthquakes and Building Construction.*

A VERY useful work, showing the present condition of our knowledge concerning earthquakes, has recently been written by Professor John Milne.* The greater part deals with the purely scientific aspect of seismology, with which we have little concern; but there are two long chapters devoted to buildings and building materials in earthquake countries, which form the most valuable contribution to that aspect of building construction that has been made in recent years. Professor Milne's long residence in Japan has made him specially familiar with the subject, and whilst many of the problems are approached from the Japanese standpoint, the author is able to draw largely from observations made in other countries. Nobody will quarrel with the author for his very frequent citation of results obtained in the Far East, however, for it is a healthy sign of the times that the modern scientist is more contented to draw upon circumstances arising within his own knowledge, than to quote distorted accounts made by untrained and inaccurate observers. There is still a general lack, in scientific works, of the careful recording of the truth. So many authors do not possess the peculiar faculty of sifting the painstaking and laborious result, from the slipshod information of the mere reporter; further, many of them appear to be unable to discriminate between fact and theory, the proved truth and the avowed hypothesis. But, the reader will not find any shortcomings of that nature in this book by Professor Milne.

Passing by the chapters treating of slow movements of the earth's crust, we arrive at the causes of earthquakes—a difficult subject to satisfactorily explain. To briefly summarise the author's views, it may be said that wherever bending is taking place in the earth's crust we find earthquakes; whilst if this process is going on in the vicinity of an ocean we find both earthquakes and volcanoes. Although a volcanic explosion, or an abortive attempt to establish a volcanic orifice, has often caused the ground to shake, the greater number of disturbances are either due to rock fracturing, or to equilibrium adjustments of a subterranean quasi-rigid magma. The sudden eruption of a volcano may occasion a local shaking, or cause an area in seismic strain to yield. In this case, the volcano is the parent of the earthquake. On the other hand, by the sudden shaking of the ground a vent which has been dormant for a long period of years may have its statical equilibrium destroyed; and then the relationship is reversed.

The next chapters give a general description of instruments used for recording movements of the earth's crust, the nature of earthquake motion, the velocity of earth waves, and a consideration of seismic elements which are calculable. One of the most interesting records of earthquake motion is that made by Professor Milne at Carisbrooke Castle, on August 26, 1896. The point of origin of that disturbance was in north-eastern Japan, as subsequent information showed, and the movement recorded in the Isle of Wight travelled direct from that point to England through the globe. The culmination of the movement, in this case, was preceded by preliminary tremors which lasted over thirty-four minutes. There appears to be a relationship between the distance of an origin and the interval of time by which tremors outrace the more decided motion.

Turning to the section which more immediately interests us, we find that the author commences with the "choice of a site" for building upon. It has been shown by the Seismological Survey of Japan, that whilst a great portion of the country is subject to violent earthquakes, there are certain localities as free from those disturbances as are many parts of England. The practical point, however, is to select a site of comparative immunity from earth movements within the narrow limits of a city. For the problem most frequently presented, gives very little freedom of choice over a wide area, for obvious reasons. In many instances it has been proved that high, hard ground suffers very much less disturbance than the soft, low ground, so that a city built over a site covering these two forms of ground may be divided into two parts, one of which is comparatively much safer than the other. This phenomenon was so well exemplified by the earthquake in Ischia in 1883, that the Italian Government took advantage of the observations then made to mark out sites on which the new town might be built. "Carefully made seismic surveys have distinctly shown that on a plot of ground, not more than ten acres in extent, the quantity of motion experienced on one side of such a tract might be sufficient to shatter a building, while a similar building not more than 900 ft. distant on the other side might remain undamaged." It would have been interesting had the author said something concerning the geological structure of any particular plot of ground which exhibited these phenomena. Instead of that, we are left to infer that the difference was in some way connected with a marsh—"the dangerous side of one plot of ground . . . bordered a marsh, and was consequently somewhat wet and soft."

The author gives a bad character to steeply sloping ground, which is deprecated as a site for construction of any description. Similarly, buildings in countries subjected to earthquakes should never be erected along the upper edges of cliffs, escarpments, and deep natural, or artificial cuttings. On river banks, fissures running parallel with the direction of the river are apt to be formed at distances of from ten to fifty yards from the river front, and within that zone buildings are likely to be demolished. At the same time, if in any particular locality it can be shown that earthquake movement comes from a definite direction, it will often be possible to demonstrate that the bank on one side of the river only becomes affected, the other side being comparatively free.

It is well known that for many years regulations have been laid down in certain districts concerning foundations, the type of superstructure, and the best materials to be employed to successfully withstand earthquake shocks. Professor Milne reviews these regulations at some length. In regard to foundations, the Ischian regulations provide that buildings must be founded on the most solid ground; if, however, the ground is soft, this may to some extent be remedied by the construction of a platform of masonry or cement, which, for a one-story building, must be ·70 mètre thick, and for a two-story building 1·20 mètres thick. This platform must extend from 1 mètre to 1·50 mètres beyond the base of the building. These, and similar rules, enforce the fact that a building which stands upon a continuous foundation, sufficiently well bound together to move as a whole, suffers less racking than if it rose from a base the different parts of which might be simultaneously moved in several directions. A building rising freely from a deep foundation, as in the case of a house with an open area or basement, will be subjected to less movement than a building rising directly from the surface. The author gives instances proving this. "The most remarkable illustration of this description occurred in 1891, when Tokyo was rocked to and fro by a series of large undulations which originated at a point about 200 miles distant. On this occasion, the Engineering College at the University received not a single crack, whilst its workshop, some twenty yards distant, was so far damaged that it had to be re-roofed and its height reduced."

---

* "Seismology." By John Milne, F.R.S., F.G.S. London: Kegan Paul, Trench, Trübner, & Co., Limited. 1898.

In cellars, vaulting may be allowed, but not above ground; above ground, arched construction in any form is invariably suppressed by official regulations. A peculiar method of constructing foundations is worthy of mention. The author had a bedroom attached to his house in Japan which rested at each of its pillar-like foundations on large iron shells carried in dish-like castings, the idea being to give a free foundation to the structure in order to minimise the quantity of motion received during a shock. He had not reckoned with high winds, however, so the building was found to be too unstable, and rolled from side to side. Ultimately ¼-in. cast-iron shot, placed between two flat iron plates, was employed, and found to be better; for the increased friction was sufficient to resist the effect of winds, whilst it was insufficient to overcome the inertia of the building, which, therefore, tended to remain at rest whilst the ground beneath, during earthquakes, rapidly moved to and fro. It is suggested that short rollers placed at right angles, or a layer of rounded pebbles, might be equally effective. The author seems somewhat afraid of his suggestions, however, as he does not recommend them except as illustrations of a principle having many practical applications. This sort of foundation may be successfully employed for light structures on soft ground, but not for heavy buildings. Yet we are told that a heavy building erected in the grounds of the General Hospital at Yokohama, and resting on balls several inches in diameter, has done well. The reasons for this are that the balls rest in deep cup-shaped depressions, and that the building, for its size, is exceedingly heavy.

Passing to the consideration of roofs, it will be readily perceived that these must not be heavy, or they will not sway at the same moment as the more lightly-constructed walls, and collapse of the whole would be inevitable. Light roofs, built so that they rest freely upon supporting walls, have proved successful. In Japan, temples and other large buildings with heavy roofs have, beneath the supporting timbers, a multiplicity of timber joints forming corbel work, which yields, and does not communicate the whole of the motion from the parts below to those above. At the same time, during the terrible earthquake of 1891, many of these roofs, which had stood for centuries, came to grief.

The roof must not be steeply pitched, as it is liable to have the tiles, slates, or other covering thrown off. Tiles should be especially well secured near the eaves and along the ridges. Roofs made of sheet metal are, no doubt, successful as withstanding earthquake shocks, but they have to be very strongly secured to be proof against cyclones and typhoons, and are an intolerable nuisance in hot weather—at least in tropical countries.

Walls should be light and strong, and, for buildings, ought not to be carried higher than from 25 ft. to 30 ft. above the level of the ground. In certain districts, as Liguria, a height of 50 ft. may be permitted, but one would hardly call that a severely-stricken earthquake country. Professor Milne states that the length of a wall should not exceed twice its height unless supported by a buttress; whilst buttresses might be placed at intervals not greater than twice the height of a wall. Its thickness must be one-fifth of its height. The corners of buildings should be strengthened by buttresses. In houses of two stories, the lower story may be built of stone or brick, whilst the upper may be of wood, resting on, but not built into, the supporting wall. The last house at either end of a terrace, and especially the end walls, must be very strongly constructed, and the same observation applies in the erection of a long, low building. The best methods of constructing piers for bridges, and chimneys, are set out in much detail. The principal point about chimneys is that they should be low, and not top-weighted.

The connexions between different portions of a building are next considered. The chief factor is that the materials employed in construction should be of uniform character (with the few exceptions already noticed) so that on receiving the shock they shall vibrate in unison. It is obvious that if a wall is a compound, say, of stone and wood, or brick and wood, there will be a corresponding want of homogeneity, which will lead to disaster. But, the building may be strengthened beneficially in many ways. In San Francisco, for instance, the City Hall is fortified by the walls at each floor being tied together by transverse and fore-and-aft rods of steel and iron. It may be doubted, however, whether this method of rigid construction is better than the opposite extreme, which allows free play, so that each part of the structure may be capable of yielding in the same manner as with a wicker basket. Ornament should not project from the face of the building, which ought to be kept as compact as possible.

Archwork is reviewed at length, and the author agrees with the generally accepted opinion that, whilst an ordinary arch is undoubtedly stable for vertically applied forces, it is one of the most unstable structures in presence of such horizontal stresses as are set up in earthquake motion. There are many useful notes concerning openings in walls (such as doors and windows), balconies, cornices, gables, ceilings, and staircases, and on the construction of reservoirs. This portion of the work concludes with some account of the destruction caused by sea-waves during violent shocks.

The remainder of the book, of less direct interest for us, deals with certain miscellaneous seismic phenomena, undulations, pulsations, and earth tremors; but the final chapter is an excellent epitome of "movements of the earth's crust in relation to physical research and engineering." In the last-mentioned chapter, the few observations on vibrations of bridges, buildings, &c., are interesting, though not particularly novel.

## NOTES.

**The Plasterers' Dispute.**

A lock-out on Monday of the members of the Plasterers' Unions now appears to be inevitable. The operatives have, by ballot, it is stated, almost unanimously decided to resist the demands of the Master Builders' Association that certain objectionable practices, described in our last issue, should be discontinued, and unless a conference can be arranged between the parties at the eleventh hour, the lock-out will commence on Monday. While the result is to be deplored, it is not at all surprising. Given men, on the one hand, who appear to think that they alone are the factor to be considered in industrial enterprise; and employers, on the other, who insist on the right of managing their own businesses, no other result is possible, though we think that a conference of employers and operatives held with the honest endeavour to avoid either a lock-out or a strike, could not have failed to remove some of the friction and might have resulted in a settlement of the dispute. No one who understands the points at issue can be surprised that the employers have submitted what is practically an ultimatum, and it seems amazing that the rank and file of the operatives should think, as they appear to do judging from the result of the ballot, that employers have little more to do than to find capital and take all risks. In the present temper of both parties the dispute is not likely to be soon ended.

**The "Employers' Parliamentary Council."**

We have received a circular from "The Employers' Parliamentary Council," which appears to be an institution for the purpose of opposing legislation which may prove injurious to the interests of employers. While we quite agree with the opinion expressed in one paragraph in regard to the exaggerated tendency among a certain class of politicians to nurse the working man, and the evident readiness of the working-man to be nursed, we think the Employers' Parliamentary Council will defeat whatever is reasonable in regard to some of their objects by their unreasonable attitude in regard to others. Their paper gives a list of Bills to be brought forward shortly, with the "objections." A Bill to empower the Secretary of State to prevent any one having charge of a steam-engine or boiler of more than five horse-power unless such person has obtained a certificate from him by examination, or on application on proof of practical experience, is denounced as "creating a monopoly in the labour market." A Bill for providing for inspection (not less than five times a year) of every steam boiler in use in the United Kingdom, is "an undue interference by the State with trade concerns." No doubt it would compel employers, whether they like it or not, to keep their boilers in proper condition instead of running the risk of blowing up their employees; but we should call it a most wholesome regulation in the public interests. Some of the other Bills mentioned are open to objection, but the general tendency of the document is to urge that employers are never to be interfered with at all; and we have got long past that point.

**The Cottage Homes Bill.**

THE Bill to enable Local Authorities to provide Cottage Homes for the aged and deserving poor has passed its second reading in the House of Commons, and has been referred to a Select Committee. It is more than doubtful if it will advance further through Parliament this Session. Of course, it is almost an impossibility for a Local Authority to decide who is, or is not, a deserving person, for every detail of a lifetime must be known for this purpose. Almshouses were at one time common in rural villages, but they have gradually disappeared. They often formed a picturesque architectural feature of a country village, but the workhouse practically put an end to them. From a practical point of view, we should doubt whether a respectable working man of sixty-five, unable to support himself, would be much better off in a cottage workhouse in a village than in a large building in a semi-central position, as at present. On the other hand, cottages in many districts are unquestionably in bad condition and insufficient in number, and we are inclined to think that if each Parish Council had a few cottages in which persons over sixty-five, of good character, who had some small means, but not enough to pay for a cottage (even if they could find one), could live rent-free for the rest of their days, it would not be undesirable.

**Artesian Wells for London.**

THE London County Council is to be assisted in its efforts to supply the Metropolis with water by Mr. R. P. Whellock, architect, surveyor, and geologist; at least, so we learn from a daily paper. This gentleman has discovered that "underneath the blue clay of London there is a vast supply of water." This will probably be news to the County Council, in view of their Welsh scheme, which had better be abandoned. A well in Houndsditch is to act as a sort of centre, after the manner of Charing Cross, only, instead of cab-fares, "artesian" wells are to be regulated at distances. That there is actually a great supply of water under this clay has only been discovered after a study of six years, according to our contemporary, by the architect, surveyor, and geologist quoted. As a "geologist" he might have known that for at least the last fifty years the great underground supply of water has been utilised in London by very many important institutions, hospitals, breweries, &c., and has always been regarded as a readily available source of supply in case of need. The suggestion to supply limited areas with drinking water from the chalk under London is by no means novel, but when we learn from the scheme now propounded that it is to be "effected at a comparatively small cost," whilst further on we read that "an acre of ground" will suffice for each of the numerous stations proposed, we have our misgivings from the financial standpoint. The London County Council, however, does not stick at such trifles as this, and no doubt it could find the money. Mr. R. P. Whellock will find that the chief opposition to his views in that quarter will be that the water companies are not to be affected. His scheme does not propose to "supersede the water companies," so "he cannot conceive that they would offer any opposition." We should strongly advise him to wait until the London Bill for creating a number of municipalities in the Metropolis is enacted before breathing this ancient idea to the electors, because a piecemeal water-supply scheme could be better dealt with by each municipality concerned than by a central authority.

**Hampstead Heath Protection Society.**

THE Second Annual Report of the Hampstead Heath Protection Society shows that the Society are doing good work in guarding against any proceedings tending to spoil the Heath, and have been successful in getting some of their recommendations carried out. The complaint about the deposit of rubbish on the Heath has been satisfactorily met by the London County Council, who stated, in a letter of April 20, 1898, that the clay had been placed there without the authority of the Council, and that it and other material had been removed, and would not in future be used for filling up rain tracts on the Heath. They have succeeded in inducing the County Council to purchase the Golders Hill Estate, though, since the estate was opened provisionally on December 1, 1898, they regret to have received complaints of wilful damage to the plants, but efforts are being made by the Trustees of the Hampstead Heath Extension Scheme to secure more adequate supervision on Sundays and other holidays. The thinning of the young fir trees planted by the Metropolitan Board of Works on the Western Heath has been carried out by the London County Council, and will have the effect of preserving and strengthening the trees that remain. The Committee express a strong opinion that the margins of the ponds which have been made bare by the Council should be restored as far as possible to their natural condition, in order that the water and waterside plants (which have afforded protection to wild birds and water fowl) may be developed.

**A Road-making Exhibition.**

IT is announced that in the next Building Trades Exhibition, to open at the Agricultural Hall on April 26, a special feature will be a collection of exhibits of materials and plant connected with road and street construction, maintenance, and cleansing. This is intended as an experiment in illustrating the class of work with which municipal engineers and surveyors have to deal; and if it is successful, it is intended in future exhibitions to have special exhibits illustrating work connected with sewerage, water supply, lighting well, &c. This is an excellent idea, and if carried out will add much to the interest of these exhibitions.

**Menai Suspension Bridge.**

IT is stated that this structure is to be sold for 15,000*l.* to the Local Authorities of Anglesey and Carnarvon. In 1801 Rennie was instructed by the Government to survey the Straits, and prepared four different designs, including a bridge of one arch, and another bridge of three arches; nine years later Telford made a further survey, and in May, 1818, sent in his second report, with estimates for a suspension bridge from Ynys-y-moch (Pig's Island) Rock. On August 10, 1819, the first stone was laid by W. A. Provis, the resident engineer, who published (1828) a large folio volume containing a technical and historical account of the works, with surveys, drawings, plans, and views. The stone for the arches and the two piers was quarried from the grey limestone marble beds at Penmon Point, Anglesey, and Shropshire iron, about 2,200 tons, was bought at 6d. per ton. Storms, combined with the normal difficulties of the Straits navigation, hindered the progress of the works, and the expenses amounted to 120,000*l.* In the early morning of January 30, 1826, the bridge was opened to the London and Holyhead mail-coach. Telford's designs were followed for the similar bridges at Pesth (666 ft. span), Fribourg (870 ft.), Hammersmith (422 ft., Tierney Clark, who brought the chains to below the roadway), and Hungerford Market * (676 ft. 6 in., I. K. Brunel). At Menai Straits the horizontal distance between the centres of the main pillars is 580 ft., the pillars (33 ft. wide at top and 66 ft. wide at low water mark) measure 173 ft. between low water and the main chain saddles, giving the underside of the roadway above high water (spring tides) at the piers a height of 100 ft., which increases by a slight camber to nearly 103 ft. at the middle point. The road, laid over deal planks, has two carriage-ways, 12 ft. wide, with a footpath, 4ft. wide, between them. The chains which support the suspension rods, are sixteen in number; they have a total length of 1,715 ft., being carried 60 ft. into the rock; the length of the catenary is about 580 ft. with a descent of 47 ft. The chain-bars are 9 ft. 6 in. long, 3 in. broad, and 1 in. thick; they were tested to a strain of 11 tons per square inch, the weight of the suspended bridge is about 480 tons, and the chains were calculated to support 2,020 tons. Wrought-iron rollers rest upon the apex of each pier; adjusting links are provided, and lateral iron ties are inserted into the piers above the carriage-way arches which rise to 15 ft. with a span of 9 ft.

**St. Philip's, Stepney, and London Hospital.**

DR. TRISTRAM, Q.C., Chancellor of the Diocese of London, has agreed to issue a faculty from the Consistory Court whereby a plot of unconsecrated land in New-street, on the south side of Whitechapel-road, will be conveyed for the purposes of the proposed extension of the hospital, to be carried out after Mr. Rowland Plumbe's plans and designs. For the parcel of land — 7,500 ft. superficial — the Hospital Governors offered 4,166*l.*, being thirty-three and one-third years' purchase of its annual value. The ground, together with the site of St. Philip's, Stepney, was conveyed to the Church Building (now the Ecclesiastical) Commissioners, and, with their concurrence, the vicar and churchwardens sought for authority to alienate the land under the provisions of the Church Building Acts of 1822 and 1839. The Act of 1845 vests the freehold of a church's site in the incumbent, and in the case of "Plumstead Board of Works *v.* the Ecclesiastical Commissioners" it has been decided that the freehold passes with the act of consecration, the Commissioners having then no power to convey it. The church (1818) was reconstructed by the present vicar, after the designs, we understand, of Mr. Hayward, a few years ago, and forms the chapel of the hospital, with which it is connected by two covered ways.

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* Opened 1845: since removed to Clifton, Bristol. New Hammersmith Suspension Bridge, by Sir Joseph, and Edward, Bazalgette, was opened in 1887.

**A Competition in Street Decoration.**

THE Union Centrale des Arts Decoratifs has opened a competition for the best scheme for day and night decorations of a public place in Paris, to be kept up during the Exhibition of 1900. The place selected is the portion of the Rue Royale comprised between the Faubourg St. Honoré and the Madeleine. This effort may perhaps have some effect on the decorative style of the special fêtes to be held during the Exhibition, which otherwise it is to be feared would only be a repetition of the ordinary commonplaces of the official fêtes of Paris.

## THE REPORT ON WATER GAS.

THE report of the Departmental Committee appointed in February, 1898, to make inquiries concerning the manufacture and use of water gas has been published, and will probably have an important influence in many localities upon the composition of the public gas supply.

Pure water gas, which is made by passing steam through heated coke or anthracite, has no smell and burns with a non-luminous flame. It is therefore "carburetted" or "enriched" by incorporating with it a certain quantity of vaporised oil, or gas produced by the decomposition of oil by heat. The carburetted water gas thus produced possesses a penetrating odour and burns with a luminous flame, the light intensity of the flame depending upon the proportion of oil added.

Now in the greater part of London and in many of our large towns it has been found convenient and economical to add to the coal gas supplied to the public a certain proportion of carburetted water gas, in many districts sufficient carburetted water gas of 22 candle power being added to enrich coal gas of 14 candle power to a standard 16 candle power. The rising price of coal and the difficulty of profitably selling the residual coke are, however, causing carburetted water gas to be largely employed in some places instead of coal gas, as much as 50 per cent. being, it is said, commonly mixed with the coal gas supply of Tottenham and Edmonton.

The chief objection which has been raised regarding the use of carburetted water gas, is that it contains a large proportion of carbonic oxide, a gas which ranks among the most dangerous gaseous poisons. Pure coal gas itself contains from 4 to 12 per cent. of this carbonic oxide, but carburetted water gas contains about 30 per cent., and a mixture of 50 per cent. carburetted water gas with coal gas usually contains about 20 per cent.

Want of space prevents our discussing the merits and demerits of carburetted water gas, but it may be mentioned that about 70 per cent. of all the illuminating gas supplied in the United States is carburetted water gas.

The most important recommendation of the Committee is the limitation of the amount of carbonic oxide at night to 12 per cent., or "such greater amount as the Department may consider desirable."

The Committee propose that the following recommendations should be carried into effect by means of a Public Bill :—

"1. That it should be illegal for any person to make and distribute for heating and lighting purposes any poisonous gas which does not possess a distinct and pungent smell.

2. That all persons applying for statutory powers to make and distribute gas should be required to state in their application the kind of gas which they propose to sell, viz., whether ordinary coal gas, carburetted water-gas, plain water-gas, or other variety of gas, separately or mixed.

3. That before any kind of water-gas is distributed in any place, due public notice of the proposal should be required to be given ; and that, as long as there is any water-gas in a gas supply, that fact should be stated on every demand note.

4. That where water-gas is distributed records should be kept by the producer showing the respective amounts of the gases issued day by day, distinguishing the gas supplied to each area (if more than one and separately served) and the day and night supply ; that these records should at all times be open to inspection by any gas-consumer or ratepayer of the district, and should be published quarterly in a local newspaper, and that a new column should be added to the annual returns made to the Board of Trade giving the total amount of water-gas issued as compared with coal-gas.

5. That power should be conferred upon a central Department to make regulations, enforceable by adequate penalties, limiting the proportion of carbonic oxide in the public gas supply at night to 12 per cent. or such greater amount as the Department may consider desirable. These regulations might be applicable either generally over the United Kingdom or to any particular locality, and might contain such conditions, if any, as appeared necessary.

6. That powers should also be given for the regulation of the distribution and use of gas by means of by-laws, made subject to the approval of a central Department, and administered under local control. The matters to be so dealt with might include the following ;—The hours during which, or the arrangements by which, the limit imposed upon carbonic oxide should be enforced ; the use in emergencies of more than the authorised proportion of carbonic oxide ; the character of the gas-burners, fittings, and apparatus to be used, having regard to the circumstances of their employment ; the testing of gas ; and other similar questions.

7. That the provisions of Sections 28 to 34 of the Gasworks Clauses Act, 1871, should be made applicable to the testing of gas for carbonic oxide, and that in all cases where a limit has been placed upon the carbonic oxide in the gas supply of a locality there should be some person empowered and required to test for carbonic oxide and to publish the results periodically.

Lastly, we are so much impressed by the insufficiency and untrustworthiness of the statistics relating to particular causes of mortality which can be gathered from returns of coroners' verdicts, that we venture, though the matter is outside the terms of the reference to us, to recommend strongly that some steps should be taken to secure that these verdicts should lend themselves more readily to clear classification by the Registrar-General ; and, in particular, we suggest that in every case where the coroner is in possession of a medical certificate of death, or where medical evidence has been taken at the inquest, a copy of that certificate or an abstract of that evidence should be appended to the coroner's certificate when sent to the Registrar-General."

## GREEK ARCHITECTURE.[*]

### THE IONIC AND CORINTHIAN ORDERS.

TASTE, skill, and that artistic perception of what is right, and what is sufficient, so pervaded the artists and craftsmen of Greece that their works, be they in what material you please, are now, if not priceless, at least worth their weight in gold ; they are not only eagerly sought by all persons of taste and means throughout the world, but nations themselves struggle for their possession ; an engraved gem, a sword, a greave, a painted vase, an earthenware figure, a coin, or a piece of goldsmith's work, a horse's bit, or a potsherd, will often bring men of wealth and taste from the Antipodes to bid for it. The worst tyrants of Greece, like the worst tyrants of Italy, cherished any work of artistic perfection as their choicest possession. When Polycrates, the tyrant of Samos, on the advice of Amasis, tried to propitiate fortune by sacrificing his most loved possession, he threw his engraved signet gem into the sea ; five or six days after a fisherman caught a large fish and presented it to Polycrates ; the ring was found in the fish and eventually Polycrates was decoyed by Orœtes the Persian, to Magnesia and there crucified. It was the combination of natural perception, sense of propriety, and the determination of each craftsman to excel, that gives these often contemptible objects their priceless value. What is true of other arts is true of ours. Even in the fragment of a moulding we see the infinite care that has been bestowed on perfecting it, the subtlety of invention, and the propriety and appropriateness of what has been done.

There are a few things in Nature that look as if they had been done by a Greek craftsman. The shell of the king crab, for instance, and the small Indian water nut. I may here mention as an interesting fact, connecting England with Greece, that the first gold coin minted in England before the Roman invasion, was made by the Gauls resident here, and was a rude imitation of the Golden Stater of Philip of Macedon, the Gauls having possessed themselves of these coins during their invasion of Greece 280 B.C.

We really know very little about the daily life of the Greeks, so we can only conclude from induction that their simple wants were as admirably provided for by their architects as their artistic ones.

I once mentioned to an epicure that the Greeks must have had coarse palates, as they were so fond of assafœtida in their savoury sauces. He replied : "Nothing is more foul in smell and taste if used in large quantities ; but the slightest suspicion of it is most delicious—it is superior to the touch of garlic, without which no cookery is complete."

With the exception of a few ruined temples, gate-houses, basilicas, racecourses, theatres, and monuments, almost every vestige of Greek buildings seems to have perished. Yet I think we can have little doubt that when "Greece took rustic Latium" the Romans adopted or adapted most of the Greek buildings. We know that Greece eventually banished its conqueror's language in favour of its own, and the Greek language still flourishes, while the Latin is extinct. Plutarch died about 120 A.D.

Nothing remains, I believe, of the Greek private house (oikos) except what is preserved by words in Vitruvius, unless we include the houses at Pompeii and Herculaneum. When I was young nothing surprised me more than to read of the metallic palace of Alcinous, yet so late as Alexander the Great's time—B.C. 356-323 — Greek houses were so adorned. Plutarch tells us that "Phocion's house is shown to this day in the borough of Melita, adorned with some plates of copper, but otherwise plain and homely."

The main Greek buildings were the market-place and the meeting-place ('αγορά), the town-hall (πρυτανέιον), the exercising-place (παλαίςτρα), the racecourse (στάδιον), the bath (βαλανέιον), the hot baths (θέρμαι), the concert-room (ωδεῖον), the theatre (θέατρον), the lounge (λέσχη), the painted colonnade (στοά ποικίλη), the basilica (στοά βασιλικη), the treasury (θησαυρός), though this was mostly the opisthodomus of a temple ; and the prison (δεσμωτήριον).

You are not to imagine that the Greeks were a humane people ; the torture of Phocion was loudly called for, though he had been forty-five times the General, and mostly the successful General of the Athenians, and was over eighty years of age.

In Plato's "Republic," Glaucon says :—"The just man will be scourged, racked, fettered, will have his eyes burnt out, and at last, after suffering every kind of torture, will be crucified."

In the fourth volume of the Antiquities of Ionia, published by the Dilettanti Society, plans of an Agora and a Stadium at Priene are shown that were contributed by Falkener, and in his Ephesus there are plans of others ; the Agoras seem to have been open squares, surrounded on three sides by walls and porticoes, while one side only was enclosed by a double portico, and they mostly had a fountain in the middle ; against the walls were shops or stalls, the porticoes forming a covered walk in front of them. Aristotle, in his "Politics" (Lib. 4, cap. 12, pp. 196-197), speaks of two markets, one for the sale of goods and the other the *free* or *upper* market. Speaking of the former, he says :—"For this market is *ex hypothis* reserved for the necessary business of life, whereas the upper market is a place in which to spend one's leisure, and which he says is not to be soiled by any marketable wares."

In looking at the Stadium at Priene, you will observe one side has many more seats than the other, and the high side is crowned with a crypto-porticus ; the reason of this inequality of height is not apparent, but Falkener was kind enough to explain it to me. The seats of the high side were cut out of the rock ; this not only saved expense but enabled those sitting up high to look over the lower seats on the opposite side into the country beyond ; and the crypto-porticus was not only useful as a lounge, but made a crowning feature when seen from the plain below. The racecourses were, in Greek times, about 600 Greek feet long = 606¼ English feet, and 625 Roman feet. That at Priene is 630 ft. according to Falkener, and was possibly Roman. It is greatly to be deplored that Falkener was not asked to give a description and sketches of this and the Agora, and also of the Altar in Athene Polias at Priene ; the latter has disappeared since he measured it.

Theatres were treated in a similar way to the stadia ; the seats, stairs, and passages of the semicircle were cut out of the rock, or hillside, so as to save expense, and partly to use the upper part of the hill as a sounding-board, and the semi-circle was usually crowned with a crypto-portico and sometimes with an outside portico as well. On the ground floor alone the scene, the entrance-halls, crush-rooms, the staircases, and the actors' rooms had to be wholly constructed, mostly with a portico in front, and occasionally with an open court surrounded by crypto-porticoes. Several plans of theatres in Crete are to be found in Falkener's book on the subject, mostly copied from the illustrated MSS. of Onorio Belli, an Italian physician and dilettanti, who wrote it in 1556. At the town of Lysus, in Crete, Onorio Belli tells us there were three rows of the harmonic bronze vases I mentioned before, which he says "can be well seen in their cells."

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[*] Professor Aitchison's fifth Royal Academy lecture, delivered on Monday, February 13.

The musical notation in Greek days appears to have been effected by the letters of the alphabet, both the capitals and italics. To extend their application, and to distinguish the various modes the letters were placed in different positions, the direct, the averted, the inverted, and the horizontal.

The modes were :—

The Hypo-dorian.
" Grave - Hypophygian.
" Acute - Hypophygian.
" Grave Hypolydian.
" Acute Hypolydian.
" Dorian.

The Ionian.
" Phygian.
" Æolian.
" Lydian.
" Grave Mixo. Lydian.
" Acute Mixo. Lydian.
" Hypomyxolydian.

Sir G. Grove tells me the Greeks had fourteen scales, of which we use two, the major and the minor; two others of the fourteen were accounted ugly, and fell into disuse, the balance is what are called Gregorian modes (or scales); out of these are formed the Gregorian tones, *i.e.*, tunes, to which the Psalms in the Roman Church and in many Anglican are still sung. I daresay a good many of us, when we have read those lines of Milton

> "And ever against eating cares,
> Lap me in soft Lydian airs,"

as little thought he was alluding to the Gregorian chants as that we owe the foundation of our music to Pythagoras, Aristoxĕnos, and Euclid.

The Greek theory of education was to train each citizen to the right conduct of business and the noble employment of leisure. Aristotle says both are requisite, at the same time leisure is preferable to business, and is the end of human existence ("Politics," Book v., cap. 3); and he tells us the four usual subjects of education are—1st, reading and writing; 2nd, gymnastic; 3rd, music; 4th, the art of design. As "gymnastic" meant all the exercises that were done naked, music meant not only the learning the lyre and the flute, but all the poetry, too, which was sung to these instruments, and, as the poets were supposed to be inspired, the works of Homer and Hesiod were looked upon much in the same light as we now look upon the Bible.

The Lesché or Lounge was at certain places decorated with paintings. Pausanias devotes many chapters to those paintings in the Lesché at Delphi by Polygnotus, and these subjects have been illustrated by Falkener in his Classical Museum. The paintings are believed to represent the Siege of Troy and the embodiment of Homer's Hymn, and it is believed that the pediments of the Parthenon represent the latter, taken from Polygnotus' pictures. By some the λέσχη has been represented in the shape of a temple with three outside walls and with one side in antis, without the wall of the pronaos, with a peristyle, and open in the middle; but Mr. Falkener believes it was not unlike a stadium, or a double stadium with a wall down the middle, surrounded on all sides by a portico, and with circular or semicircular ends like those buildings found in Hadrian's villa at Tivoli.

I fancy the Greeks of the mainland used only tanks to bathe in, except when they had hot springs. Vitruvius tells us the Laconicum was so called from Laconia, from the hot baths of which the hot chamber was taken. The remains of baths and palæstræ in Ephesus have so much the air of Roman buildings that I have not thought it worth while to give you plans of them, and the same remark applies to the exercising rooms of the palæstra, and the sphairisteria, tennis or fives' courts.

We have all heard of the Seven Wonders of the Ancient World, though possibly but few of us could enumerate them; as they are all triumphs of the architect's or sculptor's art, I may safely name them, though I must tell you that different authors arrange their order differently, and give different ones—for instance, the labyrinth at Crete, and the altar made of horns by Lysippus at Delphi, are sometimes substituted for the ivory and gold statue of Phidias or the Pharos of Ptolemy at Olympia. Martial, unlike the parasite in "Gil Blas," was not so candid to Vespasian, but made the Flavian Amphitheatre not the eighth but the seventh wonder of the world.

> "Egypt, forbear thy pyramids to praise,
> A barb'rous work up to a wonder raise;
> Let Babylon cease th' incessant toil to prize,
> Which made her walls to such immenseness rise;
> Nor let th' Ephesians boast the curious art
> Which wonder to their temple does impart.
> Delos, dissemble, too, the high renown
> Which did thy horn-framed altar lately crown;
> Caria, to vaunt thy mausoleum spare,
> Sumptious for cost, and yet for art more rare,
> As not born up, but pendulous i' th' air.
> All works to Cæsar's theatre give place;
> This wonder Fame above the rest doth grace."
> (Anon, 1695).

They are now called—first, the Pyramids of Egypt; second, the Mausoleum; third, the Artemision at Ephesus; fourth, the walls and hanging gardens of Babylon; fifth, the colossus at Rhodes; sixth, the ivory and gold statue of Jupiter at Olympia; seventh, the lighthouse of Ptolemy Philadelphus.

As favourite subjects for architectural restoration, the Temple of Solomon, Porsenna's Tomb, the Mausoleum, the Artemision, and the Greek House, as described by Vitruvius, have been chosen. Hundreds of restorations of the Mausoleum have been made. Perhaps that which is not the least ingenious is the steeple of St. George's, Bloomsbury, by Nicholas Hawkesmore, Sir Christopher Wren's assistant and successor, who was not unfrequently associated with Sir J. Vanbrugh.

It is curious that the Mausoleum, which was so much admired and written about, which stood complete for at least 1,400 years, was never even decently described; and it is owing to the compiling industry of the Elder Pliny that in our time only have its ruins been absolutely identified, and some little more known about it. I give you the extracts from Strabo, 60 B.C.; Vitruvius, 80 to 11 B.C.; Martial, 43 to 104 A.D.; Pausanias, 174 A.D.; and Pliny, 23 to 79 A.D. I give Pliny last because he gives us a few dimensions.

Strabo, Lib. 14, cap. 2, 16. "Then follows Halicarnassus . . . . here is the sepulchre of Mausolus, one of the seven wonders of the world Artemesia erected in honour of her husband."

Vitruvius, Lib. 2, cap. 8, par. 11. "A terrace, in the middle of which the Mausoleum is built with such distinguished works, that it is called one of the wonders of the world."

Vitruvius, Lib. 7, proem par. 12. "Saturius and Phiteus wrote on the subject of the Mausoleum, and it was their real good fortune which conferred on them that highest and greatest task. For those men whose artistic powers are judged to have the highest praises up to the present time, and will have them in the future, also lent their exquisite workmanship to its design; I mean, that separate artists, Leochares, Bryaxis, Scopas, Praxitiles (and some think Timotheus also), in competition took their part on each front of the building in decorating it, and proving their own genius; and it was the extraordinary excellence of their art which pushed this work into the fame of one of the seven wonders."

Pausanias, 8, 16. "I know many sepulchres worthy of admiration, but I shall only mention two, one of which is in Halicarnassus, and the other in the land of the Hebrews. The former of these was raised for Mausolus, who reigned in Halicarnassus, and its magnitude is so prodigious, and its ornaments so magnificent, that the Romans, in consequence of the great admiration which it produced in them, call all their illustrious sepulchres Mausolea."

Martial (De spec: 1):

> "Nor let the Carian town exalt so high
> Its Mausoleum hanging in the sky,"

Pliny (Book 36, cap. 4):—"Scopas had for rivals and contemporaries Bryaxis, Timotheus, and Leochares, artists whom we are bound to mention together from the fact that they worked together at the Mausoleum; such being the name of the tomb that was erected by his wife Artemisia in honour of Mausolus, a petty king of Caria, who died in the second year of the hundred and seventh Olympiad" (his death is usually given in B.C. 353).

"It was through the exertions of these artists more particularly that this work came to be reckoned one of the seven wonders of the world. The circumference of this building is in all 440 ft. or 411 ft., and the breadth from north to south 63 ft., the two fronts being not so wide in extent. It is 25 cubits in height, and is surrounded with six and thirty columns, the outer circumference being known as the 'Pteron.' The east side was sculptured by Scopas, the north by Bryaxis, the south by Timotheus, and the west by Leochares; but, before their task was completed, Queen Artemisia died. They did not leave their work, however, until it was finished, considering that it was at once a memorial of their own fame and of the sculptor's art, and to this day even it is undecided which of them has excelled. A fifth artist also took part in the work, for above the Pteron there is a pyramid erected, equal in height to the building below, and formed of four-and-twenty steps, which gradually taper upwards towards the summit; a platform, crowned with a representation of a four-horse chariot by Pythis. This addition makes the total height of the work 140 ft."

The only other particulars are gathered from Hyginus, the Emperor Augustus's freed-man, who was Librarian to the Palatine Library (and whose description of the Mausoleum was discovered by Falkener).

The monument of King Mausolus, built of Parian, was 80 ft. high and 1,340 ft. round; by this latter dimension he is believed to have given its peribolus.

Sir C. Newton has given an extract from Guichard's "Funerailles des Rommaines," printed at Lyons in 1581, which is as follows:—

"The year 1522, when Sultan Solyman prepared to assault the Rhodians, the Grand Master knowing the importance of this place, and that the Turk ought not to encroach on it, at once sent several knights there to repair and put in order all that was necessary to sustain it against the enemy. Amongst them was the Commander De la Tourette, a Lyonese who was liberated after the taking of Rhodes and came to France, who gave the account which I am now going to relate to M. d'Alechamps, a personage well known by his learned writings, and whom I name solely that it may be known from whom I learned the history so remarkable. The knights having arrived at Mesy (now Budrum), began at once to fortify the castle; and to have lime, not finding any stone in the neighbourhood more fit to burn, nor found more easily, than certain steps of white marble which ran up in a flight in the midst of a field near the port, where the great square of Halicarnassus formerly was, they had these pulled down, and took them for this purpose. The stone being found good was the cause of their searching lower in the hopes of finding more when the little masonry that was above ground was demolished. This luckily succeeded; for in a short time they discovered that the lower they dug, the more the building spread out at the bottom; which furnished them with stone, not only to make lime, but to build with; at the end of four or five days after having made this great discovery, one day after dinner they saw an opening as if to enter a cellar; they took candles and let themselves down inside, where they found a fine great square hall, ornamented all round with marble columns, with their bases, capitals, architraves, friezes and cornices, sculptured in half relief; between the columns was covered with slabs, listels or fascias, of different coloured marbles, ornamented with mouldings and sculpture, in conformity with the rest of the work, properly arranged on the white ground of the walls, where nothing was seen but histories and battles in half relief. After having at first admired and then weighed in their imagination the singularity of the work, they at last pulled it down, broke and smashed it, to use it as they had the rest. Afterwards they found a low door, which led to another, like an antechamber, where there was a sepulchre with its vase and helmet of white marble, very beautiful, and wonderfully shining, which they did not open for want of time, the retreat having already sounded. The next day, after they had returned, they found the tomb uncovered, and the ground strewn with little bits of cloth of gold and spangles of the same metal; which made them think that the corsairs who swarmed along that coast, having got wind of what they had found there, had come in the night, taken off the cover of the tomb, and they held that they had found great riches and treasures.

Thus this superb tomb, accounted as one of the seven miracles and marvellous works of the world, after having escaped the fury of the barbarians, and remained the space of 1,247 years standing, at least buried in the ruins of the town of Halicarnassus, was discovered and destroyed to repair the castle of St. Peter, by the Rhodian Knights of the Cross, who were immediately afterwards driven off by the Turk, and from all Asia as well."

It is believed that the Mausoleum stood in a more or less perfect state until the twelfth century, shortly after which it is supposed to have been partially destroyed by an earthquake, and was spoken of as remains by Cepio, who visited it in 1472 in Pietro Mocenigo's expedition.

We now come to the time when Lord Stratford de Redcliffe got the sculptured friezes that were built into the walls of the Castle of St. Peter, at Budrum, and presented them to the British Museum. The next is the arrival of Sir C. Newton, at Budrum; he was only concerned in the sculpture, so that the site of the foundation was covered up when Pullan arrived. As nothing but the remains of the quadriga, some of the steps of the pyramid, some pieces of the columns, and their entablature were found, he began by allowing a sufficient space for the quadriga, and then worked in the twenty-four steps from the remains found. This showed him the actual size of the bottom of the pyramid, and enabled him to set out the thirty-six columns—viz., nine at each end and eleven on each side, and the bases of these gave the stylobate 119 ft. by 88 ft. 6 in., allowing a space at each end for the lions, which make up 415 ft.—quite near enough to Pliny. By means of the remains of the coffering, Mr. Pullan obtained 63 ft. and 62 ft., as the sides of the chamber resembling the naos of a temple on the first floor behind the peristyle, and which he supposes to be the part mentioned by Pliny as 63 ft., only he does not attempt to construct the chamber according to Guichard either on the ground or first floor, and it is not to be supposed that a Knight of St. John, who had lived in the East, would call the sepulchral chamber, 22 ft. by 14 ft., a fine large square chamber.

I confess there is great difficulty about it; for if we suppose the steps were those of the pyramid *in situ*, what could have raised the ground 80 ft.? If, however, we suppose the steps had fallen in a mass on to the stylobate beneath, we still have over 40 ft. to account for, and even supposing the peribolus to have been surrounded with houses and other buildings, unless these had been heaped up, they could not all have fallen in that place, even supposing the peribolus itself was covered with houses too, over 40 ft., not to speak of 80 ft., is a great height to fill up; but if not, what becomes of Guichard's Hall and his statement that the mausoleum was buried in the ruins of the town?

It is most probable that the stylobate was ornamented with rows of sculptured friezes like the Neroon at Xanthus, of which there is a part and a complete model at the British Museum, but as there were no traces of these, Pullan has wisely omitted them; he gives the lower diameter of the columns as 3 ft. 5·35 in., taking the order at the proportion prescribed for Ionic columns by Vitruvius (Lib. 4, cap. 1), or $8\frac{1}{2}$ diameters = 29 ft. $3\frac{1}{2}$ in., and the measured entablature 8 ft. 6 in. = 37 ft. $9\frac{1}{2}$ in., quite near enough to agree with Pliny's 37 ft. 6 in., this from the 80 ft. of Hyginus leaves 42 ft. $2\frac{1}{2}$ in. for the stylobate. Pullan makes the total height of the steps of the pyramid 24 ft. 6 in., and to the head of Mausolus, in the quadriga from the platform on which it stands, 13 ft. $3\frac{1}{2}$ in. = 37 ft. $9\frac{1}{2}$ in., though I think it must have been higher, 14 ft. at least. Pliny gives the total height at 140 Roman feet = 136 English feet; this would allow a pedestal on the pyramid of 17 ft. 6 in., for it must be supposed that there was a high plinth on the cornice, at least as high as the projection of the sima. The top would then be much like the Lion tomb at Cnidos; to make the height agree with Pliny, we have only to take the 37 ft. $9\frac{1}{2}$ in. to the top of the lower pedestal, which gives 11 ft. $9\frac{1}{2}$ in. for the pedestal, and allow 4 ft. or 5 ft. to the bottom of the quadriga group as its base, like that of Cnidos.

The pyramid and square base of the lion tomb is 13 ft. 10 in., and thence to top of lion 18 ft., 6 ft. for the lion, about 6 ft. for its base, and plinth, and 5 ft. 6 in. for the pedestal on the pyramid.

The tomb of Cyrus at Pasargadœ is not very unlike the mausoleum, and as Cyrus died in 529 B.C., it may have partly served as a model. Arrian (Lib. 6, cap. 29) describes it as follows:—"The basis thereof consisted of one large stone of a quadrangular form. Above was a small edifice, with an arched roof of stone, and a door or entrance so very narrow that the slenderest man could scarce pass through. Within this edifice was the golden coffin, wherein the body of Cyrus was preserved."

All the ornament of the mausoleum was picked out in red and blue, and the marble appears to have been coloured dull yellow.

The splendid drawing by the late F. P. Cockerell, from Professor Cockerell's restoration (done before Pullan had made out the size of the pyramid, as the peristyle is made dipteral), was presented to the British Museum by Mrs. F. P. Cockerell. Falkener (in the Classical Museum) and Mr. Watkiss Lloyd restored the mausoleum as a dipteral building. Vitruvius says the mausoleum had been pushed into the rank of one of the Seven Wonders of the World by the excellence of the sculpture: so he evidently did not think much of it as an architectural triumph. I think we may say that Professor Cockerell much exceeded Satyrus and Phiteus in designing skill, for I think most of you will agree with me in considering it a most elegant design for a king's tomb.

We find from Vitruvius (Pro. Lib. 7) that "Ctesiphon of Gnossus and his son Metagenes built the Artemision, and also that it was afterwards completed by Demetrius, a priest of Diana, and Pæonius the Ephesian. Pæonius and Daphnis the Milesian built the Temple of Apollo at Miletus of the Ionic order." This completion was the rebuilding after it was burnt down at the death of Socrates in 399 B.C.

I may here remark that such is the influence of writing, that our own brother Vitruvius, who was acquainted with the books, does not seem to be aware that the Artemision of his time, the eighth, was built by Alexander the Great's architect; for the aliases he chose to go by concern his fame and not us. Vitruvius calls him Dinocrates; Strabo, Cheirocrates; and Plutarch, Stasicrates. The sixth temple must have been very splendid, since Xerxes spared it, on account of its magnificence, and either this or the seventh of Pæonius seems to have had sculptured drums to the columns and to have had the simas or (ʽεπιτίθιδες) sculptured with figures, both of which may be seen at the British Museum.

Pliny (Lib. 36, cap. 56) tells us that at one of these eight temples, the first Ionic columns, or at least volutes were first used, and that in addition to these columns there are what are called attic columns, quadrangular, with equal sides, which I do not think has been noticed before. Mr. A. S. Murray pointed out to Fergusson that the square pedestals found by Wood had once had columns on them, and Fergusson adopted this theory in his restoration. With the exception of laudatory remarks on the temple, the only particulars are, I believe, given by Pliny, which I now give you:—

Pliny. Book 36, cap. 21 (14): "The Temple of Diana at Ephesus.—The most wonderful monument of Grecian magnificence, and one that merits our genuine admiration is the Temple of Diana, at Ephesus, which took 120 years—more commonly stated as 220 years—in building; a work in which all Asia joined. A marshy soil was selected for its site, in order that it might not suffer from earthquakes or the chasms which they produce. On the other hand, again, that the foundations of so vast a pile might not have to rest upon a loose and shifting bed, layers of trodden charcoal were placed beneath, with fleeces covered with wool upon the top of them. The entire length of the temple is 425 ft.—413 ft. 1 in. English—and the breadth, 225 ft.—218 ft. 7 in. The columns are 127 in number and 60 ft. in height, about 58 ft. 4 in. English; each of them presented by a different king. Thirty-six of these columns are carved, and one of them by the hand of Scopas. Chersiphron was the architect who presided over the work. The great marvel in this building is, how such ponderous architraves could possibly have been raised to so great a height. This, however, the architect effected by means of bags filled with sand, which he piled up upon an inclined plane, until they reached beyond the capitals of the columns; then, as he gradually emptied the lower bags, the architraves insensibly settled in the places assigned them. But the greatest difficulty of all was found in laying the lintel, which he placed over the entrance doors. It was an enormous mass of stone, and by no possibility could it be brought to lie level upon the jambs which formed its bed; in consequence of which the architect was driven to such a state of anxiety and desperation as to contemplate suicide. Wearied and quite worn out by such thoughts as these, during the night, they say, he beheld in a dream the goddess in honour of whom the temple was being erected, who exhorted him to live on, for she herself had placed the stone in its proper position, and such, in fact, next morning was found to be the case, the stone apparently having come to the proper level by dint of its own weight. The other decorations of this work would suffice to fill many volumes."

Pliny by the 220 years must mean the last three temples built on the same site, for the seventh temple was burnt by Erostratus the day Alexander the Great was born, B.C. 356.

The blundering of our Government when anything connected with the arts is in their hands cannot be too strongly deplored. The first object is to discourage and, if possible, extinguish the obnoxious proposition; when this fails, to exercise, in the first instance, the greatest parsimony, and this usually entails the most lavish expenditure, with the least possible results. Nothing can illustrate this better than the proceedings at Ephesus. 1st. Wood was to find out the site of the temple at his own expense. Small sums were then doled out, until the temple was found; when it, and some of the marbles were found, a grant was made, but one insufficient for a perfect exploration; the work was then abandoned, and is so to this day, long before there is any assurance that still more valuable results may not be obtained by excavations up to and beyond its peribolus. This information would be most valuable to architects, antiquaries, and scholars. In England the book is left to haphazard publication, for if it does not strike a publisher as being likely to pay well, and if the explorer is not a man of fortune, even the little knowledge obtained will in all probability be lost for ever to the public who has paid the expense of the expedition. In this case, nothing but a popular book has been published, while it is of the utmost importance that the most perfect records should be published of what has been found by the discoverer. At Ephesus, for instance, theatres and other buildings were explored as well as the Temple.

In France a learned antiquarian or two, who have devoted themselves to the subject, are usually associated with two architects, and a competent figure draughtsman, and a complete and erudite book is published most perfectly and beautifully illustrated.

A topographical map and a plan of the town should be in the room at the British Museum, a model of the site showing where each fragment was found, and a model of the Temple restored to its pristine condition, with the colouring and accessories, to make the discoveries even comprehensible to the general public. I trust it is not too late for the Government to have a properly illustrated book of these discoveries published. You will be astonished to hear that the works of Sir C. Newton and Mr. Pullan on the Mausoleum were published at their own expense.

Fergusson in one of his numerous restorations has shown how the 127 columns may be got in by using an odd one at the end of the posticum, which with great probability was used, for the back of the Temple was hidden from general view by a hill. It also seems likely that the sculptured bases, besides those of the front, were put on the flank next the town, where they could always be seen. His theory about there being a sculptured stylobate, instead of steps on three sides, must remain an open question, though Wood has some evidence on his side from Philo, who gives ten instead of fourteen steps. These sculptured drums alone are original, beautiful, and unique, not to speak of the square pedestals, and would give unusual magnificence to the building. I would beg you to notice this invention; nothing is altered in the Ionic column, a piece of figure sculptor's work is simply introduced in the place of the lower part of the fluting. I have also not thought it worth while to give an illustration of this temple, as it is in no wise different from others, except in the sculpture on the columns I am indebted to Mr. A. S. Murray for the loan of his restoration. The ornamental sculpture on the neckings at the Erechtheion is a similar invention.

I will say a few words on the favourite subject for sculpture in the Artemision, the Mausoleum, and some of the Athenian buildings—the Amazons. They have been dismissed as fabulous, and the celebrated interview of Alexander the Great with them and their Queen as merely a May-day show; but Mr. Tyler, who has lately been lecturing on the Hittites, gives the following remarks, and assigns their habitation to the River Thermodon, in Pontus, and you may recollect that Herr Puchstein and M. Chipiez tell us it is from Cappadocia that we may look for the beginnings of Greek art and civilisation.

"But here," said Mr. Tyler, pointing to another part of the storied field, "was a long procession of women, each having what might be regarded as an unstrung bow, and their appearance altogether was in accord with that character of warrior-priestesses which had been attributed to the Amazons. Moreover, there was the striking fact that Boghaz-Keni was not far distant from the locality which the Greeks assigned as the head-quarters of the Amazons by the River Thermodon. If it was contended that the Amazons were purely legendary, these sculptures might be looked upon, at any rate, as showing that the story of these female warriors was believed in what might be called their own country. There was, moreover, in the Hamath inscriptions what looked like the indication of female warriors armed with club and sword."

In the rapid sketch of Greek architecture I have given you, I have shown you a model of artistic perfection that has never been surpassed, that has not even been equalled by the gifted races of Etruria and its neighbourhood; I have shown you what has been achieved by a profound knowledge of geometry applied to proportion, and to the grace and subtlety that has accrued in the working up of a commonplace type by a highly sensitive and gifted people; and I have hinted at the increased interest to be gained by combining the arts of sculpture and painting with our own. Xenophon, in his memoirs of Socrates, tells us that a celebrated wrestler said "he could tell his pupils from others by the bearing of their bodies, even when they went to the shambles for meat." I hope we may in future know the buildings of an Academy student by their truth, the charm of their proportion, their beauty, and the perfection of their details.

I must return my thanks to so many for the assistance they have lent me that I might almost fill one lecture with them. To Mr. A. S. Murray, to the South Kensington Museum for Fergusson's model of the Parthenon, to Professor Smith for the favour of his diagram, to the "Guardian" Fire Office for their chromolithograph, to Sir G. Grove, Mr. Holmes, Mr. Tadema, and a host of other private friends, for information, translations, books and suggestions.

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## TERRA-COTTA.*

I DOUBT if at any time when great works were erected it has ever before been open to the architect and the contractor to build in so many different ways, and use such various materials. Consider for a moment what was in use when Westminster Abbey was erected. We find in that building only stone of various sorts, including marble, sand and lime, timber, lead, glass, tiles, and a very sparing use of iron, and no other materials. If we come down to the erection of St. Paul's we find the same materials with the addition of brick and copper. At the present day we have, in addition to these, one entirely new material, namely, Portland cement, one virtually new, namely, steel, never till now available for structural purposes. We have the natural cements, such as Roman cement, &c.; and we have concrete in various forms, artificial stone, sundry metals, and lastly, terra-cotta. These additional materials (save Portland cement) are developments or new applications or revivals of materials already known to the world, and though virtually new to us are not new to the art of building.

Among these revived and developed materials terra-cotta is taking an important place; it is being extensively employed, and this being so, I have thought that it might very suitably form the subject of a lecture in this course, and that photographs showing its use in ancient and in more modern but past times, and in our own day, might usefully serve as illustrations.

The name terra-cotta is Italian, and, literally translated, means "burnt earth"—a title which, of course, might include bricks, but the term is always understood as meaning a material made of finer earth than the brickmaker uses, and more thoroughly burnt; a material to be employed in building for decorative purposes, and usually made in blocks larger than bricks, and of a different shape. Terra-cotta is *not*, however, artificial stone, and it partakes more of the nature of brick than of stone. While stone is wrought with the chisel or the pick from the block in a hard state, terra-cotta is modelled or cast in the plastic clay or earth in a soft state, and then dried and fired. Stone, it is true, is used, as is terra-cotta, to finish or ornament a building, but most of the ornaments, mouldings, and features which can be readily cut out of stone with a chisel are different from what can be readily modelled in soft clay, or cast in that material in a mould. There is, accordingly, a proper terra-cotta treatment, and a proper stone treatment, of ornament, and to deal with terra-cotta as if it were artificial stone is not to use the material the best way.

Terra-cotta belongs to the most ancient of the articles man has manufactured. To quote Sir Charles Lyell "burnt bricks, jars, vases—the human figure in burnt clay—are found in the remains of submerged towns, in the channels of the Nile and Upper Egypt, in the Mexican buried cities of America, and elsewhere, as the enduring types of the civilisation of peoples and races whose names even are not known in the pages of history. Granite disintegrates and tumbles into particles of mica, quartz, and felspar. Marble soon moulders into dust of carbonate of lime, but hard, well-burnt clay endures for ever in the ancient landmarks of mankind."

The earliest specimens of terra-cotta that we have—and they are of very great antiquity—were not manufactured for building purposes or for ornament, but for the very dissimilar purpose of writing materials.

The ancient Babylonians, Assyrians, and Egyptians used to prepare tablets of clay, to write on them while soft with a pointed stick, and then to fire them. A tablet such as one can hold in the hand, or a small cylinder, covered with writing, was made to hold a long inscription, and practically indestructible. The famous Tel Amarna letters were tablets of this sort. There are hundreds of these tablets in the British Museum. To many of the most ancient of them is ascribed an antiquity of not less than 3,000 years, and to some even more, and they can be read with ease (by those who know the language) to-day, so indestructible a material is terra-cotta.

The first nations to use terra-cotta for many purposes of ornament (so far as we know) were the Etruscans and the Greeks. The Etruscans were the people who lived in the central part of Italy before the Roman day. The country they occupied extended from Rome to Florence, and they have left behind them the remains of many cities, with cemeteries, and in the tombs of their cemeteries they had the habit of burying jars and ornaments of terra-cotta, some of which were made in the country, while others were brought from Greece. They made large funereal chests, or sarcophagi, of this material. A sarcophagus was a glorified sort of coffin, large enough to contain a corpse, and was intended to bear on the lid a life-sized effigy of the deceased, executed in terra-cotta.

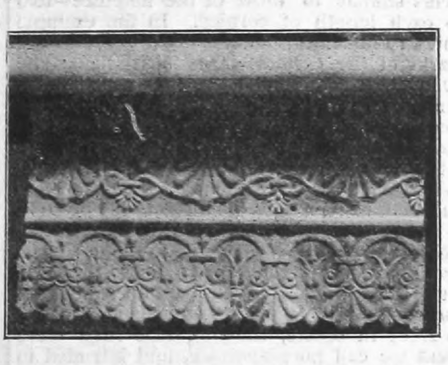
*Terra-cotta Statues. (British Museum.)*

Sarcophagi are represented in the British Museum by two fine specimens, one a little more than 2,000 years old (say 2,100), the other much more antique and singular, and probably at least 400 years older. The points that will interest you most about these curious specimens are the perfect preservation in which they have come down to us, and the singular mastery of a difficult manufacture which had been attained so long ago. I doubt if Lambeth at the present day would find it easy to turn out such large specimens of terra-cotta better or more free from defects.

Beyond mentioning the subject I shall not speak to you about Greek and Etruscan terra-cotta vases, for they seem to have more relationship to pottery than to building, but there is another manufacture of ancient terra-cotta which I cannot bring myself quite to pass over: I allude to the statues, chiefly, but not always, those miniature statues, which are usually known as statuettes. These seem to have been favourite ornaments of the Greeks and Romans, and of the people influenced in their tastes by Greek civilisation, and they were very frequently placed in tombs, where most of those now in our own and other museums have been found.

These statuettes were *cast* in moulds, and many of them are graceful and pleasing to the last degree. You can find hundreds of them at the British Museum, ranging in age from 2,600 years to 1,800, or thereabouts, and still more in Paris. In addition to their great beauty, they illustrate for us the ease with which ornamental work can be reproduced in terra-cotta, and the extraordinary durability of that material under reasonably favourable conditions.

Coming now to that which more nearly interests us, namely, the application of terra-cotta to building, we have in the British Museum an illustration of the striking antiquity of its use, brought, like the great sarcophagus which I have already referred to, from the buried remains of an Etruscan city. It had been understood from classic writers that it was customary in Etruria to erect buildings partly of timber and enrich them with ornaments done in terra-cotta, and consequently specimens of the ornaments so used have been sought for. Some have at last been dug up in Civita Lavinia, near Rome. These are attributed to the sixth century before the Christian era, that is to say are now 2,500 years old, or thereabouts. They are of Greek design, and possibly Greek manufacture. What is shown is part of the side cornice of a building, believed to have been a small Greek temple, with part of the ornamental frieze which crowned the wall. The sloping cornice of a pediment or enriched gable end, and a series of extremely elaborate and striking ornaments known by the Greek name of *antefixæ*, which were employed at intervals along the line of eaves. The great beauty of this work will strike the eye, and the capacity of terra-cotta for receiving ornament is illustrated by it.



*Frieze from Civita Lavinia (Etruscan). (British Museum.)*

From the same place a series of ornamented slabs have been obtained, which appear to have been fastened by bronze pins to a timber structure, and a considerable number of such slabs have been found at Civita Castellana, the ancient Falerii, an Etruscan site, and are now in a museum at Rome.

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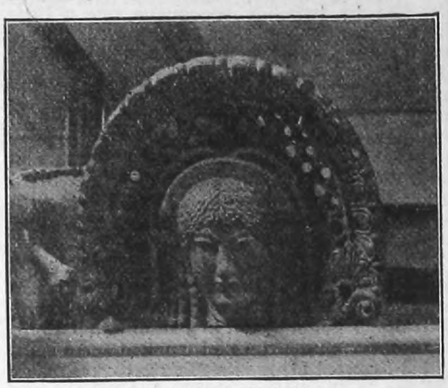
* A lecture delivered at Carpenters' Hall by Professor Roger Smith, on the 21st ult.

The colour of all this terra-cotta is of brownish cream colour, very similar to the colour of most of the terra-cotta in use in London now. The very fine specimens, such as statuettes and vases are generally paler than the larger pieces, but I do not recollect ever seeing any ancient terra-cotta that is red.



*Acroterion from Civita Lavinia (Etruscan). (British Museum.)*

At Civita Castellana remains of the terra-cotta cornice of a building of very similar character to those set up in the British Museum have also been found and taken to Rome, and are described in an Italian archæological publication. Taking these two examples as illustrating one another, it seems clear that the terra-cotta was secured to a simple, timber-framed structure with a span roof having a gable at each end. The roof was covered with large flat tiles of terra-cotta with a flange at each edge. Each joint was covered by a large terra-cotta roll. The underside of some of the tiles was painted for a few inches, indicating by how much they had overhung at the eaves. At the end of each of the rolls just alluded to was a large and rich ornament known as an antefixa. This rose about 18 in. above the eaves. It was fixed at right angles to the plane of the roof, and consequently sloping a little forwards. The ornament was held in place by a stout terra-cotta strut which went back to the roll, and there still can be seen in the Falerii example the carefully formed opening through which a pin, no doubt of bronze, was passed to fix the whole securely to the timbers. Below the eaves the wall was enriched with plaques covered with rich ornament.

At the gable ends there was secured to the timber a moulded and enriched cornice of considerable height but of little projection, ending in a hollow crowning moulding and having two large beads and secured to the roof by curved struts similar to those of the antefixæ—two to each length of cornice. In the example now in London this cornice is painted, and the marks of the careful steady brush held some twenty-five centuries ago by some Etruscan ornamenter can be followed to-day by us in this specimen of his handiwork now stored in Bloomsbury.

Some ornamental tiles, for which it is hard to find a place, were found at the same spot, but there can be little doubt as to the position of a tile adapted to be the central ornament which crowned the gable of the Civita Castellana example, and they have found at the same place other tiles on which the same ornament runs from right to left in some, and from left to right in others, showing that they were what we call purpose-made, and intended to go right and left from the centre of the gable.

By the courtesy of Dr. Murray, Mr. Elsey Smith has been permitted to take some photographs for you at the Museum, and these will illustrate some of the matters just described.

Terra-cotta seems to have practically dropped out of use for a thousand years and more, and we next meet with it in certain countries during the Middle Ages, and still more frequently when matters were ripening for that outburst of revived Classic which we call the Renaissance, and which is the starting point for all modern art. Its use was resumed chiefly in countries where stone is scarce and timber not used in abundance, such as the alluvial plains of North Italy, Holland and the Netherlands, South-Western France, and many parts of North Germany and of Spain.

The material does not seem to have been much employed, if at all, in the comparatively rude buildings erected before the great church-building age of Europe, namely, the thirteenth, fourteenth, and fifteenth centuries; it is met with much more frequently on buildings of the fourteenth and fifteenth century than in those of the earlier century. When the great change of taste occurred at the end of the fifteenth century terra-cotta held its ground for some time. It is true that in the buildings which were almost direct copies of ancient Roman ones, with columns, cornices, and porticoes, it was little employed; but it was freely used in those buildings which abound in the early stage of the Renaissance, where the new Classic features and ornaments and the Gothic ones are more or less blended, and where comparatively small arches and windows and profuse ornament were introduced; and it gradually went out of use as the general taste in architecture turned towards big features, such as could be best executed in stone or marble.

The cities of Milan and Pavia contain the finest examples of the use of this material, and nowhere is it so appropriately employed as in the Certora or Charterhouse of Pavia, a great Carthusian monastery, with cloisters and a large church of great richness and beauty; but in many other North Italian towns good specimens can be found.

Generally speaking, the terra-cotta there employed is in small blocks of very nearly the same coloured red as the bricks with which it is used, and very richly covered with cast ornament. Nothing to suggest that it is an artificial stone occurs. It always impresses one as a refined and ornamental brick, and this circumstance makes the Italian terra-cotta extremely useful to the designer.

In England, very few examples earlier than the Renaissance are to be found; still there are a small number of Gothic buildings with terra-cotta panels and other ornaments, and the beautiful moulded brick chimneys and ornaments of Tudor mansions may be claimed as coming within our range. When the sixteenth century brought to this country the new architectural style, the employment of terra-cotta became more customary. There are, for example, a series of terra-cotta busts of Roman Emperors used as ornaments at Hampton Court Palace, and other works in the same material at the same building; and two well-known monuments in terra-cotta, dating from early in the sixteenth century, stood in the old Rolls Chapel till it was very recently pulled down.

In Norfolk and Suffolk—counties where stone has to be brought from a distance—there exist a considerable number of mansions dating from about this time, in which terra-cotta, partly in the shape of fine moulded brick, is used for almost all the ornamental work; and the same thing occurs occasionally in other southern and western counties. In the shape of moulded and enriched brick, especially for the cornices and chimneys of domestic buildings, the use of material analogous to terra-cotta continued through the seventeenth century, and to some extent in the eighteenth.

The modern employment of terra-cotta may be said to date from as far back as 1786, when a Miss Coade started a factory in Lambeth for terra-cotta and artificial stone. It stood near where Eastwood's wharf now is, and under various names continued till about thirty years ago. A good many pieces of sculpture were executed here, among them the pediment at Greenwich Hospital, representing the death of Nelson. Rossi and Bubb, who, it is said, had been employed at Coade's works, and afterwards set up for themselves, executed, among other works, the eight figures called caryatidæ, standing at the north and south porticoes of St. Pancras Church, and the antefixæ, or small erect ornaments, on the principal cornice. These must have been set up about the year 1819, and so have been standing eighty years. The statues were executed in tolerably large blocks, and, though much discoloured by smoke, they appear to have stood the London climate extremely well; and the antefixæ, exposed to the full force of the weather, appear to be quite complete and in good condition, and, unless they have been renewed, their condition is a tribute to the durability of terra-cotta in the London atmosphere.

The names of Blashfield, Blanchard and Doulton, Gibbs and Canning, Pulham and Edwards are among those which become prominent in the more recent development of terra-cotta. In the hands of these and other manufacturers it has been to a remarkable extent employed as a building material.

For some of these and other details I am partly indebted to a very exhaustive paper by Mr. Charles Barry in the "Proceedings of the Royal Institute of British Architects."

The more recent use of terra-cotta for important buildings may be said to be associated with South Kensington. The Science Schools; the Albert Hall, by General Scott; the Natural History Museum, by Mr. Waterhouse; and more recently the Central Technical Institute by the same architect, and the Imperial Institute, by Mr. Collcutt show specimens of its use; the Natural History Museum being an especially important example. In other parts of London one may point to the Constitutional Clubhouse, by Mr. Edis; the Palace Theatre and City Bank, Ludgate Hill, by Mr. Collcutt; and the Prudential Insurance Company, by Mr. Waterhouse. Two very large terra-cotta hotels are now building.

The number of buildings in London of more moderate extent in which the material is employed is now so very great that it is not possible to do more than refer to one or two conspicuous instances. In Essex-street, Strand, there is a remarkable Renaissance front (by Mr. Gordon) covered with well-designed ornament, and well worth examining, as showing the capabilities of the material. Even more striking is the front of a recent building by the same architect in Parliament-street, near Whitehall, where the finely-worked terra-cotta enrichments are combined with brickwork. Here, however, there is in some respects an attempt to disguise the terra-cotta as stone. The theatre at Peckham, by Mr. Ernest Runtz, is a good recent instance of the successful employment of this material in which it is quite possible to fail as well as to succeed. Witness its employment in the recasting of the Russell-square houses.

Terra-cotta is now manufactured with a high glaze and of various colours—in which condition it resembles faïence or glazed earthenware, and the two materials can both be employed and can be combined alike in the exterior and the interior of a building. Only a few days ago the President of the Royal Institute of British Architects said from his official chair that it was "refreshing even to think of London and other manufacturing towns presenting us with beautifully-coloured and enriched fronts that do not want painting every year," and regretted that "coloured and glazed materials for external facings, where the greatest beauty of colour and form may be used," were so rarely employed. This is now within reach, and the Birkbeck Bank in Southampton Buildings, Chancery-lane, the design of Mr. T. E. Knightly, for which Messrs. Doulton made the terra cotta and faïence, is an unusual example of this employment of glazed and coloured materials. The extensive and extremely striking interior is not yet open to the public; and I shall therefore only say that when it is so open it will be well worth the while of any one having any interest in the subject of this night's lecture to inspect it.

I have not sought for opportunities of showing you in the lantern what you can so easily see for yourselves in London streets; but I am glad to be able by the kind assistance of professional friends to show you what has been done in Birmingham.

The Assize Courts, the work of Mr. Aston Webb and Mr. Ingres Bell, are executed entirely in terra cotta inside and out. The building is ornate but very effective, and the ornament, though it is profusely employed in parts of the building, does not interfere with the general breadth and dignity of effect, and is itself appropriate and beautiful.

The new hospital, the work of Mr. William Henman, who has most kindly caused photographic slides to be made for you, is a building of red brick with red terra-cotta enrichments, and very great pains have been taken to make the most appropriate use of the material, and Mr. Henman has introduced allegorical figures, modelled by Mr. J. Wenlock Rollins, of Chelsea, some of which appear in the photographs. He has attached importance to the surface given to the terra-cotta made for him by Messrs. Doulton. This is granular. "I had noticed," he writes, "that most terra-cotta cracked all over its surface and eventually much of the face peels off, and after careful observation, extending over some time, I came to the conclusion that it was caused by the slight glaze on most terra-cotta. This results from silica coming to the surface in the act of drying before burning.

This glazed surface is naturally cold and of greater density than the substance of the terra-cotta. Unequal contraction and expansion cause the cracking. Condensation on the cold surface, and frost cause the peeling. It, therefore, seemed to me that by corrugating or rather granulating the surface the cracking might be prevented, and, consequently, the peeling. The result has been most successful in this respect, and the general appearance is, in the opinion of all who have expressed their views to me, greatly to be preferred to the partially glazed effects."

I propose here to say a little about the manufacture and qualities of the material and later on something about its artistic capabilities.

Terra-cotta is a refined kind of brick; and, like brick, it varies in colour, texture, and durability. Speaking generally, the principal ingredient is either fire-clay or one of the fine plastic clays fit for use in making good earthenware, such as are found in Dorset, Devon, and Cornwall. This is generally mixed with a portion of fine sand and of old pottery or terra-cotta ground to a fine powder. The proportions—especially in cases where it is found best to mix two and more sorts of clay together—are the secret of the manufacturer, and are the result chiefly of experiment. Sometimes other ingredients are added with a view to serve as a flux to promote the fusion of the whole mass in the kiln. Much pains is taken to secure that all the materials shall be thoroughly and most intimately mixed, as the success of terra-cotta largely depends upon the material being quite uniform all through, so as to dry and burn uniformly, for warping and getting uneven and out of shape, is the disaster of which there is the greatest danger. The prepared material is moistened with water and so brought to a state in which it can be moulded.

For building-blocks a model is made of each sort of block required, from this a plaster mould is taken, and the clay is pressed into that mould and the piece so cast is carefully dried in hot air, and in drying becomes tolerably hard and firm. During the drying it shrinks, and if there be unequal shrinkage it warps and may be spoilt.

Sometimes terra-cotta work is not cast, or only parts of it are cast. In what is called the "direct work" process it may be modelled by hand, or ornamental pieces may be built up. This gives the opportunity for employing original work, varying from work of the highest artistic character to simple enrichments modelled in clay instead of being carved in stone, but capable of being undercut as castings cannot be.

The pieces of terra-cotta when dried are burnt in a kiln. It is possible to correct small irregularities that have shown themselves as the result of drying before burning.

The kiln is usually what is called a muffle kiln, that is to say, a kiln with a lining of brick-work within, and separate from the fabric of the kiln itself, so that the flame may not play direct on the goods. There is, I believe, room for a good deal of skill, or the reverse, in the charging of the kiln. It takes, roughly, a ton of coal to burn a ton of terra-cotta. The heat developed is very great, and the result ought to be to fuse or vitrify the entire mass of each bit of the material. In firing, the ware is commonly subjected to the action of a salt glaze, and the surface, after firing, ought to stand a test which I had best describe in the words of Sir Henry Doulton: "Take a sharp-pointed steel instrument, and if you can make an incision with it in the terra-cotta the tooth of time will attack it; but if it turns the sharp point of the steel you may be sure it is imperishable. The other test is acid, which in a short time will test its durability." On leaving the kilns the terra-cotta is very carefully and slowly allowed to cool.

The finished blocks do not ordinarily exceed from 3 ft. to 4 ft. cube, and in many cases are much smaller than that. Their height and their depth from front to back should be arranged so as to bond with brickwork. The blocks are always made hollow, partly to economise valuable material, partly to secure that the heat of the kiln shall completely pervade every part of the material. The ends of the block are, of course, solid, and if it is of any size one or more cross-pieces are formed to strengthen the sides and front; the back is usually open. It is customary and desirable, notwithstanding that terra-cotta is very strong, to fill up the hollow space with cement concrete, made with rather fine materials. Some authorities prefer Roman cement for this purpose, since some specimens of Portland, especially if not air-slaked, swell a little, and this is liable to crack the blocks if it occurs.[*]

The finished piece of terra-cotta has shrunk from what it was when moulded. Part of the shrinkage takes place in the drying, part in the burning, but the usual result is that it is about one-thirteenth smaller every way. If, therefore, you desire to produce a block measuring 12 in. by 6 in. by 9 in., your mould must be 13 in. by 6½ in. by 9¾ in. This introduces one of the difficulties with which the manufacturer has to contend. The detail drawings sent by the architect show the size and shape that the finished article must be. The manufacturer or the architect has to redraw the whole to an enlarged scale and make the model to that enlarged scale, and the labour involved in this enlargement is often very great, nor is it always quite certain that the shrinkage will be exactly what is anticipated.

A further difficulty rises out of the irregularities which spring up in the kiln. Lines that ought to be straight are wavy. Surfaces that ought to be true are a little curved or hollow. The colour also is not always quite uniform when the articles are compared with one another. Where the heat has been greatest, the terra-cotta may prove to be darker than the average; and either the irregularity in shrinkage, in truth of line and surface, and in colour of exterior may be enough to cause a block to be unfit for use, much more if it is defective in more respects than one. There is also a liability to fire-cracks.

The advantages which terra-cotta possesses over stone are, first, the invaluable one that it is, when exposed to an acid atmosphere, more durable, being practically indestructible when good. Secondly, that it is cheaper, and if much enriched, considerably cheaper than stone. Thirdly, that it admits more readily of high-class original sculpture, or, at least, original modelling; and, fourthly, that it admits—nay invites—a profuse use of appropriate ornaments, that is to say, such as can be cast in a mould and repeated many times over. Lastly, the colour is often good and is very much under control; and the material is far more suitable for use with brickwork than stone.

There are some minor advantages and some applications to modern uses to be named. It is stronger than stone, and yet lighter, which is advantageous for carriage, hoisting, and handling. Its surface does not readily hold impurities, so that it remains clean, and the rains wash it, and when used inside a building it can readily be cleansed. It is more available for casing in the structural ironwork of a building so as to protect it in case of fire, than any other material, and when so used it can be run into suitable shapes or ornamented without interfering with its usefulness as a fire jacket. Terra-cotta tubes make the best smoke flues and ventilating flues, and terra-cotta bars are now often used to go from joist to joist in fireproof floors and to carry the concrete or tiles.[†]

The drawbacks to the use of terra-cotta are, however, not few, and some of them are serious. The first and the most important is that it involves delay, and it is not, like masonry, prepared on the job.

From the time when the manufacturer receives the drawings till the delivery of the first cargo on the work you may fairly reckon on a delay of not less than six weeks at the very least, and then it may be that the blocks wanted first come to hand last, and, what is worse, that some block which is essential does not come at all, or comes too short or too long, or in some other way deficient or defective, and must be replaced. It is fortunate if the new block can be obtained in a month, and meantime it is quite conceivable that the brick-work of a whole wall, or even of a whole building, has to stand still. Of course, this may happen more than once in the course of a large building, and it is no exaggeration to say that months of delay may be, and often are, occasioned by this circumstance if there happens to be a run of bad luck or of misfortune.

Then the work being not prepared on the spot, it is difficult, often impossible, to make the most desirable modification in a building during progress, and all the business of templates and dimensions and generally fitting what would be the masonry to the rest of the work is most liable to go wrong, and necessarily becomes troublesome.

If a block which is of importance comes so different in colour that it cannot be accepted, or if it must be rejected on account of a defect, the consequences may be so serious that neither the architect nor the contractor feel half as free to deal with this material as they would with masonry. If the terra-cotta be thoroughly vitrified it is almost impossible to cut it or shape it in any way if it is in the slightest degree a misfit, and yet, owing to the warping and shrinkage which I have described, this material is peculiarly liable to be here and there thrown out of shape, even with the utmost care, and this calamity sometimes seems to pursue one particular piece, which may come to hand out of shape twice or three times running.

The remedy—as far as it can be remedied—for this class of drawback is to be found in extra vigilance—above all, a greater degree of fore-thought than is required with any other building material whatever; extremely good and careful general and working drawings made long beforehand, and a steadfast refusal to make any changes in the work during progress. One expedient which is sometimes attempted I strongly object to—the arranging matters so that the brickwork can be put up first and the terra-cotta added afterwards. This is not structural, and it of course adds to expense very greatly; but there are circumstances when even this desperate expedient must be resorted to; and in that case the ease with which terra-cotta can be shaped renders it possible to devise tolerably good arrangements for fixing it after the structure is up.

It is undoubtedly a drawback that the material cannot well be obtained with perfectly true straight lines and perfectly even surfaces. The curved pieces are also liable to be a little out of truth, but if the blocks are small it can be generally so set by a superior workman that this is not easily detected.

Terra-cotta in long lengths for lintels and cills is not obtainable. It can be joggle-jointed, as may be seen in many cases where it is employed, just as in Mediæval work the mantels of fireplaces were jointed; but some will feel that this is an imperfect substitute for a lintel in one piece.

In the Italian Gothic examples what one may call terra-cotta bricks chiefly occur; that is to say, the blocks are comparatively small, are moulded and enriched profusely with such ornaments as are easily cast repeated frequently, and are built up along with the bricks into the features of the architecture. They do not differ very greatly from the brickwork in colour, but they do differ in fineness of texture and surface, in sharpness, and in being ornamented. Here I think we have an example of the best employment of terra-cotta for the ornamentation of a building. The whole is perfectly harmonious and the ornamental part is quite appropriately similar to the plainer part, differing only just so much as is necessary to accentuate it. In London examples exactly similar in treatment are not numerous, but a fine one with red brickwork and red terra-cotta ornament is Mr. Waterhouse's St. Paul's School at Hammersmith, a building of Tudor character. The same architect has used the same materials in a fine Tudor dwelling-house near Putney Heath. His rebuilding of University College Hospital makes use of the same materials in a Renaissance design, and promises when the scaffold is struck to be a very effective exterior. The Birmingham Hospital is another good example. The same effect is obtained with sharper ornament though at heavier expense in many of the best modern red-brick exteriors when the enrichments have been carved out of the brickwork

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[*] Specimens of building blocks of various shapes and colours were lent as illustrations by Messrs. Doulton and by Coalville, Sandford, & Alston, Limited.

[†] The experiments of Mr. Kirkaldy, quoted by Mr. Charles Barry in his paper on this subject, read before the Institute, and in the "Dictionary of Architecture," give the following results:—

A cube, of 6 in. by 6 in. by 6 in., of Portland stone—
Cracked under 283 tons per foot
Crushed ,, 292 ,, ,,
A similar cube of Bath (quarry not stated)—
Cracked under 88 tons per foot
Crushed ,, 104 ,, ,,
A cubic block of solid terra-cotta, same size—
Cracked under 442 tons per foot super.
Crushed ,, 523 ,, ,,
Another experiment gave a block, a foot cube, as crushing, 664 tons.
A hollow block, about 6 in. by 6 in. by 11 in.—
Cracked under 22 tons, the block
Crushed ,, 80 ,, ,,
Similar block, chambered—
Cracked under 46 tons
Crushed ,, 186 ,,
Similar block, filled with Roman cement—
Cracked under 45 tons
Crushed ,, 163 ,,

by hand. Mr. Norman Shaw and other architects have some excellent work of this sort.

In some of the late Italian examples the terra-cotta is more distinct from the body of the brickwork, and is of a different colour. This, I think, is so in part of the Certosa at Pavia. The features of this building, and of others similar to it, are usually small, and such and so enriched as can be easily and naturally executed in a material cast in moulds, and obtainable in moderate sized pieces. It is hard to overrate the beauty of some of the work at the Certosa. Among modern architects Mr. Collcutt seems to have best secured the class of effect I am alluding to. His Palace Theatre, his City Bank on Ludgate Hill, and his Imperial Institute are good specimens of buildings in which terra-cotta, in bands and in features and enrichments, is used simply and naturally; and the spectator can be in no doubt at the first glance that they have been designed specially to suit the material employed as their principal enrichment. Then there comes what must be called the stone treatment. In scale and in design the architectural forms, and sometimes the enrichments, are of a size and of a shape just such, or nearly such, as would have occurred had stone been the material, and the whole face of the building is of terra-cotta. Now there is a good deal to be said for such a treatment, especially in cities with a smoky and an acid atmosphere like London, but it represses the peculiarities of the material to some extent instead of bringing them out, and so far is less satisfactory.

For a manufacturing town, however, such as Birmingham, and especially for London, there is a great inducement to make use of terra-cotta as a substitute for stone simply because it will stand when stone will fail, and it will keep clean when stone will blacken, and because also stone is a very costly material to use in profusion, and terra-cotta is cheaper.

The science schools building on the east side of Exhibition-road has a series of columns of considerable size, in the design of which the artist (the late Mr. Godfry Sykes) has shown great intelligence. He has divided his column into heights by bands, which have enabled the manufacturer to produce a large column in a series of sections of not unmanageable size, and he has twisted his shafts, a proceeding which, dispensing with straightness, is particularly suitable when dealing with a material which it is not easy to get straight. I have always looked upon these as suggesting possibilities in the use of terra-cotta which other architects have not yet attempted to grasp.

The quality of terra-cotta which is the highest of all, and which is capable of producing the most brilliant results, is certainly one which has been not fully developed yet, and in which, consequently, lie the greatest possibilities for the artist of the future. I allude to its capacity for receiving and rendering permanent the original modelling of a sculptor or modeller. Plastic clay is the material in which the sculptor does the essential part of his work, and if, instead of the slow, laborious, and expensive process (largely mechanical) of transferring the modelled work to marble, stone, or bronze, the model itself can simply be baked and fired, and so made permanent, we bring the sculptor close to the public. We can have original work, in the production of which almost all of the fee goes to the artist, and comparatively a mere trifle is spent on costly material or manual labour, or anything else.

In many cases a not extravagant outlay would enrich the interior or the exterior of a building with noble and entirely original sculpture; not cast in a mould, but the actual work of the sculptor's own hand. I am able to show you, by the courtesy of Mr. James Doulton, photographs of several of the works of Mr. Tinworth, a sculptor who has worked in this material for years, and whose original, vigorous, and very striking compositions have a great charm. If any of you will visit that architectural gem, the interior of the Guards' Chapel, you will see some of Tinworth's work in panels there, and will appreciate how much they contribute to add life as well as beauty to that interior. It is quite possible for any architect who has a modest sum at his command for the ornamentation of his building to enrich it with panels such as those by Tinworth which I am to show you, or to dignify the exterior with sculpture such as Mr. Henman has been able to introduce at Birmingham.

But work of far less pretension—a spandrel, a tympanum, some ornament to fit a single panel, can be had in most cases where it would be appropriate to employ it; and nothing is more valuable than even a single piece of original work of this class in adding dignity to an entire building.

To sum up in one sentence what appears to grow out of our examination of terra-cotta as a material for the architect's use, we may, I think, say that terra-cotta seems to be at its best when it is used along with brickwork (though this is not absolutely essential); when it is used in a building that is ornate rather than plain, and is employed in smallish blocks; when there is much enrichment, and much repetition of the same enrichment or ornament, but not many plain arrises and mouldings; when cornices have greater height than projection; when numerous small features are employed rather than a small number of bold ones; when use is made of the facility with which an ornament can be moulded and repeated; and last, but very far, indeed, from least, when original modelling is to some extent employed.

What there may be in reserve for us in the near future from the employment of glazed and coloured terra-cotta I do not pretend to prophesy, but that its use will become a conspicuous feature in the design of street buildings I cannot doubt. I sincerely hope that it will be taken up by architects who will employ it with good taste and self-restraint.

## THE ROYAL INSTITUTE OF BRITISH ARCHITECTS.

THE Committee of this Institute appointed according to the resolution passed at the general meeting on January 16 have met and are considering the question of the administration of building by-laws in rural districts. They would be glad to receive any suggestions from members. Such communications to be addressed to the Secretary of the Institute.

A special general meeting will be held on Monday, the 6th inst., to elect the Royal Gold Medallist for the current year. The Chairman to move: "That, subject to her Majesty's gracious sanction, the royal gold medal for the promotion of architecture be presented this year to Mr. George Frederick Bodley, A.R.A., for his executed works as an architect."

The ninth general meeting (business and ordinary) will then be held, when the election of candidates for membership will take place.

Mr. Henry Dawson will subsequently move "That, with the object of securing correct legal action in the election of candidates for membership of this Institute, the members thereof request the Council to obtain, at the earliest convenient date, the written opinion of some eminent Queen's Counsel of independent position, as to whether women are eligible as Associates or Fellows under the terms and provisions of the existing Charter and By-laws of the Royal Institute of British Architects. And that the Council do report such opinion to the members at the earliest convenient date."

Mr. Owen Fleming will move "That the attitude of the Council towards the brickwork experiments recently conducted by the Science Standing Committee is calculated to impair public confidence in the Royal Institute, and that the Council therefore be invited to take such steps as may be necessary to bring the matter to a satisfactory conclusion."

Mr. H. Hardwicke Langston will also move "That in the opinion of this meeting it is desirable to put a suitable and prominent inscription on the street front of No. 9, Conduit-street, indicating that those premises are occupied by the Royal Institute of British Architects."

At the conclusion of the foregoing business the meeting will be open to non-members, and the following paper will be read, "Some Early Christian Churches in Palestine," by Mr. A. C. Dickie, with lantern-slide illustrations.

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OPEN SPACES, LONDON.—It is announced that Colonel Sexby, chief of the Parks Department, L.C.C., is engaged in preparing for publication a history of the Municipal Parks, Gardens, and Open Spaces of London, which amount to thirty-one in all. The book, which will contain a large number of illustrations, will comprise descriptions of the tenures under which the lands are severally held, and of their historical and other associations, together with accounts of some houses and buildings around them.

## THE ARCHITECTURAL ASSOCIATION DISCUSSION SECTION.

THE ninth meeting of the Discussion Section of the Architectural Association was held at 56, Great Marlborough-street, W., on the 24th ult., Mr. H. J. Leaming in the chair. A paper by Mr. H. V. Crawfurth Smith on "Heraldry" was read.

The author, commencing with a short account of the origin of heraldry, explained some of the terms employed (mostly derived from Norman-French) as escutcheon, marshalling, &c., also the use of colour for heraldic purposes generally. He pointed out how, when heraldry reached its glory at the commencement of the eleventh century—and for three centuries following—dresses, hangings, furniture, armour (even ecclesiastical vestments emblazoned with the arms of the donor), were all enriched with the rank, family, &c., of the wearer or owner. A "rebus," a pun upon a name (as a man falling, for "i-slip" in Bishop Islip's Chapel in Westminster Abbey), was very far from uncommon. Thus in the Middle Ages all was treated in a thoroughly decorative manner down to the smallest details.

In glancing at the revival of heraldy, Mr. Crawfurth Smith mentioned especially the name of A. W. Pugin in his thorough and good work in the Houses of Parliament, and concluded his paper by showing that in the robes of the Garter, of the Judges, and of the great State functionaries there still lingered with us reminiscences of the great science of heraldry.

The discussion was opened by Mr. Weymouth, followed by Mr. Hopkins. Mr. Swinfen Harris remarked that heraldry was a science as well as an art, and that it was to be judged by its peers (like architecture), and *not* by the public. None should overlook the religious side—where shields, &c., were not so much to display one's pride as one's faith. He noticed, too, how the helmet of the king was full-faced, as commanding, and of the nobility, turned to the left as listening. So also knights and barons full-faced; squires to the left, listening. Mr. Harris called attention to the Franciscan church at Innsbruck, with the great bronze figures in armour, calling it a heraldic delight, so thoroughly had everything connected with heraldry been worked out.

Mr. Matt. Garbutt, Mr. George Smith, and the Chairman continued the discussion, Mr. Crawfurth Smith replying to the vote of thanks. Some hangings, with heraldic devices, were kindly lent by Messrs. Storey, of Kensington, showing use of heraldic badges, &c., decoratively treated.

The next meeting of the section was announced for Friday, March 10, when a paper is to be read by Mr. H. C. Corlette on "Colour."

## THE LONDON COUNTY COUNCIL.

THE usual weekly meeting of this Council was held on Tuesday, in the County Hall, Spring-gardens, Mr. T. McKinnon Wood, Chairman, presiding.

*Engineering Contracts.*—Mr. Beachcroft presented a petition from the London District Association of Engineers and Shipbuilding Employers, asking for consideration by the Council of the difficulties felt by them in regard to the clauses which were inserted in the Council's contracts relating to dismissal of foremen, and the determination of all disputes as regards the contract by the simple fiat of the Council's officers, and the enforcement of a schedule rate of wages. Also with reference to the hardships inflicted upon the London engineering trade by the restrictions as to the cubical area of workshops contained in the London Building Act, and asking that the Council would consider the advisability of obtaining some modification with the view of putting the London engineering trade upon an equal footing with their competitors outside the London area. The petition represented sixty firms, paying upwards of 1,200,000*l.* a year in wages.

The petition was referred to the General Purposes Committee and the Building Act Committee.

*Loans.*—On the recommendation of the Finance Committee it was agreed to lend the Camberwell Vestry 22,200*l.* for the purchase of sites; the Clerkenwell Vestry 3,005*l.* for sewage works; the St. Paul, Deptford, Vestry 700*l.* for furniture and fittings, &c., at baths and washhouses; and the Wandsworth and Clapham Union 5,150*l.* for purchase of site for offices, &c.

*Fulham Palace-road Improvement.*—On the recommendation of the Improvements Committee it was agreed that the estimate of 5,084*l.* submitted by the Finance Committee be approved, and that, subject to the Vestry of Hammersmith enfranchising the copyhold of the land to be added to the public way, and subject to the road being widened to not less than 45 ft., the Council do give its consent to and do contribute, on the usual conditions, one-half of the net cost of the setting back of the western side of Fulham Palace-road between Carnforth Lodge and the "Duke of Cornwall" public-house, such contribution not to exceed the sum of 5,084*l.*

*Enlargement and Alteration of the Clerkenwell Fire Station.*—The Fire Brigade Committee submitted a long report embodying correspondence in regard to the enlargement and alteration of the Clerkenwell fire station. The amount of the accepted tender, by Messrs. Munday & Sons, was 6,286*l.*, but in consequence of delay in getting possession of the site and the subsequent rise in the price of materials, &c., the contractor submitted an account of a considerable excess. The Fire Brigade Committee now recommended, and it was agreed, that the arrangement made between the architect and Messrs. G. S. Munday & Sons with regard to the balance of the amount payable to the firm under their contract in respect of the enlargement and alteration of the Clerkenwell fire-station be approved, and that the Council do sanction a further expenditure of 2,694*l.* 14s. 6d. in respect of such work.

*Improvements.* — The Improvements Committee made the following recommendations, which were agreed to :—

> "That the estimate of 4,025*l.*, submitted by the Finance Committee, be approved, and that the Council do contribute on the usual conditions one-half of the net cost of widening Church-street at the "Three Crowns" public-house, and at Nos. 2, 4, 6, and 8, as shown upon the plan forwarded by the Vestry of Stoke Newington, such contribution not to exceed the sum of 4,025*l.*, it being understood that the Vestry shall continue the widening of the street from time to time as opportunity occurs."
>
> "That the estimate of 2,763*l.*, submitted by the Finance Committee, be approved, and that the Council do contribute on the usual conditions one-half of the net cost of the reconstruction of the bridge and approaches carrying Westbourne-terrace-road over the Grand Junction Canal, as shown upon the plans submitted by the Vestry of Paddington, such contribution not to exceed the sum of 2,763*l.*"
>
> "That the amount of the Council's contribution to the Limehouse District Board, in respect of the widening of Narrow-street, at Nos. 39, 41, 43, 45, and 47, be 396*l.* 13s. 4d. . . ."
>
> "That a payment of 3,000*l.* be made to the Wandsworth District Board on account of the Council's promised contribution in respect of the widening of Lower Richmond-road. . . ."
>
> "That the amount of the Council's contribution to the City Corporation, in respect of the widening of Ludgate-hill, between St. Martin's-court and Pilgrim-street, be 15,887*l.* 11s. 1d. . . ."

*Battersea Park Bandstand.*—The Parks and Open Spaces Committee recommended, and it was agreed :—

> "That the Council do approve the estimate of 594*l.* submitted by the Finance Committee, and do authorise the construction in Battersea Park of a permanent bandstand in accordance with the design prepared by the Architect; that the tender of Messrs. McDowell, Stevens, & Co. to execute the ironwork of the superstructure as specified, for the sum of 314*l.*, be accepted ; and that the Committee be authorised to obtain tenders for the construction of the foundations and platform and the painting work, and to enter into any necessary contracts in the matter.

*Walls and Fences, Southwark Park.*—The same Committee recommended, and it was agreed :—

> "That, subject to the passing of the annual maintenance votes for 1899-1900, the Council do authorise an expenditure of 1,242*l.* for the erection of a close oak pale fence, with iron capping, between Southwark Park and adjoining property, and the repair of the existing wall and fencing at other portions of the boundary ; that the tender of Messrs. Rowland Brothers to carry out the work for the sum of 1,242*l.* be accepted."

*Smoke Consumption.*—Mr. Bull moved to refer to the Public Control Committee to consider the advisability of offering a reward of 1,000*l.* for a patent smoke consumer adaptable to modern private grates.

The resolution was rejected, and the Council soon after adjourned.

## THE BUILDERS' FOREMEN AND CLERKS OF WORKS INSTITUTION.

The annual dinner of the Provident Institution of Builders' Foremen and Clerks of Works was held last Saturday in the King's Hall, Holborn Restaurant. Mr. Joseph Randall, A.M.Inst.C.E. (Messrs. Kirk & Randall), presided, being supported by Messrs. Benjamin Tabberer, W.H. Strudwick, H.W. Horner (Ashby & Horner), T. Costigan (Secretary Central Association of Master Builders), and others. Over 480 members and friends of the Institution sat down to dinner.

The loyal toast having been honoured,

The Chairman gave the toast of the evening, "The Provident Institution of Builders' Foremen and Clerks of Works." Having alluded to the loss the Institution has sustained in the death of Mr. G. Plucknett, F.S.A. (who for thirty years had held the position of Governor, and for several years previous was a trustee) and Mr. W. H. Sharpington, a hard-working director of the Institution, the Chairman gave some information about the Institution and its excellent work. In the course of his remarks he said the men's pension is now 12s. a week, and he believed that the proposal was being considered to increase that sum to 15s. a week. They now had over twenty pensioners who were receiving about 350*l.* per annum, and so carefully were the affairs of the Institution managed that the working expenses were only about 70*l.* per annum. Society appeared to be separating into two classes — the savers and the wasters, the provident and the improvident, the thrifty and the thriftless — and he asked his hearers to help the thrifty — to help the Institution to carry on its good work in assisting those who, through ill-health or other circumstances, might be unable to provide for themselves or their families. In many large towns in the country the example set by the London foremen and clerks of works has been followed and similar institutions have been started and supported by builders and others.

Mr. W. H. Bedford, in response, said that the Institution had been in existence fifty-seven years, and during the last forty-eight years 30 male pensioners had received 3,183*l.*, 54 widows had received 6,427*l.*, 10 orphans 351*l.*, and 960*l.* had been paid to afflicted members—making a total of nearly 11,000*l.*

Mr. Horner then gave the toast of "The Architects and Surveyors." The duties of architects were becoming more difficult, for an architect had now to make himself familiar with such matters as electric light, steel construction, &c. ; he was expected to be both an artist and a man of business, and it was his business to approach the client and smooth over matters with the builder. He (the speaker) had been reading a little history of Sir Christopher Wren, whose remuneration was about 4d. an hour, and whose name was scarcely known in London until many years after his death. In the same way he was afraid that the names of many eminent architects would remain unknown until after their death. Critics had been heard to condemn that fine building on the Embankment (New Scotland Yard), but he ventured to think that the name of its architect, Mr. Norman Shaw, would be known long after the names of the critics were forgotten. With the toast he coupled the names of Mr. Tabberer and Mr. Strudwick.

Mr. Tabberer, in responding for the architects, said that architects highly appreciated the abilities displayed by builders' foremen and clerks of works.

Mr. Strudwick, for the surveyors, said that in the course of a few years, possibly, the Government would deal with the question of old-age pensions, and if they did he hoped that an Institution like the Builders' Foremen's, which had done so much for its members, would have special consideration.

Mr. J. Stapleton then proposed "Builders and Contractors." In the course of his remarks he said that matters between builders and their men had come to a crisis, and the question had to be decided whether builders and contractors were to manage their own businesses or have them managed by the workmen. It was time for the masters to be firm, for the more they yielded the more would be demanded of them.

Mr. T. Gregory having briefly replied,

Mr. F. Hann proposed the toast of "The Governor (Mr. F. J. Dove), Trustees (Messrs. Dove, J. Howard Colls, and W. Scrivener), Donors, Honorary Subscribers, and Visitors."

Mr. T. Costigan, in response, said that it was a most creditable fact that the cost of administration of the funds of the Institution was so little. The aims of the Institution were deserving of every support, and he thought everything promised even greater success for the future than had been achieved in the past.

The remaining toasts were "The Chairman," proposed by Mr. John Beer, hon. secretary, and "The Press."

During the evening, subscriptions and donations to the amount of 130*l.* were announced, the Chairman giving 21*l.* and the Central Association of Master Builders 10*l.* 10s.

## METROPOLITAN ASYLUMS BOARD.

Sir Edwin Galsworthy presided on Saturday last at the fortnightly meeting of the Managers of the Metropolitan Asylums District, held at the County Hall, Spring-gardens.

*Surveyor to the Board.*—The Works Committee recommended that the managers should appoint a permanent surveyor, to be under their control, who should give his whole time to the service, prepare plans and specifications, and discharge all the duties of an architect and surveyor. They proposed that the officer to be elected should have special knowledge of sanitary and draining work, should be under forty years old, and should receive a salary of 500*l.* with travelling expenses, office accommodation, and assistance.—The Rev. G. W. Pope protested against the proposal to appoint a surveyor, and said they ought to have a competent architect instead. Mr. J. H. Brass objected to putting the officer under the Works Committee. Already they had an Engineer at 600*l.* a year, and the Works Committee would never let them have a look at that officer. Only a fortnight ago the Committee refused to allow the services of the Surveyor to the South-Western Hospital. On the suggestion of Mr. Purchese, the Chairman of the Committee, Mr. A. C. Scovell, agreed to omit the provision that the officer should be under the control of his Committee. With regard to the question of salary, Mr. J. H. Lile said he considered it a great mistake to advertise for an officer at such a low salary. He did not believe they would get a good man under 600*l.* or 700*l.* a year. Recently the London County Council advertised for an architect at 1,500*l.* a year, but could not get a suitable man and had to advertise for one at 2,000*l.* A man was needed who had had practical experience elsewhere, and he would not think it worth while to come for 500*l.* a year. He moved an amendment that the salary should be 650*l.* The Hon. Maude Stanley seconded. Mr. Edward White, L.C.C., was satisfied that suitable men would not be prevented from applying by the difference between 500*l.* and 650*l.* This was an experiment, and if it turned out well, doubtless the Committee would propose the appointment of an architect to the Board. They did not desire to make the appointment too important at first. The officer would have to begin single-handed, and a staff would gradually gather round him. If he were asked to begin by taking charge of an establishment ready formed, it might be worth while to offer more, but he hoped they would get, not a man who had failed as an architect on his own account, but a rising young man—say, first assistant to a good firm, who would make the office worth more as he learned the work. The Rev. G. W. Pope considered that they should have appointed a Surveyor at 400*l.* subordinate to the Engineer. If there was to be a new department let it be a good one, and let them have an architect. Mr. Lile having withdrawn his amendment, a suggestion was made by Mr. Monson that the Committee already had a man for the place, and that advertising would be a farce. This was indignantly repudiated by the Chairman of the Committee as "without a shadow of foundation," and the report was adopted.

*Appointment.*—Mr. W. T. Farthing was appointed to take out the quantities of the Joyce Green Hospital buildings.

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Electric Lighting Scheme for Hackney.—After seven months' consideration the Electric Lighting Committee of the Hackney Vestry have issued a report, prepared by Mr. R. Hammond, electrical engineer, and the Committee recommend the Vestry to adopt an electric lighting scheme therein set out, which will cost, exclusive of charges for the site of the works, 242,367*l.*

## DRAWINGS FOR THE ROYAL ACADEMY.

As usual, we shall be glad to forward to the Royal Academy any drawings sent to the office of this journal in time to be photographed for publication (if considered suitable) before sending them in.

The last day for receiving drawings at the Royal Academy is Monday, March 27; and the latest time at which we can receive any to be delivered from this office is *11 a.m. on Saturday the 25th.* Any drawings sent here later than that we cannot take charge of.

The following are the requirements of the Royal Academy in regard to drawings:—

1. That every drawing should be in a gilt frame.
2. That there should be a label affixed to the back of it giving the title of the drawing and the artist's name and address, and the distinguishing number of the drawing (if more than one is sent).
3. That a similar label should be affixed to the frame by a string, so as to hang over in front.
4. That the drawing be accompanied by a letter to the secretary of the Royal Academy containing the same information as on the labels.

We can take charge of no drawings which do not comply with these regulations. *We cannot provide or affix labels where they have been omitted by the sender of the drawing.*

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## Illustrations.

### ILLUSTRATIONS OF GREEK ARCHITECTURE.

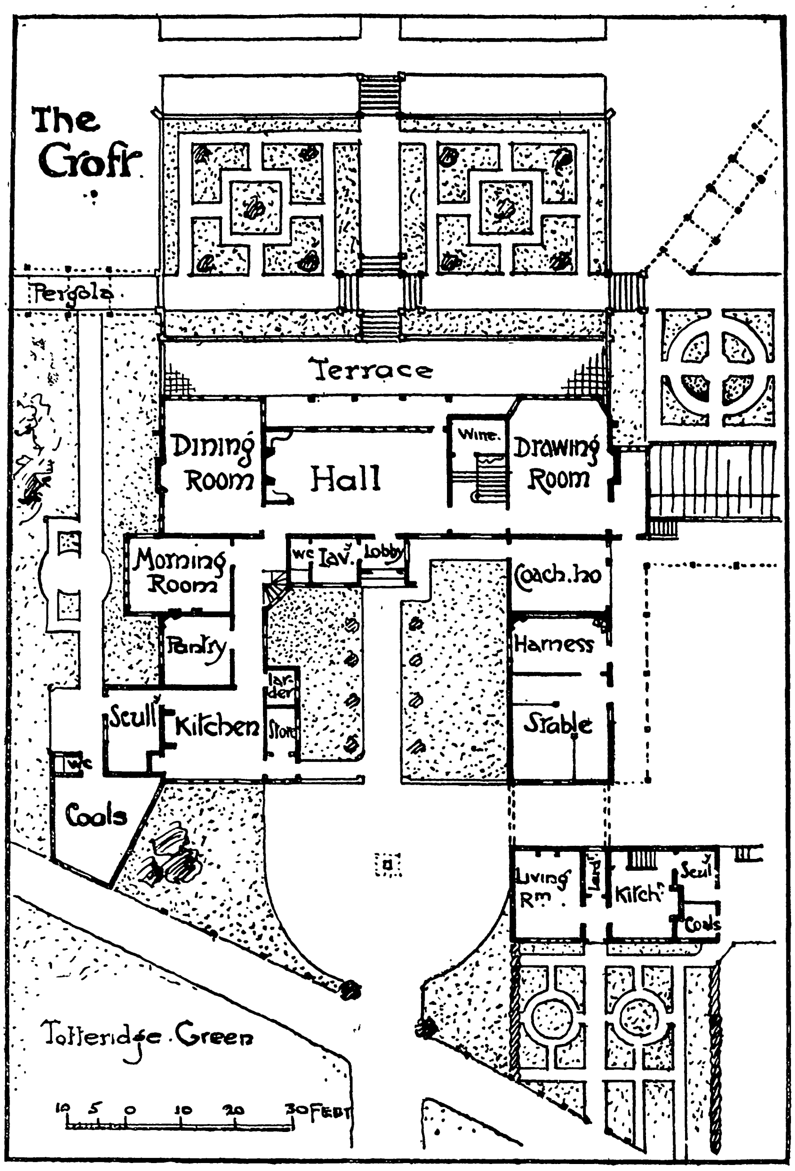
THE illustrations of the Propylæa and of the monument of Lysicrates at Athens, taken from two fine photographs, are given in connexion with Professor's Aitchison's lectures on Greek architecture. There is a pathetic as well as an architectural interest in them. The remains of that beautiful little conception known as the monument of Lysicrates stand, a battered relic of a great past, in the midst of the modern buildings some of which exhibit a kind of faint effort at a revival of Greek spirit, while others are of purely utilitarian character.

The view of the remains of the Propylæa is taken in front of the remains of the stone staircase up which the Athenian population crowded on high days and holidays, to pay their adoration to the tutelary goddess whose statue was enshrined in the most perfectly designed temple the world has seen. The steps and the columns of the Propylæa, though half ruined, still recall and suggest the effect of the once-stately entrance to the sacred enclosure.

### "THE CROFT," TOTTERIDGE.

THIS house is situated facing Totteridge Green, Herts. and is built of thin red brick, with Ancaster stone mullions and jambs to the ground floor, and oak windows to the first floor. The upper portion of the walls is finished in rough cast and the roofs are covered with old plain tiles.

The architect is Mr. T. E. Collcutt. The drawing was exhibited at last year's Royal Academy exhibition.



### A COUNTRY HOUSE, GARDEN FRONT.

THIS pleasing and quiet elevation for a country house, by Mr. Geo. O. Scorer, was exhibited at the Royal Academy last year.

Owing to the author's absence from town we have not been able to obtain a plan and description from him in time for publication.

### PARISH INSTITUTE, PORTSEA.

THE building illustrated is the Parish Institute of St. Mary's, Portsea, which was opened by Mr. Goschen in October, 1898. The building consists of four class-rooms and lavatories on the ground floor and staircases, and on the first floor a class-room, kitchen, scullery, &c., and a long hall, 98 ft. 6 in. by 35 ft. by 24 ft. 9 in. high from floor to ceiling, which is illustrated herewith. As it was essential that the floor space should be uninterrupted, steel principals were designed to span the hall. These are stayed at the foot by steel joists running across in the thickness of the floor and rivetted, and the principals are cased in plaster to form flat ribs. Fawcett's system has been used for the fire-proof floors.

The materials are red Fareham bricks, with gauged brick and Portland stone dressings, Maidenhead tiles for the roof, and a wood lantern with copper cupola. The building has been carried out by Messrs. Ward & Co., builders, of Portsea, from the designs and under the superintendence of Mr. Reginald Blomfield, architect.

We gave an illustration of the proposed design about a year ago, from a drawing exhibited at the Royal Academy. The present illustration is from a photograph from the building, which has been somewhat modified in execution.

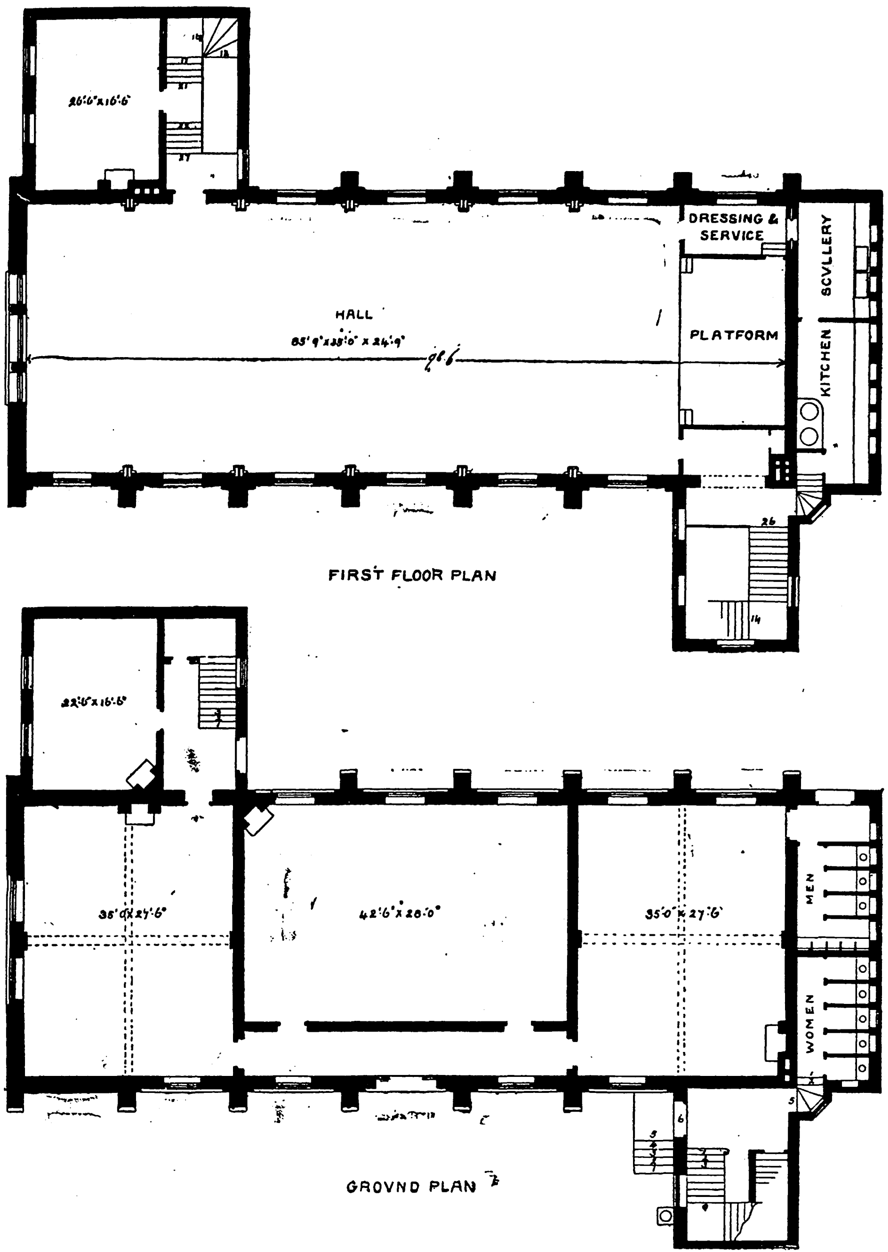
### MEMORIAL PULPIT, FARNHAM, SURREY.

THIS pulpit has been erected in the parish church of Farnham, Surrey, in memory of Canon Hoste, for many years rector of the parish.

The materials are wainscot oak, ebony, and coromandel wood. The columns are inlaid with ebony reedings, and the large moulding below the swags is covered with a veneer of coromandel wood. In the original design it was intended to fill the panels with designs in intarsia work, using such woods as yew, cherry, and box, the idea being to carry up the colour scheme started by the coromandel wood below. This idea was abandoned to meet the wishes of the committee, and carved and moulded panels were carried out instead. The winding staircase is necessitated by the plan of the pier against which the pulpit is fitted. The whole of the work, with the exception of the brass lectern by Messrs. Elsley (which is not shown in the illustration), has been carried out by Mr. W. Bessant, from the designs and under the superintendence of Mr. Reginald Blomfield, architect.

## *ARCHITECTURAL SOCIETIES.*

GLASGOW ARCHITECTURAL ASSOCIATION.—At the usual fortnightly meeting held in the rooms, 187, Pitt-street, Mr. Wm. J. Anderson delivered a lecture entitled "Impressions of a Mediterranean Trip," describing, mostly in a light and humorous manner, a cruise by way of Algiers and Malta to Athens, and a return journey by Corfu, Naples, Nice, and the Loire district of France, for purposes of architectural study. Among impressions of the tour which he indicated were, the feeling that good design and largeness of conception had been evinced in the planning and extension of most Continental cities, while they were almost wholly absent from our own, and that there existed an aspiration for something beyond the fulfilment of mere material necessities in their public buildings. This was to be attributed, especially in the case of France, which in such matters led the Continent, to the steadying influence of sound traditions of architectural education, which, in permeating society with the understanding and the love of art, fostered the desire as well as provided the talent for its realisation. More particularly have we to learn the lesson in so-called engineering works such as bridges, railway stations, markets, &c., which in France are often among the most successful works of its brilliant school of architects. No question of art was at all comparable to the need for the improvement of our cities in these respects, and for skilled control of the development of their plan. In an Anglo-Saxon community it would almost seem as if the provision for animal necessities was sufficient, and that to aspire in our handiwork after anything nobler than the aims of the bird and beaver was to be hopelessly Utopian and unpractical. Concluding, the lecturer urged the claims of a more extended historical study of architecture, not for practical reasons only, but as examples of the higher manifestations of Nature, reaching us through the human spiri



*Parish Institute, Portsea. Plans.* (*See page* 224.)

whose path, in relation to every essential matter of progress, was marked by its monuments.

EDINBURGH ARCHITECTURAL ASSOCIATION.—The second series of visits of members of the Edinburgh Architectural Association for this session took place on the 25th ult. In the forenoon the visitors were entertained and shown through Milton House Works, Abbeyhill, belonging to Messrs. James Milne & Son, Limited. These works, which cover from two and a half to three acres of ground, provide employment for between 700 and 800 workers, comprise an engineering department, in which malting and paper-making machinery is largely made; water fittings shop, castings shop, gas-fittings shop, smiths' shops, and gas-apparatus shops. After lunch in Milton House Hall, Mr. Ross, President of the Association, proposed a vote of thanks to Messrs. Milne. In the afternoon the members visited Holyrood Palace, and, in charge of Mr. W. W. Robertson, H.M. Board of Works, had an opportunity of inspecting those parts of the Palace and Chapel closed to the public. Before leaving the Royal apartments, Mr. Ross proposed a vote of thanks to Mr. Sands, her Majesty's Inspector of the Palace, and Mr. Robertson.

PUBLIC IMPROVEMENTS, LEICESTER.—Col. Coke, R.E., Local Government Board Inspector, held an inquiry at the Town Hall, Leicester, on the 22nd ult., with respect to applications by the Town Council for a provisional order sanctioning the compulsory purchase of property for the widening of High-street, Newarke-street, and Hotel-street, and also for the Board's sanction to the borrowing of 73,187*l.* for street improvements, 5,454*l.* for sewage works, 1,025*l.* for public baths, and 1,823*l.* for market purposes. The attendance included Mr. E. G. Mawbey (Borough Surveyor) and Mr. Allen (Assistant Borough Surveyor).

## THE DISPUTE IN THE LONDON BUILDING TRADE.

THE letter from Mr. J. A. Hassal, Secretary to the National Association of Master Builders, intimating to the plasterers that a general lock-out will be enforced from March 6, was received by Mr. Deller, the Secretary to the National Association of Operative Plasterers. No reply, however, was communicated, inasmuch as the officials of the men's union were proceeding to carry out the arrangements for a general ballot of the members. This ballot has been taken upon all the questions which the masters have brought into prominence during the course of the present dispute. In the opinion of the union officials a long struggle is imminent, as they say the members of the union are not likely to accede to the demands put forward by the masters. These demands, they assert, have been needlessly forced to the front, and the members of the association would, by complying with them, be sacrificing their trade-union principles. Masters and men, they say, have worked well together hitherto under the present arrangements, and now that the union has given up its refusal to work with non-union foremen, they see no reason for a lock-out and no cause for complaint. There are now nearly 12,500 members of the Plasterers' Union, over 3,500 being in London, and the funds amount to over 20,000*l.* The plasterers believe that the lock-out, if carried into effect, will not deprive the whole of their members of work, as many of the firms employ only trade-union labour, and have so much work on hand that they will not carry out the resolution of the Masters' Association.

The Secretary of the Plasterers' Society stated on the 23rd ult. that the society desired to make one point clear. That was shown in the following letter, which had been addressed to Mr. Hassal, in reply to the communication announcing a lock-out of the plasterers throughout the kingdom:—"Dear Sir,—I beg to acknowledge yours of yesterday's date, but as there are no references to our proposal to meet your association to discuss the points at issue, I would thank you to say clearly whether your association declines to discuss the question, and also to say if it is your intention to ignore the signed agreements with our provincial branches which stipulates for three or six months' notice, as the case may be, for any alteration to such rules, as we contend your demand really meant a revision of such signed agreement.—M. DELLER."

Members of the Plasterers' Union have been instructed not to work overtime pending the settlement of the dispute.

The Master Builders' Association have issued a manifesto, setting out the points in dispute, and the following circular has been posted to all the members:—

"National Association of Master Builders of Great Britain and Ireland, South Crescent-chambers, 6, Lord-street, Liverpool.—Dear Sir,—You have doubtless anticipated the information contained in the enclosed manifesto. The National Association of Master Builders of Great Britain and Ireland relies upon you to pay off all the members of the National Association of Operative Plasterers that may be in your employment on March 4. If you find any insuperable difficulty in distinguishing between union and non-union plasterers, please send letter to that effect.

It is scarcely necessary for me to remind you that the duration of this contest will be determined entirely by the amount of loyalty amongst employers, and I rely upon you not to permit the employment of any member of the National Association of Operative Plasterers on works under your control by any other person, for any such action would only prolong the struggle.

You will be kept informed, as far as possible, of the course of events; but in the meantime let me invite you to place no reliance upon any information that may appear in the newspapers or elsewhere until it is officially confirmed.

WILLIAM HOLDSWORTH, President,
National Association of Master Builders."

Accompanying the letter is a form to be filled in by each employer, stating the number of members of the National Association of Plasterers discharged, and the number of non-union plasterers retained at work.

Mr. Deller received a letter from Mr. Hassall stating that the union's letter, offering to submit the matters in dispute to a conference, would be considered at a meeting of the Standing Committee of the Association, to be held in Liverpool.

The result of the ballot of the members of the Plasterers' Union was to have been announced on Friday. It was generally known on Thursday, however, that the vote of the men is almost unanimous in determining to resist the employers' demands. A general lock-out may therefore be expected on Monday.

We have been shown some quotations from the Official Reports of the Plasterers' Union which throw a striking light on their replies to some of the charges made by the Association of Master Builders. In regard to the limitation of apprentices, the N.A.O.P. asserted that "this was a local question, each district making its own arrangements"; but their own reports showed that all local working rules have to be sent up to the Central Executive for approval; and the by-laws of the London Rules include a definite limitation of the number of improvers. In reference to Clause 5, "That applicants when a vacancy occurs shall not be registered after sixteen years of age," the following is significant:—

*Extract from January Report.*—"They also requested to know what action they were to take as regards the membership of W. Hawkins, jun., there being some doubts as to his age, and was accepted upon the condition that his birth certificate was satisfactory, which, up to now, had not been produced . . . The General Secretary was instructed to publish a notice blocking his card pending the production of birth certificate."

The master of the apprentice has apparently nothing to do with the matter!

The N.A.O.P. profess that they have "no official knowledge" of any arrangements for boycotting certain firms. The following quotations are given from their own reports:—

*Extract from January Report.*—"Burton-on-Trent asked if Trollope & Son gave up the job at Lord

Burton's could a local employer take the job? Reply sent: not unless the whole of the firm's men and plant were removed from the job.

*Burton-on-Trent.*—A request was also made to know if a local firm of plasterers would be allowed to tender for a further extension to Lord Burton's hall under a local builder. —— moved and —— seconded, 'That, providing a guarantee be given that the work undertaken is distinct and apart from any contract undertaken by the firm of Trollope & Sons, this Council will raise no objection to our members working upon such contract.—Confirmed.'

The following extract is from the Quarterly Report:—

"Members are requested not to accept employment from the firm of Harper, builder, Highgate, pending information from the district office; the firm are also building in the neighbourhood of Richmond.

Foalks, builder, in this district, is also blacked, employing Church.

When a piecework master plasterer is stopped upon any public job, no foreman working for him shall be entitled to act as foreman upon the said job for the builder.

Members must not accept employment from the firm of Mr. James, builder, Beckenham, who employs bricklayers to do plastering."

In regard to the claims made by the N.A.O.P. that they, and not the employers, are to be the judges in regard to the class of operatives to be employed on any particular job, the following specimen seems almost incredible:—

"*Burton-on-Trent.*—This branch forwarded correspondence relating to a bricklayer doing the cementing to a soft-water cistern, which they demand shall be hacked off and replastered by a plasterer, the firm giving a guarantee that it shall not occur again."

We have more matter of the same kind before us; but the above is sufficient to indicate the spirit of arrogance in which the Association of Plasterers are acting, and the absolute insincerity of their replies to the Association of Master Builders.

The reflection naturally suggested is—cannot we manage to do without plastering, and adopt other methods of finishing interiors?

## THE CENTRAL ASSOCIATION OF MASTER BUILDERS OF LONDON.

THE annual general meeting of the Central Association of Master Builders of London was held on the 23rd ult. at St. Martin's Town Hall, Charing Cross, Mr. Benjamin I. Greenwood, President, in the chair.

The annual report and the audited accounts were read and adopted.

The Council, in submitting their twenty-seventh annual report, refer to the briskness of trade, which is threatened only by the aggressive policy of the trade unions. Seven years ago, a new code of rules was adopted for the purpose of decentralising the administration of the Association, by the formation of district councils. This scheme, though excellent in theory, had proved to be unsatisfactory in practice, and the Council have, therefore, prepared a new code of rules, re-establishing one central executive council only, and providing that such council, and other officers of the Association, shall be elected yearly by the vote of the members of the Association at each annual general meeting. The new rules provide for the maximum subscription being raised from fifteen guineas to thirty guineas, and they also contain several minor alterations. The report proceeds:—

"The year has been characterised by a prevalence of paltry and petty strikes against individual firms of builders. The definite agreement made with the trade unions to submit all disputes for consideration at a conference between employers and employed prior to any strike taking place has been persistently ignored by the workmen. In many instances the trade union officials have repudiated the action of their members, over whom they profess to have no control, although it is to be observed that their control over their members seems to be unlimited when they have a desire to exercise it. Some of these difficulties have arisen in consequence of disputes between different trades as to which trade should do a certain class of work. Time was when the man who paid the wages decided what work should be done for the wages he paid, but this right is altogether ignored by the trade unions, who seem to consider that the employer has no voice in the matter, and, in the event of his refusal to endorse the particular views of any trade union, he is promptly struck against by the offended union. . .

One of the most serious matters for the consideration of the trade is the great increase in the cost of building, in consequence of the great decrease in the amount of work done by the workmen. Although wages have risen, the amount of work done for such wages has rapidly diminished, in fact, there seems to be a systematic determination, more particularly in some trades, that no workman shall do more than about half the amount of work that he is capable of doing, nor permit any other workman to do more. So long as a workman's remuneration is entirely independent of the amount of work he does (and a uniform rate of wages insisted upon), there is, apparently, no prospect of preventing this state of things from developing even to a greater degree. On the other hand, if a workman's wages were dependent upon his industry and exertion, there would be an immediate revolution in the cost of building operations. The present system of almost universal day-work puts a premium upon laziness and inefficiency, and effectually strikes at all enterprise, energy, and effort. It is reducing the British workman to a very low level, and developing a system of chronic dishonesty, which loses its odium from the fact that it has become general."

The report then deals with the present dispute with the plasterers, and includes the statement as to the various objectionable practices which the masters demand shall be discontinued, and which we have already printed. It appears that at the recent meeting of the masters in London, at St. Martin's Town Hall, when a substantial strike fund was contributed, the following resolutions were submitted, and received the unanimous support of the meeting:—

1. "That this representative meeting of master builders and other employers of plasterers in London entirely approves the circular of January 10 (1899) issued by the National Association of Master Builders.

"And this meeting further pledges itself, individually and collectively, to give loyal and energetic support to the policy therein set forth, and recommends that it should be carried into effect at the earliest possible moment."

2. "That in the event of a lock-out, contractors will not employ any members of the National Association of Operative Plasterers, nor permit them to be employed by sub-contractors or any other persons on works under the control of such contractors.

"And in the event of legal proceedings being taken against any member of the Central Association of Master Builders of London, by any sub-contractor for breach of contract on these grounds, the Central Association of Master Builders of London shall indemnify such member against the cost of such legal proceedings."

"The officials of the National Association of Operative Plasterers are," the report proceeds, "evidently relying upon their expressed opinion that the members of the building trade are too much occupied in seeking their own individual interests to enable them to jointly resist any aggression on the part of the Trade Unions with any prospect of success. The National Association of Operative Plasterers has, however, exasperated the whole of the building trade throughout the kingdom to such a degree that there has probably never before been such a unanimous determination to maintain, at all costs, freedom of management and freedom of employment, and there is every reason to rely with confidence on the loyal and energetic co-operation of the trade throughout the country. . . .

The Association has become affiliated to the south-eastern centre of the National Association of Master Builders. During the past year the process of federating the building trades' employers throughout the kingdom has been rapidly advanced. . . . The Council wish to call the attention of members to the desirability of forming a register of foremen and clerks seeking re-engagement with a good reference from their recent employers. If all members, who are dispensing with the services of such men, will acquaint the secretary of the Association, they would not only be serving the interests of those who thus leave their employment, but, at the same time, assist other members of the Association who may be seeking such services. The Council desire to impress upon all members of the Association the duty that rests upon them to secure apprentices to the various trades which they practise. Nothing is more serious in the outlook of the building trade than the increasing scarcity of good mechanics. It is an utter fallacy to suppose that technical education will form any sufficient substitute for apprenticeship, and whilst employers refuse to be troubled with apprentices they are creating for themselves and their successors difficulty and trouble in the conduct of their business which it is impossible to adequately estimate. Whilst it is true that the trade unions endeavour to unduly limit the number of apprentices, there is no doubt that some master builders do not even avail themselves of apprentices to anything like the extent to which trade unions assent. Printed indentures of apprenticeship are issued by the National Association of Master Builders, and can be procured on application. It appears to be necessary that members should be cautioned against sacrificing their interests by signing building contracts that are not drawn upon an equitable basis. Amongst other items an adequate extension of time, in event of a strike or lock-out, is essential, and also a proper arbitration clause in event of dispute. Every contractor is entitled to terms of contract similar to those contained in the Form of Contract issued by the Institute of Builders, and the Council recommends that each member should make himself familiar with this Form of Contract for his own protection and guidance, as the carelessness that is frequently exhibited in these matters is most reprehensible. The result of the legal decision in the case of Lyons *versus* Wilkins has established the fact that attempting to stop the conduct of any man's business by means of picketing is illegal, and this decision should save contractors from much annoyance during labour disputes. The Council regrets to report that during the past year Mr. R. S. Henshaw has retired from the office of Secretary of the Association, in consequence of his duties in connexion with the Builders' Accident Insurance Company requiring all his time and attention. Mr. Thomas Costigan has been appointed to the vacancy. . . ."

Mr. T. Gregory was then elected President Messrs. C. Wall and H. H. Bartlett were elected vice-Presidents, and Mr. H. W. Horner was elected Treasurer.

Other business having been transacted, the meeting terminated.

## BUILDERS' CLERKS' BENEVOLENT INSTITUTION:

### ANNUAL GENERAL MEETING.

ON the 28th ult. the annual general meeting of this Institution was held.

Mr. W. H. Parker, in vacating the chair of the ordinary monthly meeting of committee, expressed regret at the unavoidable absence of the outgoing President, Mr. R. C. Foster, and introduced the incoming President, Mr. Alfred F. Randall.

Mr. Randall said the report showed the past year to have been a record one, and he congratulated the committee on such a successful period.

The report and balance-sheets as read were adopted.

The report showed an income for the year of £888 14s. 9d.—the donations and subscriptions announced at the annual dinner amounting to £519 9s.; also that there were twenty recipients of the annual pension, two children in the Orphan Working School, and a vacancy for a third. The committee are prepared to receive applications for a builders' clerk's orphan as a candidate.

## Correspondence.

*To the Editor of* THE BUILDER.

### BRICKS FOR BREWERY FLOORS.

SIR,—I am about to take up and relay the floors of racking rooms in a brewery, and contemplate using blue Staffordshire bricks laid on edge in cement, on cement concrete.

Will any of your readers who have had experience in brewery work tell me if this will make a good floor; or will the acid in the liquor constantly flowing over it "kill" the cement?

DOUBTFUL.

## BOOKS RECEIVED.

WESTMINSTER ABBEY, HISTORICALLY DESCRIBED. By H. J. Feasey. With an account of the Abbey Buildings, by J. T. Micklethwaite, architect to the Dean and Chapter. (Geo. Bell & Sons.)

DICTIONARY OF ELECTRICAL ENGINEERING AND CHEMISTRY. By Paul Heyne. (Grevel & Co.)

THE LONDON WATER SUPPLY. By Arthur Shadwell, M.A. (Longmans, Green & Co.)

THE WALLS, GATES, AND AQUEDUCTS OF ROME. By Thomas Hodgkin, D.C.L. (John Murray.)

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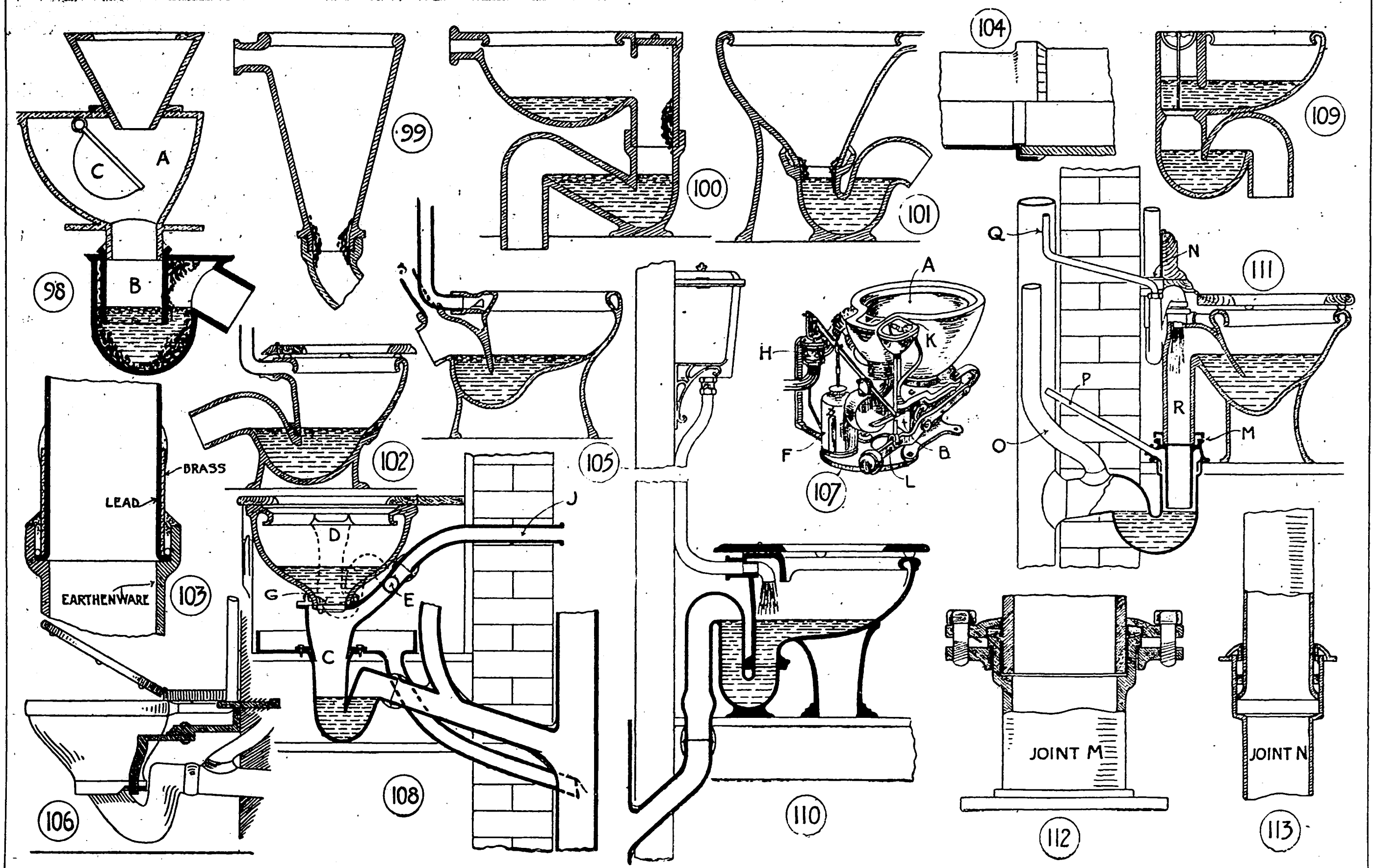
THE PEABODY FUND.—In the thirty-fourth annual report of this fund it is stated that the lease of a small site—part of the Stamford-street Estate—having recently fallen in, the Trustees are erecting on it two blocks of buildings containing thirty-six rooms each, which are expected to be ready for occupation by the end of the year. No other new building is mentioned. At the close of the year the number of existing rooms provided by the Trust was 11,367, besides bath-rooms, laundries, and lavatories. These rooms comprise 5,121 separate dwellings; 100 of four rooms each, 1,767 of three rooms, 2,412 of two rooms, and 842 of one room each. The average rent obtained from each room has been 2s. 2d. a week.



*Illustrations to Student's Column.*

# The Student's Column.

## ARCHITECTURAL HYGIENE.

### IX.—SANITARY FITTINGS.

HAVING in our last article referred to drain ventilation and siphonage and some of the more usual traps in use, the way has thus been prepared for the discussion of the various sanitary fittings which are used in the house and the general treatment of such fittings.

This section may be conveniently tabulated into the following sections :—

1. *Preliminary Remarks.*
2. *The Various Types of Water-closet Pans, &c.*
3. *Flushing Cisterns and Water-waste Preventers.*
4. *Soil-Pipes and their Ventilation.*
5. *Baths and their Wastes.*
6. *Lavatories and their Wastes.*
7. *Urinals.*
8. *Sinks and their Wastes.*

1. *Preliminary Remarks.*—Sanitary fittings of all kinds should, where possible, be fixed against an external wall, so that the apartment in which they are placed may be capable of thorough ventilation, and also that the fittings themselves and their wastes may be easily overhauled and repaired in case of necessity, so avoiding the danger inherent with internal soil-pipes and the connexion of the house air with the drainage system.

The planning of water-closets in relation to the other parts of a house has been already dealt with in a former article ; but we may emphasise the necessity for making the walls of rooms in which sanitary fittings are placed of non-porous materials. For instance, the floors of bath-rooms, lavatories, water-closets, are best made of tiles, terrazzo paving, or other non-absorptive materials. The walls may be either of glazed tiles, from floor to ceiling, or merely as a dado with the upper part plastered and painted or distempered. A method often employed is to have flooring laid to a fall towards the outer wall, so that the floor can be scrubbed down and the water led by a small waste-pipe into a rain-water head. In America, where the floors and walls of bath-rooms and lavatories are nearly always tiled, the evil effects of overflows to the fixtures are abolished, the overflowing water falling on to the floor and running off by the pipe mentioned.

Every apartment should be well lighted, and with the whole window constructed so as to open, and should, where possible, be disconnected by a ventilating lobby from the house. Abundant light is an enemy to dirt of all kinds. Where there is light there is, as a rule, cleanliness, and this brings us to an important point, and that is the casing of fittings. One of the greatest advances in modern sanitation has been the tendency to abolish what are known as "casings," that is, the wooden enclosures or framings which were formerly considered necessary as an envelope to hide the actual water-closet pan and bath, &c.

In a healthy dwelling casings should be avoided, as they simply harbour dirt and vermin, and answer no useful purpose whatever. One should be able to see all round a sanitary fitting in order to ensure its cleanliness, and unless one can do so it can scarcely remain sanitary.

In the more recent examples of superior plumbing this is now exemplified by the use of pedestal closets and what are called "Roman" baths, *i.e.*, rolled edge baths without enclosures. Lavatory basins are often carried on nickel-plated brass brackets, all the pipes being in sight.

To the student in London a visit to the Parkes Museum in Margaret-street, and to the Architectural Museum, King's College, will be of the greatest assistance, because he will see there models of appliances of every kind.

2. *The Various Types of Water-closet Pans, &c.*—It goes without saying that the water-closet is the most important of sanitary fittings, and is that to which the attention of reforming sanitarians has been earnestly directed. A water-closet fitting consists of a basin and a trap, and its efficiency depends on the way these are constructed so as to answer certain requirements of cleanliness and suitability.

Before dealing with the various types of basin, let us state briefly what is required in each. The basin, it is evident, should be of such a shape that no part is liable to be soiled by the excreta falling on the sides, and every part should be thoroughly scoured by the flush of water. It should be made of glazed stoneware, a perfectly impermeable material, preferably finished white, and so formed that it retains a sufficient depth of water from the after-flush to receive the excreta, and so prevent the fouling of the bottom of the basin. This latter point is of importance because it is found that if the fæces are thoroughly coated with water before being discharged into the soil-pipe, there is less likelihood of the fouling of the interior of the pipes.

The apparatus should, if possible, have no working part which can get out of order ; and, lastly, as mentioned previously, should not be enclosed in woodwork, which forms a receptacle for dirt and filth of all kinds.

The water-closet trap should be of a simple self-cleansing form, without angles or other obstructions, fixed above the floor so as to be easily accessible. It should have a minimum water seal of 1½ in. to 2 in., and protected against siphonage (as referred to in the article on "Drain Ventilation") by being ventilated at its outgo.

In dealing with the various forms of closet, we shall observe that the basin and trap are sometimes made of the same piece of earthenware, whereas, in other cases, the trap is made separately of lead or iron. With a separate trap, there is the advantage that in case of damage to a water-closet pan it can be repaired without opening up direct communication with the drains.

We do not propose to take up much room by dealing with insanitary forms of water-closets, but no article would be complete without reference to a few which have been in use in the past, and by looking at the reasons for which they have been discarded, we shall perhaps be better able to understand the sanitary points of the better forms.

Of all insanitary fittings the old *pan-closet* (fig. 98), with iron container (A) and lead D trap (B), was undoubtedly one of the worst. A glance at the illustration will show that in no respect does it fulfil the requirements as set forth at the beginning of this chapter. It takes its name from the hinged pan (C), which swings backwards and forwards by means of the closet handle. As will be seen, this pan requires a space to swing in ; this was known as the "container," which quite acted up to its name, as it formed a receptacle for the excreta which made it neither more nor less than a small cesspit. Even when the closet was flushed the water could not succeed in reaching a large part of the container, which, therefore, was never cleansed, but became fouler and fouler from the splashings of the pan; and the gases, of course, found their way into the building whenever the pan was let down to clear the closet of excreta. This was in itself bad enough ; but, in addition, the apparatus had attached to it what is known as a D trap, so called from its shape. It will be seen at once that it is a most insanitary form of trap, with large flat surfaces and corners ready to intercept and collect the excreta.

Being, as a rule, unventilated, it formed a collecting space for foul gases, which, joined to those in the container, were ready to pour into the house whenever the pan was lowered. Probably only those who have taken out a pan closet with its D trap will realise how insanitary and dangerous it rendered the house, and the necessity of at once removing such a form of closet from old houses even now constantly arises.

The *long-hopper* closet, fig. 99, is another form which was somewhat largely used. It is seen that it cannot be a sanitary fitting; the water was usually introduced by means of a spiral flush, which only half cleaned the pan, and the latter was kept continually soiled because the water area at the bottom of the basin was not of sufficient capacity to catch the soil.

Various developments have, however, taken place, which will be dealt with later on.

The *wash-out* closet, fig. 100, secured the favour of sanitarians some years ago, but although met with in many houses, they are condemned by most as insanitary, for reasons which a glance at their section will explain.

The water at the bottom of the basin is, as a rule, too shallow, and the excreta, instead of being forced straight down the trap into the soil pipe, is dashed against the outgo, which is in consequence fouled, and then has to find its way down the trap; the value of the momentum being lost. Enough has been said to show the insanitary qualities of the foregoing types, and we can now proceed to deal with types which are considered of a more improved kind.

A step in the right direction was made when the long hopper form was changed to the short hopper, a section of which is given (fig. 101). It will be seen that a flushing rim is obtained which will ensure the basin being thoroughly flushed, but the water area at the bottom is only about 4 in. in diameter, and the basin would practically be fouled every time it is used by the excreta falling on the sides.

This brings us to the simplest and probably the best form of closet for ordinary purposes, which is known as the *wash-down*, and a form of which is now ordinarily used for general purposes (see fig. 102).

It is an improvement on the short hopper form. It can be either made in one piece, with the trap attached, or in two pieces, the trap being separate; the latter being best, because the pan can be repaired without opening up communication with the drain.

Among the many advantages which this closet possesses are its simplicity and cheapness, which are most important factors. It is usually made of a pedestal form, spreading sufficiently to carry the weight of the person using it. It requires no "mahogany enclosure," but is provided with a lift-up seat, hinged so as to fall against the wall, thus enabling the basin to be used as a urinal. The outside may be ornamented in low relief in colours or kept perfectly plain, so that any speck of dirt can be at once removed. It will be observed that the water area is as large as possible, which prevents the fouling of the basin; and it is also deep enough to submerge the fæces, and thus prevents the apartment being filled with noxious odours. The former is an important point, as if the fæces fall on the dry side of the basin, they adhere so that two or three flushes are sometimes necessary to remove them. The flushing rim is of sufficient size and form to thoroughly scour the inside of basin. The trap in this case is a P trap, with a water seal of 2 in., and the outgo is so arranged that the joint is under water, so that in the event of any defect arising it is at once made apparent.

The joint between the lead soil pipe and the earthenware trap is generally the weakest part of this form of water-closet, and special care must be taken to render this perfectly air-tight. The London County Council have issued regulations on this joint, and the vestries also insist on its being made as follows: In connecting a lead pipe to earthenware a socket is formed on the lead pipe by means of a plumber's "turning pin." The end of a brass collar or ferrule fits into this. Tallow is then rubbed over the parts on which solder is to be placed, and then molten solder is poured around the joint and "wiped" into shape by help of a cloth. The brass ferrule is then jointed to the earthenware by means of a ring of gaskin (hemp) and neat cement is then run in and wiped round. This fills in the grooves and makes a thoroughly waterproof and air-tight joint. Pathogrine germs are prone to linger in the hemp, and many authorities therefore advocate the use of other material.

This is one of the best ways of forming a reliable joint between lead and earthenware, and is insisted on by the sanitary authorities. A section is shown in fig. 103.

The old method of a red lead joint between earthenware and lead is generally rendered defective by means of the contraction and expansion, allowing direct communication between the drainage system and the house.

Another means of forming this connexion is known as the "metallo-ceramic" joint (fig. 104). This is an invention of Messrs. Doulton, and it has been received favourably by the authorities. On the pottery only of the closet, before being sent out, a short piece of lead pipe is fused by a patent process, and the entire incorporation of the pottery and metal at the point of junction is effected.

The result is considered perfect, and as every joint is tested up to the pressure of a 45-ft. head of water, it must be admitted that it forms a very excellent joint. This also possesses the advantage of the closet being perfectly ready to be connected with the soil pipe by an ordinary wiped joint.

Fig. 105 shows Messrs. Doulton's "Simplicitas" closet, which has found much favour among architects. An anti-siphonage pipe (S) is shown and it is usually 2 in. in diameter, and by the London County Council regulations it is placed not less than 3 in. or more than 12 in. from the highest point of the trap. There is a tendency among manufacturers not to follow out this rule, but to place this anti-siphonage connexion less than 3 in. from the crown of the trap. The use of anti-siphonage pipes has been already dealt with as necessary to prevent siphonic action, and thus destroy the water seal. They are also useful in ventilating the upper part of the trap, thus preventing foul air from pressing against the water seal. The illustration shows the flush pipe, which is connected with a siphon-flushing cistern or water-waste preventer. It is usually made of 1½ in. internal diameter and connected with the flushing rim by means of an india-rubber cone.

We have dealt at some length with this perfected form of wash-down because it is now generally regarded for ordinary purposes as one of the more satisfactory.

An improvement on the ordinary wash-down is the "Bracket" closet by Messrs. Dent & Hellyer (fig. 106). This closet is kept off the floor, so that the latter can be properly washed, and there is no chance of dirt and dust collecting. It has been used in many hospitals. The water surface to receive the motion is about 8 in. by 5 in.; an improvement on some of the earlier firms, but it is not so large as Doulton's "Simplicitas," whose water area measures 10½ in. by 6¾ in.

We have now to deal with an important type of closet which is still preferred by some, and which if made in the best manner does possess some advantages even over the improved forms of the wash-down type. We refer to what is known as the *valve closet.* By reference to the illustrations, figs. 107 and 108, an idea will be obtained of the appearance of a valve closet and of its more complicated appearance in comparison with the simpler forms we have been discussing.

The illustrations (a view and section) represent Mr. Hellyer's "Optimus" valve closet, and the various parts being lettered, will be readily understood. The apparatus consists of three parts—the basin, the valve-box, and the lead anti-D trap placed underneath.

The advantages which a closet of this type possesses over others may be briefly stated. On reference to the section it will be observed that a large water area (the contents equalling about a gallon) is available to catch the fæces, to thoroughly envelop them, and pass them through the pipes without adhering to the latter. The closet also possesses a double water seal and a closely-fitting valve, so that in the case of the closet remaining unused for some time, additional security is obtained; besides which the foul air in the soil pipe presses against the lower trap, saturates the water in it with foul gases, which are then given off, and escape by means of the ventilator to the valve-box. This is another advantage over a single trap. To these we may add that there is usually less noise in emptying a valve closet than a wash-down type. In the section and view the parts are lettered as follows:—

A. Earthenware basin with flushing rim.

B. Valve box of cast-iron, enamelled white inside.

C. Anti-D trap.

D. Overflow from basin connected to the ventilation arm of valve box, as shown at E.

E. Copper bellows for regulating the quantity of water to be admitted to the basin after the handle is dropped.

These regulators are of various forms and have either a pneumatic or hydraulic valve.

G. Flap valve with indiarubber flange to keep water in the basin.

H. Brass supply valve admitting the water to the flushing rim.

J. 2-in. vent pipe to the valve box, simply carried to the outer air. This is also necessary for preventing the siphonage of the overflow to the basin.

K. The lever for opening and closing the basin valve.

L. Weight for shutting the supply valve.

The fittings to a good valve closet will, with very little attention, work satisfactorily, but in the majority of cases where no such attention can be given to them, it is, perhaps, advisable to substitute the best form of wash-down closet. Again, a wooden casing is usually considered necessary to hide the mechanism, and this usually succeeds in hiding a good deal of dirt and filth at the same time. The supply of water is not a regular one, but dependent on the person using the plug, whereas in the ordinary wash down one pull of the handle empties the contents of the water waste preventer into the basin. In valve closets a water waste preventer is not used, but the flushing water should be derived from a special cistern, properly disconnected from the cistern which supplies the water service of the house.

An illustration of a "plug" valve closet is given in fig. 109, which will explain its construction, in which it will be observed that there is no valve chamber. It is, however, seldom used and can scarcely be recommended.

*Siphonic Closets.*—These are based on principles that have found favour in recent years, and which have been used with success, although it is doubtful whether they have been sufficiently long before the profession to constitute a lasting trial. The one shown in the illustration by Messrs. Shank (fig. 110) gives one a fair idea of the principles on which it is designed. The points to be noticed are its deep seal of 8 in., the large water surface of 13½ in. by 11¼ ins., its powerful suction properties, and there being no joint on the drain side of the trap. It is said only to require a two-gallon flush.

Messrs. Jennings & Morley's Siphonic discharge closet, shown in fig. 111, has a surface area of 12 in. by 10 in., and the trap has a 3-in seal. The illustration shows the closet fixed over a 4-in. lead trap. The joints M and N must be air-tight, and are formed as shown in figs. 112 and 113. O shows the usual 2-in. anti-siphonage pipe. P is a puff pipe, taken through the wall and left with an open end. The in-coming water expels the air through this pipe and starts the siphonic action. Pipe Q admits air to the siphonic leg R, and prevents the siphonage of the basin when slops are emptied into it. It should be noted that the service-pipe from the cistern has two connexions to the closet, one leading into the basin, and the other into the top of the long leg of the siphon-pipe R.

The siphonic closets have been used largely in America, and they seem to be gaining favour in England at the present time for public purposes.

## TRADE CATALOGUES.

MESSRS. NICHOLLS & CLARKE (London) send us their catalogue of sanitary goods, &c. It is a well-bound and well-illustrated quarto volume of 408 pages, the paper highly glazed and of good quality, and the type excellent. Many of the fittings described and illustrated are the specialties of Messrs. Nicholls & Clarke, but, as nearly all the foremost manufacturers of sanitary goods are also represented, the catalogue is a compendium which cannot fail to be of great service to architects, builders, and sanitary engineers. We are glad to find that pan-closets and D traps are conspicuous by their absence, but bell-traps of various kinds unfortunately still find a place. So long as there is a demand for such fittings, merchants will continue to illustrate them, and the catalogue before us must be taken as evidence that bell-traps are still used, although we cannot think that architects ever specify them. Among the water-closets we notice Messrs. Nicholls & Clarke's "Parja" pedestal closet, which has the advantage of a lead trap, but the area of the water-surface—an important point—is neither stated nor shown. Only one example of siphonic closets is given, but other varieties are very fully illustrated, and about sixteen different kinds of water-closet cisterns are given, including the "Monarch" and "Waterwitch"; we are glad to see that most of the cisterns are made in the 3-gallon size as well as in the 2 and 2½ gallon. Cisterns for other purposes, cylinders, boilers, safety-valves, taps, pumps, rams, and other details of domestic water-supply are among the contents of the volume, as well as sinks for kitchens, pantries, and housemaids' closets, but the untrapped glazed-ware waste-pipe cannot be recommended. Gas-fittings and meters, hydrants and hose, beer-engines and bar-fittings, pipes of lead and of cast and wrought iron, tools, paints, and glass are all illustrated and quoted, although not so fully as the sanitary goods, such as water-closets, baths, lavatories, drain-testing appliances, and sinks. Useful information is given about pumps, and forty pages are devoted to the Model By-laws of the Local Government Board, the By-laws of the London County Council, and the regulations of all the metropolitan and nineteen provincial water companies. Architects and men engaged in every branch of the building trade cannot fail to find in this catalogue much of interest and of service.

Messrs. A. Ransome & Co. send us their new catalogue of wood-working machinery and appliances, which contains between forty and fifty new illustrations. Among these are the vertical band-saw machine (page 34) for medium-sized logs, intended to meet the requirements of those who have not sufficient work to warrant the adoption of the more expensive machines; the horizontal log band-saw machine, (page 36) which can be controlled by one man; the semi-portable log frames (page 52), intended for positions where the presence of water immediately below the surface precludes the formation of a vault under the mill floor; the log band-saw with wooden framing (page 54) for breaking down very large logs—Jarrah and Karri trees up to 7 ft. diameter; the reciprocating cross-cut saws for cutting logs of any size; the combined self-acting and roller-feed saw benches (page 74); band-saw machines with self-acting cant tables (page 89); and the special high-speed flooring and match-boarding machine, (page 96) designed for preparing flooring and match-boarding at the highest attainable rates of speed. The following is part of the description of this latter machine:—

> "The feeding arrangement is very powerful, consisting of four pairs of feed rollers of large diameter, all of which are driven, thus ensuring the boards being fed continuously past the cutters without any slip; and the pressure apparatus is so arranged as to press equally over the entire width of the piece when passing over the fixed knives and revolving cutter-blocks. The whole of the top feeding rollers can be raised or lowered simultaneously, to suit for boards of different thicknesses, by turning a single powerful screw placed at the extreme end of the machine. The board is held firmly to the bed of the machine, and kept close to the fence, as it passes along, by means of a series of weighted pressures, which effectually prevent any vibration in the board, and thus ensure clean work.
>
> In passing through the machine, the board first comes in contact with the bottom revolving cutter, which removes any irregularities in the surface of the board before it arrives at the fixed knives. This bottom cutter is fixed in a cast-iron drawer, which can be readily drawn out clear of the main framing of the machine when it is required to sharpen, change, or adjust the cutters. The board next passes over the fixed knives, two of which are fixed in a cast-iron drawer, which can be instantly removed and replaced by another when the cutters become dull. The board next passes to the side cutters, which are specially constructed to produce true and smooth work with a high rate of feed without breaking the edges. The board finally passes under the top revolving cutter, by which it is reduced to a perfectly uniform thickness."

The catalogue is a very large one, in which every machine is illustrated and fully described.

Messrs. W. H. Willcox & Co. send us illustration and description of their semi-rotary wing pump. This consists of a perfectly cylindrical casing in which a strong brass wing, provided with valves, oscillates. The casing is closed by a lid which is fastened by four, six, or eight bolts, according to the size of the pump, and which, when necessary, can be easily removed without the pump having to be taken to pieces. On the outside the spindle is furnished with a lever which can be operated either by hand or by power. The pump acts both as a lift and as a force pump, and with the use of a foot-valve it sucks up to a height of 25 ft. These pumps have lugs to fix against a plank or wall. The same makers also send a catalogue of various other pumps made by them.

Messrs. Jas. Hill & Co. send us their catalogue of fan-light openers of all kinds, metal casements, and ventilators, including their patent noiseless silk flap exhaust ventilators; and showing gearing for fixing and working fanlights in every position.

Messrs. Shand, Mason, & Co. send us "an occasional circular" of their various forms of fire-engine and fire extinguishing apparatus.

Messrs. S. & E. Collier send a catalogue with illustrations of their roofing and wall tiles, finials, and other ornaments and chimney-pots; the latter are very good and suitable in design, a certain degree of characteristic finish being given to them without attempting anything pretentious in the way of ornament.

Messrs. G. B. Kent & Sons send us a catalogue of their painting brushes of all kinds for house painters' work; and Mr. C. S. Bailey (Bristol) a catalogue of his stencil plates and compartments of adjustable stencils.

We have received from Messrs. Williamson & Joseph, of Northampton Works, Canonbury, London, a copy of their new catalogue of electric fittings and goods used in electric lighting and other applications of electricity. In the design of some of the fittings very considerable originality is displayed, and this catalogue will be a useful one for engineers and architects to file away for reference. We were specially struck by the design of the switch-boards and the distributing fuse-boards. We were glad to see that a china division fillet and a 2-in. break have been introduced into the latter when intended for high voltage circuits. It is interesting also to note a tendency towards greater simplicity in the parts of electric fittings, no screw or fuse that could possibly be done without being anywhere in evidence. An excellent example of this is shown in their new lamp-holder suitable for high voltage. The prices of the various articles are moderate.

## *OBITUARY.*

Mr. Thomas Rowe.—The death is announced at Sydney of Mr. Thomas Rowe, President of the Sydney Water and Sewerage Board. He was the son of Mr. Richard Rowe, contractor, of Penzance, and was born in 1829. He went to Australia in 1849, and in 1856 began his long career in Sydney as an architect. Mr. Rowe was the founder of the Institute of Architects of New South Wales, and a Fellow of the Royal Institute of British Architects. In 1888 he was appointed President of the Metropolitan Water and Sewerage Board. Mr. Rowe held the rank of colonel in the New South Wales military forces.—*Western Morning News.*

## *GENERAL BUILDING NEWS.*

Church, South Tottenham.—The foundation-stone of the new Church of St. Peter, South Tottenham, was laid recently. The building will have red brick walls, Weldon stone window and door-dressings, bands, &c., and red Dumfries stone for the arcade pillars; the roofs of pitch-pine timber, covered with tiles. The floors will be laid with wood blocks under the seats, and with marble mosaic in the chancel and porches. The church will consist of nave and aisles, chancel, with a morning chapel on south side, and organ chamber and vestries on north side, and baptistry and narthex at west end. There will be accommodation for 800 persons. The west end will have a bell turret and a large traceried window above the baptistry roof. The architect is Mr. J. S. Alder, of Arundel-street, Strand. The total cost will be about 8,000*l.*

St. Paul's Church, West Smethwick.—This church, which has been closed for several months whilst a scheme embracing alterations, additions, and repairs has been carried out, was reopened on the 22nd ult. The galleries at the west end and over the south transept have been taken away, and the principal entrance to the church has been arranged under the spire. The space formerly occupied by a staircase to the gallery has been utilised to form a porch. A baptistry has been provided at the west end of the church, and this contains a new font. The whole of the old seats in the nave and south transept have been removed, and the seating and aisles have been rearranged, so that now there are three aisles instead of two, as formerly. A new boarded floor has been fixed under the whole of the seating, the aisles having been laid with red tiles. The heating and lighting arrangements of the edifice have also been altered. The interior of the church has been cleaned and redecorated. The work has been carried out by Mr. H. Harper, builder, of Oldbury, under the superintendence of Mr. F. Gill, architect, of Smethwick.

Baptist Church, Lurgan, Co. Armagh.—The new edifice erected by the Baptist congregation in Lurgan was opened on the 19th ult. The building is situated on Windsor-avenue. The new church was erected by Messrs. Redmond & M'Cullough, Lurgan, from plans prepared by Mr. W. Redmond. The design is Gothic, and the building is of red brick, relieved with red sandstone. It is 50 ft. long by 30 ft. wide, and is capable of seating 250 persons.

Welsh Congregational Chapel, Bootle, Liverpool.—The new Welsh Congregational chapel to be erected in Trinity-road, Bootle, has been entrusted to Mr. T. Taliesin Rees, architect, Birkenhead. The design was selected from a number submitted in a limited competition. The building will be erected in red brick and terra-cotta.

School-room, Mistley, Essex.—The new infants' school, annexed to the Norman Schools, at Mistley, was opened recently. The architects were Messrs. Baker & May, and the builder Mr. T. Canham, of Weeley. The building is an extension of the existing schools, which were built at a cost of 4,000*l.*

Yorkshire Foresters' Orphanage, Bridlington.—The foundation and memorial stones of an orphanage and convalescent home were laid at Bridlington on the 23rd ult. The building, which will be of red brick, with stone dressings, was designed by Mr. Robert J. Beale, of Westminster, who won the premium in competition; and Mr. Joseph Shepherdson, of Hull and Driffield, has supervised the carrying out of the work. It will occupy a site near the railway-station, and about mid way between the Old Town and the Quay. The internal arrangements provide for sixteen children and thirty adults. Exclusive of site and furnishings, it will cost a little over 2,000*l.*

Constitutional Club, Hull.—The foundation-stone of the new Hull Constitutional Club was laid, on the 22nd ult., on the site recently purchased in Carr-lane. The club has been designed by Mr. B. S. Jacobs, and will be in the Renaissance style. It will have an elevation of three stories, and will contain reading, smoking, and billiard rooms, and a large central hall, besides sleeping accommodation for the members.

Club, Birkenhead.—The new Liberal Club at Higher Tranmere, Birkenhead, is now in course of erection. The building is of a Renaissance character, and will be of red brick with Brynteg stone dressings. The accommodation will include assembly hall to seat 400, billiard-room for three tables, smoke-room, reading-room, refreshment bar, kitchen, store cellars, lavatories, and cloak-rooms, retiring-rooms, &c. The contract is let to Messrs. John Lee & Son, Bebington, Cheshire, and the work is being carried out from the plans of Mr. T. Taliesin Rees, architect, Birkenhead.

The New Infirmary for Newcastle.—A print of the instructions and conditions of the competition for the New Infirmary on the Castle Leazes, with a plan of the site, have now been issued to the eighteen architects who have been requested to send in designs. These are to be for a complete infirmary, on the pavilion system, containing 400 beds—180 medical and 220 surgical.

Technical School and Free Library, Hyde, Lancashire.—The new building of the Hyde Technical School and Free Library was opened on the 18th ult. The building, which is in Union-street and near the Corporation baths, and the Mechanic's Institute, has been built at a cost of about 13,000*l.* It has accommodation for 1,000 students. In the basement are rooms for laundry work, cooking, dressmaking, and art modelling. The ground floor has a reading-room, ladies room, lending department of the library, the librarian's room, the secretary's office, committee-room, and the building construction and machine construction departments. On the first floor are the chemical laboratory, the chemical theatre for scientific lectures, the chemical master's room, the physical laboratory, the elementary art room, and the advanced art department and the art master's room. The architects of the building were Messrs. Woodhouse & Willoughby.

Patent Office (New) Library.—Messrs. Perry & Co., contractors, have begun to clear the ground in the rear of Staple Inn and Southampton-buildings for the erection of the new library block; the plans and designs have been prepared in H.M.'s Office of Works, and it is expected that the new premises will be completed in three years' time.

Music Hall, Inverness.—A new hall, to replace the one destroyed by fire, is to be built at a cost of 4,000*l.*, from plans by Messrs. Ross & Macbeth, architects, Inverness.

Music Hall, Middlesbrough.—The new music hall in Corporation-road, Middlesbrough, will be opened on March 6 next. The new theatre has been built of terra-cotta and red brick. The entrance-hall in Corporation-road is 34 ft. by 19 ft., and 18 ft. in height. Leading out of it to the right and left are broad staircases to the grand circles and the stalls respectively. The auditorium is 60 ft. wide and 63 ft. in depth, the average height of the false ceiling being 45 ft. Provision is made for 120 orchestra stalls, 120 stalls, and a pit accommodation for 450. The grand circle will hold 150, and in its rear is a saloon, 34 ft. by 27 ft. There are, in all, six private boxes, and the gallery will accommodate 750 persons. The woodwork is decorated in white and gold, and a series of paintings of allegorical subjects surrounds the great central light in the ceiling. The stage dimensions are :—Width, from wall to wall, 70 ft. ; average depth, 35 ft. ; height, to flies, 25 ft. ; height, to grid, 55 ft. ; proscenium opening, 30 ft. square. The building was designed by Mr. Ernest Runtz, of London, who has supervised the construction, with the assistance of Mr. W. Duncan and Mr. E. A. Whipham. It is lighted by electricity throughout.

County Police Buildings, Blaenau Festiniog, North Wales.—The contract for the County Police buildings which are now being erected has been let to Mr. P. McLachlan. The building will be erected of local stone, with red sandstone dressings. The design is from the office of Mr. T. Taliesin Rees, and it was selected in open competition.

Children's Wing, West Cornwall Hospital, Redruth.—The Jubilee Children's Wing of the West Cornwall Women's Hospital at Redruth is now complete. The building has been erected from the designs of Mr. Sampson Hill. The children's wing will be served from the women's hospital kitchens, being connected by a covered passage.

Technical School, Bootle.—A new technical school is to be erected at Bootle on a site which fronts the Balliol and Pembroke roads. The institute will be erected from the designs of Messrs. Best & Callon, architects, Westminster. The lowest tender received was from Mr. John Corkill, of Liverpool, the amount being 22,064*l.* The front of the building will be of red brick, with buff terra-cotta dressings, and the roofs will be covered with Westmoreland green slates. Straight through from the principal entrance on Balliol-road there will be the examination or lecture-hall, with various class-rooms and offices branching off from corridors on either side. The large hall will accommodate 285 persons, and the class-rooms from thirty to fifty students each. At the back will be shops for the metal workers, carpenters, and plumbers. Two main staircases will communicate with the first floor, the front part of which will be mainly occupied by the Art Department. The elementary art-room will accommodate fifty students, and the modelling and advanced art-rooms about twenty each. On the right hand side will be situate the engineering, drawing, and general class-rooms, each with an accommodation for between thirty and fifty students. The whole of the space on the left hand side will be given up to chemical departments. The masters' rooms will be so situated as to allow of communication with all the class-rooms without going through the corridors.

Pearl Assurance Buildings, Southsea.—Buildings for the Pearl Assurance Company are being erected at the corner of Commercial-road and Grigg-street, Southsea. The frontage line to Commercial-road has been set back 18 ft. at the Grigg-street corner, and about 10 ft. at the eastern end, thus widening the road to 60 ft. The frontage to Commercial road extends 93 ft., and to Grigg-street 70 ft., the height to the ridge of the roof being 72 ft. The elevation is mainly in Portland stone, relieved by local facing bricks supplied by Mr. Foster, of Stamshaw, and enriched by carved panels, caps, shields, and scrolls, the carving being the work of Mr. Syl Horsman, of London. The pilasters of the frontage to Commercial-road are mainly in polished granite. This portion of the frontage is divided into six bays, and that to Grigg-street into five bays ; and every alternate bay, except those at the angle of the building, is broken up with oriel bays, the one over the main entrance being elliptical in shape, with an ornamental and enriched gable with stone pediment and pinnacles, and the other bays will be finished with a stone balustrade and dormers. The angle of the building will be terminated by an ornamental copper-covered dome, constructed of steel, the height being 104 ft. from the road level. The main entrance is through ornamental wrought iron gates. The ground floor will contain four shops and two sets of offices, those at the corner being retained by the company for their own business. There is also to be a temperance hotel at the south-west end of the building, with entrances from Grigg-street and Waltham-street. It, as well as the shops, will be separated from the other portions of the buildings by brick walls and concrete floors. The corridors and lavatories will have a dado of tiles throughout. The whole of the ground floors, the corridors, and staircases are fireproof. The entrance to the offices adjoins the company's offices, the hall being 10 ft. wide. This gives access by concrete staircases to the upper floors. This portion of the building is to be supplied with a passenger lift. There is a basement throughout. The whole of the outside facings to the back elevation are of white glazed bricks. The first, second, and third floors will contain fifteen suites of offices, each to contain not less than two rooms. The attic floor will be partly utilised as stock rooms and partly as the residence of caretakers. The roof, which is to be covered with chocolate Ruabon pressed tiles, is broken up by dormer windows between the gables of the several bays. Part of the roof of the hotel will be covered by an asphalte flat, by Mr. Bradshaw, of Southsea. The building is being erected from the designs of Mr. C. W. Bevis, architect, Southsea ; the contractor is Mr. J. H. Corke, Southsea ; and Mr. A. J. Lewis is the clerk of works.

Theatre, Eccles.—On the 23rd ult. there was an informal opening of the New Lyceum Theatre, Eccles. The building is in the English Renaissance style, and has been erected from the design of Mr. Walter Campbell.

New Banking Premises, City-road. — The building which has been erected for the London and Westminster Bank, with post office and club premises for the Finsbury Central Club, occupies a commanding position at the junction of City-road and Old-street. The style is Italian. The building is constructed up to the first-floor cornice in red and grey Aberdeen granite and the upper part in red brick with Portland stone piers, caps, and dressings to windows ; the doors and sashes in solid oak. The building consists of basement, in which is the rising lift, also strong rooms built in blue bricks and steel banded. The banking room, on the ground floor, has the walls lined with solid Devon marble, with panels from the red Ippel Marble Quarry, Totnes ; the skirtings, sills, and mouldings being black Ashburton marble. The twelve piers have alabaster bases and caps, and the enriched ceiling is in fibrous plaster. The whole is fitted with the electric light. The main building has been erected by Messrs. J. Grover & Son, of New North-road. The ceiling was designed by Mr. J. M. Boekbinder, of Camden Town ; the marble work is by Messrs. Jenkins & Son, of Torquay ; the mosaic floor, in Italian marble, by Messrs. Mainzer, of Berners-street ; the oak wood block floor by Messrs. Charteris & Longley, of Crawley ; the stone carving by Mr. Seale, of Camberwell, and the granite by Messrs. Whitehead, of Aberdeen. Mr. R. Bennett, of London, is the architect.

## *SANITARY AND ENGINEERING NEWS.*

Public Improvements, Birmingham.—Improvements involving the straightening and widening of the River Rea, the construction of the "Queen's Ride" by the side of the park, and street extensions, at Cannon Hill Park, are being carried out by the Birmingham City Council. The scheme includes the extension of Lower Edwardes-street to Edward-road to connect Balsall Heath and the Pershore-road. The contract for straightening and widening the river has been given to Messrs. Thomas Lowe & Sons, Burton-on-Trent.

Sewerage Scheme, Pocklington.—The Main Sewerage and Sewage Disposal Scheme for the town of Pocklington has been completed, and the Local Government Board consent obtained to the loan for carrying out the extra works ordered by the Council, the contractor for which was Mr. Thos. Bell, of Market Weighton, and the engineers, Messrs. D. Balfour & Son, London and Newcastle.

Vauxhall Bridge. — About half the superstructure of Vauxhall Bridge has now disappeared, leaving about 400 ft. of the river uncovered. The rest of the ironwork of the old structure will probably have gone in another six or eight weeks.

Mersey Dock Improvements.—The Mersey Docks and Harbour Board have, after two prolonged debates, adopted recommendations of the Works Committee as to carrying out (at an estimated cost of 885,335*l.*) certain of the great works provided for in the Act obtained last year, the borrowing powers under which approximate to five millions. The instalment now to be proceeded with comprises the construction of a new branch of the Huskisson Dock, with double-story flat-roofed sheds (capable of being converted into three or four story sheds if necessary) on the north and south sides, at an estimated cost of 482,782*l.* ; the construction of a graving-dock, 1,000 ft. long and 95 ft. entrance, to the south of the above-mentioned branch dock, and to cost 202,813*l.* ; and the provision of a new quay on the north side of the Sandor Dock, in connexion with the foregoing works, with a two-story flat-roofed shed, at a cost of 199,738*l.* The Committee also advised some variation in the scheme for the new Queen's graving-dock, 630 ft. long and 80 ft. wide at entrance. At first it was proposed that the 1,000 ft. graving-dock should be capable of being divided into two, but this idea was abandoned. The controversy at the Board has been almost entirely devoted to the sheds. While the Committee advised two-story flat-roofed sheds, on the top of which cranes could work, some members advocated three stories and others four stories. The scheme as adopted will give thirty-two acres of shed space, and will be capable of accommodating 160,000 bales of cotton or 160,000 tons of grain at one time.

Sewerage Scheme, Bradwell, Bucks.—A Local Government Board inquiry was held recently at Bradwell, near Wolverton, by Mr. E. A. Sandford Fawcett, Inspector, for sanction to a loan for 5,000*l.* for works of main sewerage and sewage disposal. The scheme has been designed by Messrs. D. Balfour & Son, civil engineers, London and Newcastle-on-Tyne. The whole of the town is to be properly sewered with fireclay socketted pipes, and, where subsoil is wet, Hassall's water-tight jointed pipes are to be used, especially adjoining the rivers Ouse and Ouzel. The sewage will discharge into an underground storage tank, from which it will be lifted by centrifugal pumps driven by gas-engines in duplicate, and forced through a rising main to the Disposal Works, where it will be specially treated by chemical or bacteriological tanks and land.

Lowestoft (New) Pier.—A Parliamentary Bill has been prepared for granting powers to a new company to construct a pier at Lowestoft. The proposed pier will extend seawards for a length of about 233 yards, and will have an approach road to be made from the junction of Whapload-road and Lighthouse-score, and extending eastwards for about 370 yards to the beach at a spot distant, northwards, 610 yards or thereabouts from the Low lighthouse. The pier will be provided with a theatre, saloons, concert and assembly rooms, shops, and so on.

## *FOREIGN.*

France.—The jury in the competition for a group of schools for the Municipality of Saint Mandé have awarded the first premium to MM. Berthier & Berard, of Paris ; the second to M. Letrosne (Paris), and the third to M. Borgeaud (Saint Mandé).——The Corporation of Nice propose to purchase, for a public park, the fine estate of the Comte de Chambrun, recently deceased, and to place a commemorative statue to him in a marble rotunda to be erected in the grounds.——M. Paul Samary, architect, has been commissioned by the Government to design the Indo-China palace for the 1900 Exhibition.——The excavations undertaken by M. Gauckler, Director of Arts and Antiquities in Tunisia, at Carthage and Dermah, have resulted in some interesting discoveries. After getting though the layer of Byzantine *débris* containing tombs and mosaics, he came on the Pagan stratum, in which he found a colossal head of Marcus Aurelius, and two large mosaics representing naval battles and hunting scenes. In the ruins of the temple of Jupiter Ammon have been discovered four statues of priestesses, gilt and coloured and in fair preservation, eight statuettes in marble, and other fragments ; and various tombs containing Carthaginian pottery, terra-cotta masks, and other objects.——The death is announced, at the age of sixty-eight, of M. Jules Cousin, honorary curator of the Carnavalet Museum, of which he was the founder, and of the Municipal Library, to which, after the Commune, he gave 6,000 volumes and 8,000 engravings relating to the history of Paris. He was author of various important archæological works.——The death is also announced, at the age of eighty-six, of M. Charles Marie Mesnager, member of the Société Centrale des Architectes, who in former days took part in the works of the fortifications of Paris and in those of the Hôtel de Ville and the College of France. He was a pupil of the Ecole des Beaux Arts, and in 1869 obtained an honourable mention, in connexion with the Bordin prize, for his essay on "Les principes et les règles générales de l'Architecture."

Penang.—The Commissioners have called for and obtained tenders for the erection of the Diamond Jubilee Clock Tower, the result being that the lowest is about 60 per cent. above the amount proposed to be spent when designs were advertised for. It will be remembered that the Municipal Engineer's design was placed first, and it was afterwards decided that his design be carried out, but that another architect be called in to superintend the work, prepare details, and contract. One architect and one engineer were then asked what commission they would accept, the former naming 7½ per cent. and the other 5 per cent. The latter was accepted, and he prepared the specification and contract. It appears that in this colony it is usual for the architect to charge 10 per cent. for drawings, specification, and the superintendence of work, which sum includes payment of clerk of works, and on this occasion nothing was said to lead any one to think that the usual conditions would be departed from. However, it appears from the specification that the contractor is to pay to the superintending architect 100 dols. a month for a clerk of the works, and as the time of erection is twenty months, this makes a considerable difference. There are several strange clauses in the contract, such as, "The contractor is to supply full-size drawings of certain carved work." If the contractor supplies bad sand or other material he has to pay a fine to the architect. So far a start has not been made. A scheme for lighting Penang with electric light has, we believe, been sanctioned, and is likely to be put in hand.

Singapore.—The Committee of the Diamond Jubilee Town Hall are not much further advanced than they were a year ago, as they are still looking for a site. Designs were called for a building on a certain site, but this site is likely to be abandoned, as it is a very bad one.

Malay Peninsula.—The railway is being rapidly pushed on both north and south, and before long the several sections will be joined together and the line from Penang to Malacca completed.

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The British Fire Prevention Committee.—The British Fire Prevention Committee, the establishment of which was the outcome of the Paris Charity Bazaar and Cripplegate fires, has now become a fully incorporated scientific society under the special sanction of the Board of Trade. It will be known as such from March 1.

## MISCELLANEOUS.

PROFESSIONAL AND BUSINESS ANNOUNCEMENTS. —Mr. Ernest Runtz, architect, of 10, Walbrook, has taken in partnership Mr. Albert C. Bredon and Mr. G. McLean Ford, who have been with him for some years, and the firm will now be that of "Ernest Runtz & Co., architects."——Messrs. D. Balfour & Son, civil engineers, of Newcastle-on-Tyne, have changed their London office from 28, Victoria-street to Westminster Chambers, 1, Victoria-street, S.W.——Mr. G. Chatterton, civil engineer, has removed his offices from 46, Queen Anne's-gate, to 6, The Sanctuary, Westminster.——The Patent Impervious Stone Company have removed their chief office from 9, Victoria-street, Westminster, to Rutland Wharf, Hammersmith, W. The office in Victoria-street will be retained as a branch office only.——The firm of Walter & Hensman, builders and contractors, &c., at Horncastle, is dissolved, and in future the business of builder and contractor will be carried on by Mr. Charles Hensman on his separate account. The agency for the Groby Granite Company will be retained and carried on by Mr. W. Baker Walter.

FOUNTAIN AT SOUTHEND, CATFORD.—The fountain which has been erected at the south-west corner of the junction of Bromley-road and Beckenham-lane, Southend Village, Catford, in commemoration of the completion of the sixtieth year of her Majesty's reign, was opened recently. The fountain, the base of which is of grey granite, with four basins, has a slender shaft of Portland stone, surmounted by a floriated cross. It has been erected from the design of Mr. R. Creed, of London.

"OLD KENSINGTON."—The *Athenæum* states that the collection of sketches, in black and white, that were made for the illustration of the Rev. W. J. Loftie's book, has been secured for the local Public Library. The collection includes views of some interesting houses which have been pulled down within the past ten or fifteen years. In some of our public libraries the formation of similar collections relating to their own respective districts is by no means neglected; the practice should be encouraged, so as to render each library a place of deposit for authentical particulars upon the history and topography of the district.

STREET IMPROVEMENT IN THE STRAND.—It is intended to demolish the buildings between Arundel-street and Norfolk-street, Strand, and to erect new premises for shops and offices. It is not proposed to set the Strand frontage back in view of the fact that the County Council has acquired the Holywell-street block opposite, in connexion with their Holborn to Strand improvement scheme.

THE NEW PARLIAMENT-STREET.—The new roadway in Parliament-street, in connexion with the improvement scheme at Westminster, is already completed, and on Tuesday this week the barriers were removed and it was opened to traffic. The work has been pushed forward by the contractors, Messrs. John Mowlem & Co., and large gangs of men, ranging from fifty to 200, have been constantly employed.

DUNDEE MASTER BUILDERS' ASSOCIATION.—At the ninth annual meeting of the Dundee and District Master Builders' Association, recently—Mr. James Powrie, the President, in the chair—the Committee of Management, in their annnal report, congratulated the members on the prosperity which had continued to attend the building trades during the past year. It was satisfactory to reflect that during the year there had been little or no friction with the employees in any of the trades represented by the Association. The attention of the Association was much occupied during the earlier part of the year with the question of how best the employers could be insured against the heavy burden placed upon them by the Workmen's Compensation Act. Prior to the passing of that Act it was the universal custom of employers to ensure themselves against liability to their workmen at common law, and under the Employers' Liability Act at a rate of insurance of about 4s. per 100*l.* of wages paid. On the passing of the Workmen's Compensation Act, however, it was announced by the insurance companies that to cover liability under that Act they would be obliged to charge premiums at a rate of about 2*l.* per cent. It was felt by the members of the Association that this increase was quite excessive in proportion to the additional risk, and the question of starting a Local or National Mutual Indemnity Association was discussed. Latterly, however, one of the insurance companies quoted a rate which was little more than 50 per cent. of the original quotation, and the competition thus engendered amongst the various companies had ultimately the effect of reducing the current rate for builders' liability to something like 1*l.* per cent. Even this rate was excessive. An effort was made to get the architects to insert in their schedule a special item for the cost of the insurance against liability to workmen, but to this request the architects did not agree. In Aberdeen the architects had agreed to insert such an item. Complaint had been made against the architects issuing schedules with the arbiters' names filled in, but the Council of the Architects' Institute had passed a resolution declaring that in their opinion the rules, as framed, left it competent for the architect either to issue schedules with the arbiters' names blank or with the names filled in, leaving it optional to the contractor to object to the arbiters' names when it was proposed to accept his offer. The Association had protested against this construction of the rule as fallacious and mischievous, and the committee were of opinion that in the interests of the Association this question should be pushed to an issue. The following office-bearers were appointed:—President, Mr. D. P. How; Vice-President, Mr. W. Farquharson; Secretary and Treasurer, Mr. Joseph Wilkie, solicitor.

ELECTRIC LIGHTING AT DONCASTER.—On the 21st ult. a Local Government inquiry was held at Doncaster by Mr. H. H. Law, one of the Inspectors of the Local Government Board, with respect to an application by the Corporation to borrow 30,000*l.* for the purpose of lighting the town by electricity. The case was laid before the Inspector by the Town Clerk (Mr. T. B. Sugden), and evidence was given by Mr. W. H. Crabtree, Borough Surveyor, and Mr. J. N. Schoolbred, Electrical Engineer.

PROFITS OF BRICKMAKING.—Mr. Daniel Watney sat as arbitrator on the 22nd ult. at the Surveyors' Institution, Savoy-street, to hear the claim, Bachelor *v.* the Brompton, Chatham, Gillingham, and Rochester Water Company, for compensation in respect of land taken under their Act of 1898 by the company for the extension of their works. The claimant, Mr. R. J. Bachelor, of Chatham, who is a brickmaker and contractor, is the owner of the Darley Farm, the Chatham Farm, and several other properties in the district, nearly twenty acres of which the water company has acquired. Since 1892 he has, in the Darley field, been engaged in making bricks, and in 1896 purchased the Chatham field for the extension of his works. During the three years, 1896-7-8, the average cost of the bricks had been 15s. 4½d. per 1,000, and the selling price 30s. 10d. per 1,000, whilst the profits during the same period had been over 10,000*l.* He claimed the sum of 78,958*l.* for the value of the land taken and compensation for disturbance. It was estimated, on behalf of the claimant, that there was enough brick earth on the land to make 48,149,201 bricks, and it was contended that he was entitled to the profits, discounted for twelve years, which he could have made if he had been left in possession. The inquiry was adjourned. —*Daily Telegraph.*

WILL OF THE LATE MR. W. ROBERTS.—By the will of Mr. William Roberts, architect and surveyor, of Manchester, who died recently, 23,850*l.* are left for public purposes. A sum not exceeding 4,500*l.* is set apart for the erection of a bronze statue in Manchester in memory of Mr. Gladstone; and 4,000*l.* is to be devoted to the erection of a Unitarian chapel at Brook's Bar, Manchester. The other bequests include 2,000*l.* for the Hulme Grammar School, Manchester; 1,200*l.* for a lifeboat on the Welsh coast, to be called *The William Roberts;* 1,050*l.* to the Manchester Infirmary; 1,000*l.* to the Old Trafford Deaf and Dumb Schools; 1,000*l.* to the Welsh Theological College, Bala; 1,000*l.* to the Unitarian Home Missionary College, Manchester; 1,000*l.* to the Northern Counties Hospital for Incurables; and many other benefactions, varying in amounts from 100*l.* to 500*l.*

CLOCK TOWER, EASTGATE, CHESTER.—A clock tower is being erected on the Eastgate, Chester, as a Diamond Jubilee memorial. The clock was supplied by Messrs. Joyce & Co., the ornamental ironwork being by Mr. James Swindley, of Handbridge. Messrs. Douglas & Minshull are the architects.

BURTON BUILDERS AND THE COMPENSATION ACT.—A meeting of the members of the building and allied trades of Burton was held at the Midland Hotel recently to discuss the advisability or otherwise of forming a Mutual Association to meet the provisions of the Workmen's Compensation Act, 1897. It was eventually decided by 13 votes to 1 to form a Mutual Association, and a number of directors were nominated.

THE TAVISTOCK-ROAD IMPROVEMENT, PLYMOUTH.—Nearly all the owners of property on the east side of Tavistock-place, Plymouth, waited as a deputation upon the Special Works Committee of the Plymouth Borough Council on the 20th ult. to protest against the adoption, without at least some substantial modification, of the premiated design for the reconstruction of the houses forming the east side of Tavistock-road and the west side of Tavistock-place.—Mr. J. J. Marshall, who introduced the deputation, pointed out that they were in no sense hostile to the improvement of Tavistock-road, but objected to certain features in the design of Mr. Herbert T. Buckland, which had been awarded the premium offered by the Council of 250*l.* The deputation explained that what they chiefly objected to was the proposal to practically convert Tavistock-place into a back lane by placing the backs of the new houses, which would front Tavistock-road, towards Tavistock-place. To a row of shops facing Tavistock-place they would have no objection and a strong preference was expressed for another of the competitive designs, which provided for a double row of houses on the site to be cleared—one facing Tavistock-road and the other consisting of smaller houses two stories high facing Tavistock-place. The Chairman (Mr. Law) invited some practical suggestions from the deputation, but the Rev. J. M. Hodge replied that that was a matter for the Corporation experts. All the deputation desired was that the plans might be so modified as to enable Tavistock-place to retain somewhat the character of a front street. After the deputation had withdrawn the committee discussed the subject. Whilst, however, it was conceded that any modifications which could reasonably be made in the plans to meet the objections of the owners should be done, it was felt it would be wrong for the Corporation to violate its own by-laws, and practically the whole question was relegated to the Council to determine at its next meeting.

THE LONDON SKETCH CLUB.—The private view of the London Sketch Club's Second Exhibition will take place at the Modern Gallery, 175, Bond-street, W., on Tuesday, March 7, and the Exhibition will be open to the public from the 8th to the 18th inclusive. This exhibition will consist only of the "Time Sketches" painted in the gallery.

HOME ARTS AND INDUSTRIES ASSOCIATION.—The fifteenth annual exhibition of the work done in the classes of the Home Arts and Industries Association will be held from May 11 to 15, in the gallery of the Albert Hall. There will be exhibits from a large number of classes throughout the United Kingdom. The exhibition will include wood carving, inlay, metal repoussé, embossed leather, spinning and weaving, and many other applied arts.

NATIONAL REGISTRATION OF PLUMBERS.—At the annual meeting of the North of England District Council, held at Middlesbrough on the 23rd ult., a resolution was passed to the effect "That this meeting, recognising that the qualification of Medical Officers of Health, and the qualification and certification of Sanitary Inspectors have been provided for under the Public Health (London) Act, 1891, is of opinion that it is requisite for such statutory provisions to be extended to secure the adequate qualification, certification, and registration of qualified plumbers, upon the efficiency of whose work the healthiness of a house virtually depends." Professor Bedson then delivered a lecture on "Dust and its Relation to Sanitation."

CANON BENHAM ON WINCHESTER CATHEDRAL.—On Monday Canon Benham gave a lecture on Winchester Cathedral at the London Institution, the first part of which consisted of a review of the events that led to the foundation of our ancient towns and their cathedrals, the origin of their names, and the invasion and settlement in Britain of Saxons, Jutes, and Angles under the name of Englishmen. For four centuries Britain had been a province of the Roman Empire, ruled from the great cities such as York and Lincoln. In 411 Rome recalled her legions from Britain to defend Italy from the Goths, and they never again returned to this country. Englishmen first landed on the Isle of Thanet. It was exactly on this spot that Saint Augustine landed more than a century afterwards, now 1,300 years ago. Comers up from the sea on the south coast, first Celts then English, worked their way up the river Itchen (now a mere fishing stream), and there, under the shelter of the downs, built their inland city, known in the earliest records as Gwent (=the White City) of the Belgæ; Venta Belgarum, the White Town, explained to any visitor by the chalkey nature of the soil on all sides visible. After the general scramble for possession of the land by the invaders, Britain was divided into kingdoms, the strongest of which proved to be that occupied by the West Saxons, called Wessex. They made Venta their capital, only they dropped the Belgarum and called it instead Vent Fortress—Winchester. Some of the fortifications are still to be seen. The expelled Britons were Christianised, in name at any rate, by the Romans; the invaders were heathens. In 633 came Birinus, the monk, to convert the conquerors to the Christian faith. He baptised the King of Wessex at Winchester, and the king was anxious to have a cathedral in his capital, and in 646 it was begun, and finished in 648. There may be in the crypt some remains of the original church, because whereas the oldest churches were built with timber and roofed with reeds, Winchester is said to have been a novelty, being built of stone, and much finer than any that had been built yet. The first bishop died in 650. Passing rapidly over the olden days, the lecturer referred to the most famous of the early bishops—S. Swithun, born between 852 and 862. At this time the Danes were in full swing with their invasion of England. They burnt Canterbury Cathedral and killed its bishop, Alphege. Swithun, a zealous builder, persuaded the King, no other than Alfred the Great, to build a strong wall round Winchester, which effectively kept the invaders out. In 980 the cathedral was rebuilt and rededicated with such pomp as had never been seen in England. Not only the King, but nearly every duke and noble was there, and nine bishops, including the famous Dunstan. After the Norman Conquest, William made his cousin Walkelin Bishop of Winchester. In 1079 he began to build his cathedral from his own plans, but funds ran short. Shortly after Walkelin's death the central tower fell in. In those days restoration and additions were made in the style then in vogue, with no thought of following existing lines. In the case of Walkelin's tower, however, Bishop Godfrey made a notable exception; out of respect to Walkelin's memory, he rebuilt it on the Norman plan. This was in the year 1200. He removed the Norman east end and rebuilt it in the Early English style. In the fourteenth century Edyngdon pulled down Walkelin's Norman nave and the great west towers and built the present west front. After him came the great William of Wykeham, architect and prelate. He did not pull down, but transmuted

Walkelin's heavy Norman work into the graceful beauty of the Perpendicular style. Thus, with a few minor alterations, Winchester Cathedral took the form it has retained ever since. The lecturer took his audience a tour of the cathedral and the city, pointing out the interesting features in order, and illustrated his remarks with limelight views.

**The Strand and Clare Market Improvements.**—Mr. H. T. Steward, F.S.I., the arbitrator appointed to decide the value of properties acquired by the London County Council under the Housing of the Working Classes Act, 1890, in connexion with the Strand and Clare Market scheme, commenced his inquiry at the offices of the Strand District Board of Works, Tavistock-street, Covent Garden, on the 27th ult. The first claim was in respect of the "Hope Tavern," Blackmoor-street, which is held on lease for a term of which twenty years are unexpired at Lady-day next at 70*l.* a year. Mr. Thomas J. Weaver, public-house valuer, expressed the opinion that 8,000*l.* could be got as a premium for a sixty years' lease. Witness had applied the 4 per cent. table. His total valuation, including the usual 10 per cent. for forced sale, was 6,567*l.* These figures were supported by the evidence of other experts. On behalf of the London County Council, Mr. Thornton and Mr. Weatherall, F.S.I., had taken the rental of 70*l.* a year on the 4 per cent. table, 952*l.*; value in possession, 100*l.* per annum, 1,919*l.*; 4 per cent. table, twenty-five years' purchase, 2,500*l.* Their total valuation was 3,362*l.* In regard to the "Grapes Tavern," Drury-lane, and the "Artichoke," Clare-street, the arbitrator was asked to make an award of 3,647*l.* and 7,200*l.* respectively.

**Cheapside Improvement.**—On Monday workmen began to pull down business premises having frontages in Cheapside and St. Paul's Churchyard, with a view to the widening of the western entrance to Cheapside. In rebuilding, the street-line will be placed back several feet. The improvement scheme also provides for the widening of the roadway at the junction of Newgate-street and Cheapside.

**Old English Playhouses.**—The series of free lectures on matters connected with building, organised by the Carpenters' Company, came to a conclusion on Monday, when Mr. William Poel, director of the Elizabethan Stage Society, gave an address on "English Playhouses in the Sixteenth, Seventeenth, and Eighteenth Centuries." Mr. Poel's lecture was illustrated by a number of lantern slides, taken from old woodcuts and drawings. With these he showed the manner in which dramatic representations had been given in England from very early times. The origin of the drama was found in the religious mysteries, which were acted often in front of the cathedrals and churches. Then there was the outdoor pageant, the drama in the court-yard, and the bear-baiting ring, a kind of amphitheatre with raised seats for the spectators. From these early experiences the builders must have determined the earliest design for a playhouse, taking the circular shape from the bear-ring, and the stage from the raised platform used in inn yards. The building of the first playhouse was due to the banishment of the players from the City in 1576. There were then five playhouses in inn yards in the City, but the streets were too narrow to serve as approaches for the crowds of people who wished to enter, and this caused the removal of the drama to the Surrey side of the river. He showed slides bearing on the Elizabethan method of representing plays, and a series of pictures showing the great alterations that took place in theatres as time went on.

**Riddlesworth, Norfolk.**—The fine old mansion known as Riddlesworth Hall, dating from 1780, which on the 10th ult. was the scene of a most destructive fire (little being left beyond the bare walls), will, we understand, shortly be rebuilt from designs of Mr. Herbert Green, architect, of Norwich. The building is covered by insurance to the extent of 20,000*l.*

**Exeter Guildhall.**—At a meeting of the Exeter City Council on the 22nd ult., the Estates Committee recommended that the City Surveyor be instructed to insert steel girders inside the stonework of the Guildhall front at the level of the room over the arches, in accordance with his suggestion at an estimated cost of 35*l.* The Surveyor had pointed out that this work was only preliminary to the restoration of the whole front, and recommended that the fixing of the steel girders should be done when the arch centres and boarding for the restoration work were in place, so that each stone of the front could be bolted to the steel longitudinal piece. Upon this the Committee further recommended that Mr. Read be employed to carry out the restoration of the stonework of the front of the Guildhall under the direction of the architects to the Society for the Protection of Ancient Buildings. The recommendations of the Committee were adopted.

**Glasgow Building Trades Exchange.**—The annual dinner of the members of the Glasgow Building Trades Exchange was held in the Windsor Hotel on the 24th ult. Colonel Robert J. Bennett presided. Mr. William Anderson proposed "The Navy, Army, and Reserve Forces," and Mr. Gray replied. Mr. James Goldie then gave "The City of Glasgow." Bailie Carswell replied. Mr. Walker, Newcastle, proposed "The Glasgow Building Trades Exchange." He mentioned that following the example of Glasgow a building trades exchange had been formed in the Tyneside burgh, and that there were between 170 and 180 members, and that they had been able to do some good work in connexion with a city improvement scheme. The Chairman, in replying, said that owing to the absence of the President, Sir William Arrol, he had the honour to preside for the second time at the annual dinner. The exchange was barely five years in existence, they were entirely free of debt, and both financially and numerically stronger than they had been at any time of their existence. Besides, the exchange prevented them living in cliques, isolated from each other; it had enabled them to show individually a little of that spirit of unity that brought men together, that made them march shoulder to shoulder, and led them to victory. They did not run the exchange for sentiment. It was a business enterprise, managed and conducted on business principles. Brains and skill were what they claimed for its members, combined with honesty of purpose in carrying out their contracts. The Exhibition Committee, in his opinion, wisely sent three delegates in the beginning of the year to the United States to see what they could learn from the past experience of the great Chicago Exhibition. He thought it would be well if the Municipality of Glasgow were in closer touch with the architects, surveyors, and the Builders' Exchange in erecting all public buildings.

**A Railway Up Mont Blanc.**—A contractor connected with "Travaux Publics" department of Paris has announced his intention to undertake the construction of a railway from the base to the summit (or nearly so) of Mont Blanc. A Technical Committee appointed by the Faculté des Sciences of Lyons has examined the project and reported favourably on it. The proposed railway would start from the village of Houches and be continued to a point about 250 mètres below the summit, and 80 mètres higher than the Janssen observatory. It is proposed to be a rope traction railway worked by electric power, and the cost is estimated at 10 million francs.

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## *CAPITAL AND LABOUR.*

**Aberdeen Masons.**—The operative masons and stonecutters in the building branch have asked a rise of ½d. per hour, the standard rate of wages being at present 8d. per hour. They are also to join the monumental branch in pressing a demand for payment of wages weekly in place of fortnightly. The masters having refused the men's demand, a conference will be held. Should this prove abortive, the question at issue will be referred to arbitration.

**Aberdeen House Painters.**—The Aberdeen House Painters' Union demanded an increase of wages from 7½d. to 8½d. per hour. The employers offered a rise of a ¼d., whereon the operators belonging to the union resolved to abide by their demand, and came out on strike on March 1 to the number of upwards of 300.

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## *LEGAL.*

### IMPORTANT ANCIENT LIGHT DISPUTE AT BROMLEY.

The case of Brown and others *v.* Collings came before the Court of Appeal, composed of the Master of the Rolls and Lords Justices Rigby and Vaughan Williams on the 25th and 27th ult., on the appeal of the plaintiffs from an order of Mr. Justice Byrne in the Chancery Division. The case was reported in the *Builder* of July 30, 1898. The action was brought by Mrs. Ellen Elizabeth Brown, the Rev. John Thomas Brown, and Mr. Chas. Webb, the owners in fee simple of certain dwelling-houses known as Nos. 83 84, 85, and 86, High-street, Bromley, Kent, and by Jane Lynes, the lessee of No. 83, Elizabeth Deane, the lessee of No. 84, and Mr. Isaac Gunton, the lessee of Nos. 85 and 86, for a mandatory injunction to restrain the alleged infringement of ancient lights. There was an alternative claim for damages.

Mr. Astbury, Q.C., and Mr. Dunham appeared for the plaintiffs (the appellants); and Mr. Eve, Q.C. and Mr. Chas. Crawley, for the defendant (the respondent).

Mr. Astbury said that the plaintiffs appealed from a decision of Mr. Justice Byrne dismissing their action for an injunction. Mr. Justice North, before whom the case came on a motion for an interlocutory injunction, had no hesitation in granting it, and when the case was opened before Mr. Justice Byrne, when the plantiffs' first witness was in the box, that learned Judge was a good deal impressed by the model and by the judgment of Mr. Justice North, and suggested that if he granted an injunction in the ordinary terms, prohibiting the defendant from allowing such part of his building which interfered with the plaintiffs' ancient lights to remain, the defendant might not know how much to take down, and if he took down what he thought right the plaintiffs might not be satisfied, and then the whole thing might have to be fought over again on a motion to commit.

The Master of the Rolls: You want a mandatory injunction?

Mr. Astbury said he did. The learned counsel then explained that High-street, Bromley, in which the premises in question were situated, was one which was being largely improved. A large quantity of new buildings had been put up in the street, and the plaintiffs' property, which happened to be very old, was valuable for pulling down and rebuilding on the site. The ancient lights were admitted, and were, of course, very valuable. Although there were sixteen windows in all, of which it was said the defendant had obscured the light by his building, he (counsel) should only trouble their Lordships with four, which were the principal as being on the ground floor. These windows faced south-west and in the best position to get the sun. Those windows for over twenty years looked over a low shed—about 10 ft. high at one end and 14 ft. at the other. This little building was distant from the windows 65 ft., so that the plaintiffs had practically an uninterrupted sky area. The defendant recently obtained a building lease of this piece of land, and upon the site of the little shed, without any notice to the plaintiffs, started to put up a building which was to be 33 ft. high up to the eaves and 44 ft. high up to the roof. The result of this was disastrous to the plaintiffs' light. At the latter height it was hopeless to expect the plaintiffs to get any sun at all except during the summer months. Mr Edward Gruning, who had reported on the matter to Mr. Justice Byrne, was of opinion that the defendant's building had not substantially interfered with the plaintiffs' light, but that the plaintiffs had themselves, within the last few years, materially diminished the access of light to their windows or some of them by raising and prolonging certain back additions in the rear of and at right angles to the houses. For this reason he thought that the angle of light should be taken at thirty degrees, and not the usual forty-five degrees. The learned counsel said that he disagreed altogether with this report. It was perfectly idle for anybody to say that the defendant's building had not taken away twenty-two degrees of the most valuable light to the plaintiffs' windows. Their Lordships would see that Mr. Justice Byrne had not even given the plaintiffs damages. A man's property in his light was just as much his own as the bricks in his walls, and another man could not come and take a material part of such light and say that, in his opinion, the other had got quite sufficient light. The plaintiffs considered that their property was ruined for building purposes if the defendant's building were allowed to remain. Professor Smith, Professor of Architecture at University College, who was the highest authority the plaintiffs could get on the subject, had visited the *locus in quo*, and had stated that the light to the plaintiffs' lower windows had been greatly interfered with by the defendant's building. The learned Counsel submitted that Mr. Justice Byrne had not given sufficient weight to the evidence of the plaintiffs' witnesses, and had given too great weight to Mr. Gruning's report.

Mr. Eve, for the respondent, submitted that Mr. Justice Byrne's decision, fortified as it was by Mr. Gruning's report, following his personal inspection of the premises in question, should be upheld.

The Master of the Rolls: It strikes me that Mr. Gruning has approached the matter from the point of view that the plaintiffs had got a sufficiency of light, and has not taken into consideration the amount taken away.

Mr. Eve replied that not one of the plaintiffs' witnesses agreed as to which of the windows was most affected by the defendant's building. The learned counsel then referred in detail to the plaintiffs' expert evidence, and asked their Lordships to come to the conclusion, as Mr. Justice Byrne did, that it was unreliable. In considering whether there had been substantial interference with light, the Court must take into consideration the nature of the premises and the locality in which they were situate and the purposes for which the light might be wanted. In the present case the plaintiffs could not expect to have for all time an unobstructed view over a park. Bromley was a growing place——

Lord Justice Vaughan Williams: It is not because your villa is built near London and you have enjoyed for more than twenty years absolutely unobstructed light, that at the end of twenty years somebody is to be entitled to obstruct your light.

Mr. Eve: What I mean is this. When you have got to consider the value of the obstruction of the light you must look at the things as they then exist, and if the villa has ceased to be a villa residence, and the street in which it is situated has become a commercial street, then in arriving at what is substantial interference you must arrive at what light a man had got before and the amount he has got left, put the one with the other, and consider whether the difference is substantial.

Mr. Crawley having followed on the same side, the Master of the Rolls, without calling upon Mr. Astbury for a reply, in giving judgment, said he had come to the conclusion that Mr. Justice Byrne's judgment ought to be reversed. This was a question of obstruction of light to ancient windows, and the model showed the windows most seriously affected by the defendant's building. In considering these light cases, one must consider what light came to the ancient windows before they were interfered with, and what light came to them since the obstruction. It was a question of degree whether there had been such obstruction or diminution of light as to render the premises uncomfortable or unfit for the ordinary purposes of habitation or of carrying on business. He (the Master of the Rolls) agreed that a considerable portion of the plaintiffs' evidence had been greatly exaggerated, but making all allowances for extravagant statements, he still felt driven to the conclusion that a considerable quantity of light which had formerly access to the plaintiffs' windows had been cut off by reason of the defendant's building. There ought to be an injunction to compel the defendant to pull down so much of his building as obstructed the access of light as previously enjoyed in the plaintiffs' buildings. As a guide to the parties he (his Lordship) thought the evidence showed that the defendant's building should not be above 25 ft. high, and unless it was pulled down to that height there would probably be a difficulty. That, however, was only a hint thrown out for the guidance of the parties. The order, of course, would be drawn up in the ordinary form, and the defendant would have to pay the costs of the action and of the appeal.

The Lords Justices concurred.

It was arranged that the defendant should have three months within which to carry out the order of the Court.

## EMPLOYERS' LIABILITY CASE

THOMAS COOPER, a carpenter and joiner, sued Mr. William Shepherd, builder, at the Southwark County-court, on the 23rd ult., under the Employers' Liability Act, to recover damages for personal injuries. Plaintiff was at work at the Borough Polytechnic on a board which slipped, and he fell to the ground, breaking one of his legs. Judge Addison, Q.C., said it was a clear case for compensation under the Act, and awarded plaintiff 100*l*. and costs.

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## MEETINGS.

### FRIDAY, MARCH 3.

*Architectural Association.*—Mr. A. Saxon Snell on "Public Baths." 7.30 p.m.

*Glasgow and West of Scotland Technical College (Architectural Craftsmen's Society).* — Mr. James M'Kissack on "Half-timber Work." 8 p.m.

*Institution of Junior Engineers (Westminster Palace Hotel).*—Paper on "Carbon Consuming Batteries and their Possibilities," by Mr. W. R. Cooper, B.Sc., illustrated by experiments. 8 p.m.

*Royal Institution.*—The Right Hon. Lord Rayleigh on "The Mechanical Properties of Bodies." IV. 3 p.m.

### SATURDAY, MARCH 4.

*South Kensington Museum (Lecture Theatre).*—Mr. William Burton on "Pottery." II. 3.30 p.m.

*British Institute of Certified Carpenters.*—Visit to the Prudential Assurance Offices at 3 p.m. Mr. H. A. Davey on "Shoring," at 6 p.m., at Carpenters' Hall.

*St. Paul's Ecclesiological Society.*—Visit to the Catholic Apostolic Church in Gordon-square. 2.45 p.m. at the east entrance.

*Sanitary Inspectors' Association.*—Professor W. W. F. Pullen on "Furnaces and Smoke Prevention." 6 p.m.

### MONDAY, MARCH 6.

*Royal Institute of British Architects.*—(1) Special general meeting to elect the Royal Gold Medallist for the current year; (2) Business meeting for the election of candidates for membership, &c. (see p. 222); (3) Mr. A. C. Dickie on "Some Early Christian Churches in Palestine." 8 p.m.

*Royal Academy.*—Lectures on "Greek Sculpture," by Dr. A. S. Murray. V.—"Chariot Groups." 4 p.m.

*Surveyors' Institution.* — Mr. F. J. Smith on "The Working of the Light Railways Act, 1896." 8 p.m.

*Society of Engineers.*—Mr. E. Wynter Wagstaff on "The Shan Hill Country and the Mandalay Railway." 7.30 p.m.

*Sanitary Institute (Lectures for Sanitary Officers).*—Lecture by Dr. Alfred Hill. 8 p.m.

*Liverpool Architectural Society.*—Mr. Edward S. Prior, M.A., on "Business in Architecture." 6 p.m.

*Leeds and Yorkshire Architectural Society.*—Exhibition of Institute Drawings. Nomination of Officers. 6.30 p.m.

### TUESDAY, MARCH 7.

*Institution of Civil Engineers.*—(1) Mr. J. T. Milton on "Water-tube Boilers for Marine Engines"; (2) Sir A. J. Durston on "Recent Trials of the Machinery of War Ships." 8 p.m.

*Northampton Institute, Clerkenwell.* — Lectures on Mediæval Architecture, by Mr. Francis Bond, M.A. IX.—"Anglo-Saxon and Irish Architecture." 7.45 p.m.

*Glasgow Architectural Association.*—Mr. W. S. Tucker on "A Holiday in the South of England." 8 p.m.

### WEDNESDAY, MARCH 8.

*Architects' Benevolent Society.*—Annual general meeting of the subscribers and donors will be held in the rooms of the Royal Institute of British Architects. 5 p.m.

*Sanitary Institute.*—A discussion to be opened on "The Establishment of Public Abattoirs in the Metropolis in relation to the Prevention of Tuberculosis," by Dr. William Arthur Bond, M.A. 8 p.m.

*Sanitary Institute (Demonstrations for Sanitary Officers).*—Inspection at L.C.C. Municipal Lodging House, Parker-street, Drury-lane. 3 p.m.

*Society of Arts.*—Mr. J. H. Collins, F.G.S., on "Cornish Mines and Miners." 8 p.m.

*Liverpool Engineering Society.*—Paper by Mr. Brysson Cunningham. 8 p.m.

*Edinburgh Architectural Association.*—Mr. J. Campbell Irons on "The Architectural Antiquities of Leith." 8 p.m.

*Northern Architectural Association.*—Annual meeting. 7.30 p.m.

### THURSDAY, MARCH 9.

*Royal Academy.*—Lectures on Greek Sculpture, by Dr. A. S. Murray. VI.—"Neo-Attic Sculpture." 4 p.m.

*Society of Antiquaries.*—8.30 p.m.

*Royal Institution.*—Mr. William Poel on "English Play-houses in the Fifteenth, Sixteenth, and Seventeenth Centuries." I. 3 p.m.

*Institution of Electrical Engineers.*—8 p.m.

*Sanitary Institute (Lectures for Sanitary Officers).*—Dr. J. F. J. Sykes on "Objects and Methods of Inspection, Nuisances, &c." 8 p.m.

### FRIDAY, MARCH 10.

*Institution of Civil Engineers (Students' Meeting).*—Mr. H. Lapworth on "The Construction of the Elan Aqueduct, Birmingham Waterworks." 8 p.m.

### SATURDAY, MARCH 11.

*Edinburgh Architectural Association.* — Visit to Colinton House, Colinton Castle, and Redhall.

*Royal Institution.*—The Right Hon. Lord Rayleigh on "The Mechanical Properties of Bodies." V. 3 p.m.

*Sanitary Institute (Demonstrations for Sanitary Officers).*—Inspection at Frien Barnet Sewage Works. 3 p.m.

*Institution of Junior Engineers.*—Conversazione at Westminster Palace Hotel. Reception at 7 p.m.

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## RECENT PATENTS:

### ACCEPTED SPECIFICATIONS.

*Open to Opposition until April 22.*

[1897] 26,810, Evans, Lamps. 29,433, Kinsey; [1898] 1,154, Drummond; 3,835, Harrison; 8,683, Aykroyds; and 12,182, Sardi, Generation of Acetylene Gas. [1898] 4,241, Sutcliffe, Noiseless Water-closets and Apparatus therefor. 4,438-40, The Canister Machine Company, Cans, Canisters, &c. 4,531, Richmond, Gas Meters. 4,632, De Man, Fire-proof Buildings. 5,326, Chapman, Seal Fastenings. 5,373, Dell, Anti-fouling Compositions, &c. 5,628, Grimshaw & Barnes, Cover for Tanks for Sewage, &c. 6,374, Martins, Detachable Firing Flue for Bakers' Ovens, &c. 6,443, Lingner, Application of Disinfectants. 6,458, Clifford & Frith, Compound for Paving or Covering Roads, Paths, or Floors, and for Making Paving Bricks or Blocks. 6,602, Wilson & Goodman, Stoves and Fire-grates. 6,622, Alcock, Combined Cinder-sifter and Dust Bin. 6,658, Davis, and [1899] 1,036, Vogt, Deep-boring Apparatus. 6,679, Marchant, Valve Seats. 7,603, Kettelwell, Method and Apparatus for Extinction of Fires in Breweries, Distilleries, and Similar Premises. 7,634, Brookes, Artificial Stone. 7,700, Dewar, Shields for Incandescent Electrical Lamps, &c. 7,839, Railton & Campbell, Water Filters 7,848, Penrose and Others, Heat Non-conducting Composition or Paint. 7,938, Gourrier, Gas, Oil, Spirit, and other Stoves. 8,112, Firmin & Firmin, Supply-valves for Lavatories, Wash-basins, Baths, &c. 8,142, Lamme, Systems of Electrical Distribution. 8,348, Heap, Electrical Measuring and Indicating Instruments. 8,380, Stocker and Others, a Liquid for rendering Articles Non-inflammable and for Fire Extinction. 8,595, Heath, Easels for both Indoor and Outdoor Uses. 8,655, Cutler, Dust Interceptor for Water-gas Generators. 8,801, Bentall, Crushing and Grinding Mills. 8,907, Marshall, Breaking-up and Scarifying Roads and other Ground Surfaces. 8,921, Cartwright, Fire Extinguishers. 9,306, Wright, Hot Plates of Gas Cooking Stoves. 9,421, Brodie & Prior, Cooking Ranges. 9,488, Rippingille, Cooking Stoves. 9,575, Walker & Hildred, Cranes. 10,854, Lloyd, Full-way Steel Pipe Water Conduits. 11,053, Briquet & de Raet, Vapour Lamp for Soldering, &c. 15,786, Railton and Others, Ash and other Hoists. 16,754, Bieberstein, Coin-freed Apparatus for Delivery of Electrical Current. 18,533, Harrison, Reversible Sliding Windows. 22,205, Nash, Water Meters. 24,522, Barnsley, Pipe Connexions and Fittings. 25,369, Karger, Compressed Gas Lighting Installations. 26,273, Stendebach, Automatical Gas Igniter. 27,318, Schram & Maundrell, Nozzles for Straining, and Preventing the Spraying of Water, more particularly Applicable to Taps. 27,440, Cramer, Feeding or Charging Apparatus for Cement Kilns and Furnaces. 27,629, Kieley & Mueller, Pressure-reducing Valves. [1899], 73, Williams, Common Blow-pipes. 888, Parker, Cutting Pliers or Nippers. 1,009, Daumas, Plug Cocks. 1,036, Vogt, Deep-boring Apparatus. 1,224, Maurer & Becker, Conveyance and Collection of House Refuse.

### ABSTRACTS OF PATENTED INVENTIONS.

24,108.—WATER HEATERS: *J. Winterflood.*—Within the double-jacketted casing is a tubular boiler between two chambers connected to the outlet and inlet pipes, respectively; on its way to the lower chamber the water passes a lift valve and a non-return valve, the boiler being heated by Bunsen burners, and the products of combustion circulating around the heater before their escape; the water inlet and gas valves are fixed upon one spindle, the lifting of the former valve makes a passage for gas to the burners through the latter, when the outlet cock is closed, water no longer flows, and a flexible diaphragm envelopes the spindle—an outlet is attached for any leakage of water; the apparatus is fitted with an independent valve for cutting-off the gas supply, in case of an excess of steam pressure, the valve being shut by means of a diaphragm against which the steam presses through an escape valve.

24,139.—BRICKS: *W. G. Jarvis.*—For facing and fixing bricks an admixture is made of cinder, ash, or coal dust, with equal parts of sawdust and clay or brick earth; the bricks are described as affording a good hold to plaster and mortar.

24,159.—WATER PRESSURE GAUGES: *R. T. & J. G. Glover.*—In order to eliminate error due to variations in the water level is constructed a float, into the bell whereof gas enters through a pipe, and having a central buoyant cylinder carrying a tracer rod, which records variations of pressure on the drum above; the foot of the drum spindle rests upon a frame supported by a ring-float, beneath which is put a guiding frame; the guiding frame works in connexion with another frame, to which guide rollers are attached; by means of a bevel gear the clock drives a slotted spindle, and the upper part of the drum spindle slides in, and turns with, the slotted spindle.

24,178.—PAINTS AND PAINTING: *C. E. Lee & Lawtons.*—For a water-mixed paint, comprising two mixtures, to be separately applied, the one mixture is made of a large number of various substances, amongst which are comprised carbonate of lead, hydrated oxide or silicate of zinc, carbonate of lime, with an aqueous solution of silica prepared by dialysis; to these pigments may be added. The other mixture consists of a solution of the compound silicates of zinc, ammonium, and sodium or potassium, to which may be added certain thickening substances and pigments.

24,179.—CEMENTS: *C. E. Lee & C. F. Lawtons.*—The inventors seek to provide a cement that shall be applicable for cementing sand, gravel, &c., on to the backs of tiles, or for cementing sand, gravel, or crushed stone on to the faces of bricks, or for putting a smooth and hard finish upon brickwork. They powder, and boil in water, a sodium tetrasilicate, which they obtain by fusing together sand, quartz, calcined soda-ash, and charcoal; to this they first add antimonic oxide, and then calcium carbonate, ground quartz, and the ground product of the fusion of quartz, lime, sand, carbonate of soda, and alumina or its silicate. The pasty mass will be improved by finely grinding it in a paint-mill. Colours may be added at will, and certain named natural compound silicates may be substituted for the artificial compound silicate, and iron oxide for lime in the fused compound.

24,219.—FLUSHING AND WATER-WASTE PREVENTERS: *D. Hurst.*—The pressure vessel is formed of lead and steel tubes, arranged concentrically, and with concrete between them, constituting a cylinder into the bottom of which the outlet-pipe projects, and which is perforated to let a part of the flush leak away as an after-flush, the air-pipe enters at either the top, or near the top, of the cylinder. The invention relates to flushing-apparatus specified under No. 3,267 of 1896.

24,224.—LIFT VALVES AND SEATS: *A. D. Curling.*—A removeable seat is screwed into the bottom of the casing of a ball-valve tap (for liquids, gas, and steam), the ball engages with the seat when one lowers the spindle which is recessed to receive a loose piece below the spindle. When the spindle is screwed up the ball rises owing to the pressure of the fluid, which then passes to the outlet.

24,278.—ORNAMENTED SLABS, PANELS, &C.: *G. L. Siever.*—To a perforated sheet-metal skeleton or wire netting, fixed against the wall or other surface, is applied a ceramical paste of the kind that is used for porcelain, and the paste is burned by means of an electrical current or a portable radiating stove; cotton coverings impregnated with a silicate can be used as an insulator, leaving insulating envelopes of silicate around the wires; colouring matters may be mixed with the paste, and the slabs, if enamelled or decorated with vitrifiable substances, may be baked again.

24,290.—GAS AND OTHER LAMPS: *H. Winkler.*—The contrivance is intended to afford means of supporting the globe when it is lowered in order that it may be cleaned or the burner removed; to the lamp's lower end is attached a tapered tube by a hook or similar adjustment, when the globe and its holder are lowered on to the flange of the tapered tube, they may be tilted to one side thereof, or the tube, globe, and holder may be swung aside upon the hook.

24,307.—SPANNERS: *S. Cook.*—In the spanner's head slides a forked jaw on a stem, which slides in a slot in the middle portion of the tool; the stem is threaded to engage with an adjusting nut, which projects through openings in side plates rivetted to the middle part, to which also may be attached a second jaw and a corresponding jaw formed by the ends of the plates and an intermediate piece.

24,313.—SHORING AND STRUTTING: *J. C. Cadman & J. T. Minshall.*—The stop-blocks (as secured to girders for keeping pit-props in position) are fashioned in one piece or in two, and are secured to the girder's lower flange by a wedge-shaped bolt that passes through a hole in the block to bear against the girder and to be tightened up by means of a nut.

24,369.—SASH FASTENERS: *R. C. Chichester.*—In one sash rail is recessed an angle plate, to which is pivotted a locking plate, to be normally forced outwards by a spring that engages with a ledge in the other rail and locks the closed sashes; a plate sliding on the front of the latter rail engages with a groove in the spring push to hold the locking plate when the sashes are to be unfastened or opened.

24,470.—ELECTRICAL JUNCTION BOXES: *J. Shipp & The Telegraph Manufacturing Company.*—The box has detachable sockets for receiving the ends of single or multiple conductors which are fixed therein by means of suitable fillings, and screws attach the sockets to the box; the inner conductors of a concentrical cable have connexions attached by sockets, the external conductors may be secured to lugs formed upon the detachable sockets outside the box.

24,604.—WATER WASTE PREVENTERS AND SIPHON DISCHARGE: *J. H. Harris.*—The lower end of the long leg of the siphon, which is pivotted about an axis, is fashioned to form a tubular valve seated upon the top of the discharge pipe; the flush is started upon the rush of water into the long leg when the siphon is tilted by the action of the pull-chain upon the ball-crank lever and rod, whilst inflow of water during the starting operation is prevented by means of a lateral projection upon the siphon which engages with, and lifts, the float arm.

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## SOME RECENT SALES OF PROPERTY:

### ESTATE EXCHANGE REPORT.

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| February 14.—By DRIVERS (Holloway) (on the Premises). | |
| Holloway.—5, St. John's Park, u.t. 52¼ yrs., g.r. 5*l*. | £500 |
| February 16.—By FULLER, MOON, & FULLER (at Croydon). | |
| Wallington, Surrey.—Demesne-rd., 44 plots of building land, area 4 a., f. | 1,030 |
| Coulsdon, Surrey.—Smitham Bottom, a block of building land with buildings thereon, f. | 1,075 |
| Croydon.—108, Oakfield-rd., and a plot of land adjoining, f. | 1,510 |
| Norwood.—73 and 75, Harrington-rd., u.t. 51½ yrs., g.r. 16*l*. 10s., r. 75*l*. | 335 |
| February 20.—By A. THOMAS, PEYER, & MILES. | |
| Prince's Risborough, Bucks. — "The Lion Brewery," with eighty hotels, public and beer houses attached, f. | 59,500 |
| Fulham.—Aintree-st., the Eagle Brewery, f., r. 60*l*. | 1,600 |
| By MATTHEW MILES. | |
| City of London.—Milton-st., "The Grapes" p.-h., f., r. 150*l*. | 4,975 |
| By SIM & RANDALL. | |
| Stratford.—14 and 16, Reginald-rd., u.t. 82 yrs., g.r. 10*l*. 10s. | 310 |
| 19 and 21, Ward-rd., u.t. 58½ yrs., g.r. 6*l*. | 340 |
| Holloway.—131, Corbyn-st., u.t. 71½ yrs., g.r. 6*l*., r. 30*l*. | 280 |
| By WILLIAM HOUGHTON. | |
| Richmond.—62, 64, 65, 66, 67, 69, 71, 72, and 73, Houblon-rd., u.t. 58 yrs., g.r. 26*l*. 5s. | 1,970 |
| Clapton.—1 and 3, Detmold-rd., u.t. 80 yrs., g.r. 10*l*. | 380 |

# COMPETITIONS, CONTRACTS, AND PUBLIC APPOINTMENTS.

## CONTRACTS.

| Nature of Work or Materials. | By whom Required. | Forms of Tender, &c. Supplied by | Tenders to be delivered. |
|---|---|---|---|
| Chapel, Barwick-in-Elmet, Yorks.... | ——— | G. F. Danby, Archt. 10 Park-row, Leeds ........ | Mar. 7 |
| Culvert, Honckley-road............. | Wrexham R.D.C. .... | J. Strachan, Surv Crispin Lodge, Wrexham... .. . | do. |
| Shop and House, Alnwick........... | Graham & Henderson | R R Temperley, Alnwick Castle, Alnwick ........ | do. |
| Schools, Graigellachie, N.B.......... | Aberlour Sch. Bd. .... | Brown & Watt, Archt. Aberdeen ............. | do. |
| Alterations to Bryn Rhydderch House, near Penpergwm .......... | .. | R. Williams, Archt. Pontypool .............. | do. |
| Road Works ................ | Bicester R.D.C. ..... | G. Walsh, Council Offices.. | do. |
| *Articles and Works ................ | Tottenham U.D.C..... | Offices, 712, High-road, Tottenham.... ........ | do. |
| Alterations to Shops, Market-street, Bradford................ |  | Milnes & France, Archt. Bradford............ | Mar. 8 |
| Mortuary, Tividale ............ ... | Rowley Regis U.D.C.. | D. Wright, Lawrence-lane, Old Hill, Rowley........ | do. |
| Road Stone and Kerbing .......... | do. | do. | do. |
| Three Blocks Dwellings, Cowgate .... | Edinburgh Corp. ... | T. Hunter. City-chmbrs. Edinburgh ............ | do. |
| Cottage, Blundeston, Lowestoft...... | ...... | S. Rivett, Archt. 5 South Quay, Gt. Yarmouth .... | do. |
| Surveyor's Materials ............... | Rishton U.D.C. ...... | J. J. Adams, High-street, Rishton ............ | do. |
| Park Shelter, &c. Beeston ........... | ...... .. | City Engr.. Municipal-bldgs. Leeds ............ | do. |
| Street Works, Hawthorn-avenue .... | Hull Estates Co. Ltd. | Gelder & Kitchen, 76, Lowgate, Hull ............ | do |
| Brick Bridge .................... | Coventry Corp. ...... | J. E. Swindlehurst, Engr. St. Mary's Hall, Coventry | Mar. 9 |
| Eight Houses, Low Moor ............ | Cleckheaton Indus Co-op. Soc. .. ...... | Secretary, Central Offices, Cleckheaton ............ | do. |
| Granite and Slag ................. | Stafford R.D.C. ...... | W. Morgan, 4, Martin-st. Stafford ............ | do. |
| School Chapel, Idle Moor ........... | ——— | Walker & Collinson, Archt. Swan-arcade, Bradford .. | do. |
| Road Works ................ | Bradfield R.D.C....... | J. Forrester, Surv. Theale, near Reading............ | do. |
| Sewarage Works, Isle of Arran, N B | Trustees of Duke of Hamilton ...... ... | Warren & Stewart, Engr. 115, Wellington-st. Glasgow.. | Mar. 10 |
| Two Cottages, Broughton Moor, Maryport .................. | . .... | B. Eilbeck, Standing Stones, Broughton Moor ........ | do. |
| Granite...... ............ | Billesdon (Leics.) R.D.C. | W. E. Richardson, 18, New-street, Leicester .... | Mar. 11 |
| Surveyor's Materials ....... ....... | Padiham (Lancs.) U.D.C. ......... | J. Gregson, C.E. Council Offices ............ | do. |
| Slag and Granite ............ | Norman Cross R.D.C. | Mr. Skinner, Surv. Norman Cross, Peterborough .... | do. |
| Reservoir ............ ........ | Roscommon Waterworks Co. .......... | C. Mulvany, C.E. Athlone | do. |
| Bridges, Millbeck, &c... ........... | Carlisle R.D.C. ... | J. Bell, Road Surv. 1, Aglionby-st. Carlisle .. | do. |
| Roadway ............ ........... | Gosforth U.D.C....... | C. J. Buff, Surv. Council-chambers .. ... .. .. | do. |
| Reading Room, Carlton-road ....... | Nottingham Corp..... | W. B. Starr, Archt. 12, St. Peter's-gate, Nottingham | Mar 13 |
| Six Houses, Oakworth, Yorks ....... | ....... | Judson & Moore, Archt. Oakworth, nr. Keighley | do. |
| Additions to Hospital, Newton Heath | Manchester Corp. .... | City Surv Town Hall .. | do. |
| Slaughter House ...... ........... | Llandudno U.D.C. .. | E. P. Stephenson, Engr Church Walks, Llandudno | do. |
| Road Materials ............ | Rotherham R D.C ... | Mr. Bradbury, 29, High-st Rotherham ...... .. | do. |
| Reservoir, Glantlees, Newton-on-the-Moor ...... ........... | Major Widdrington .. | M. T. Wilson, Archt. Alnwick .. ........... | do. |
| Coal Stores ............ | Cowes (I. of W.) U.D.C. | J. W. Webster, Engr. Council Offices .......... | do. |
| Two Houses, Windmill-road, Cork .. | D. O'Reilly .......... | W. H. Hill & Son, Archt. 28, South-mall, Cork .. | do. |
| Promenade Extension ............ | Llandudno U.D.C..... | E P. Stephenson, Engr. Church Walks, Llandudno | do. |
| *Asphalte Pavements ............ | St. Giles Dist. B. of W. | G Wallace, 197, High Holborn, W.C. .......... | Mar. 14 |
| *Sewer Work ...... ...... ...... | do. | do. | do. |
| *Works and Materials (various) .. .. | do. | do. | do. |
| Road Materials ....... ......... | Littleborough (Lancs.) U.D.C. .............. | G. A. Wild, Surv. Harehill-rd. Littleborough.... ... | do. |
| Bridge Widening, King's Lynn ...... | ——— | H. J. Weaver, C.E. Guildhall, King's Lynn .. .. | do. |
| *Road Making and Paving ............ | Willesden D.C. ...... | O. C Robson, Public Offices, Dyne-road, Kilburn .... | do. |
| *Fencing, Gates, &c. ............ | Cty. Boro. of West Ham | Lewis Angell, Town Hall, Stratford.. ....... .. | do. |
| *Alterations, &c. Sewer Pumping Station, Pimlico ............ | L.C.C......... .... . | Engr's. Dept. Spring-gardens, S.W. ......... | do. |
| *Materials (various) .... ........ | Greenwich B. of W. .. | 141, Greenwich-road, S E. | Mar. 15 |
| *Alterations to Workhouse Buildings | Camberwell Guardians | H. Jarvis & Son, 29, Trinity-square, Borough, S E | do. |
| Cast-iron Pipe Laying (7 miles) ...... | Weymouth Waterworks Co. .......... | T. & C. Hawksley, C.E. 30, Great George-st. S.W. .. | do. |
| Dross and Granite, nr. Doncaster .... | Thorne R.D.C......... | G. Kenyon, Plantation-rd. Thorne.... ......... .. | do. |
| Sewerage Works ............ | Westbury-on-Trym R.D.C. ............ | A. P. J. Cotterell, C.E. 7, Baldwin-st. Bristol .. . | do. |
| Thirteen Houses ............ | North Dublin Union | J. O. Neill, Union Offices, North Brunswick-street, Dublin................ | do. |

## CONTRACTS—*Continued.*

| Nature of Work or Materials. | By whom Required. | Forms of Tender, &c. Supplied by | Tenders to be delivered |
|---|---|---|---|
| Granite (1,000 tons) ............ | Chelmsford T.C....... | G. H. Sasse, Boro. Surv. 16, London-road, Chelmsford ............ ...... | Mar. 15 |
| Surveyor's Materials ... ............ | Hoo (Kent) R.D.C. | F. C. Thurston, Surv. Hoo | do. |
| *Timber and Concrete Wharf.......... | Blackheath and Greenwich District Electric Light Co............ | R. P. Wilson, 66, Victoria-st. S.W. ........ ... | Mar. 16 |
| *Hot-water Arrangements and Kitchen Fittings ............ | Islington Guardians .. | W. Smith, 65, Chancery-lane, W.C. .. ... | do. |
| Dwellings, Innishowen, co. Donegal.. | Commrs. of Irish Lights | C. Armstrong, Sec. Irish Lights Office, Dublin.. . | do |
| Paving Works............ | Preston (Lancs.) Corp. | Boro. Surv. Town Hall | Mar. 17 |
| Road Materials ............ | Hoylake (Cheshire) U.D.C. ............ | T. Foster, Surv. Council Offices ............ .. | Mar. 18 |
| Factory, Thornton-rd. Morecambe .. | Anderson & Sons...... | A. L. Lang, Archt. 12A, Pedder-st. Morecambe | Mar. 20 |
| *Road Making ............ | Beckenham U.D.C. .. | J. A. Angell, Council Offices ............ | do. |
| *Heating of Swimming Baths, &c..... | do. | do. | do. |
| *Deal and Jarrah Wood Blocks........ | Paddington Vestry .. | Surv Vestry Hall, Harrow-road, W. ............ | do. |
| *Ballast, Sand and Cement............ | do. | do. | do. |
| *Pitch and Tar............ | do. | do | do. |
| *Workshop at the Workhouse ........ | Croydon Union ...... | F. West, 23, Coombe-road, Croydon ............ | do. |
| *Well and Boring ............ | Rochford Union ...... | J. Mansergh, 5, Victoria-st. S.W. ............ | do. |
| *Church, Hanley............ | ....... | R. Scrivener & Sons, Archt. Hanley ............ | Mar. 21 |
| *School Buildings ............ | ....... | I. R. Brown & Son, 17 Market Hill, Luton .... | do. |
| Bridgework, Ringstead ............ | Thrapston R.D.C. .... | G. Bunnybun, Council Offices ............ | Mar. 24 |
| York Paving Flags ............ | Ramsgate Corp. ...... | T. G. Taylor, Boro. Surv. Broad-st Ramsgate .... | Mar. |
| *Granite, Granite Chippings and Dust | Middlesex C.C. ...... | H. T. Wakelam, Guildhall, Westminster, S.W....... | April 4 |
| *Cartage of Granite and Gravel........ | do. | do. | do |
| Bridge, near Lanchester............ | ——— | W. H. Ritson, Lanchester, co. Durham ............ | April 5 |
| Additions to Premises, Adam-st. Cardiff...... ............ | W. J. Rogers, Ltd..... | Jones, Richards & Co. Archts. 18 St. Mary-st. Cardiff............ | No date |
| Factory, Wrexham ............ | Allcock & Co. Ltd..... | W. Slater, Archt. 9, High-st. Wrexham............ | do. |
| House, Rawstorn-rd. Colchester...... | A. G. Rayner ........ | C. E Butcher, Archt. 3 Queen-st. Colchester .... | do. |
| Fourteen Cottages, Ashton-under-Lyne............ | ........ | T. George & Son, Archt. Old-square, Ashton...... | do. |
| Villa, Torrisholme, nr. Morecambe .. | Wood Bros. .......... | Marshall Bros. Archt. Back-crescent Morecambe .... | do. |
| Residence, Frinton-on-Sea ............ | ——— | B. Pite, Archt. 48, Harley-st. W. ............ | do. |
| Shops and Houses, Kidderminster.... | ——— | J. M. Gething, Archt Kidderminster ......... | do. |
| Two Villas, Finisklin, Sligo...... ... | A. Lyons ............ | W. F. Gilchrist, C E. Wine-st. Sligo ............ | do. |
| House and Shop, Sefton-rd. Morecambe ............ | Mr. Stutton .......... | Marshall Bros. Archt. Back-crescent. Morecambe | do. |
| Two Houses, Rossendale-avenue, Morecambe ............ | . . . | do. |  |
| Houses and Shops, Catergate, Newark | Messrs. Atter ........ | Sheppard & Harrison, Archt, 17, Kirkgate, Newark ............ | do |
| Two Houses and Shop, James-st Llanelly ............ | ——— | W. Lewis, 19, Coldstream-st. Llanelly ............ | do. |
| Laundry, South Acton ........ .... | ——— | G. P. Pratt, Archt. 10, The Parade, Acton...... | do. |
| Shop, Market-st. Lurgan, Ireland ... | J. Mullan ............ | W. J. Moore, Archt Ann-st. Belfast ............ | do. |
| Business Premises, Lurgan .......... | P. Doyle ............ | do. | do. |
| House, Pontefract-lane, Leeds....... | ——— | F. Mitchell, Archt. 9, Upper Fountaine-st. Leeds .... | do. |
| Church, Cardiff............ | ........ | F. R Kempson, Archt. 16, High-st. Cardiff ........ | do. |
| *Dwelling House and Out-buildings .. | T. J. Edney ........ | R. Sterry Wallis, Basingstoke ............ | do. |

## PUBLIC APPOINTMENTS.

| Nature of Appointment. | By whom Advertised. | Salary. | Application to be in. |
|---|---|---|---|
| *Clerk of Works ............ | Cty. Boro. West Ham | 4*l*. 4s. per week .......... | Mar. 4 |
| *Clerk of Works ............ | Festiniog County Sch. | ........ | do. |
| *Manual Training Instructors and Assistant Woodwork Instructors.. | Sch. Bd. for London.. | Instructor's Min. 100*l*. per annum, Max 155. ; Assistant's Min. 80*l*. Max. 100*l*. ............ | Mar. 11 |
| *Outdoor Foreman............ | Longton Corp......... | 2*l*. 10s. per week .......... | Mar. 18 |

*Those marked with an asterisk* (*) *are advertised in this Number. Competitions, p.* iv. *Contracts, pp.* iv. vi. viii. x. & xxiii. *Public Appointments, pp.* xxi. & xxiii.

| | |
|---|---|
| Walthamstow.—Addison-rd., Springfield and Hillside, f., r. 58*l*. | £960 |
| 20, Summit-rd., f. | 360 |
| Church End, freehold stabling premises | 800 |
| By THOMAS NEALE (at Nottingham). | |
| Nottingham.—31, Mayfield Grove, f. | 375 |
| 19, 21, and 23, Finch-st., and five houses in rear, f. | 965 |
| February 21.—By BROWETT & TAYLOR. | |
| Stratford.—Tenby rd., f.g.r. 170*l*., reversion in 79½ yrs. | 4,125 |
| Strand.—3, Bedfordbury, u.t. 75½ yrs., g.r. 47*l*., r. 203*l*. | 975 |
| Manor-pk.—4 and 6, Rabbit's-rd., u.t. 995 yrs., g.r. 9*l*. 15s. | 325 |
| By DAVID BURNETT & Co. | |
| Leyton.—35 to 47 (odd), Beaumont-rd., u.t. 79 yrs., g.r. 15*l*. | 1,020 |
| Walthamstow.—62 and 64, Hoe-st., u.t. 80 yrs., g.r. 7*l*. | 350 |
| Sutton, Surrey.—Clapham Lodge and 6 a., u.t. 64½ yrs., g.r. 30*l*. | 700 |
| By HARMAN BROS. | |
| City of London.—63, Aldersgate-st., u.t. 60 yrs., g.r. 120*l*., r. 315*l*. | 2,760 |
| Hampstead.—1 to 13, Mansfield-pl., u.t. 60 yrs., g.r. 28*l*. | 2,700 |
| Finsbury Park.—18, Gloucester-rd., u.t. 80 yrs., g.r. 10*l*. 10s., r. 65*l*. | 760 |
| By W. R. NICHOLAS & Co. | |
| Hare Hatch, Berks.—The Hawthorns and 3 a. 1 r. 32 p., f. | 2,300 |
| By G. F. HARRINGTON. | |
| Edmonton.—Hertford-rd. (near), The Cock Field Building estate, 12 a., f. | 4,300 |
| Camberwell.—11 to 21 (odd), Hinton-rd., u.t. 68 and 66 yrs., g.r. 34*l*., r. 218*l*. | £1,615 |
| By C. & H. WHITE. | |
| Walworth.—Lorrimore-st., &c., i.g.r. 200*l*., u.t. 55 yrs., g.r. 70*l*. 12s. | 2,520 |
| Battersea.—286, 292, and 294, Battersea Park-rd., u.t. 78½ yrs., g.r. 32*l*. 10s., r. 215*l*. | 3,110 |
| Wandsworth.—9, Dent's-rd., u.t. 81½ yrs., g.r. 7*l*. 16s., r. 38*l*. | 435 |
| Brixton.—26, 28, and 30, Craster-rd., u.t. 77 yrs., g.r. 21*l*., r. 100*l*. | 930 |
| Camberwell.—31, 33, and 35, Grace's-rd., u.t. 60 yrs., g.r. 16*l*. 10s., r. 90*l*. | 930 |
| Plaistow.—40 to 48 (even), Garfield-rd., u.t. 82½ yrs., g.r. 17*l*. 10s. | 380 |
| By DEBENHAM, TEWSON, & Co. | |
| Crouch End.—Crouch Hill, f.g.r. 60*l*., reversion in 69½ yrs. | 1,940 |
| Cecile Pk., f.g.r.'s 247*l*. 10s., reversion in 83 yrs. | 7,950 |
| Cecile Pk., f.g.r. 45*l*. 4s., reversion in 89 yrs. | 1,450 |
| Cecile Pk., f.g.r.'s 190*l*., reversion in 83 yrs. | 6,040 |
| Bank-bldgs., f.g.r. 92*l*., reversion in 86 yrs. | 2,950 |
| Weston-pk., f.g.r. 42*l*., reversion in 87 yrs. | 1,320 |
| Weston-pk. f.g. rents 259*l*., reversion in 83 yrs. | 8,190 |
| Weston-pk., f.g.r. 27*l*., reversion in 89½ yrs. | 840 |
| Weston-pk., f.g. rents 306*l*. 7s., reversion in 83 yrs. | 9,710 |
| Elder-av., f.g. rents 193*l*. 3s., reversions in 83 and 89 yrs. | 6,110 |
| Fairfield-rd., f.g. rents 75*l*. 17s., reversions in 87 and 89 yrs. | 2,390 |
| Fairfield-rd., f.g. rents 174*l*. 11s., reversion in 89 yrs. | 5,530 |
| Aubrey-rd., f.g. rents 106*l*. 5s., reversion in 89 yrs. | 3,330 |
| Palace-rd., f.g.r. 11*l*., reversion in 79 yrs. | 330 |
| Middle-lane, f.g. rents 111*l*. 6s., reversion in 65 and 60 yrs | £3,310 |
| Palace-rd., f.g.r. 14*l*. 14s., reversion in 60 and 79 yrs. | 440 |
| Barrington-rd., f.g.r. 11*l*., reversion in 79 yrs. | 330 |
| Holloway.—Aubert-pk., f.g.r. 41*l*. 16s., reversion in 77½ yrs. | 1,250 |
| Brixton.—Josephine-av., f.g. rents 58*l*. 10s., reversion in 91 yrs. | 1,760 |
| Arodene-rd., &c., f.g. rents 307*l*., reversion in 91 yrs. | 9,210 |
| Helix-rd., &c., f.g. rents, 364*l*. 10s., reversion in 91 yrs. | 10,920 |
| Leander-rd., f.g.r. 42*l*., reversion in 91 yrs. | 1,250 |
| Brixton Hill, f.g. rents., 150*l*., reversion in 66½ yrs. | 4,570 |
| By BOYTON, PEGRAM, & BUCKMASTER (at Walham Green). | |
| Fulham.—17, Fristen-st., u.t. 93 yrs., g.r. 6*l*. 10s., r. 35*l*. | 365 |
| Lillie-rd., a freehold building plot | 405 |
| 40, Purser's Cross-rd., u.t. 89 yrs., g.r. 5*l*. | 375 |
| Februrary 22.—By BEARD & SON. | |
| Notting Hill.—5, Victoria-gardens, u.t. 60 yrs., g.r. 4*l*. 5s., e.r. 45*l*. | 545 |
| 15 and 35, Dartmoor-st., u.t. 50½ yrs., g.r. 10*l*. | 770 |
| Kilburn.—3, Goldsmith-gardens, u.t. 45½ yrs., g.r. 5*l*., r. 23*l*. | 195 |
| By HIGGINS & SON. | |
| Hampstead.—21, 23, 26, and 28, King's College-rd., u.t. 53½ yrs., g.r. 32*l*., r. 310*l*. | 3,155 |
| 9 and 9A, King's College Mews East, u.t. 53½ yrs., g.r. nil | 470 |
| 9, 9A, and 10, King's College Mews West, u.t. 53½ yrs., g.r. nil | 530 |

| | |
|---|---|
| St. John's Wood.—59 and 61, Springfield-rd., u.t. 38 yrs., g.r. 16l. 16s., r. 130l. | £1,225 |
| 19 and 20, Queen's-ter., u.t. 21 yrs., g.r. 25l., r. 175l. | 980 |
| Paddington.—7, Praed-st., u.t. 13½ yrs., g.r. 5l., r. 85l. | 550 |

By H. DONALDSON & SON.

| | |
|---|---|
| Bermondsey.—63, 64, 65, and 66, Grange Walk, area 6,300 ft., f. | 1,575 |
| Stoke Newington.—39, 41, 43, and 45, Cowper-rd., f., r. 132l. 14s. | 1,875 |
| 7, Goldsmith-sq., u.t. 53 yrs., g.r. 2l. | 285 |

By ERNEST OWERS.

| | |
|---|---|
| Cricklewood.—34 and 36, Oaklands-rd., u.t. 93 yrs., g.r. 12l., r. 68l. | 680 |
| Shepherd's Bush.—1, The Market, u.t. 97 yrs., g.r. 18l., r. 105l. | 1,500 |
| Wimbledon.—Alexandra-rd., f.g.r. 39l., reversion in 90½ yrs. | 1,090 |

By E. W. RICHARDSON & SON.

| | |
|---|---|
| Hackney.—Hackney-rd., f.g.r. 12l., reversion in 12 yrs. | 450 |
| Hackney-rd., f.g.r. 12l., reversion in 35 yrs. | 350 |
| Holloway.—58, Langdon-rd., u.t. 79 yrs., g.r. 5l. 10s. | 140 |
| Tottenham.—Wakefield-rd., Fern Villa, u.t. 79 yrs., g.r. 8l., r. 28l. | 270 |

By G. PEARCE & SONS.

| | |
|---|---|
| Stoke Newington.—10, Springdale-rd., u.t. 68 yrs., g.r. 5l., r. 40l. | 380 |
| 34, 36, and 38, Springdale-rd., u.t. 72½ yrs., g.r. 16l. | 910 |
| 42 and 44, Springdale-rd., u.t. 68 yrs., g.r. 13l. 13s., r. 80l. | 700 |
| 47, Springdale-rd., u.t. 72½ yrs., g.r. 5l. 5s. | 270 |
| 95, Aden-grove, u.t. 72½ yrs., g.r., 5l. | 320 |
| 21, Wolsey-rd., u.t. 51 yrs., g.r. 5l. 10s., r. 30l. | 310 |
| Islington.—73, Southgate-rd., u.t. 17 yrs., g.r. 5l. 5s., r. 40l. | 250 |
| De Beauvoir Town.—54 and 56, Ufton-rd., u.t. 21½ yrs., g.r. 6l., r. 68l. | 420 |
| Hoxton.—21 to 24, Baring-st., u.t. 33¼ yrs., g.r. 20l. | 840 |
| 1, Gopsall-st., u.t. 33 yrs g.r. 4l. 4s | 260 |
| 123 and 125, New North-rd., u.t. 19½ yrs., g.r. 42l., r. 90l. | 290 |
| 112, 114, and 116, Wenlock-st., u.t. 43¼ yrs., g.r. 12l. 12s., r. 111l. | 1,020 |
| 13, 17, 21, 23, and 25, St. John's-rd., u.t. 23 yrs., g.r. 93l. 8s., r. 158l. | 400 |
| 27, St. John's-rd., u.t. 23 yrs., g.r. 105l., r. 171l. 16s. | 165 |
| Hackney.—28 to 32, West Side, u.t. 48½ yrs., g.r. 30l. | 1,170 |
| Homerton.—44, Church-rd., u.t. 55 yrs., g.r. 3l. 3s., r. 32l. | 270 |
| Canonbury.—24, Canonbury-sq., u.t. 19½ yrs., g.r. 23l., r. 45l. | 110 |
| Commercial-rd. East.—102, Watney-st., f., r. 63l. | 1,110 |
| Belvedere, Kent.—Abbey-rd., i.g.r. 22l. 5s., u.t. 61½ yrs., g.r. 10l. 10s. | 210 |

By R. TIDEY & SON.

| | |
|---|---|
| Hackney.—22 to 28 (even), 32, 34, 36, and 42, Amhurst-rd., f., r. 400l. | 6,400 |
| Islington.—2, Ockenden-rd., u.t. 42 yrs., g.r. 6l. 10s., e.r. 48l. | 550 |
| Holloway.—33, Milton-gr., u.t. 75 yrs., g.r. 10l., r. 40l. | 325 |
| Highbury.—26 to 32 (even), St. Paul's-rd., u.t. 26¾ yrs., g.r. 40l. | 1,035 |
| 80, St. Paul's-rd., u.t. 26¼ yrs., g.r. 8l. 12s., r. 43l. | 255 |
| Canonbury.—2, St. Paul's-pl., u.t. 26¾ yrs., g.r. 10l., r. 41l. | 235 |
| Kingsland.—299, Kingsland-rd., u.t. 20 yrs., g.r. 12l. 10s., r. 40l. | 200 |
| 307 and 309, Kingsland-rd., u.t. 18 yrs., g.r. 1l., r. 70l. | 450 |

By DOUGLAS YOUNG & CO.

| | |
|---|---|
| Forest Gate.—38 and 42, Vansittart-rd., u.t. 88 yrs., g.r. 10l. | 275 |
| New Cross.—30, Casella-rd., u.t. 58 yrs., g.r. 5l., r. 34l. | 345 |
| Streatham.—35, Hopton-rd., u.t. 81 yrs., g.r. 9l., r. 50l. | 430 |
| Oakdale-rd., five plots of building land, f. | 900 |
| Clapham.—81, Sandmere-rd., u.t. 82 yrs., g.r. 7l., r. 36l. | 375 |

By CHADWICK & SONS (at Maida Vale).

| | |
|---|---|
| Maida Vale.—No. 88, Lease for 11 yrs., r. 85l. | 100 |
| Paddington.—13, Walterton-rd., u.t. 64¼ yrs., g.r. 9l., r. 45l. | 410 |

By RIDER & SONS (at Shepherd's Bush).

| | |
|---|---|
| Shepherd's Bush, 19, 21, and 23, Sterne-st., f., r. 101l. 8s. | 1,250 |
| 11 and 14, Tadmor-street, f., r. 71l. 10s. | 905 |
| 26, Caxton-rd., f., r. 35l. 8s. | 410 |

By WILLIAM WESTON (at Harrow-rd).

| | |
|---|---|
| Harlesden.—6, 8, 10, 12, 35, 37, 39, and 41, Tubb's-rd., u.t. 83 yrs., g.r. 44l., r. 250l. | 2,495 |
| Kensal Town.—264 and 266, Kensal-rd., and Great Western House in rear, u.t. 75¼ yrs., g.r. 10l., r. 120l. 16s. | 620 |

By THOMAS MARTIN (at Exeter).

| | |
|---|---|
| Exeter, Devon.—243 and 244, High-st., area 5,000 ft., f. | 7,000 |

By RICHARD PETER (at Launceston).

| | |
|---|---|
| Broadwoodwidger, Devon.—Kellacott Farm, 35 a. 1 r. 26 p., f. | 1,105 |
| Higher Grinnacombe Farm and Grinnacombe Wood, 118 a. 0 r. 22 p., f. | 1,120 |

February 23.—By ALDER & CO.

| | |
|---|---|
| Upton Pk.—82, 84, 86, and 88, Tudor-rd., u.t. 88 yrs., g.r. 20l. | 750 |

By MARK LIELL & SON.

| | |
|---|---|
| Manor Pk.—Romford-rd., three plots of building land, f. | 645 |
| Romford-rd., a freehold building site | 620 |
| Forest Gate.—34, Neville-rd., f., e.r. 26l. | 255 |
| Poplar.—173 and 175, Upper Chrisp-st., u.t. 64 yrs., g.r. 5l. | 500 |

By CHESTERTON & SONS.

| | |
|---|---|
| Fulham.—600 and 602, Fulham-rd., f., r. 175l. | 3,620 |

*Contractions used in these lists.*—F.g.r. for freehold ground-rent; l.g.r. for leasehold ground-rent; i.g.r. for improved ground-rent; g.r. for ground-rent; r. for rent; f. for freehold; c. for copyhold; l. for leasehold; e.r. for estimated rental; u.t. for unexpired term; p.a. for per annum; yrs. for years; st. for street; rd. for road; sq. for square; pl. for place; ter. for terrace; cres. for crescent; for yard, &c.

## PRICES CURRENT OF MATERIALS.

| TIMBER. | | |
|---|---|---|
| Greenheart, B.G. ton | 8/0/0 | 0/0/0 |
| Teak, E.I....load | 10/10/0 | 15/10/0 |
| Sequoia, U.S. ft. cu. | 1/9/0 | 2/0/0 |
| Ash, Canada, load | 3/17/6 | 5/5/0 |
| Birch, do. | 3/0/0 | 5/0/0 |
| Elm, do. | 4/12/6 | 5/15/0 |
| Fir, Dantsic, &c. | 2/0/0 | 4/0/0 |
| Oak, do. | 3/5/0 | 3/15/0 |
| Canada | 4/0/0 | 6/0/0 |
| Pine, Canada red | 0/0/0 | 0/0/0 |
| Do. yellow | 4/7/6 | 6/5/0 |
| Lath, Dantsic, fath | 4/10/0 | 5/10/0 |
| St. Petersburg | 4/0/0 | 6/10/0 |
| Wainscot, Riga, &c., log | 3/15/0 | 5/15/0 |
| Odessa, crown | 3/15/0 | 5/15/0 |
| Deals, Finland 2nd & 1st std. 100 | 9/15/0 | 10/5/0 |
| Do. 4th & 3rd | 9/15/0 | 10/5/0 |
| Do. Riga | 8/5/0 | 9/5/0 |
| St. Petersburg, 1st yellow | 11/15/0 | 14/5/0 |
| Do. 2nd yellow | 10/15/0 | 12/5/0 |
| Do. white | 9/15/0 | 11/15/0 |
| Swedish | 9/15/0 | 16/15/0 |
| White Sea | 10/15/0 | 18/0/0 |
| Canada, Pine 1st | 18/15/0 | 25/5/0 |
| Do. do. 2nd | 13/15/0 | 17/0/0 |
| Do. do. 3rd, &c. | 6/0/0 | 10/0/0 |
| Do. Spruce, 1st | 8/10/0 | 10/10/0 |
| Do. do. 3rd and 2nd | 7/5/0 | 8/10/0 |
| New Brunswick | 7/5/0 | 8/0/0 |
| Battens all kinds | 5/0/0 | 16/0/0 |
| Flooring boards, sq., 1 in., prep. 1st | 9/6 | 16/3 |
| Do. 2nd | 8/0 | 13/3 |
| Other qualities— | 6/3 | 7/0 |
| Cedar, Cuba, ft. | /4 | /4½ |
| Honduras, &c. | /3½ | /4½ |
| Mahogany, Cuba | /5½ | /7 |
| St. Domingo, cargo av. | /5 | 1/3 |
| Mexican, do. do. | /3½ | /4 |
| Tobasco, do. do. | /4 | /6½ |
| Honduras, do. | /4 | /6 |
| Box, Turkey, ton | 4/0/0 | 15/0/0 |
| Rose, Rio | 7/0/0 | 14/0/0 |
| Bahia | 6/0/0 | 12/0/0 |
| Satin, St. Doming. | /5 | 1/0 |

| TIMBER (*continued*). | | |
|---|---|---|
| Satin, Porto Rico | 0/0/9 | 0/2/0 |
| Walnut, Italian | 0/0/3 | 0/0/7 |
| METALS. | | |
| Iron—Pig, in Scotland ton | 2/13/11 | 0/0/0 |
| Bar, Welsh, in London | 6/0/0 | 6/5/0 |
| Do. do. at works in Wales | 5/15/0 | 5/17/6 |
| Do. Staffordshire, in London | 6/5/0 | 7/10/0 |
| COPPER—British cake and ingot | 76/0/0 | 76/10/0 |
| Best selected | 77/0/0 | 77/15/0 |
| Sheets, strong | 79/0/0 | 81/0/0 |
| Chili bars | 71/10/0 | 0/0/0 |
| YELLOW MTL. lb. | 7d. | 7½d. |
| LEAD—Pig Spanish ton | 14/10/0 | 0/0/0 |
| English com. Brands | 14/15/0 | 0/0/0 |
| Sheet, English 6 lbs. per sq. ft. and upwards | 15/15/0 | 0/0/0 |
| Pipe | 16/5/0 | 0/0/0 |
| ZINC—English sheet ton | 30/0/0 | 0/0/0 |
| Vieille Montagne | 31/0/0 | 0/0/0 |
| Spelter | 27/15/0 | 27/17/6 |
| TIN—Straits | 107/0/0 | 0/0/0 |
| Australian | 107/0/0 | 107/10/0 |
| English Ingots | 110/0/0 | 111/0/0 |
| Banca | 0/0/0 | 0/0/0 |
| Billiton | 0/0/0 | 0/0/0 |
| OILS. | | |
| Linseed ton | 17/7/6 | 0/0/0 |
| Cocoanut, Cochin | 27/15/0 | 0/0/0 |
| Do. Ceylon | 24/10/0 | 0/0/0 |
| Palm, Lagos | 21/15/0 | 0/0/0 |
| Rapeseed, English pale | 22/15/0 | 0/0/0 |
| Do. Brown | 21/5/0 | 0/0/0 |
| Cottonseed ref. | 15/0/0 | 16/0/0 |
| Oleine | 17/0/0 | 18/0/0 |
| Lubricating U.S. | 0/5/3 | 0/7/6 |
| Do. Black | 0/5/0 | 0/6/6 |
| TAR—Stockholm barrel | 1/5/0 | 0/0/0 |
| Archangel | 0/18/0 | 0/0/0 |
| Turpentine | 32/5/0 | 32/7/6 |

## TO CORRESPONDENTS.

F. W. R. (Below our limit). J. C.—C. E. (Amounts should have been stated).

NOTE.—The responsibility of signed articles, letters, and papers read at public meetings, rests, of course, with the authors.

*We cannot undertake to return rejected communications.*

Letters or communications (beyond mere news items) which have been duplicated for other journals are NOT DESIRED.

We are compelled to decline pointing out books and giving addresses.

Any commission to a contributor to write an article is given subject to the approval of the article, when written, by the Editor, who retains the right to reject it if unsatisfactory. The receipt by the author of a proof of an article in type does not necessarily imply its acceptance.

All communications regarding literary and artistic matters should be addressed to THE EDITOR; those relating to advertisements and other exclusively business matters should be addressed to THE PUBLISHER, and *not* to the Editor.

## TENDERS.

[Communications for insertion under this heading should be addressed to "The Editor," and must reach us *not later than* 10 *a.m. on Thursdays*. N.B.—We cannot publish Tenders unless authenticated by the name and address of the sender; and we cannot publish announcements of Tenders accepted unless the amount of the Tender is given, nor any list in which the lowest Tender is under £100, unless in some exceptional cases and for special reasons.]

BOURNEMOUTH.—For the erection of schools, Pokesdown, for British Schools Committee. Mr. Corbin Harris, J.P., Architect, Glendale, Pokesdown, Bournemouth:—

| | | | |
|---|---|---|---|
| Jenkins & Sons | £2,337 0 | Meadus | £1,940 0 |
| S. Whittaker | 2,019 13 | F. Elcock, Pokesdown* | 1,490 0 |

* Accepted.

BRENTFORD.—For the erection of a vestry hall, Half Acre, for the Overseers, Old Brentford. Mr. Nowell Parr, architect:—

| | | | |
|---|---|---|---|
| F. & H. F. Higgs | £8,196 | Young | £7,027 |
| Brooking | 7,887 | T. Nye | 6,997 |
| Godson & Sons | 7,562 | J. Dorey & Co., Brentford* | 6,861 |
| Foord & Sons | 7,185 | | |

* Accepted.

Architect's estimate, £7,041.

CASTLETHORPE (Bucks).—For additions, &c., to schools, for the School Board. Mr. H. H. Dyer, architect, 1, Sheep-street, Northampton:—

| | | | |
|---|---|---|---|
| Bransom & Sons | £215 8 | E. Webster | £177 0 |
| Wilson P. Alright | 200 15 | J. Sharman | 175 0 |
| Tanner Bros. | 195 0 | J. M. Panting | 170 0 |
| W. Heap | 188 0 | | |

CIRENCESTER.—For the construction of a surface-water drain, for the Urban District Council. Mr. Thomas Hibbert, surveyor, Cirencester. Quantities by surveyor:—

| | | | |
|---|---|---|---|
| . Hipwell & Co. | £4,590 0 0 | J. & T. Binns | £3,561 15 3 |
| . Ambrose | 3,931 4 10 | Saunders & Sons, Ltd. | 3,537 11 6 |
| William Webb | 3,896 0 0 | Drew Brothers, Cirencester* | £3,421 18 2 |
| H. Welldon | 3,749 5 0 | | |
| Thomas Free & Sons | 3,623 16 6 | | |

* Accepted.

ROSSHAVEN (Ireland).—For the reconstruction of a house into dispensary premises, for the Kinsale Union Guardians. Mr. R. Evans, C.E., 53, South-mall, Cork:—

| | |
|---|---|
| T. B. Buckley, Crosshaven, co. Cork | £155 |

HERTFORD.—For pulling down and rebuilding "The Turk's Head," Railway-street. Mr. Percival C. Blow, architect, 7, London-road, St. Albans:—

| | | | |
|---|---|---|---|
| Miskin & Son | £1,285 | R. Ginn & Son* | £1,019 |
| Ekins & Co. | 1,250 | | |

* Accepted.

ILFORD.—For erecting and completing shop premises, Cranbrook-road, Ilford Essex, for Mr. W. F. Prentis. Messrs, Verlyck & Dunn, architects:—

| | | | |
|---|---|---|---|
| Bruty | £2,515 | Willmott | £2,350 |
| North | 2,498 | Pridmore | 2,195 |
| Mitchell | 2,167 | Gowen | 1,950 |
| Shepherd | 2,381 | | |

LEICESTER.—For the construction of sewers, &c., Coalville, for the Urban District Council. Mr. J. B. Everard, C.E., 6, Millstone-lane, Leicester:—

| | | | |
|---|---|---|---|
| J. Biggs | £26,962 0 0 | E. Orton | £20,756 0 0 |
| J. Holme | 26,220 0 0 | E. Tempest | 20,093 4 2 |
| C. Bell | 21,652 0 0 | J. Ford | 19,871 17 4 |
| W. & J. Foster | 21,546 9 4 | Bentley & Loch, Leicester* | 17,969 0 0 |
| H. Weldon | 21,326 19 7 | | |
| C. Walker & Co. | 21,178 0 0 | | |

* Accepted.

Engineer's estimate, £17,870.

LEICESTER.—For new warehouses for Mr. Winterton. Mr. Charles Kempson, architect, Corporation Buildings, Leicester Quantities by the architect:—

| | | | |
|---|---|---|---|
| Marston & Son | £6,940 | J. Pipes | £6,700 |
| Major & Son | 6,914 | T. Herbert | 6,689 |
| J. Holmes | 6,897 | C. Wright | 6,676 |
| Hutchinson & Son | 6,890 | Bowles & Son | 6,637 |
| J. Chapman | 6,813 | Bradshaw Bros. | 6,607 |
| H. Bland | 6'773 | Riddett & Son | 6,498 |
| Johnson & Son | 6,760 | W. Tyrrell | 6,364 |
| Carr Bros. | 6,761 | A. Carr | 6,281 |
| Clark & Garrett | 6,742 | W. Jayes* | 6,230 |
| J. O. Jewsbury | 6,738 | | |

* Accepted.

[All of Leicester.]

LONDON.—For alterations to the "Cricketers," Stoke Newington, for Mann, Crossman, & Paulin, Limited. Mr. William Stewart, architect:—

| | | | |
|---|---|---|---|
| Geo. Barker | £452 | Crampton | £379 |
| Finn | 425 | Lancaster | 352 |

LONDON.—For new public baths and washhouses, Cheshire-street, for the Vestry of St. Matthew, Bethnal Green, E. Mr. R. Stephen Ayling, architect:—

*Engineering Work.*

| | | | |
|---|---|---|---|
| Richmond & Co. | £6,698 0 | Goddard, Massey, & Warner | £4,640 19 |
| Bradford & Co. | 5,546 0 | Williamson & Co. | 4,640 0 |
| Fraser & Fraser | 5,444 0 | Armstrong & Co. | 4,600 0 |
| Ashwell & Nesbitt | 5,177 0 | J. & F. Clarke | 4,575 0 |
| Summerscales & Co. | 4,878 0 | Z. D. Berry & Sons | 4,370 0 |
| J. & F. May | 4,874 0 | | |
| Mackintosh, Meikle, & Co. | 4,664 0 | | |

*Additional for Galloway's Boiler and Marshall's Engine.*

| | | | |
|---|---|---|---|
| J. & F. Clarke | £55 0 | Z. D. Berry & Sons | £173 10 |

*Totals.*

| | |
|---|---|
| J. & F. Clarke | £4,630 0 |
| Z. D. Berry & Sons (accepted) | 4,543 10 |

LONDON.—For the erection of cottages at the Heathwall pumping station, for the London County Council:—

| | | | |
|---|---|---|---|
| J. Appleby | £1,296 15 4 | H. Wragg & Sons | £1,077 0 0 |
| T. L. Green | 1,193 14 3 | W. Hammond | 1,069 0 0 |
| General Builders, Limited | 1,180 0 0 | | |

LONDON.—For the erection of fencing and gates at the Wells-road, Sydenham, recreation ground, for the London County Council:—

| | | | |
|---|---|---|---|
| L. Faulkner & Sons | £720 0 0 | Hill & Smith | £533 17 6 |
| McVey, Rennie, & Co. | 576 19 0 | E. J. Raybould & Co., Limited | 525 0 0 |
| W. Hayward & Sons, Limited | 546 0 0 | | |

LONDON.—For erecting a dwelling-house at View-road, Highgate, N. Mr. Michael Bunney, architect, 1, Langham Chambers, Langham-place, W.:—

| | | | |
|---|---|---|---|
| Davenall | £2,420 | Turner, Limited | £2,087 |
| Hosking | 2,199 | Marchant & Hirst | 2,045 |
| Dixon | 2,100 | | |

LONDON.—For erecting stabling, covered yard, and caretaker's house in Vicarage-lane, Stratford, E., for Messrs. Boardman & Sons. Messrs. Yetts, Sturdy, & Usher, architects, 44, Finsbury-pavement, E.C.:—

| | | | |
|---|---|---|---|
| Faulkner | £8,283 | Woodward | £7,689 |
| Hosking | 8,059 | Parmenter | 7,659 |
| Shurmer | 7,950 | Patman & Fotheringham | 7,631 |
| Patrick | 7,837 | Battley, Sons & Holness | 7,547 |
| Downes | 7,810 | | |

LONDON.—For alteration at the "Black Horse," Great College-street, N.W. Mr. H. Riches, architect, 13, Crooked-lane, King William-street, E.C.:—

| | | | |
|---|---|---|---|
| Lacy | £249 | Osborne & Sons | £219 |
| Sheffield Bros. | 229 | Marchant & Hirst | 189 |

LONDON.—For alterations at the "Royal Engineers," Westminster Bridge-road, for the New London Brewery Company, Limited. Mr. John Hamilton, architect:—

| | | | |
|---|---|---|---|
| Whitehead & Co. | £339 | Geo. Barker | £320 |
| W. Smith | 339 | G. E. Maxwell | 310 |

LONDON.—For additions to Freemasons' Hall, Great Queen-street, W.C. Mr. Henry L. Florence, architect, 3, Verulam-buildings, Gray's Inn. Quantities by Mr. James Francis Bull, 30, Bedford-row, W.C.:—

| | | | |
|---|---|---|---|
| G. H. & A. Bywater & Sons | £13,200 | Ashby & Horner | £12,578 |
| Thos. Rider & Son | 12,696 | Colls & Sons | 12,470 |
| Geo. Trollope & Sons | 12,735 | W. Cubitt & Co.* | 12,077 |

* Accepted.

LUTON.—For shop and stores, Chapel-street, for Mr. C. W. Deacon. Mr. A. Wilkinson, architect, Luton:—

| | | | |
|---|---|---|---|
| G. Buckingham | £351 | G. W. Pryer* | £289 |
| G. Angel | 320 | D. Parkins | 285 |
| Saunders & Son | 304 | | |

* Accepted.

[All of Luton.]

NORTHALLERTON.—Accepted for the erection of a villa for Mr C. Alexander. Mr. W. Perkins, architect, Bishop Auckland. Quantities by architect:—

| | |
|---|---|
| *Masonry and Joinery.*—D. Oakley, Bishop Auckland | £730 0 |
| *Slating.*—J. Harrison, Middlesbrough | 47 10 |
| *Plastering.*—F G. Walsh, Bridlington | 61 10 |
| *Plumbing and Glazing.*—Sykes & Co., Darlington. | 119 5 |
| *Painting.*—T. Alderson, Northallerton | 24 12 |

NORTHAMPTON.—For erecting three houses and shops in St. James-road, St. James-end, for Messrs. Carr & Harrison. Mr. H. H. Dyer, architect and surveyor, 1, Sheep-street, Northampton. Quantities by architect:—

| | | | |
|---|---|---|---|
| C. Webster | £1,175 0 | J. M. Panting | £1,100 0 |
| W. Throssell | 1,160 0 | A. J. Chown | 1,095 0 |
| Wingrove & Stanley | 1,159 0 | E. D. Sharman & Son | 1,090 0 |
| F. Harper | 1,154 10 | Wilford & Judkin | 1,089 0 |
| G. T. Fisher | 1,140 0 | W. T. Flavell | 1,080 0 |
| Wilson & Alright | 1,120 0 | W. Higgins | 1,075 0 |
| W. Heap | 1,120 0 | J. Nobles & Son* | 1,000 0 |
| J. Dunckley | 1,118 6 | | |

* Accepted.

All of Northampton.

NORTHAMPTON.—For semi-detached villa, Duston, for Mr. T. C. Thompson (exclusive of grates and plumbers', painters', and glaziers' work). Mr. H. H. Dyer, architect and surveyor, 1, Sheep-street, Northampton:—

| | | | |
|---|---|---|---|
| J. Garrett | £899 0 0 | J. G. Pullen & Sons | £784 10 6 |
| E. D. Sharman & Son | 815 0 0 | J. Nobles & Son | 770 0 0 |
| Wingrove & Stanley | 813 0 0 | W. Higgins | 764 10 0 |
| W. Heap | 810 0 0 | Crow & Gardner | 760 0 0 |
| Wilson & Alright | 802 0 0 | A. J. Chown* | 760 0 0 |
| C. Webster | 799 0 0 | | |

* Accepted.

*Plumbers', Painters', and Glaziers' Work.*

| | |
|---|---|
| R. Cleaver (accepted) | £135 6 0 |

PENDLETON (near Salford).—For the construction of retaining walls, &c., for the Salford Corporation. Mr. J. Holt, C.E., 6, St. Mary's-gate, Manchester:—

| | | | |
|---|---|---|---|
| Wilson & Lunt | £10,984 11 5 | Byrom | £6,303 10 6 |
| Briggs | 7,553 2 0 | Tims | 6,351 10 0 |
| Dixon | 7,385 0 0 | Cottle | 6,151 3 0 |
| Braddock | 6,851 13 5 | Etheridge & Clarke | 5,866 14 3 |
| Bentley | 6,821 5 0 | Clewarth & Robinson | 5,760 0 0 |
| Healey | 6,768 10 0 | Tate & Gordon, Manchester* | 5,357 19 5 |
| Meadows | 6,758 17 6 | | |
| Walmsley & Roberts | 6,710 0 0 | | |
| Morton | 6,510 4 4 | | |

* Accepted,

REIGATE.—Accepted for erecting a house at Udderhill Park, Reigate, for Mr. R. C. Smith. Mr. C. E. Salmon, architect, Bell-street, Reigate:—

W. Bagaley & Sons ........ £1,950

RIPLEY.—For erecting "Moss Cottage" Inn, Ripley, near Derby. Mr. R. Argile, architect. Quantities supplied:—

| | | | |
|---|---|---|---|
| W. Norman | £1,179 0 0 | Harris & Hunt, Marehay, near Derby* | £1,111 2 6 |
| J. Warren | 1,150 0 0 | | |
| W. Harris | 1,117 0 0 | | |

* Accepted.

ROCHFORD.—For the enlargement of, and additional wards to infirmary for the Rochford Board of Guardians, Rochford, Essex. Mr. E. Wright, architect, Southend:—

| | | | |
|---|---|---|---|
| S. Norden | £7,050 0 | J. W. Steward, Southend-on-Sea (accepted) | £6,998 10 |
| Davey & Son | 7,023 0 | | |

Architect's estimate, £6,893.

RYDE.—For two additional class-rooms to the Upper Grade Boys School, for the Ryde School Board. Mr. John I. Barton, architect, Ryde:—

| | | | |
|---|---|---|---|
| Whitewood | £820 | Barton | £709 |
| James | 795 | Holland, Ryde* | 579 |
| Wheeler Bros. | 750 | | |

* Accepted.

ST. ALBANS.—For the erection of Prestwood Cottage, Sandridge-road, for Mr. F. G. Merkins. Mr. Percival C. Blow, architect, 7, London-road, St. Albans:—

| | | | |
|---|---|---|---|
| E. Dunham | £385 | Goodchild* | £281 |
| Bushell | 299 | | |

* Accepted.

ST. ALBANS.—For the erection of drying and bleaching works, Grange-street, for Messrs. E. & W. Hitchcock & Son. Mr. Percival C. Blow, architect, 7, London-road, St. Albans:—

| | | | |
|---|---|---|---|
| Miskin & Son | £992 | Bushell* | £965 |
| Dunham | 975 | | |

* Accepted subject to slight alteration.

ST. ALBANS.—For repairs to St. John's Lodge, Verulam-road. Mr. Percival C. Blow, architect, 7, London-road, St. Albans:—

| | | | |
|---|---|---|---|
| Miskin & Son | £254 0 | Bushell* | £245 0 |
| Brightman | 248 10 | | |

* Accepted.

SOUTHAMPTON.—For building licensed house and two private houses adjoining, Bellemoor Estate, Shirley, for Messrs. Wm. Cooper & Co., Limited. Mr. William Burrough Hill, architect, Southampton:—

| | | | |
|---|---|---|---|
| Jenkins & Sons | £1,974 | J. J. Udall & Co. | £1,877 |
| Playfair & Toole | 1,897 | Henry Cawte* | 1,772 |
| H. Stevens & Co. | 1,877 | | |

* Accepted.

[All of Southampton].

SOUTHAMPTON.—Accepted for building twenty-nine houses in Ascupart-street and Wilton-street. Mr. William Burrough Hill, architect, Southampton:—

John Treherne ........ £7,250

SOUTHAMPTON.—Accepted for rebuilding front and alterations and repairs to No. 85, Above Bar. Mr. William Burrough Hill, architect, Southampton:—

J. J. Udall & Co. ........ £1,398

STOCKTON-ON-TEES.—For erecting new premises, for Messrs. D. Hill, Carter & Co., Limited, Stockton-on-Tees. Mr. Eugene E. Clephan, architect, St. Nicholas Chambers, Newcastle-on-Tyne:—

| | | | |
|---|---|---|---|
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| | | | |
|---|---|---|---|
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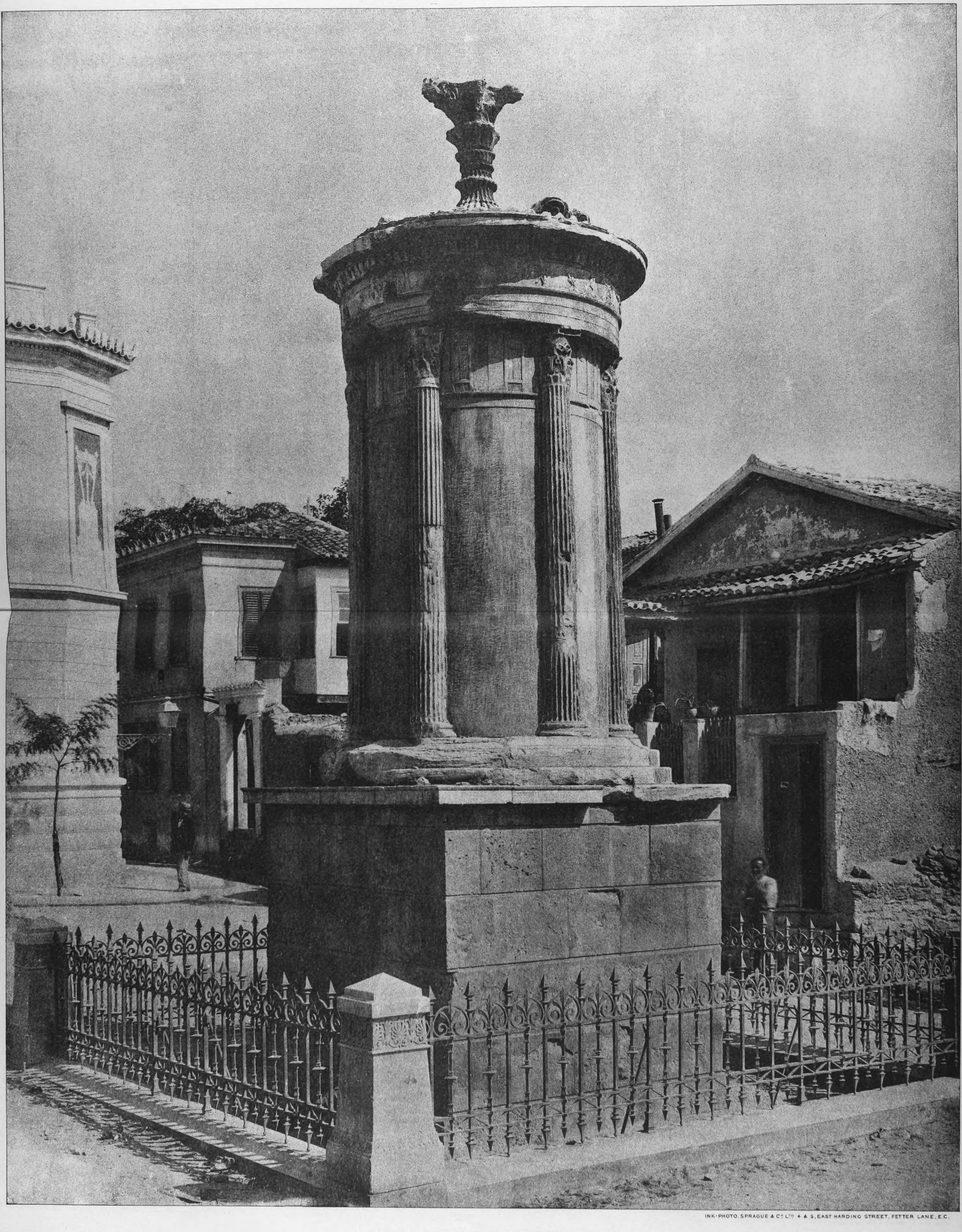

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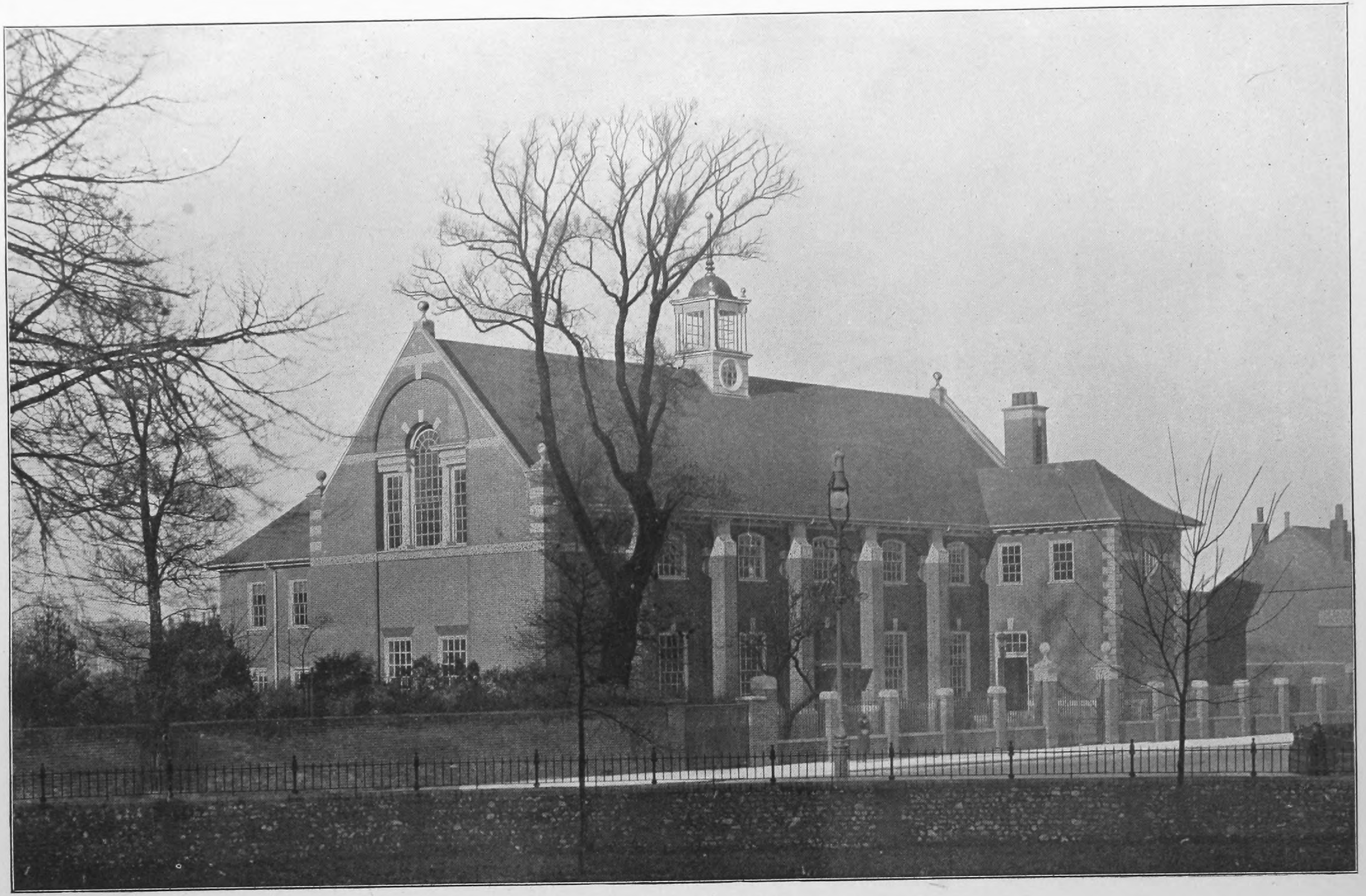

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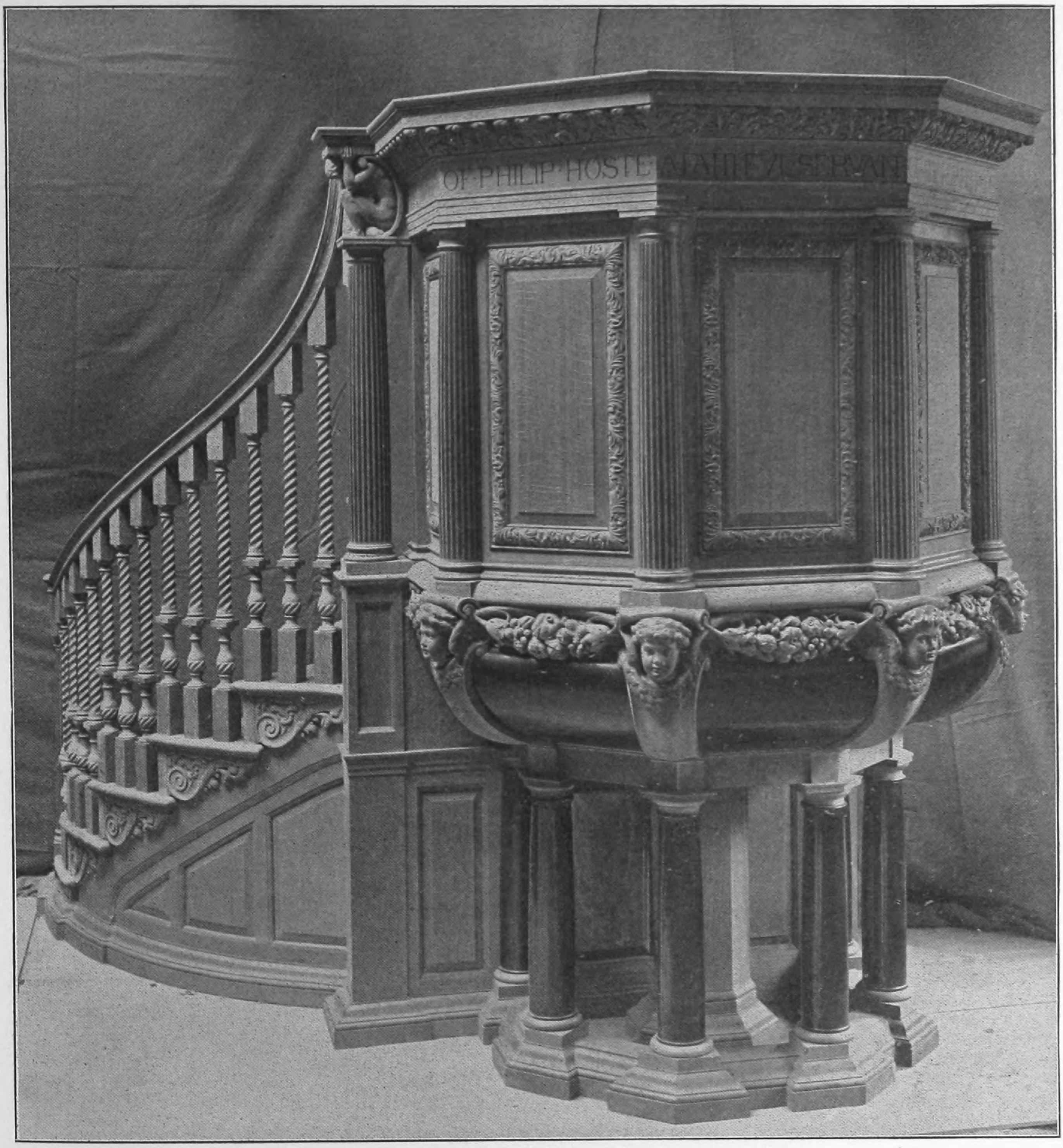
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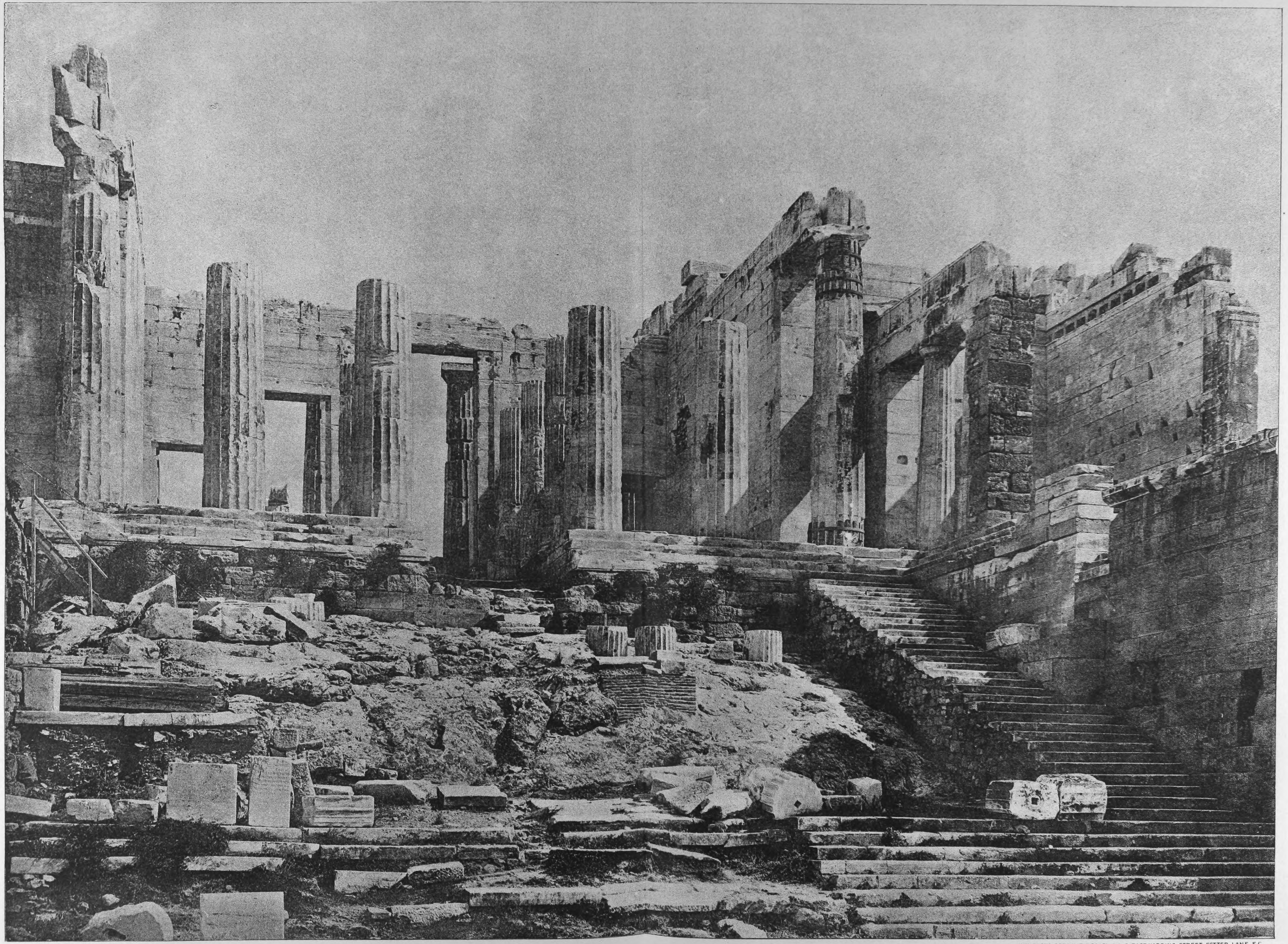

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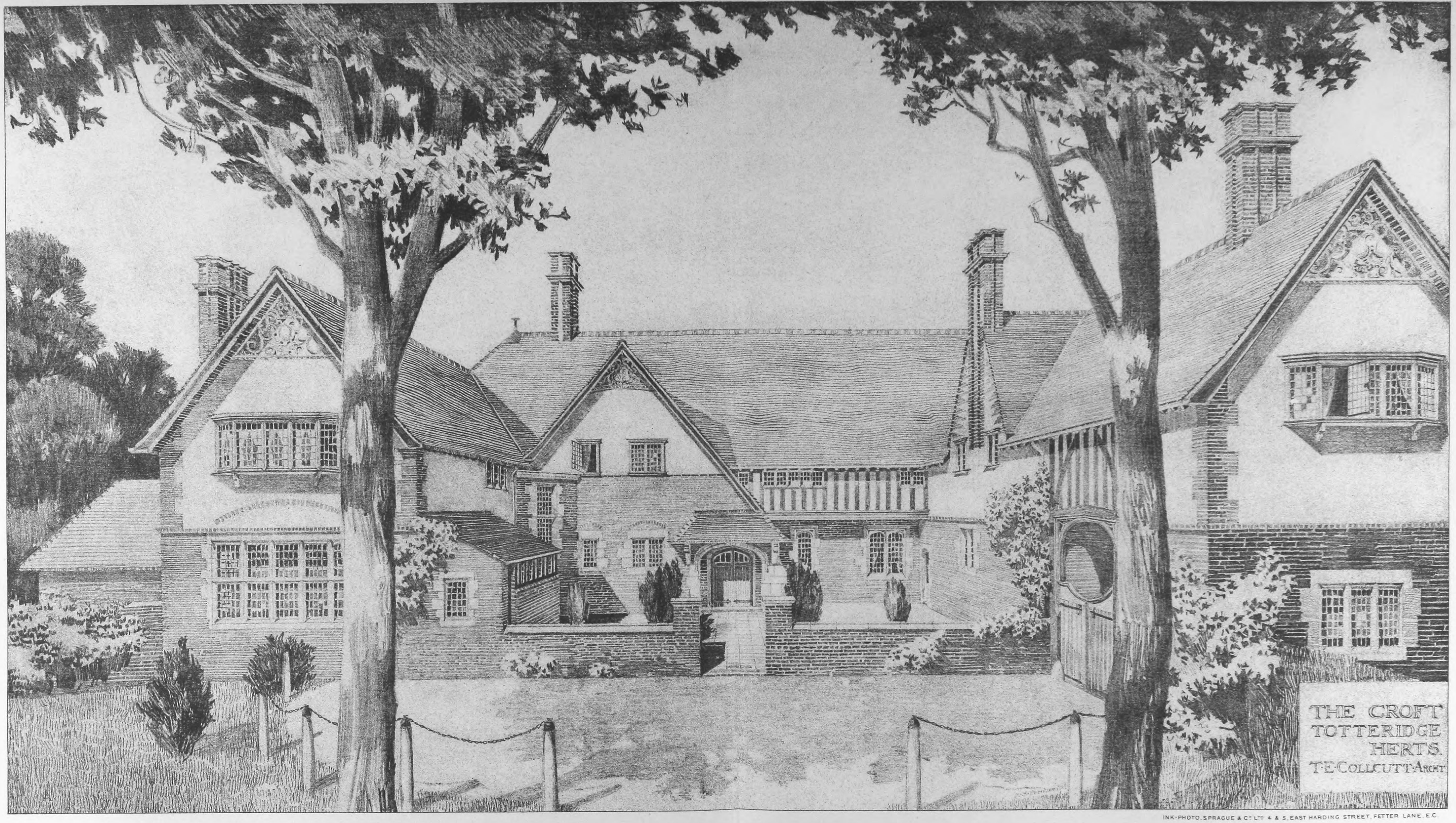
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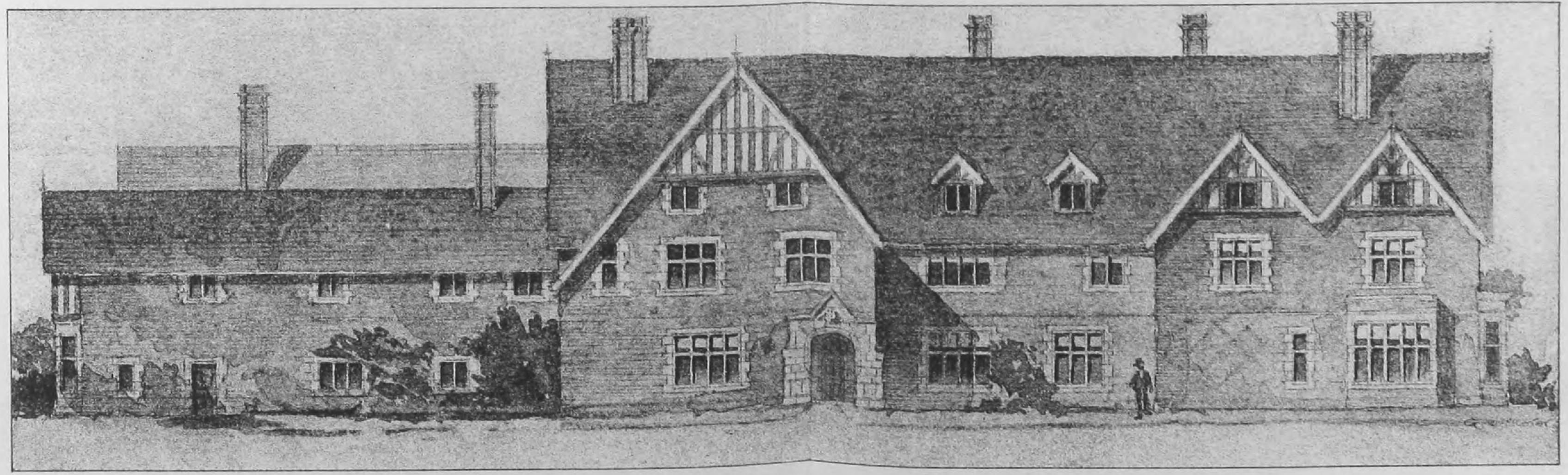

COUNTRY HOUSE: GARDEN ELEVATION.—Mr G. O. Scorer, A.R.I.B.A., Architect.

# The Builder.

VOL. LXXVI. No. 2927. MARCH 11, 1899.

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The Theseion : and the Caryatide Porch of the Erechtheion ........Double-Page Ink-Photo.
Design for Saltwood Parish Hall and Almshouses.—By Mr. Beresford Pite, F.R.I.B.A. ........Single Page Ink-Photo.
St. Paul's Church and Parsonage, Fairhaven.—Mr. Medland Taylor, Architect ........Single Page Ink-Photo.
Design for Saltwood Parish Hall and Almshouses.—By Mr. Beresford Pite. F.R.I.B.A. ........Double-Page Ink-Photo.
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### *The Vauxhall Bridge Question.*

We print in another column the important letter which was addressed to the *Times* on Monday, signed by a long array of names of weight both in the social and artistic world of London, pointing out the duty devolving on the London County Council to put the architectural design of the new Vauxhall Bridge, if there is to be architectural design, into competent hands; and in our report of the Tuesday's proceedings of the County Council will be found the answer of the Chairman of the Bridges Committee to the letter. We call it *pro formâ* an answer, because it is apparently supposed to be such; but in fact it is an evasion of the whole point of the matter, and the Bridges Committee do not seem even to realise that there is anything to answer. The Chairman quotes a letter from Mr. Waterhouse to the Council's Engineer, which we have reason to believe was only a private expression of courtesy on the part of one of the most good-natured of men, and was not intended for publicity; then refers to a sketch design sent in by the Institute of Architects, which he knows perfectly well was a design suggested when a steel bridge was intended, and has no reference whatever to the present stage of the matter at all; and he states that they could not associate an irresponsible Committee with their Engineer, feeling that he must be responsible. No one asked them to do so. What they were asked to do was to place the decorative or architectural element of the bridge design in the hands of some eminent architect, who should be responsible for that portion of the design, as the engineer would be responsible for the constructive portion of it. There is no sort of difficulty in doing so. It is done in France and can be done in England. What stands in the way is simply the obstinacy of the Bridges Committee and their engineer, who are determined to handle a matter they do not understand, and to resent any interference from those who know better. In our opinion the Committee and their Engineer have shown a great want of public spirit and of proper sense of responsibility in dealing with public money. They must know in their own minds that such a strong and general objection to the proposed design, on the part of architects and artists, cannot be without some foundation; but they have assumed a dogged *non possumus* attitude merely from a notion of keeping up their own dignity; and the reply of the Chairman of the Bridges Committee to Mr. Shaw Lefevre's question is a completely disingenuous piece of special pleading to throw dust in the eyes of the public. We heard an admission from one member of the County Council (not of the Bridges Committee) that he believed the objectors were right, but that the Engineer "was very sensitive on the subject," and they did not like to interfere with him. That is to say, that we are to have a clumsy and absurd design for a new bridge carried out, at immense cost, because the Engineer of the County Council thinks he can design architecture, and does not like to be told that he cannot.

It is almost absurd to find how impossible it is to get English people to understand the real point of the question. Engineers, for example, always seem to think that one is attacking their profession. We should be the very last to do so. We consider the engineering profession one of the greatest now existing; and we should be quite ready to admit that in this century its triumphs have been greater and more unquestionable than those of architecture. No reasonable critic thinks of attacking engineers, as engineers. What the engineers apparently cannot understand is that architectural design is a separate and a very difficult and delicate art; so difficult and delicate that the most eminent architects, who have devoted their lives to it, would probably admit that they had very rarely satisfied themselves with their own designs. The education of engineers includes not the slightest study of the art of design—in fact, in most cases they almost ostentatiously ignore it; and then they imagine that, when a decorative or architectural treatment of an engineering work is supposed to be called for, they can do this by the light of nature, aided by that of a hired draughtsman. The position of offended dignity they take up in such a case is really too absurd. No one is accusing them of not understanding their own business; what they are accused of is of trying to carry out what is not their business, and what they have received no training for; and it is surely a most inordinate and illogical self-assurance on their part to suppose that they, without any training in art at all, can carry out what is really architectural work in a satisfactory manner.

A great part of the mischief at present arises from the unholy ambition of engineers in these latter days to make their structures "handsome" or "ornamental," as it is called. That is the difference between much of their work and that of the older engineers. There is no reason to suppose that Rennie, who built London and Waterloo bridges—Telford, who built the Menai Suspension Bridge—Robert Stephenson, who built the Menai tubular bridge, studied architectural design any more than the engineers of to-day do. But they had the merit of knowing where to stop; they did not try their hand at things that were beyond their training. London Bridge is as nearly as possible perfect, simply in virtue of its broad severity of treatment; Waterloo Bridge is open to the criticism that the use of the Doric columns on the face of the piers is out of place and illogical, and the bridge would have been better without them; but still they have the negative merit that they are in scale with the rest of the design. In the Menai suspension bridge the towers are very simply treated, and the catenary line formed by the chains in itself ensures a graceful appearance. The Menai tubular bridge can hardly be called beautiful, but there is no pretentiousness and no bad ornamental detail foisted on to it; the towers, of a very fine stone almost like marble, are quite simply treated; it would be possible, with some very slight alterations, to improve them considerably; but there is nothing in them that is offensive to good taste.

Twenty-five or thirty years ago there arose this pestilent notion of building ornamental bridges; and we had Blackfriars Bridge, with its absurd stumpy columns and coarse carving; Battersea Bridge, with the sham "cove" worked on it in curved plates, concealing the real construction; and, worst of all, Hammersmith Bridge, with its coarse mouldings and enormous cast acanthus leaves, like cabbages from a Brobdingnagian kitchen garden, stuck on the ends of the girders as "ornaments." This latter detail illustrates in the most satirical manner the total want of any notion of *scale* which pervades architectural designs made by engineers. They seem to think that a detail that is suitable on one scale will be just as suitable if magnified ten or twenty times. This lesson of scale is one of the most important things that architectural students have to learn; engineers do not seem to be aware even of the existence of such a quality in design.

The design for the Vauxhall Bridge, which was published in our first issue in January of this year, however interesting as a novel piece of engineering construction (and it was as such only that we published it), illustrates this insensibility about scale better (or worse) than most designs we have seen. The enormous moulding on the top of the lower portion of the pier—a single member nearly 3 ft. deep—is enough in itself to dwarf the whole scale of the structure; and it is even bad in a practical sense, on account of the large flat projection formed on the under side of it: if a barge got her bow or her gunwale under that moulding on a rising tide, she would be pinned there till the tide turned, just as (on a smaller scale) we have seen a rowing-boat pinned down and swamped in one of the old timber locks on the upper Thames, by getting her nose under a projecting beam. The great semi-circular projection on the face of the pier might be treated (even without any material deviation from the contract) so as to look suitable in scale and expression; but by giving it the semblance of an immense column, carrying the cornice round it in the guise of a capital and putting a "necking" underneath it, they have given it the appearance of a feature to support vertical weight, where there is none to support, except a comparatively small column above, which again is itself far too large for a lamp-standard, which is its only obvious purpose. Another absurdity is the line of immense rusticated voussoirs, by which, the Engineer tells us, "great boldness" is achieved, and which project a foot from the face of the masonry. All right, if this were a solid granite arch with everything else in keeping; but here the real construction is concrete, and the masonry is only a *revêtement*, and to give it this appearance of enormous strength is a sheer contradiction of the facts, which would at once reveal itself if the bridge were built, although in the drawing it may deceive people who are not accustomed to estimate the effect of executed designs from drawings. In fact, the whole design is a complete bungle by some one who has got a smattering of architectural details without understanding their meaning or how to handle them.

If it is to be admitted that England is nothing but a commercial community totally indifferent to art, there is no more to be said. But unless we are content to remain under that condemnation, it is perfectly monstrous that bridge after bridge of absurd and preposterous design, built out of public funds, is to add one disfigurement after another to the capital and its river, merely because the County Council and their Engineer do not know any better. At whatever cost to the susceptibilities of those directly concerned, this kind of thing must be stopped; and, as is suggested in Monday's letter in the *Times*, if the County Council will not listen to reason on this occasion, steps must be taken to couple Parliamentary powers for new bridges and other such monuments, for the future, with a stringent condition that architectural design shall take a proper place in the work.

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## THE LONDON GOVERNMENT BILL.

THIS Bill might, we think, be not inaptly described as a Bill for whittling away the power of the London County Council. In so far as it proposes to introduce a more consistent and systematic division of secondary or local authority in London than exists at present, and to supersede the Vestries by local bodies which one may hope will represent wider views and a better public spirit than exists in many of the Vestries (though we have yet to see whether that hope will be realised), it may be regarded as a beneficial measure. But its general tendency is certainly towards a decentralisation of municipal authority in London, probably to a greater extent than the framers of the Bill calculated on; for there are clauses which look insignificant at first sight, which may nevertheless be used so as to become most powerful dissolvents.

The most important consideration, of course, from our point of view, is the degree and the manner in which the Bill, if it become law, will affect the building authority and practice in London, and lead to modifications and variations in building legislation. And here we fear the outlook is rather a formidable one. Certain powers proposed to be given, under the first section of the second schedule of the Bill, seem reasonable enough. These refer to small matters—the special licensing of wooden structures, the power to deal with sky-signs, with the removal of obstructions in streets, the registering of dairymen and the regulation of common lodging houses. These are things which the Local Authority may very well see to; it can do so more easily and conveniently than the central body; and some variations in practice in different boroughs will not cause much inconvenience in regard to this class of subjects. But the second part of the schedule opens up a wider field of action. For instance, we read, as the first of the powers mentioned in this second part of Schedule II., under the heading Powers of County Council to be exercised also by Borough Councils, the following provision :—

| " Powers Exercisable. | Conditions of Exercise. |
|---|---|
| Power under Section 170 of the London Building Act, 1894, which section relates to the demolition of buildings in case of the conviction for an offence against the Act, or by-laws made under it. | The power to be exercised only where the Borough Council have obtained the conviction." |

From the conditions of exercise it is evident that the power of convicting for an offence under the London Building Act is to pass into the hands of the Borough Council, a provision which at once strikes a blow at the independent position and powers of the men who are now called District Surveyors, and who represent the central authority. This arrangement, if adopted, is almost certain to have the effect of weakening the hands of the executive; as we before observed, the office of the Local Authority will not have the same independence of action as the District Surveyor under the County Council. The demolition of offending structures, however, is only a negative or destructive piece of action. The more serious thing will be if the constructive building of London is to be brought under local instead of central regulations. There is no direct legislation to this effect in the Bill, but there is the door open for it. Clause 6 of the Bill runs thus (the italics are ours):—

> "6. The Committee of the Privy Council hereinafter mentioned shall make a Provisional Order determining which of the powers under the London Building Act, 1894, or any amending Act, other than the powers mentioned in Part One of the Second Schedule to this Act, are to be exercised by the London County Council and the Borough Councils respectively, and the conditions under which they are to be exercised, *and may embody in the Order such modifications of the London Building Act, 1894*, and such provisions for the protection of existing interests, *as may appear expedient* for giving effect to the determination."

We can hardly imagine a more mischievous proposal. Of course ambitious Borough Councils will lose no time in endeavouring to get modifications made in the Building Act to suit what they consider their own interests and their own conditions of building, and then will follow, as a natural consequence, that the unity of London architectural regulation will be done away with; each Borough will be a law unto itself; and the public inconvenience will be created that builders will find different regulations prevailing in different districts, and will never be sure what they have to provide for or to provide against. The clause we have quoted is practically an invitation to the new Boroughs to try to compass this object, and making the way smooth for them; and if the clause is allowed to stand it will pave the way for serious evils and inconveniences in the building regulation of London.

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## NOTES.

The Dispute in the Building Trade.

THE expected lock-out of plasterers commenced on Monday, and though it does not appear to have affected as many operatives as was thought likely, a large number of men have undoubtedly been locked out. Nor does it seem probable that the struggle will soon end, for the men appear to be determined to resist the employers' demands, and it seems likely that another long and wasteful industrial dispute has been entered upon. The ballot of the members of the Plasterers' Union resulted, as we indicated in our last issue, in an almost unanimous approval of the refusal of the officials of the Union to give an undertaking that the practices complained of by the masters should be discontinued. The history of the dispute is well known to our readers, and we feel that the great majority of them will agree that the time had come for the masters to make a practical stand against the unreasonable and exasperating practices complained of; nor do we think that public sympathy generally will be with the locked-out men, the conduct of whose representatives has not been endorsed even by some of the labour leaders. Although we are all Socialists now, according to a well-known politician, the time has not come for making an employer an organiser of labour and nothing more; though, even if it had, the practices complained of would make impossible the success of such an organiser. At present a builder carries on his business for profit, and if his freedom of action were to be curtailed on every hand, the result would very soon be financial ruin.

**The Barking Boiler Explosion.** THE Board of Trade Inquiry into the cause of this terrible explosion, by which eight men and boys lost their lives, was concluded by the Commissioners on Saturday last. The evidence taken at the inquest and at this inquiry showed that the boiler was bought second-hand by Messrs. Hewett & Co. about fourteen years ago, but that it had been repaired by them, and at the time of the explosion was in fairly good condition—"perfectly safe," as Mr. David Watson, Engineer to the Board of Trade, said, "to work at a pressure of 50 lbs." The boiler was fitted with two safety-valves and a pressure-gauge, and at the time of the explosion the latter registered a pressure of only 16 lbs. Prior to the catastrophe, while the gauge registered only 5 lbs., steam escaped from the valves, although they had been set to blow off at 70 lbs. Instead of taking the safe course and deeming the gauge to be at fault, Burness, one of the workmen subsequently killed, assumed the valves to be wrong, and tightened the nuts two and a half turns; when the gauge registered 15 lbs., steam again began to escape, and Burness gave the nuts another turn, so that the pressure in the boiler, according to Mr. Gough's statement, reached no less than 235 lbs., although at no time did the gauge indicate more than 16 lbs. The Commissioners conclude that the gauge was at fault, and did not act properly on account of an obstruction to the cock. They also report that "Messrs. Hewett & Co. did not appoint persons who were properly qualified to manage the boilers at the works at Barking, and did not take proper measures to ensure that the boilers were being worked under safe conditions"; Messrs. Hewett & Co. were, therefore, condemned to pay half the costs of the inquiry. This, of course, represents only a small proportion of the loss they will have to bear in consequence of the disaster, though this cannot be compared with the loss represented by the deaths of the eight men and boys. This "accident" is another example of the rule that ignorance and carelessness are always expensive; to use Huxley's startling metaphor, Nature, our great opponent in the game of life, "never overlooks a mistake, or makes the smallest allowance for ignorance."

**The Workmen's Compensation Act Again.** THERE is no question that the Workmen's Compensation Act is giving rise to a great deal more litigation than is desirable. Hardly a Saturday passes without some decision of a County Court Judge coming for review before the Court of Appeal. Last Saturday, in the case of McNicholas *v.* Dawson & Son, the point arose whether, when a man was killed by an engine which he was looking after, and when no one saw the accident, the workman could have been said to have lost his life in the course of his employment. The engine worked in a shed, and outside was a mortar tank, and there seems to have been a small door which could be reached by passing under the engine. The use of this door was forbidden by the firm. But it is obvious that the right presumption was that the workman came by his death in the course of his employment. There was nothing to show that he did not. It is for the defendants in such a case to show clearly that the accident was caused by something occurring outside the course of the employment. If the only clear and certain fact is that the workman is discovered killed by a machine which it was his duty to tend, it is really absurd to endeavour to escape liability by suggesting possible actions of gross negligence of which the unfortunate man may have been guilty. For the presumption must be that he was acting properly when he came by his death.

**London Street Improvements.** A CURIOUS and rather useful little debate took place in the House of Commons last week on the second reading of the Bill for the making of the new street from Holborn to the Strand. Sir Henry Fowler moved its rejection in order to call attention to the delay in widening the Strand by the demolition of the Holywell-street "island." We think Sir Henry Fowler, who is a personage of importance, did good service in pressing the County Council upon this point. It was somewhat amusing to find that this Parliamentary formality was taken seriously by some partisans of the County Council, as though Sir Henry Fowler really wished to reject the Bill. Of course, since there had been delay, it was, perhaps, good tactics on the part of the supporters of the County Council to draw the debate off the point on which it was begun. All that has to be done with the Holywell-street block is to demolish it, and we are yet unable to perceive that the County Council has given any satisfactory reason for the delay which has taken place. It is all very well for Mr. Burns to talk about a new bridge across the Thames being in contemplation. What London needs is a widened Strand.

**The Metropolitan Fire Brigade Report.** THE annual Report of the Metropolitan Fire Brigade for 1898 shows an increase in the number of fires as compared with those of 1897, but the really serious conflagrations were fewer in number, and we have no great catastrophe to record like the Cripplegate Fire. Perhaps the most notable fire of 1898 was that of the Metropolitan Tabernacle, a building of four floors, measuring about 180 ft. by 100 ft.; but there were also several large warehouse fires, one of which required the attendance of as many as twenty-eight steamers and three floats, and another that required twenty-four steamers. The number of lives lost during the year was ninety-eight, as compared with 225 in danger; but most of these fatalities occurred where the actual extent of the fire was small, namely, in connexion with explosions of mineral oil lamps, or where the clothing of individuals came in contact with open fires. As to the improvements in the Brigade during 1898, there has been a marked tendency to turn out a larger force of engines and men on the first alarm of fire in dangerous districts. The development of the horsed fire-escape as first tried by the late Chief Officer has been a feature of the past year, whilst the formation of a special central district and a rearrangement in the methods of turning out for so-called "district" and "brigade" calls probably stand next in importance. As to work for the present year, the further development of the fire-alarm system and the application of the telephone to call points may be regarded as likely to be proceeded with.

**The New Brighton Tower Case.** IN reference to our Note of February 18 (p. 161) we may call attention to the letter of the architect, Mr. Maxwell, printed in this issue, which we are glad to say entirely disposes of the impression conveyed by the words used in the *Manchester Guardian*, from which we quoted, that there had been some question of commissions paid by the contractors to the architect. This appears to have been merely a misapprehension on the part of the Manchester paper. What was really referred to was the charge for quantities, which in many parts of the North of England are paid for by the builders and not by the building-owner. The point takes one back to the early history of quantities, which originally were regarded as a matter for the convenience of the contractors in estimating, and used frequently to be taken out by a quantity surveyor engaged by the builders tendering, the winner paying his charges. We remember hearing from a provincial architect of the older generation the remark that he would not furnish quantities, because thereby "the architect made himself the servant of the builders." Of course the arrangement of the surveyor appointed by the builders taking out the quantities gave easy opportunity for collusion, and was probably abandoned on that ground; but it is historically interesting as indicating the idea as to quantities which then prevailed. In the present day people speak of quantities as if they were almost a part of architecture; whereas they are really only incidental to the system of competition tendering—a bad system in itself, though one which it seems impossible in general to escape from.

**The New Bridge at Paris.** AN interesting exposition was given by MM. Résal and Alby, the engineers of the Alexandre III. bridge, a few days ago to the Société des Ingenieurs Civils de France, and took place on the bridge itself, where the engineers explained the system of the construction and erection of the bridge. At the present time eight of the steel arches have been put into place, and M. Résal declares that the mounting will be terminated by May next. The sculptors are now at work on the decoration of the stone entrances to the bridge, and very shortly it will be possible to judge of the effect of the whole work.

**Canon Benham on St. Albans Cathedral.** WE listened with interest to the admirable historical account of St. Albans Cathedral given by Canon Benham, at the London Institution, on Thursday, March 2. Its history is an engaging story of the mediæval times. The lecturer laid emphasis on the part the ancient monastery played in the development of the country, its wealth and position as the greatest monastery in the land, its independence as an abbey, being under the jurisdiction of no bishop, its struggle to maintain its position against its royal rival of Westminster, and its final eclipse at the dissolution of the monasteries, when it fell to the humble position of a parish church. The Canon would have done better to have gone no further. After disclaiming any knowledge of architectural design, he proceeded to the time since St. Albans was made the centre of a diocese in 1877, to what he picturesquely described as the "Grimthorpian" restoration.

The lecturer evoked some applause while impressing upon his audience that Lord Grimthorpe was a clever lawyer and an agreeable personal friend, that he had spent over 200,000*l.* on the restoration of the Cathedral that at the time so sadly needed repair. This kind of utterance in a public lecture ought not to pass without comment. Lord Grimthorpe's legal and social qualifications have nothing to do with his capacity to design architecture, which can be judged from what he has done to the unfortunate building; and his liberality was exercised not in doing the best for the building, but in pleasing himself by playing the amateur architect—a procedure which in any other country would not have been allowed on a national building. If Lord Grimthorpe had spent his money in repairing the building under the best architectural guidance, he would have been a public benefactor. As it is, he merits no gratitude at all, as he has merely spoilt a great building to please himself.

**Hertzian Telegraphy.**

Mr. Marconi's paper at the Institution of Electrical Engineers last week on Hertzian telegraphy was listened to with great interest by a very crowded meeting. He described no new modification or arrangement of his apparatus, but contented himself with describing a series of very successful experiments. Since last December his system has been in satisfactory operation between the South Foreland Lighthouse and the East Goodwin Lightship—a distance of twelve miles. The terrible storms during January and February put this means of communication to the severest test, so that Mr. Marconi can be heartily congratulated on having given a satisfactory solution of the problem of communicating with lightships. It will be remembered, also, how Mr. Marconi fitted up his instruments on the Royal yacht *Osborne* and at Osborne House during the Prince of Wales' illness, and how communication between them was kept up whether the yacht was in Sandown Bay or three miles off the Needles. The fourteen months' trial of his system between Alum Bay and Bournemouth and Poole has been entirely satisfactory, and we understand that his company is now setting up stations at Folkestone and Boulogne. The height of the two vertical wires required to signal over the thirty-two miles will be a little greater than 100 ft. Mr. Marconi said that some of his instruments had been in constant use for three years without showing any sign of deterioration. In the subsequent discussion, Captain Kennedy made an interesting speech. He pointed out the importance of Hertzian telegraphy in naval and military operations, and how, by means of a military kite or a small balloon, the necessary long vertical wire could always be easily hung up. When the atmosphere was charged with electricity this would, of course, be a highly dangerous operation, and special lightning safety devices will have to be invented.

**No. 16, Young-street, Kensington.**

This freehold house will be offered for sale in the course of the current month. Standing on the west side of the street, and distinguished by its two circular bays, it is noteworthy as having been Thackeray's home during a period of six years, being then numbered "13." Thackeray removed thither in 1847, and in 1853 went to No. 36, Onslow-square. In that interval he wrote "Vanity Fair," "Esmond," "Pendennis," and portions of "The Newcomes." Field relates that he once made a pilgrimage with Thackeray to the various houses where his books had been written, and that, on coming to Young-street, he said, with mock gravity, "Down on your knees, you rogue, for here 'Vanity Fair' was penned!"

**Society of Painter-Etchers.**

We regret to observe, in the seventeenth annual exhibition of the "Royal Society of Painter-Etchers and Engravers" at the rooms of the Society of Painters in Water-colours, that the genuine art of etching in line is getting so much pushed out by "aquatint" and other analogous processes. By these methods pretty and popular pictures are produced, but they have not the intellectual interest or the vigour of line etching. Mr. Frank Short, who we used to regard as an ideal line etcher, has treated the subject of "Old Battersea Bridge" (27) as an aquatint; but what a far more powerful effect he might have got with line etching in the timber structure which forms the foreground of the picture. There is a certain proportion of fine line etchings in the exhibition, however; Mr. Haig's "Ca d'Oro" (37) and "In San Marco" (44), Mr. Oliver Hall's "Chapel Island" and "King's Lynn" (74, 75), Mr. Evershed's "Venice" (122), Mr. Paton's "Tree Study" and "Lancaster" (343, 347), and Mr. Charlton's "Calm in the Bay" and "A Tidal River" (382, 397). Mr. Strang exhibits his usual rather grotesque force in a series of drawings at the top of the room, among which "The Roof of the Halles, Ypres" (109) is an admirable piece of old building detail; and his show is contrasted by that of Mr. Helleu's characteristic dry-point sketches of ladies at the other end of the room, among which the one architectural subject, "Dieppe Cathedral" (369), is certainly not a success, being far too scratchy and wanting in structural character. Among other exhibits Miss Martyn's frame of illustrations to George Herbert's poems (136) shows pretty and delicate fancy; there are a number of bookplates by Mr. Sherborn; and among the special exhibits of water-colour drawings we noticed some charming architectural subjects by Mr. A. H. Murray.

**Mr. Reid's Exhibition.**

The collection of "Pictures of Rural Life in the Home Counties" by Mr. John R. Reid, at the Fine Art Society's Gallery, is one of the most interesting of the special exhibitions of the works of one artist which has been held there for some time. The quotation in a footnote to the catalogue (we are not told from whom)—"Rural landscape is not solely made up of land, water, trees, and beasts; *man* is a distinguished figure in it," expresses pretty well the present aims of Mr. Reid's art; he began with works in which the figures were predominant and the landscape only a background or setting; in his later works the landscape element has been developed more and the figures become accessories—in most cases not very important ones; they serve as supplying incident rather than illustrating character. This subordination of the figures must be intentional, for this artist showed in earlier paintings ("Toil and Pleasure," for instance) a decided capacity for the expression of human character, and we should be glad to see works of this class again from him; but in the meantime he has acquired a very fine and broad style in landscape, especially notable for its open-air feeling and what Constable called "the preservation of God's daylight." These characteristics are illustrated here in a number of small landscapes, all good, but among which we should name specially "A Southdown Mill" (52) and "After the Thunderstorm, Reigate Heath" (49); the latter much recalls Constable; the former is perhaps the more poetic work, though not quite so strong. Among others may be mentioned "A Fish Shop at Looe" (8); "Tea Time, Pilgrim's Way, Elstree" (23); "Reigate Heath" (20), and "The Last Load, Hampstead" (45). Of the two or three pictures in which the figure predominates "A Daughter of the Soil—the Weald of Kent" (36) is a fine presentation of a type of healthy rustic beauty. There is only one work we quarrel with—"Kew Bridge" (9). The bridge is all wrong in proportion and architectural character. It is curious that artists who can give the character of a human figure so well often cannot give the character of a work of architecture. Want of special attention to the subject is, we presume, the reason.

**The Goupil Gallery.**

The Spring Exhibition at the Goupil Gallery contains some interesting works by Israels, Maris, and other Dutch painters; a beautiful study of "A Village Maiden" by Mr. Clausen, and the same artist's powerful picture of "The Harrow" which was in the last Royal Academy Exhibition; a capital little pastel landscape by M. Lhermitte, "Midday Rest," an exceptionally good "Nocturne" by Mr. Whistler, and a fine work by Corot, "Ville d'Avray," which has the additional interest of being quite unlike Corot's usual style; probably an early work before he had fully come into his Corot-dom. Mr. Hornel's studies of groups of figures in very crude flat colour are novelties, but ugly ones.

**Exhibitions in Paris.**

M. Auguste Pointelin, the landscape-painter, has arranged, at the Galerie des Artistes Modernes, Rue Caumartin, an exhibition of his works, comprising about sixty pictures, pastels, and charcoal sketches. This exhibition shows him as a landscape-painter of no ordinary talent and originality, though a little monotonous in colour. The most important work exhibited is "Combe Vert du Haut Jura. In an exhibition at the Georges Petit Gallery are collected some works by five painters: Sisley, Claude Monet, Cazin, Besnard, and Thaulow, and one ceramic artist, M. Chaplet. Among the works by Sisley is the "Bords de la Seine à Saint Maurmès." By Monet there is the "Femme en Robe Verte" which was first seen at the 1866 Salon, the "Dejeuner" from the 1868 Salon, and a series of landscapes. The decorative faïence by M. Chaplet is very successful, and goes remarkably well with the landscapes.

**Picturesque Holland.**

This is the title given to a curious and very clever set of studies of Dutch character and costume, executed in a flat decorative manner, by Mr. N. W. Jungmann, and exhibited at Messrs. Dowdeswell's Gallery. The artist seems fully to appreciate the humorous side of the costume and build of the maritime population among his country folk—notice "On the Zuyder Zee" (23), the seated figure with his back to the spectator — the drawing is careful and incisive, and the whole collection, though verging sometimes a little too much on the grotesque, is interesting and original work. A higher note is struck in "Mother's Love" (26), a modern Dutch Madonna and Child, and in the frieze composition "Cantus ad Juventutem" (27), where also the brilliantly indicated bit of sea behind the figures is a fine point. On the private view day the presence of the two pretty Dutch maidens, in their characteristic costumes, who distributed catalogues, formed a further and very pleasing illustration of "picturesque Holland."

## THE REPORT ON THE ACETYLENE EXHIBITION.

THE report of the Committee of the Society of Arts on the exhibition of acetylene generators, held last summer at the Imperial Institute, London, has been published within the last few days. It has been somewhat dilatory in making its appearance, but it will certainly rank as a standard work of reference for many years to come; for the first few years it will serve as a valuable guide to those concerned in the manufacture of acetylene generators, and subsequently it will be consulted as a record showing the manner in which carbide of calcium was used during the first years of its manufacture on a large scale.

Taking into consideration the many hundreds of patents which have been applied for relating to the manufacture or use of acetylene, the numerous carbide factories that have been established, and the immense sum of money that has been invested in acetylene appliances, it appears incredible that carbide of calcium was practically unknown five years ago. Yet such is the case, and the report on the exhibition affords some evidence of the remarkable activity which has been displayed in developing the new industry.

Every generator admitted to the Exhibition was first tested by Mr. Duffield, on behalf of the Committee, at the Harrow-road premises of the London County Council; and subsequently at the Imperial Institute each generator was tested daily for a month, and the results were duly recorded. These tests were carried out under the supervision of Professor Vivian B. Lewes and Mr. Boverton Redwood, and the carbide used was supplied in bulk by the Acetylene Illuminating Company from Foyers.

Disappointment will probably be expressed by many because the actual figures, showing the quantity of gas obtained from each generator per pound of carbide, are not published; but their absence from the report will, doubtless, prevent much controversy. Amongst the *automatic* generators three gave an average of slightly more than 4·5 cubic feet of gas per pound of carbide decomposed, while the yield from the remainder varied from slightly under 4·5 to as low as 3·55 cubic feet. Amongst the *non-automatic* generators one gave an average yield of 5 cubic feet, and the others yielded much less. It is apparent, therefore, that the claim of 5 cubic feet of gas per pound of carbide usually made by generator makers requires some modification.

The Committee recommend, among other things, that every apparatus sold should be accompanied by a written guarantee that it will light a specified number of burners, consuming a given quantity of gas per hour, over a consecutive number of hours without increasing the temperature in any part of the carbide receptacle above 228 deg. C., that is, above the fusing point of tin. And among the seven appendices to the report is one giving the results of experiments by Professor Lewes which show that the temperature produced in the generator during the decomposition of the carbide has a very important influence upon the quantity and nature of the gas liberated.

Appendix E consists mainly of diagrams indicating the types of machine used, and is very interesting, but we imagine that some of the exhibitors will be far from pleased with the remarks attached to each generator. The final appendix refers to the legislation relating to calcic carbide and acetylene.

The following is a list of firms to whom certificates have been granted. These certificates state that the generator exhibited complied with the requirements of the tests to which it was submitted, and worked safely and satisfactorily during a month's daily use.

*Automatic Generators.*

The Abingdon Acetylene Illuminating Company, Limited, Birmingham.
The Acetylene Beacon Light Company, Limited, Birmingham.
The Acetylene Gas Corporation, Limited, London.
The Acetylite Syndicate, Birmingham.
Appleby & Harris, London.
Bailey & Clapham, Keighley, Yorks.
British Acetylene Gas Generator Company, Limited, Kirkcaldy, Scotland.
Ehrich & Graetz, Berlin.
Exley & Co., Huddersfield.
Sir Chas. S. Forbes, Bart., Strathdon, Aberdeenshire.
International Industrial Syndicate, Limited, London.
Liver Acetylene Gas Company, Limited, Liverpool.
Manchester Acetylene Gas and Carbide Company, Limited, Salford.
Midland Acetylene (Parent) Syndicate, Cradley Heath, Staffs.
Read, Holliday, & Sons, Limited, Huddersfield.
Sardi's Patent Gas Generator Syndicate, Limited, London.
Strode & Company, London.
Thorn & Hoddle, London.
Thornton-Scarth Automatic Lighting Syndicate, Limited, Birmingham.

*Non-Automatic Generators.*

The British Pure Acetylene Gas Syndicate, Limited, Liverpool.
Ideal Gas Company, Limited, Blackburn, Lancs.
Pintsch's Patent Lighting Company, Limited, London.
Sunlight Gas Company, Limited (Goodwin's System), Dublin.

## GREEK ARCHITECTURE:

### THE LIGHTING OF TEMPLES.*

YOU heard C. Garnier's opinion on the advantages of restoration as being one of the best methods of exercising the student's brains, by comparing, reasoning, and trying to find out, and so fitting him to use those qualities which are most necessary in actual practice; and though he spoke of restoration from the actual measurements of ruins and fragments, these qualities can be nearly as well exercised by the solution of problems, all the data for which have been measured for us; in one or two respects only do the measured data fall short of the original, they do not admit of the close study of the fragments themselves, which then may deliver up their secrets to him, and they lack the stimulating effects produced by handling the very pieces on which the ancient architects have bestowed their thought, and the workmen their care and skill.

The solution of the problem of the lighting of the Greek temples, up to a comparatively late period, was simplicity itself. If the temple had no windows, and was supposed to be too large to be lit by the door, it was said to be "hypæthral" in the modern sense of the word, that is to say, the restorers took the roof off the nave. I must confess that this appeared to me to be a curious expedient, even when I was a lad. The interior of the naos, with its idol, and works of art were then too much like the "Groves of Blarney":—

> "There were all the heathen gods and godesses
> so fair,
> There was Juno and Venus and bould Nicodemus,
> All standing naked in the open air."

And when I read of the statues being of ivory and gold, it seemed still more curious; still as I was told by my betters that there was no doubt about it that the Greeks could not truss a beam, and had no timber long enough without, and were unacquainted with the arch, I supposed the nave was covered with an awning, and that little or no rain fell—for aught I knew the climate was like that of Egypt.

Nicholson's and Sir William Chambers' "Architecture," "Rickman" and the "Glossary of 1838, "Bartholomew's Specifications," and a price book were then thought a fair library for an architect's office. Books were rare and costly; men worked for longer hours, and often spent their evenings for months gratuitously on office work; money was scarce; means of locomotion were rarer and much dearer than they are now; and there was no splendid architectural library like that of the R.I.B.A. open to all comers, so it was not easy to correct one's misconceptions. If any of you want to realise the climate of Greece in the winter, I recommend you to read Thucydides' account of the night escape of the 212 Platæans from their beleagured city, and you will fancy it was a bad storm in England. In Thucydides you will read of rain, hail, ice and snow, howling winds, lightning, and thunder. Consider the effect of a tempest like this on the most superb works of art the world has ever seen—made, too, of ivory and gold, enriched with gems, and adorned with painting and colours. Consider how agreeable it must have been to the priests to officiate in the open air, and to the crowds of worshippers; and, on the other hand, remember that the Greeks who had adopted this very primitive method of lighting, *i.e.*, taking the roof off their temples—an expedient below the intelligence of a North American savage—were the most brilliant race the world has yet seen, who, in certain respects, carried all the fine arts to the highest perfection they have yet attained.

Hume very justly says, "The same age which produces great philosophers and politicians, renowned generals and poets, usually abounds with skilful weavers and ship-carpenters. We cannot naturally expect that a piece of woollen cloth will be brought to perfection in a nation which is ignorant of astronomy, or where ethics are neglected."

Even if we did not know it as a fact, we might reasonably suppose a people who excelled in all the higher arts were not entirely ignorant of the lower ones. If any one in the present day wanted a village carpenter to put him up a one-story wooden house, with an open shed all round it, and said he could not have windows in the walls nor glass used, but he wanted a good light in the house, which was to be filled with pictures and painted statues, do you think he would consider the carpenter had much intelligence if he saw no other way of lighting it than taking the roof off? Yet but a few years ago, we were seriously asked to believe that the Greeks could only solve the problem in this way. This state of things was brought about partly by ignorance, partly by what I may call an insane worship of the classics, particularly of the Latin ones. Only let a statement be made, or, as in this case, be supposed to be made, by a reputable Roman author, and it was swallowed whole; the very fact of its being impossible was the best ground for belief. As I have before said, and you all probably know, Vitruvius is the first writer on architecture whose treatise has come down to us.

Vitruvius, in Book I., cap. 2, gives us a reason why certain temples should be in the open air, or hypæthral:—

"When buildings are dedicated to Jove, to lightning, to the heavens, to the sun, to the moon, they are erected hypæthral—in the open air. For of these deities we see both the appearances and the works when we are in the open shining face of nature."

Pausanias tells us that at Megara, in the Citadel, there is a roofless temple of Dusty Zeus; and, by this I understand, he means so built, for, further on, when he explains that Megara had two Citadels, he says, but if you descend to the haven which at present is called Nisæa, we come to a sanctuary of Molophorian Demeter, we may infer that the roof of the sanctuary has fallen in through the effects of time (Attic., cap. 44).

Although a lecture is the worst possible method of discussing controversial questions, I must ask you to bear the reading over three times of a part of the translation of the five and a half lines of Vitruvius (Lib. 3, cap. 2, par. 8) from the three English translations of Newton, Wilkins, and Gwilt, published respectively in 1791, 1812, and 1826, and I beg you to note down particularly the last sentence :—

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* Professor Aitchison's sixth and concluding Royal Academy lecture, delivered on Thursday, February 16.

Newton says :—"Hypæthros is decastyle both in the pronaos and posticum ; in all other respects it is the same as dipteros, except that in the inner part also it has columns—two rows in the height, detached from the walls all round, like the peristyle of a portico. Also the middle part is left uncovered, and without a roof, and doors open both to the pronaos and to the posticum. Of this there is no example in Rome ; but such is at Athens, the octastyle temple and that of Jupiter Olympius" (Newton's "Vitruvius," Book 3, cap. 1, par. 8).

I must here remark that the translation "like the peristyle of a portico," does not appear to me to be a correct translation of "*ut porticus peristyliorum*," nor does it convey any meaning to me. Wilkins left it out, and Gwilt puts it in the plural, but "the portico of a peristyle" is to me perfectly clear, for the English equivalent of *peristylium* = a place surrounded with columns on the inside.

Wilkins says :—"There is no temple of this description at Rome, but there is one at Athens, within the city, dedicated to Jupiter Olympius" Wilkins' "Vitruvius," Lib. 3, cap. 1).

Gwilt says :—"Of this sort there is no example at Rome, there is however an octastyle specimen of it at Athens, the Temple of Jupiter Olympius" ("Vitruvius," Lib. 3, cap. 1, Gwilt's).

I shall not further attempt to compare their translations with the published Latin text, for it is evident that the first and last were most careful and conscientious men who were conversant with the various editions and translations published before their time, and were architects.

The great Wilkins was not only an architect, but also a Fellow of Gonville and Caius College, Cambridge, and had consulted the MSS. as well, and had sufficient belief in his own scholarship to amend the printed text.

On the supposition that the scribe who wrote Octastylon ought to have written in "In asty Jovis," he gives the English equivalent of his own emendation, and if his knowledge and judgment could have been depended on, it would have removed a cause of controversy, and acquitted Vitruvius of what seemed an error we thought he might have avoided.

Vitruvius says :—"Of this, however, there is no example at Rome, but at Athens an octastyle in the Olympic temple" ; the controversy was whether by the octastyle, he did not mean the Parthenon, as Jupiter Olympius was always believed to be decastyle, and the supposed error was this, that if the "*and*" was "*is*," then if Jupiter Olympius was decastyle, that he ought to have known it.

In the Hellenic Society's Journal of 1888, the result of Mr. Penrose's observations on the Temple of Jupiter Olympius is given as follows :—

"Some excavations for the purpose of determining the plan of the temple itself have been carried on by the Society of Dilettanti under my direction, and have resulted in proving that the temple was octastyle, instead of decastyle, as generally supposed. The foundations have been much uprooted by searches for building stone in past times, but amply sufficient has been found for recovering the complete plan of Antiochus' temple and also some interesting particulars respecting the earlier foundation."

These earlier foundations are those of the temple begun by Pisistratus.

You have now all the information that is to be got out of Vitruvius ; first, that hypæthral temples were decastyle, and that the temple of Jupiter Olympius at Athens was an example of an hypæthral temple, though octastyle (built as you doubtless recollect for Antiochus Epiphanes by Cossutius, an architect and Roman citizen, between 175 and 164 B.C.), and that hypæthral temples were besides confined to the following five deities :—Jove, lightning, the heavens, the sun, and the moon. There are a few remarks by Greek writers on this subject which I shall presently mention.

The only decastyle temple whose ruins have come down to us is that of Apollo Didyæmus, at Miletus. The dodecastyle one of Demeter and Persephone at Eleusis, which Vitruvius informs us, was so built without a portico by Ictinus, may, therefore, I think, be put aside. Apollo Didymæus, according to Gandy, is 75ft. 3 in. across between the pilasters of the naos ; and, according to Strabo (Lib. 14, cap. 1, section 5), remained without a roof, on account of its magnitude ; consequently, we have it from necessity as one, I might say the one, temple that was decastyle, and without a roof, from which Vitruvius deduced his rule. We have now only left the octastyle Temple of Jupiter Olympius at Athens (built by the Roman architect) that Vitruvius says conformed to the rule he deduced from the one temple they could not roof, and I presume this was rather from want of means than from want of skill. The question is whether Jupiter Olympius at Athens was ever finished in Greek times, the Romans were always rather chary of destroying temples. A story is told in Plutarch of a temple being pulled down and brought to Rome, and the Senate ordered it to be taken back and rebuilt, as they did not war against the gods ; it was covered with marble tiles so fitted that the Romans could not put them up again, and merely left them on the spot. Sulla, who died in 78 B.C., or two years after Vitruvius was born, took some of the columns of Jupiter Olympius at Athens for the Temple of Jupiter Capitolinus at Rome after he had sacked Athens, and those columns are believed to have been the inside ones. In the time of Augustus, according to Suetonius, there was a conclave of kings about finishing this temple.

Pausanias (Lib. 1, cap. 13) says the temple was dedicated by Hadrian (probably about 130 A.D.) ; therefore, as far as this temple is concerned, it was hypæthral like the other, because it could not be finished, and even if at its rebuilding by Cossutius it could be considered as Greek, it was certainly not so when it was finished by Hadrian. So our hypæthral temples, on account of their size and disposition, have vanished into thin air.

I want you to notice this argument : if all temples were lit by a hypæthros, or were unroofed, it would have been much simpler for Vitruvius to say so, and not to have mentioned his five deities and given the reason why their temples should be open or hypæthral ; so that I think we may fairly conclude that other temples were neither without a roof nor with a hypæthros.

We will admit, then, that temples to any of the five deities before mentioned must be without roofs, or have an hypæthros ; let us begin with those of Jupiter and see what we can learn about them.

That temples to Jupiter were roofed we have on the authority of Strabo, who, speaking of that of Zeus Olympios at Elis, says :—"Of the offerings, the largest was a statue of Jupiter in ivory, the workmanship of Phidias of Athens, the son of Charmides. Its height was so great that, although the temple is very large, the artist seems to have mistaken its proportions, and although he made the figure sitting, yet the head nearly touches the roof, and presents the appearance that if it should rise and stand upright, it would unroof the temple" (Strabo, Lib. 8, cap. 3).

Pausanias (Lib 5, cap. 10) describes the same temple, and, speaking of the inside, says :—"In this part the top of the temple contracts itself," and further on, "within the temple there are pillars which sustain porches at a considerable height from the ground" (probably the internal peristyles and galleries). "Through these there is a passage to the statue of Jupiter, and they afford a winding entrance to the roof of the temple."

In the Temple of Jupiter Panhellenius at Ægina, the late Professor Cockerell found a piece of the coping of an hypæthros, for in it were the housings for the ends of the tiles and their cappings; and W. Kinnaird shows the top of a tomb from the Island of Rhenea, the cemetery of Delos, in imitation of the roof of a temple, where a double barrelled hypæthros is shown, the length of the two together being a trifle less than one-third of the whole length, and a trifle more than one-third of the width.

Professor Cockerell also mentions the representation of a temple cut on a rock at Cyrene, a sketch of which is given in Captain Beechey's travels, which seems to show a large hypæthros, half the length of the temple, which stands up above the ridge and has no openings in its side.

Vitruvius (Lib. 1., cap. 2) says :—"Temples of the Doric order are erected to Minerva, Mars, and Hercules ; the Corinthian Order is more appropriate to Venus, Flora, Proserpine, and to the nymphs of fountains ; that of the Ionic to Juno, Diana and Bacchus, and other similar deities." The question for us now is whether we can class Apollo with Minerva, Mars, and Hercules, or with Juno, Diana, and Bacchus, or whether we must consider him as typifying the sun god. At Bassæ he is called "Apollo the Helper," because the cessation of an epidemic was attributed to his influence, and he is lodged in a temple, Doric externally ; so that it is not as the sun deity that he is there worshipped. Baron Haller, who was one of the party at Phigalia in 1811 and 1812 with Professor Cockerell, found amongst the ruins two marble tiles with the centre part cut out, and the angle next the opening rounded. Professor Cockerell concluded that this was another form of a central hypæthros. I believe the particulars of these tiles were not generally known until Professor Cockerell's book on Ægina and Bassæ was published in 1860.

In the fourth or supplementary volume to Stuart & Revett's "Athens," published in 1830, Professor Donaldson gave a plan of this temple, and a section through the opisthodomos, the inner chamber, and a part of the naos, showing it without a roof, and in the French scientific expedition to the Morea, M. Blouet also showed the naos open, but with some slight differences in the contiguous roofs. In 1849 Fergusson, in his book of the "Principles of Beauty in Art," suggested a clearstory, lit by holes sunk in the roof. The late J. W. Papworth studied the whole question minutely, and gave the results in a paper read before the Royal Institute of British Architects in 1866, and showed from the fragments of the tiles that they must have accorded with Fergusson's plan, as they had a stop for the water next the opening, and a gutter to catch the rain coming from the ridge of the roof, and to convey it down the side ; and he also found in the British Museum another sarcophagus from Crete, whose top represented the roof of a temple with two of these sunk holes, one at one end and the other at the other, but on alternate sides of the ridge.

M. Charles Chipiez published in the "Revue Archéologique," 1878, a memoir on the hypæthral temple. He there gives a view of his own, viz., that in those temples that have internal aisles of two stories, the floor of the gallery was a stone roof open to the air, and that the curb of the hypæthros found by Professor Cockerell at Jupiter Panhellenius at Ægina was that of one of the lower sides ; he accepts Fergusson's two long slits in the roof, allows the rain water to escape therefrom through the walls of the naos on to the peristyle pavement. In his illustrations he has decorated the outside of the naos walls with what look like breastplates, which may be a sort of water guard, but without pipes—the scale of the illustrations is too small to give a definite opinion—and he also suggests that in some cases the wet that fell might have no outlet for escape, but be allowed to evaporate. The argument he brings in favour of this, in the case of Jupiter Panhellenius at Ægina, is the fact that C. Garnier, when he restored this temple, found that the arrises of the flutes of the upper columns were painted red, while the lower ones were uncoloured. I give you his words :—"An observation made at Ægina, by M. Garnier, on the same edifice we have reproduced, renders the existence of two openings in the roof very probable. This observation has been directed to the lower and upper columns of the naos, the former are monochrome, while the clear and uniform tone of the latter is violently relieved by lines of bright red which mark the arrises of the flutes; if one turns to the perspective we give, it will be seen that it would be absolutely necessary that it should be so. The columns, lit by the cross-lights, would only offer to the spectator placed in the axis of the temple a confused and indefinite outline, if some strongly-marked lines did not re-establish the firmness of the outlines. This refined artifice is stamped with Greek subtlety, and thoroughly explains itself by a lighting from each side."

Another of his arguments is, that there are no staircases to these galleries, which only amounts to this : that, apparently, there were no stone ones. He uses it to prove that they were not used by the general public who attended for worship, or for seeing the temple and its contents. M. Chipiez also points out what every architect must have observed in looking at the flank of a restored temple with the usual hypæthros, that the great notch cut out of the ridge, and extending for a considerable distance, is not merely inartistic, but very unsightly.

I believe this completes all we know from actual facts, and all that has as yet been found out from the testimony of the ancients, and we now come to Fergusson's theory.

There were no two more brilliant theorists than Viollet-le-Duc and Fergusson, and you cannot read the works of either without admiration; you often find that by their almost magical instincts they have turned darkness into light, and you feel that you get information, delight, and that enthusiasm that genius communicates, from the perusal of their works; but you will also find that no sooner does a theory irradiate their minds than, like the sun, it blots out everything else, and that in many cases they have invented the very foundations of their hypotheses.

For instance, Viollet-le-Duc seems to prove incontestably that the dome of the Pantheon is in two thicknesses because the inside shell is coffered, and the outside one was composed of discharging arches, and says Piranesi saw the arches on the outside; but when you refer to Piranesi, you find he saw these arches on the inside; so when Fergusson says this is self-evident, and if you deny it, show how you can do it better, then beware, and weigh everything with the utmost care, and look up all the references.

As I said before, fact is stranger than fiction, and you must not allow yourselves to be carried away by mere probability. We know that some Greek temples had pediments, we see from Cyrene that in all probability the parapet of the hypæthros was sometimes carried above the roof, that by raising it a little and roofing it and putting in windows we should get a clearstory; or, by sloping the roof down to the bottom of the wall of the hypæthros and piercing it we should do the same. The question is whether the Greeks did either?

The Telamones at Jupiter Olympius at Acragas point to clearstory windows, but then this is one of the temples that, according to Vitruvius, must have a hypæthros. However, we need not trouble ourselves about that which was never done, for Diodorus Siculus (Lib. 13) tells us that "When the Agrigentines were on the point of putting on the roof war interrupted their operations, and after that time the city was so far reduced in circumstances that they had no longer the means to finish it." If this part, where the Telamones or Atlases were, was pierced with windows they probably would not have filled them in, but as yet I have seen no proof that they were ever open.

Perhaps the most interesting temple that remains to us, in plan only, is that of Demeter and Persephone at Eleusis. It is fitted with forty-two columns, according to the last plan published by Dr. Dörpfeld, and looks like the hypostyle hall at Karnac; it appears to have had seats all round the walls for spectators to witness the wonders shown during the initiation, but we can only surmise as to its lighting, that it might have been lit like the Karnac Hall.

Almost all we know about the Temple of Demeter is from Strabo, Vitruvius, and Plutarch. In Book 9, cap. 1, section 12, Strabo says:—"Next is the city of Eleusis, in which is the temple of Eleusinian Ceres, and the mystic enclosure (Σηκός) which Ictinus built, capable of containing the crowd of a theatre. It was this person who built the Parthenon in the Acropolis in honour of Minerva, when Pericles was the superintendent of the public works."

Vitruvius says, speaking of marble temples (Lib. 7, Introduction):—"The third is the Doric temple of Demeter and Persephone at Eleusis, the cell of which was built by Ictinus of extraordinary dimensions for the greater convenience of the sacrifices, and without any external colonnade, this structure, when Demetrius Phalereus (B.C. 317) governed Athens, was turned by Philus into a prostyle temple with columns in front, and by thus enlarging the vestibule, he not only provided accommodation for the novitiates, but gave great dignity to its appearance."

Pausanias (Lib. 1, cap. 38) tells us, when speaking of this temple:—"But I am forbid by a dream from relating the particulars within the sacred wall." Consequently we have, unfortunately, no information from this gossiping traveller that can throw any light on the subject. He certainly ought to have been put in the pound for straying; however, he seems to have been a careful observer, though evidently without much taste for architecture.

Plutarch, speaking of this temple, says:—"Coroebus began the temple of initiation at Eleusis, but only lived to finish the lower rank of columns, with their architraves" (by which I presume he meant the inside order); "Metagenes, of the ward of Xypete, added the rest of the entablature; and Xenocles of Cholargus built the dome on the top" (Plutarch, "Pericles," Langhorne's Trans., Lon., 1801).

Dome was their translation of *opaion*, which Fergusson considers was the clearstory; now if the opaion was a mere hole, it seems hardly likely that a biographer would think it worth while to notice it and the architect who left it out.

Ὀπή=opee was the name for the smoke-hole of the original hut. Aristophanes in his "Wasps" uses the word in that sense. Bdelycleon confined his father Philocleon in the house, which he has also surrounded with guards to prevent his father from voting. Philocleon on getting out of this hole or chimney tells the guard "I am smoke coming out." The word opee seems to have been used for a hole generally, as in metope, the hole between the triglyphs. Ὀπᾶιον seems to mean a hole in the roof too, and if there were a clearstory it might eventually have been applied to that.

The Temple of the Parthenon at Athens is one of the cases where the hypæthros is not required by "that which is established," according to Vitruvius; but we are certainly in greater darkness about its lighting than about that of the Temple of Demeter at Eleusis. We do know this last had an opaion, though we do not know exactly what an opaion was; but we do not know even so much about the Parthenon. All we know is this, that there is a coin which shows it perched on a rock, but there is no sign of a hypæthros on the temple.

Fergusson's theory as applied to any temple, not being one to the five deities specified, is unassailable by argument in the present state of our knowledge, though it may eventually turn out he was wrong. His opponents rely on Vitruvius; but in the case of the Parthenon the argument is against them, and there seems to me to be no choice between artificial light and his scheme of a clearstory, or M. Chipiez's that the upper gallery was the clearstory, except Dr. Dörpfeld's, that it was only lit through the door. The artificial light theory is, I think, untenable, for this temple particularly required brilliant lighting; the idol here was not a fetish or a totem. It was one of the finest works of art in the world, of ivory and gold, and made by Phidias, who made the statue of Jupiter at Olympia, one of the seven wonders of the world. No more splendid effect of the idol can be imagined than its sudden irradiation by the rising sun. But besides the idol, the sculpture and painting of the temples themselves (the temples were museums of trophies of gorgeous armour, of painting, sculpture, and what we should now call objects of vertu and sacred relics). As the ancients could only light by torches, candles, and lamps without chimneys, every work of art would have been ruined with the droppings or the smoke, and Fergusson remarks, speaking of the frieze of the naos at Bassæ:—

"Supposing the cell roofed in any way, every one must see that it is quite impossible that sculpture, so placed, could have been properly lighted by any artificial means, for in that case the lights must have been below the level of the figures; besides, no frieze can be properly lighted by artificial light unless it was in only one direction, and was illuminated by one lamp of sufficient power to light up the whole. I need not say the Greeks could not command this; and I defy any one now, even with gas, and all the mechanical means we can command, to do this as it should be done. Nor need I add that the Greeks would never have placed such a work of art in a position where it must remain in the dark, or be lighted so as to make it literally ludicrous." The only thing to be said about this is that it might have been lit by reflected light like the Panathedaic frieze of the Parthenon.

Fergusson adopts the theory of the clearstory sunk in the roof, and showing on the outside either by two sunk holes or slits. You must recollect that the Parthenon roof could not be seen, but that at Bassæ could, for there is an adjacent mountain overlooking it. The two fragments of tiles at Bassæ show that there must have been one hole at least, but there is nothing to show it was not a hypæthros to light the sculpture of the nave; the statue of the god in the back chamber must have been simply lit by the east doorway; and all the argument against this is Pausanias' account of the dead soldier in the Heraion at Olympia (Lib. 5, cap. 20). "Aristarchus, the Olympic historian, relates . . . that in his time, when the Eleans were repairing the roof of the Temple of Here, between the polished part of the roof and that which supports the tiles, the dead body of a wounded man in armour was found. It appears to me that this man, having engaged in a fight against the Lacedæmonians, in the Altis, when the Eleans, in order to defend themselves, ascended to the temples of the gods and every place of eminence, then died, fighting in this place; and that his dead body remained so long entire because, being concealed in their retreats, it could neither receive any injury from hot vapours in summer, nor from cold in winter" (Lib. 5, cap 20).

This amounts only to a strong probability. Another argument for it is this, that as yet no drainage under the naos of a temple has been found, though perhaps it has never been looked for.

Fergusson's scheme can no more be set aside on account of the difficulty of getting the water off than a scheme of the present day could be, because of the impossibility of draining an internal lead flat.

The Greeks could make tiles and troughs out of marble as well as of pottery, and could cast bronze better than we can now; it is therefore ridiculous to make such an objection, because no rain-water pipes have been found. As no fragments of earthenware pipes have been found there we may safely say there were none; but metal was once so precious that it paid men to cut through stonework to get out the iron cramps and their lead fixings from the Colosseum.

What does tell against his theory, or that of a free clearstory, is that no fragments of one have been found; it is true they have never been looked for.

Even to the present day the bulk not only of the educated, but of architects themselves, are quite content with the open-air theory.

Fergusson's suggestion that temples might be lit by a large window at the end of the naos, getting its light from an unroofed narthex or open court, or above a low closed one, is an admirable idea for present use, doubtless suggested to him by the Cave temples of India, and may well claim our respectful consideration, as we generally fritter our light away in imitation of mediæval times, having forgotten the reason of this plan being adopted, viz., that mediæval churches were designed as picture galleries of stained glass.

Mr. Penrose found in the Jupiter Olympius at Athens that there was a compartment at the east end, nearly corresponding with the opisthodomos at the west end, and that there was no sign of there having been columns in either, which he says "would have been exactly suited to the Fergussonian theory." There were no signs of internal drainage, but there was a complete drain all round the temple about 20 ft. from the stylobate.

Fergusson, in his "Parthenon," constantly refers to Roman buildings as probably continuing the method of lighting pursued by the Greeks; there is, however, a strong probability that Roman buildings were lit by a hypæthros, probably covered with a skylight when glass or lapis specularis came to be generally used as in the Thermæ at Pompeii.

The Pantheon at Rome is *the* one grand temple that has come down to us with a hypæthros, and it remains open to this day, the rain-water running down a gulley under the centre of the eye. This is the most solemn, striking, and superb method of lighting that can be seen in Europe, and is worth a journey to Rome to see, and to receive its ineffaceable impression. The area of the eye is only about one-twenty-eighth part of the whole area inside the circle of the floor, the only supplement it has, when the doors are shut, is the light that comes through the latticed bars of the fanlight, some 70 ft. from the front of the portico.

If the nave of the Parthenon was lit by a hypæthros as shown by Mr. Falkener in his Dædalus, an opening 10 ft. by 8 ft. would have been sufficient to light the nave, if the Pantheon proportion be adhered to, for, according to Stuart, it was but 68 ft. 6 in. by 32 ft. 6 in.; and there would have been a magnificent gloom behind the lower columns of the interior peristyle, cut off as the light would have been by the gallery floor.

There is one thing positively certain, that in the best ages of Greece ample light was required for their temples.

In the little temple of Niké ˮA'pteros by the Propylæa, there are two windows about 3 ft. n. wide on either side of the central doorway, though the naos is but about 12 ft. by 13 ft. Professer Cockerell, in his book of the Temple of Jupiter Olympius at Acragas, shows it lit all round with windows, and we have heard that it was never roofed.

Fergusson says that his clearstory plan was used at the Heraion at Olympia, and in a note he says:—

"We are now proposing to erect a museum of casts. For this purpose we cannot do better than copy the interior of this temple. We may depend upon it the Greeks knew better than we do how their sculpture ought to be lighted, and we cannot do wrong in copying them as literally as possible. They are now erecting galleries for casts at Cambridge, and I am not without hopes that one of them will be a copy of the interior of the Heraion, and that we may thus have an opportunity of judging of the effects of the Hermes placed and lighted as it was done by Praxitiles himself ("Parthenon," page 88, footnote).

A large hall surrounded by dead walls can only be lit in three ways: by a skylight, the hypæthros, by a lantern (for a clearstory is only a large lantern), or by artificial light; though some artists prefer a lantern, the bulk prefer a skylight.

We can only approximately try the effects of lighting for a special object by using models, and I strongly advocate your getting a rough model made of the Apollo Epicurius at Bassæ and trying the two plans, viz., with Fergusson's clearstory and with Professor Cockerell's hypæthros, and seeing which lights the frieze best. A mere wooden box would do, if loose or hinged pieces were provided to cut off the light by the hypæthros when you were trying the clearstory, and *vice versâ*.

If any important section of mankind are still anxious to solve the problem of the lighting of the Greek temples, and if architects will research the ruins and re-examine the fragments, and ascertain the method of drainage in the temples and immediately around its steps; if scholars will still search for passages relating to this subject in the well-known authors, and in others where such information has not hitherto been looked for; if men of taste and education will aid, and men of means will supply funds for this purpose, or if our Government could be roused to lend its aid, I have no doubt this problem would be solved within a few years.

*Translation of an Extract from a Letter of Dr. Dörpfeld's, January 8, 1899.*

"As to my opinion on the lighting of Greek temples, I have not changed it since I wrote an article on the hypæthral temples in our Athenian Journal of 1891, page 334.

I do not believe that the Greek temples, at the Parthenon, for example, had any other lighting than came through the doorway. Why had the doorway of the Parthenon a height of 10 metres and a width of 5 metres (*i.e.*, of 50 metres) if it were not for allowing the light to enter the cella, and particularly to illuminate the statue of Athena? I am persuaded that this light perfectly sufficed. The temple at Bassæ was perhaps a hypæthral temple, because all the interior of the cella between the columns might have been without a roof.

The statue of Apollo was, as you know, behind the column of the interior."

I must return my thanks to so many for the assistance they have lent me that I might almost fill one lecture with them. To Dr. A. S. Murray, to the Science and Art Department for Fergusson's model of the Parthenon, to Professor Smith for the favour of his diagrams, to the "Guardian" Fire Office for their chromolithograph, to Sir G. Grove, Mr. Holmes, Mr. Tadema, and a host of other private friends, for information, translations, books, and suggestions.

The London School Board.—At the meeting of the London School Board on the 2nd inst., the General Purposes Committee presented a report recommending that the salary of Mr. T. J. Bailey, Architect to the Board, be increased at once from 1,000*l*. to 1,100*l*. per annum and that a further increase to 1,200*l*. should be granted at the end of a year. The last increase of 100*l*. was granted in 1895, and the present recommendation is made because of the important position which Mr. Bailey holds, the great responsibility devolving upon him, the efficient manner in which he has carried out his duties, and the extension of the work of the Board in recent years. After some discussion, the recommendation was agreed to by 19 votes to 11.

## THE ROYAL INSTITUTE OF BRITISH ARCHITECTS:

### SOME EARLY CHRISTIAN CHURCHES IN PALESTINE.

A special general meeting of the Royal Institute of British Architects was held on Monday, Professor Aitchison, R.A., presiding.

The first business was the election of the Royal Gold Medallist for the current year.

The Chairman moved "That, subject to her Majesty's gracious sanction, the Royal Gold Medal for the promotion of architecture be presented this year to Mr. George Frederick Bodley, A.R.A., for his executed works as an architect." This was adopted unanimously.

The ninth general meeting (business and ordinary) followed, and one Fellow, fourteen Associates, and one Hon. Corresponding Member were elected. The following are the names:—

As Fellow.—Mr. S. P. Pick, Leicester. As Associates.—Messrs. W. H. Bourne, Darlington; W. A. Scott, Drogheda, co. Louth; E. J. Mager, London; G. Reavell, jun., Alnwick; J. H. A. Phillips, London; A. M. Watson, B.A.,Lond., London; J. Cubbon, Manchester; H. I. Triggs, London; F. R. Hiorns, Margate; J. Kirkland, London; E. F. Knight, London; H. D. Pearson, London; L. W. Green, London; H. Tanner, jun., London. As Hon. Corr. Member.—Professor Commendatore Felice Barnabei, General Director of Antiquities and Fine Arts, Rome.

The meeting then proceeded to consider a notice of motion by Mr. Henry Dawson, to the following effect:—

"That, with the object of securing correct legal action in the election of candidates for membership of this Institute, the members thereof request the Council to obtain, at the earliest convenient date, the written opinion of some eminent Queen's Counsel of independent position, as to whether women are eligible as Associates or Fellows under the terms and provisions of the existing Charter and By-laws of the Royal Institute of British Architects. And that the Council do report such opinion to the members at the earliest convenient date."

After prolonged discussion this was, by the casting vote of the Chairman, rejected.

Mr. Owen Fleming next moved:—"That the attitude of the Council towards the brickwork experiments recently conducted by the Science Standing Committee is calculated to impair public confidence in the Royal Institute, and that the Council therefore be invited to take such steps as may be necessary to bring the matter to a satisfactory conclusion."

This motion was carried.

The consideration of a further notice of motion, by Mr. H. Hardwicke Langston, in favour of affixing a notice at the street front of 9, Conduit-street, indicating that the premises are occupied by the Royal Institute of British Architects was, through want of time, ordered to stand over.

Mr. A. C. Dickie then read a paper on "Some Early Christian Churches in Palestine," which was illustrated with lantern slide views. The lecturer said that Jerusalem was rich in remains of early Christian churches, that he had selected for discussion three interesting types of plans which were comparatively unknown—viz., those of the Church of St. John the Baptist (eleventh century), an Armenian mortuary chapel (sixth century), and the Church of the Pool of Siloam (fifth century). Before dealing with these, the lecturer briefly outlined the history and described the great cathedral church of the Holy Sepulchre, the most important and most interesting early Christian church in Jerusalem. Constantine, in the fourth century, built a basilica over the site of the discovery of the true cross by Queen Helena, and a rotunda over the Holy Sepulchre, which seems to have been separated from the basilica by a cloister. These were burned and destroyed by the Persians in 614, and partly restored by Modestus soon after, with the addition of a chapel over Calvary and a chapel to the Virgin Mary. Arculf (seventh century) gives a plan of the buildings showing the rotunda isolated, and between it and the basilica the chapel over Calvary and the chapel of St. Mary. The buildings were again destroyed and restored in the ninth and tenth centuries, and totally destroyed in 1010 by the Khalif Hakem. Not long afterwards they were restored, and in the beginning of the twelfth century the restoration of the Crusaders made the church much as it is now. Seen from the housetops, the façade, with its domes and tower and the Mohammedan minaret in the foreground, is the most charming group of the city; the rich, tawny colour of the weathered stone, and the lead and white domes set in bright sunlight against the intense blue Syrian sky, is a picture to be remembered. The lecturer acknowledged his indebtedness for the facts given of the church to the careful researches of Mr. George Jeffrey, a Fellow of the Institute. The Church of St. John the Baptist lies on the way to the church of the Holy Sepulchre, in Christian-street, adjacent to the Pool of Hezekiah. Over the original church a modern one has been built, very nearly on the same plan, and the ancient building now takes the place of a crypt, the surface of the ground being at the level of the upper church floor. The lower church is reached by a rude flight of steps on the south side descending into a narthex, from which three doors enter the main building. The total length of the church, north and south, is 62 ft. 9 in., and width 24 ft. 9 in., which the later wall thickening has reduced to 16 ft. 6 in. The west wall of the narthex is 6 ft. 10 in. thick. The floor of the eastern apse is raised 6 in., and the original window is now formed into a recess. The present vaulting is Late Pointed, the centre bay having intersecting vaults and the flanking bays plain vaults. A close examination of the vaulting convinced the author that it had been constructed in the same way as the natives construct the vaults at the present day, viz., by a rude centring of timber, brushwood, and earth, modelled to the form of the vault, and then completed in concrete of stones and lime thrown quickly over the centring and left to dry.

An Arab Effendi, when excavating the foundations for a new house, came upon one of the most beautiful Byzantine floor mosaics yet discovered. He preserved it by building a cell on the old foundations. The mosaic formed the floor of an Armenian mortuary chapel, a tiny rectangular cell 21 ft. by 13 ft., with an apse on the east end. The lecturer quoted Dr. Bliss's account of the discovery, and a note by Dr. A. S. Murray on the design of the mosaic.

Next to the Church of the Holy Sepulchre, perhaps the most interesting is the church dedicated to the waters of Siloam in the middle of the fifth century. This long-lost ruin was discovered during the recent three years' excavations, by the Palestine Exploration Fund, under Dr. Bliss's direction. Having given a description of the Pool of Siloam and its present condition, and some account of Dr. Bliss's excavations, the lecturer went on to discuss the church itself. There is no record of any building attached to the Pool prior to the time of the Empress Eudocia, in the middle of the fifth century. The sacredness of its waters to the pilgrims who sought relief from their infirmities at its healing stream inspired the Empress with the idea of building a place of worship over the Pool. The plan adopted is unique. It consists of a nave and two aisles, measuring over all 86 ft. by 52 ft. In the centre of the nave are four piers, 4 ft. 3 in. square, the supports of the Byzantine dome of a later restoration. The projecting choir is also of the period of this later work, as well as the thickening of the pier in the entrance colonnade to the north, inserted evidently to provide for the extra thrust of the dome arches. There is no entrance in the west, and access is gained from the north by a great stair of sixteen steps, 68 ft. wide, descending through an arcade of seven arches almost the whole length of the aisle. The staircase is reached by three doors, entering from an atrium, the centre doorway being accentuated by the addition of a small portico. Between the doorways occur low stone benches set against the wall, used as seats. Ranged round the apse are five tiers of steps, with the centre raised at a higher elevation than the flanks, for the seat of the bishop, as existing more or less complete at Torcello, illustrated by Fergusson. There is a small chapel in the east end of the north aisle, screened by a low screen of red marble, 2 in. thick, let into the sill and walls, and coped with a moulded coping stopped by moulded stone gate-posts in the centre, the remains of which were found lying at this point. In considering the influences which had worked together to bring about the peculiarity of plan, the lecturer explained that the church was designed to fit into an existing scheme, in the building of which no such extension was contemplated. At that time the pool was believed to be supplied by a spring, the builders being ignorant of the existence of the Siloam tunnel. The position of the supposed spring to which the church was dedicated, therefore fixed the position of the altar directly over the spot where the waters were believed to spring from, 27 ft. below. This practically settled the eastern apse, and the west wall was fixed by the position of the rising scarp and city wall then existing, and forming the western butt of the great staircase, the necessity for incorporating the latter in the plan, forcing the builders to draw the wall to within a few feet of the scarp, leaving a space only sufficient for a narrow passage and a western light to the church. It was desirable to have as much of the church as possible over the pool, and this was easily managed by carrying the south wall on the pool arcade and the aisle colonnade on the north wall of the pool. Thus the north was the only side available for the entrance to the church, and although the rapidly rising ground rendered this difficult, necessity demanded it, and the magnificent idea of a great staircase entering the north aisle through seven arches (almost its whole length) was the result. The traditional three doors were placed at the entrance to the staircase, and an atrium put in front.

Thus all the traditions of the early church plan were retained in a modified form—a most successful solution of an exceedingly difficult problem. An unsuccessful attempt was made to buy the site, with the intention of restoring the church and pool to its original state. Among the illustrations was a sketch restoration made by the lecturer founded upon the theories advanced in his paper. A careful study of the existing remains leaves little to conjecture, as the buildings practically stand for a height of 35 ft. from the pool pavement to the ruined top of the church walls.

The reading of the paper concluded at an exceptionally late hour (10.25), and the Chairman, remarking upon that fact, said it was desirable that any gentleman wishing to comment upon the paper should do so in writing and send it to the Secretary for publication in the *Journal*.

Mr. William Emerson proposed a vote of thanks to Mr. Dickie.

Mr. R. Phené Spiers seconded, and said he accepted the invitation of the Chairman. There was no time to discuss the question now, but the existence of the circular arch was shown to have continued up to the time of the crusade, so it gave rise to the question whether, after all, the pointed arch may not have been introduced from Europe.

The vote of thanks was adopted.

The Chairman announced that the next meeting will be held on March 20, when Mr. John Bilson will read a paper on "Gothic Architecture: Norman Vaulting in England."

The meeting then terminated.

## THE ARCHITECTURAL ASSOCIATION:

### PUBLIC BATHS.

AN ordinary fortnightly meeting of this Association was held on Friday last week in the Meeting-room of the Royal Institute of British Architects, 9, Conduit-street, Regent-street, Mr. G. H. Fellowes Prynne, President, in the chair.

The minutes of last meeting having been read and confirmed, the following gentlemen were elected members of the Association:—Messrs. N. B. Fairweather, C. F. Houston, and G. Gilbert Scott.

The Chairman announced that a meeting of members desirous of resuscitating the Architectural Association Cycling Club would be held on Friday, the 10th inst., at No. 56, Great Marlborough-street, when officers would be appointed and club rules arranged. It was hoped to arrange visits in conjunction with the Camera Club; he (the Chairman) thought it was a pity that the Cycling Club had been allowed to cease, as the visits that used to be arranged undoubtedly did good.

On the motion of Mr. E. Howley Sim, Senior Hon. Secretary, a vote of thanks was passed to Mr. J. F. Bentley for permitting members to visit recently the new Roman Catholic Cathedral at Westminster.* Mr. Sim also announced that on the 11th inst., at 2.30 p.m., a visit will be made to the Great Central Hotel, Marylebone-road. Colonel Edis, the architect of the building, will conduct the party. At 3.30 the same afternoon a visit will be made to the Great Central railway station adjoining, and Mr. E. Wragge, resident engineer, will conduct the party.

The following donations to the Library were announced: "L'Architecture, Vol. XI.," presented by Professor Aitchison, R.A.; "Dilapidations," 5th edition, by Professor Banister Fletcher, presented by Mr. B. T. Batsford. A vote of thanks to the donors having been agreed to,

Mr. A. Saxon Snell read the following paper on "Public Baths":—

"It is not my intention to go over the ground so ably traversed by Mr. Hessell Tiltman in this room a month since, if only because my paper might appear in some measure a mere *résumé* of his, and would lack interest to you. He described the broad lines and the general disposition of public baths and washhouses. I have proposed to deal with the subject much more modestly and rather with constructive details.

But one cannot approach the constructive details without some preliminary survey of the planning of these institutions; and if the remarks I have to make under this head are somewhat more lengthy than a preliminary survey might appear to warrant, you must ascribe it to the weakness of an enthusiast who cannot help airing his pet theories; and I have many with respect to the planning of public buildings.

It is difficult to lay down hard and fast rules for the planning of any class of building in London, if only because of the restricted area and often extraordinary configuration of the sites which are chosen by enlightened public bodies, it would almost appear, with the idea of setting prize puzzles to aspiring architects.

In most other countries the best sites are always reserved for public buildings — in London for enterprising speculators.

Generally in continental towns nearly every public building of any importance is bounded by streets on at least two sides. If the architect gets one fairly good frontage in London he is lucky.

But our very difficulties in this way stimulate inventiveness, and I venture to think that nowhere in the world can more ingenuity in planning be found, nor have greater triumphs been achieved in making the most of limited opportunities, than in this huge conglomeration of buildings called London.

Given, however, a fair site, the least we can do in making our plan is to study carefully the uses of our buildings and the essential requirements of their administration, and then to concentrate all our attention upon so arranging the various parts of the building as to fit these requirements, and to render future administration as easy and economical as possible. It follows without saying that if we are architects in the most practical sense of the word, we shall be able to construct our buildings strongly and clothe them in the most seemly array, and make even our difficulties yield opportunities for effective design.

The word 'economy' has been brought into contempt so often by its mis-use in the mouths of those narrow-minded people with whom it is synonymous with 'cheapness,' that it is worth while to define our own meaning; the short form for which is arrived at by labelling it with the words 'wise' or 'true.'

In planning a building then, to ensure or make possible 'wise' or 'true economy' in its administration, we mean arranging the various parts in such order as will enable those who administer it thereafter to do so with the least waste of human energy; and happy is the architect whose client perceives the true bearing of this principle and follows it to its logical outcome. It is only just to our clients, by the way, to say that it is largely recognised by them to-day, as can be shown by the lavish expenditure upon glazed bricks, majolica, and other surface decorations, the great first cost of which is so soon repaid by their permanence, and the small cost of maintenance.

I need scarcely remind you that we as architects are much more interested in the first cost of a building than in its subsequent maintenance; and it is therefore also *our* interest to build well from the first. That is by the way; it does not benefit us alone. Indeed, our share is, comparatively speaking, small; the benefit to the client is far greater.

For it is obvious that if by our skilful planning we make it possible to administer a building with five servants, say, instead of six, we save our clients a subsequent expense—to take a low estimate—of 50*l.* annually; a sum which capitalised could be expressed in buildings to the value of 1,500*l.* or thereabouts. Inversely, if by expending an additional 500*l.* our client saves the cost of one servant, he is the gainer by 1,000*l.*, and we—the architects—by 25*l.* It ought to be the other way round, but let that pass.

Those who, like myself, have had the privilege of going over the new baths at Shoreditch will agree with me that we are improving in our ideas as to what a public building should be. For some years our rulers have been slowly learning the lesson which we architects have endeavoured to teach them for many years; but they listened not to our voice, and even hinted that we advocated magnificence in our public buildings mainly because of the increased benefit to ourselves. But they begin to see *now* that money spent in buildings is not spent in the sense that it leaves us poorer, but rather that it is *invested*. They begin to realise that in no way can money be more widely circulated, or give a better return to the community than in building. They realise that nothing is more educational to the lower stratum of human life than to house it decently, and to accustom it to better surroundings. That money spent in public buildings must be regarded as invested only—and well invested—we have but to point to our old cathedrals, buildings which are now priceless, and who shall estimate their educational effect, even at the present day?

A little sign that the public are beginning to perceive these things is afforded by the growing tendency in competitions not to hamper the competitors by a fixed price. May the tendency grow into custom! Another is the custom of visiting other institutions to learn what is their best, and then to go one better.

Gentlemen, we of the younger generation of architects have a good time before us, and it behoves us to rise to the occasion, and endeavour to inaugurate a new renaissance in architecture, not only in purely architectural features, in new methods of construction, in the use of new materials, and a better knowledge of the old ones, but particularly in our ideals of space and order. So we may foster the growing imagination of our clients, and lead them on to yet higher ideals, yet nobler efforts. In that day the architect may be honoured in the land, and always get his name mentioned (and spelt correctly) in the daily papers when they describe a building.

I need not dwell upon the necessity of directness and simplicity of planning in public buildings. I remember hearing Mr. Aston Webb say, in effect, that one of the charms of domestic planning was what he described as 'mystery'; and when we call to mind the rambling arrangement of some delightful old houses known to us all, we must agree with him.

The very reverse obtains in the case of public buildings. The simpler and more direct our plans, and the greater the proportion between the rooms and passages, the better.

These and many other rules are common to all buildings for public use, and it is my purpose now to apply them, especially to baths. To do so more effectively, I have thought it well to try and realise what one would do with a fairly unrestricted site for a moderate-sized establishment; and the plan on the board is, perhaps, not perfect, but it will suffice for my purpose. I do not suggest for one moment that it is superior to any of the other designs which you see around the walls, but the difficulty of deducing rules of planning from the latter arises from the fact that in nearly every case the sites are not ideal, and therefore the plans represent only the best arrangement under the particular circumstances.

It will, perhaps, be more to the point if you regard this design in the light of a diagram such as is sometimes given out with the conditions of competition to indicate the lines upon which the client desires to have the building arranged.

I may be permitted to anticipate a criticism which will, or should, occur to some of you, and it is this:—Mr. Tiltman foreshadowed a different classification and distribution of baths in the near future, and his remarks upon this point were by no means the least interesting and suggestive part of his paper. You may be disposed to ask why I have not planned my building upon future rather than present-day ideals, especially as I have proclaimed my sympathy with the former. I can only say that until these new ideals have been well ventilated, it is impossible to say in what form they will be best adapted to the peculiar conditions of our own country. Moreover, the principles I shall draw from the diagram will, I believe, be applicable as much to future as to present-day planning.

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* For a brief description of the building, see our issue for February 25 last.

Let me take you through the building pointing out, by the way, the *raison d'être* of the various parts.

It comprises three swimming-baths, respectively for first and second class men and women; and eighty private baths allotted to the two classes and sexes in the proportion laid down in the Public Baths and Washhouse Acts.

We will commence with the entrance waiting-hall, which should always be the key to a plan.

It is about 30 ft. by 20 ft., and undivided, entered from the public street by a short and wide vestibule, and dominated by the pay-office in the rear. The first point some of you will notice is that I have only *one* entrance, which you will say is unorthodox. So it is; it is usual to have at least *two* entrances, one for men and another for women. In many baths there are as many as four, respectively for first and second men and first and second women. I hope the time is coming—and that soon—when we shall recognise that if it is not necessary to have separate booking-offices and entrances for men and women in libraries, railway stations, and other public buildings, it should not be necessary for public baths. When this is recognised we shall do away with one of the most hampering restrictions there is in planning these buildings. The hours I have myself spent in endeavouring to design a pay office which should serve *four* separate entrances, and yet be decently lighted and ventilated, I feel sad to think of.

Of course when there is a public washhouse attached to the baths, *two* entrances at least are absolutely necessary. In such a case I should, if possible, make the second entrance serve also for the second-class women's baths. I believe that ladies find it less objectionable to meet a rough class of men than the same order of women; a working man is much more likely to bear himself chivalrously before a lady, than one of her own sex in the same class.

Another point to which I draw your attention is the smallness of the hall and corridor area compared to the size of the building, which is due in some degree to the one entrance plan. Practically the same result has been obtained at the Plaistow Baths, although the entrances are separated. Whatever may be said in favour of a large entrance hall (and I myself would have it of ample size) little can be urged in favour of corridors, especially long and tortuous corridors. They take up room, cost much to build, and more to maintain, clean, and overlook, and, to my mind, show weak planning.

On one side of the vestibule is the superintendent's private office, and on the other a staircase to his apartments above. Except in quite small baths it is a mistake not to provide a separate office, in addition to the pay office.

The pay office itself should be about 100 to 150 square feet (not larger), and fitted all round with shelving for towels and bathing drawers, &c. In an establishment of this size *two* pay windows are necessary. It is desirable for many reasons (not the least being that of commanding the entrances, &c., from all parts) that the front and sides should be glazed in the upper panels, with obscured glass to the height of 4 ft. from the ground, and above with clear glass. Before leaving this part I may remind you that if you can afford any luxuries in the way of expensive fittings, joinery, pavings, &c., your clients will raise less objection to their use in the entrance hall than elsewhere. Public boards are very human—at least in their weaknesses.

The superintendent's office should also always be close to the entrance, as many people come to see him who should not be allowed to pass into the building generally; 150 square feet is quite large enough. On either side of the pay office are lobbies and short corridors—the shorter the better—leading to the swimming and warm baths. You will see that the first-class men's swimming bath is placed centrally, with those for second-class men and for women on either side, the warm baths naturally being on the corresponding sides. The provisions of the Baths and Washhouse Acts as to the proportion of numbers between the classes make it very difficult to preserve symmetry in planning. Now my reason for placing the first-class bath centrally is that in all probability it would be convenient to alternate its use for first-class men and first-class women; and this may often be conveniently done, because ladies, I think, prefer to bathe, if at all, in the morning, whilst the men's baths are always filled up in the evening. It is also in a convenient position for use as a winter gymnasium, alternately for men and women.

The shorter length of the second men's and women's swimming baths leave room for the boiler house and engine room, and the establishment or towel laundry, &c. These are not infrequently placed together, but it is not a necessary arrangement, and is, indeed, undesirable if women are to be employed in the laundry. The subway under the end of the first-class bath affords access from the engine room to the boiler house. If the site permits, these departments may be advantageously placed in the basement, but if so, we should never make the mistake of depriving them of light and air.

A system of subways is almost essential in public baths, and if possible all main pipes for drainage and hot and cold water supply and heating should be fixed along their walls or ceilings, where they can be repaired or renewed without disturbance or injury to the rooms above. I may say that both at Marylebone and Plaistow, and also Stratford, I have subways under every part of the building.

The superintendent's apartments will, of course, be placed on an upper floor over the front centre of the building; and one of the most important points to observe is to arrange the approaches so that the damp, warm air, which inevitably hangs about even the best ventilated baths, cannot find its way into the rooms. There are not a few superintendents who can speak feelingly upon this point. A small area or a way out on to a flat is very desirable. It is usual to provide about six rooms, and they should not be too small. It is not the most enviable existence to live and work all day in the atmosphere of public baths.

Now I propose to take the various parts of the building in detail, but before commencing I would draw your attention to certain features in some of the plans round the room, many of which have been most kindly lent me for the evening by their authors. I call your attention, however, first to one which was not lent me by the author. I had it enlarged from a small plan in one of the building papers, where it was ostentatiously labelled as having been designed by a superintendent engineer. The name of the architect 'for the erection' was also given, and I am inclined to think that it was the latter who published the plan with a suspicion of sardonic humour. The least I can say of it is that it contains a number of things which are not to be commended. I, who am indebted for so many suggestions and so much information as to the working of baths to one of the most enterprising and thoroughgoing superintendents in London, am scarcely likely to belittle the value of their opinions and experience, but I do not think that any capable superintendent with a sense of humour doubts the wisdom of each one of us 'sticking to his last.'

Note the plan of a bath designed by Messrs. Harrington & Lee now in course of erection at Romford. It appears to me to be a model in its way of good arrangement for a very small set of baths.

We have another small example in the bath erected at Alloa, near Glasgow, from the designs of Messrs. Burnett, Son, & Campbell. I cannot quarrel with the want of directness in the passages to the warm baths, for instance, because the very breaking away from the simple austerity of planning is made use of for some charming architectural effects. A small set of Turkish baths, with a separate entrance and a billiard-room, is provided.

I have ventured to show also the plans of the St. Marylebone Public Baths, and two sets for the borough of West Ham, each of which may not be without interest as examples of the application of these theories applied to three very different sites. I think I may add that any of you who may be interested in seeing that at Marylebone will find a courteous guide, singularly well informed in all details of public baths, in Mr. Marchant, the superintendent; and I venture to say that there are a few points of interest, a few items of peculiar construction, a few difficulties overcome, and a few examples of how small an amount of light and air can be safely relied upon.

*The Swimming Bath.*

The general arrangement of a swimming-bath is too simple and too well-known to need much description. It is invariably a large hall, enclosing a bath, the essential point of which appears to be that it should be as big as circumstances will allow. This is surrounded on all sides by a pathway or platform, as it is called, and a number of dressing-boxes arranged along each wall. With respect to the bath itself I do not myself advocate a greater length than 100 ft., and a very good width for this length is from 30 ft. to 35 ft. In deciding upon the dimensions of a bath we have to bear in mind that water costs in London about 6d. per 1,000 gallons (often much more and seldom less), and if a bath is emptied and filled only three times a week, the expense is heavy if the size is greater than need be. Of the three dimensions, I should place first in importance the length, and next the depth and width.

One of the most popular uses of a good bath is as a swimming race-course, and as the unit of length in races is always the yard, and the divisions mostly multiples of 100, it is, I think, acknowledged by swimmers that 100 ft. is a very convenient length for a racing bath. Three lengths go to the 100 yards; twenty-five and thirty yards are easily measured off.

Our water depth should vary from 3 ft. 6 in. to 6 ft. 6 in. or 7 ft.—in second-class baths 3 ft. to 6 ft., the latter being used far more by boys than grown men. Theoretically, the deepest part of the bath should be about 10 ft. from one end, because that is where a high diver would, generally speaking, strike the water.

The level of the water should not be less than 12 in. below the footway curb, and this level is maintained by the overflow trough which it is usual to place along the wall at the deeper end. This overflow has been variously contrived with an iron projecting gutter, a series of holes, or a sunk gutter hidden by a flush brass or iron grating. The best form I have seen is that adopted at Shoreditch which is a large moulded trough made in long lengths of majolica. For neatness of appearance and also, I fancy, economy, Mr. Tiltman's white glazed sunk channel is nearly, if not quite, as good. A small modification would improve it.

In the most usual form of bath tank, the walls are constructed of cement concrete built battering on the outside, but I prefer brickwork in cement carefully calculated for strength and well buttressed. The bottoms must always be of cement concrete and if the foundation is good, 12 in. is quite thick enough. Some advocate building the tank entirely separate from the walls of the bath hall to avoid any possible unequal pressure on particular parts, and consequent danger of settlement. But the immense strength necessary for holding the water alone leaves a very ample margin, and indeed the additional weights of roof, supports, and floors, help the stability.

It is, of course, of enormous importance to have the tank absolutely water-tight, and this can be obtained by two or three methods. One of the most usual, I believe, is to have a lining of asphalte behind the brick or tile facing; and in that construction it is very necessary to use only the best asphalte, and to have it applied in two layers. I do not think asphalte—vertical asphalte—is exactly a good surface for fixing tiles to, and that is no doubt why so many baths—even that fine one at Shoreditch—are lined with glazed bricks. Six-inch glazed tiles are surely preferable for appearance alone, and the introduction of coloured slips and painted tiles give us a field for decorative effect. A safe backing is obtained with two layers of plain flat tiles laid to break joint, and alternated with renderings in cement. This, together with the tile face, makes an absolutely impervious facing 3 in. thick; and I may add that I have never found the slightest leakage. In forming the platform round a bath we have to bear in mind that it can never be kept dry, and splashings and the wet feet of bathers combined with mud from the boots of new comers before undressing would soon render the footways dirty, slippery, and dangerous unless they are frequently washed down with buckets of water and run over with the squeegee. They must, of course, be laid to a good fall *away* from the bath, not *towards* it, if only to prevent fouling the bath water. A gutter running down in front of the dressing boxes will lead off the washings. There are more baths than one in London in which this gutter is placed at the back of the dressing boxes, with pleasant consequences to the unwary bather who may happen to drop any article of clothing on the floor. To avoid this entirely, I find it better to raise the dressing box floors above the platform level, the floor sloping outwards to the channel. A good curb—indeed, the best—round the bath is formed with slate 3 in. or 4 in. thick, and, if this overhangs the bath a few inches, a wider footway can be obtained at very small comparative cost. It also prevents the bath water splashing over the footways. The gutter may be covered with a brass grating, but that is not absolutely necessary. Footways are usually paved with impervious material, wood and York stone have been advocated, because they are essentially non-slippery — a matter of great importance. Bathers do not always walk sedately along the footways (in fact, from my observations, the sedateness and dignity and statuesqueness affected by bathers are generally washed off in the first plunge), and running along an impervious surface covered with a film of water is dangerous. But it is a pity if we must come down to York paving, with its monotonous colour and cold surface. Tiles laid herring-bone and in small pieces do very well; and there is another flooring which I will not recommend you till I have tried it, but which I think will be better still.

Before we leave the bath itself, mention must be made of the safety rails, which should run round at least 4 in. above the water level. At the deep end the overflow trough serves the same purpose. At the shallow end there should be a spray-rail; that is, a hollow rail, pierced with a line of small holes, and connected with a high-pressure water-main. When the water is turned on occasionally, a regular and even spray is directed on to the surface of the water, which has the effect of cleansing it of scum and floating matter, which are driven down to the overflow-trough.

I must only briefly mention the desirability of marking along the sides of the baths, in plain figures, not only the various depths, but distance in yards from the deep end, and other devices to aid in swimming contests; also the necessity of diving-boards, step-ladders, and water-chutes—the latter not being an unmixed blessing. All these matters have their importance, but a short visit to any modern bath will supply all such information.

Dressing boxes are always placed along the two long sides of the bath hall, and sometimes one end or both as well. Even so, it is impossible to get enough of them in comparison to the size of the bath. At Marylebone we have some short 'transepts,' so to speak, with boxes on each side, but I do not like the idea. Dressing boxes out of sight are always liable to be rifled. Want of adequate dressing-box accommodation must be met by some drastic alteration, and I have a glimmering notion or two of some such innovation. To meet this difficulty at the Hornsey-road baths, the dressing boxes are placed in a separate room adjoining the bath; but the same objection holds even to a greater extent than with respect to transepts. A gallery is only necessary in the first-class or racing bath, and need not be more than 6 ft. or 7 ft. wide, unless we can afford such a one as that at the Shoreditch Baths. It is advisable to have at least two staircases from the platform level.

I do not propose to dilate here upon the various matters necessary to fit the bath hall for use as a concert-room, or for other public entertainments, further than to suggest that if we study the County Council Regulations, and then satisfy the Council's Surveyor, nothing much is left to be done; but it is vital to bear in mind that these regulations have most important bearings on the planning, and should, therefore, be studied from the very first.

Dressing boxes for a first-class bath should not, if possible, have less than 12 sq. ft. of area (or, say, 3 ft. 6 in. square) although it is possible to do with as little as 9 ft. They may, and I think should, be constructed with wood-framed sides and doors, well painted with enamel paint and varnished. If we take care to keep the partitions well off the floor, there is no reason why they should rot. Of course the use of oak or teak is an improvement, but even then I would have it well varnished or lacquered.

When a bath is used for entertainments the boxes are of no use, and the room they occupy is much wanted. To meet this an ingenious arrangement has been lately patented, which, although capable of some improvement in construction, enables us to fold the sides, doors, and seats neatly and very quickly flat against the walls, where they form a fine panelled dado. They can be seen at the Shoreditch Baths. With every swimming bath there should be what is called a soap and spray bath, which may be just one of the dressing boxes fitted up with a foot-bath sunk in the floor with hot and cold water shower over. Spray and douche arrangements may be added with advantage. Indeed, it is an advantage to elaborate and enlarge this provision.

As the result of a few remarks made in this room, I have had two long and interesting letters from a superintendent of baths in a Midland city. I shall have occasion to refer to one or two points he brought to my notice later on. But among other matters he described the soap bath of his establishment. He says in his first letter:—

'I like the increasing favour shown for the former [shower] kind of bath, and should be especially pleased to see it supersede our present arrangement of a soap bath as well as the slipper, as that can scarcely be considered a proper system which only allows one change of water for as many as forty persons for each change (I am referring here to the soap bath). The same bath-room fitted with automatic feeding showers, having a regulated warm temperature, also a separate corner for a cold shower, would hardly use any more water, and even if all the dozen I have seen in at once were under the showers, they would each at least have clean water.'

Later on, in answer to my request for the dimensions, he says:—

'The dimensions are 8 ft. by 5 ft. by 18 in. depth—usual depth of water 12 in., therefore equal to about 240 gallons. A serious drawback, which I did not like to mention in my last, is the fact that there is no shower with it, so you may imagine the bathers plunging into the bath to clean themselves of the soapy water, especially after some dozen or so of moulders, mechanics, &c., have washed themselves.' He adds:—'I am forced to believe that the soap bath is also a serious competitor of the slipper on account of the cheap prices of the swimming.'

Apparently the canny mechanics of the city think a twopenny swim, with the preliminary wash in this delectable soap bath thrown in, very good value for money. But fancy that soap bath after the third man has washed! It makes one feel bad to think of.

This soap bath is necessary, not only for lower-class people. In warm weather no one who does not indulge in a daily bath (and some who do) can keep their body—and especially feet—in just that state of absolute cleanliness in which—in deference to their fellow bathers—they would wish to be before entering the common bath. Then, too, a cold douche is invigorating after the comparatively warm temperature of the bath.

With respect to swimming baths, I have only to add that they should be lighted by a large lantern with side-lights to open in the roof, and the walls should be lined with impervious material, glazed tiles or bricks for preference. A bath cannot be too well lighted. For ventilation—and a bath wants plenty of it—it is desirable to have an electrically-driven fan. I should add, by the way, that these fans give a lot of trouble, because they are so soon affected by the dampness. Perhaps some form of water-driven fan will yet be devised.

### *Warm Baths.*

We have next to consider the warm baths, provided only for washing purposes. The present form is almost invariably the ordinary slipper bath as it is called; but—to be prophetic again—I think the days of its general use are numbered. Some of them will always be required, and it is worth while to describe them. The best form is, of course, the porcelain enamelled bath glazed inside and out, and sometimes with a glazed rolled edge. Personally, I always use those glazed inside only, and with a wood top (teak for preference), because I think the greatly increased cost of outside glazing never worth the better appearance; and a roll edge, although cleanly, is uncomfortable, and may be dangerous. It also adds even more to cost. The usual length is 5 ft. 6 in. to 5 ft. 7 in. from out to out.

These baths are usually enclosed in front, for reasons which have never quite convinced me, and I am now omitting the casings. Each bath is fitted up in a very small room, which has an area of 36 ft., but better 40 ft., or as much larger as can be afforded. The walls are generally built up of slate slabs, 6 ft. 6 in. to 7 ft. high, sometimes left plain, and more often highly finished in enamelling. Marble is also employed, but I do not recommend it, and for this reason: it is so necessary to keep these places absolutely clean that any surface which will hide even the appearance of dirt is to be avoided. Inversely, they should not only be clean, but look it, to inspire confidence. It is impossible to see at a glance whether marble is or is not perfectly clean. Various other forms of partition wall are employed, and notably a thin, glazed both sides, brick wall. I prefer the slate, because with its use no woodwork at all is necessary, even as door-posts.

Each bath should be fitted with hot and cold water taps, fixed on to the front partition with the valve spindles taken through, so that the attendant outside can turn on or off the water. In the same way the waste valve should be operated by the attendant from the outside, but it is desirable to have the means of doing so also from the inside of the room.

The floors of these compartments should, of course, be impervious to wet—tiles or mosaic if we can afford it, granolithic for economy. A disagreeable experience has taught me that these floors should be laid to fall. Bathers sometimes splash the water over the sides, and the baths also overflow at times.

Mr. Hessell Tiltman dwelt at some length upon the shower, or rain douche, baths, which are in use in many continental towns; and advocated their adoption in this country. At the time, I mentioned that some form of it had been successfully inaugurated by a northern manufacturer for his workmen several years ago. I have since refreshed my memory, and will refer any one who is interested in the details to a paper read before the Sanitary Institute Congress in 1889 at Worcester by Mr. Charles Clement Walker, F.R.A.S.*

The main idea of these baths is that the bather shall not be compelled to bathe in water which has already been fouled by what we may describe as the first washing of his body, but that every drop of water, as it becomes soiled, should be carried away at once. This idea was adopted over twenty-five years ago by Mr. H. Saxon Snell for lavatories in a poor law industrial school. It has been improved and modified since in many ways, but the principle remains the same.

Another advantage of such baths is that they could be erected at about half the cost of the ordinary slipper bath, and it would be possible therefore to make a lower charge for their use—a matter of very considerable importance in the great work of reducing the numbers of that class which is facetiously dubbed the 'Great Unwashed.'

It is, however, very hard to wean the public from old-established customs, however salutary the innovation proposed. It is a good beginning to provide a hot and cold shower to the slipper baths, and in time, no doubt, we shall discard the bath itself. I say we, because I think most of us have a sneaking regard for the comfortable warmth of a casing 4 in. thick of warm water for a few moments, and some of us love the shower—the cold shower—more in theory than practice.

Before leaving the subject, it is well to note the necessity of light and ventilation and plenty of both in the room. The amount of vapour alone given off from the baths will soon make everything clammy and the atmosphere foggy unless it can be quickly removed. A lantern with opening side lights is generally sufficient.

I do not propose to deal with medicated, sitz, vapour, and other special baths, beyond noting that one or two may be included with advantage.

Turkish baths in a public institution are as yet exceptional, but no doubt when their hygienic properties are more widely known, and, I may add, when they can be indulged in more cheaply, no public baths will be completed without them.

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* See the *Builder* for October 12, 1889, for a report of Mr. Walker's paper.

By the way, why should it be considered necessary to adopt exclusively eastern forms and decoration in Turkish baths? They are none too soul-inspiring, and are certainly not 'at home.' Personally, I propose to break through the tradition in the Stratford Baths, and try the effect of the latest new humour in design. A fair-sized waiting-room, which should be comfortably furnished, is necessary to each set of baths, for there is much waiting to be endured at certain times in all establishments. Water-closets, in the proportion of, say, one to fifteen baths, should be provided, and they should have direct and separate light and ventilation.

The Committee requested me to read a paper on 'Public Baths,' and I have assumed that the omission of 'washhouses,' which are almost invariably associated with the subject, was intentional; and I felt profoundly thankful, because the subject of washhouses is a fairly large one in itself, and could not be adequately dealt with as part of another.

### *Towel Laundry.*

Every set of public baths must, however, have a small, completely-fitted laundry as part of the establishment. This is required entirely for washing the hundreds—may be thousands—of towels and bathing-dresses used by the bathers. Towels, as they are used, are thrown by the bathing attendants into receptacles which are periodically emptied and taken to the laundry, washed, and returned to the store or the pay office. It follows, then, that there should be easy means of communication between the departments, and this is best achieved by the subways. If it is possible to have a shoot from each department in these subways a basket or trolley can be placed under to receive the dirty towels, and some labour is saved thereby.

With respect to the laundry-room itself, it is only necessary to say that the floor should be paved to falls, the walls should be faced, at least 6 ft. or 7 ft. high, with white glazed bricks, and there should be ample light and ventilation, mostly from the roof. The machinery should include the usual rotary washing-machines, centrifugal wringers, steeping and rinsing-tanks, and a few wash-tubs. Steam-heated drying horses are also required, and if there is not room for a fair number (and they take a disproportionate space) a cylindrical steam-drying and ironing-machine will do a very large amount of work for the space it occupies. As the machinery must be power-driven, it is always desirable to have the laundry not too far from the engine-room; but it will be found desirable to keep the two departments quite separate, if women are employed in the laundry.

### *Engine-Room and Boiler-House.*

The engine-room and boiler-house should, in my opinion, be quite show-places in their way. Until quite late years, these vital parts of the establishment have generally been consigned to odd corners or dark basements; in fact, anywhere where the ingenuity of the engineer could possibly fit up his boilers, &c. Only two or three years ago I went over a building, but just then erected, which comprised public baths, a gymnasium, free library, and technical institute, in which the necessity of a boiler and engine-house had apparently been forgotten; indeed, I believe actually so. So the boilers were put in the subway, under part of the swimming-bath hall, and the engines and electrical plant were arranged in a line along the narrower part of the same subway. The towel laundry was 7 ft. 6 in. high, with no light but what could be obtained from little areas, and the communication between it and the engine-room was a doorway, 2 ft. wide and 4 ft. high. It couldn't be bigger without cutting too much out of a bath wall-piers.

In the smallest institutions at least two steam boilers are required, and if three can be afforded, all the better; because with three boilers it is possible to use one for the direct supply of hot water. The engine-room must of course be closed off from the boiler house, and room will be required for an engine, boiler, feed pumps, lathe, and other tools.

I have said that the engine-room and boiler-house are, or should be, show places, and, perhaps, in saying so I am assuming in my professional brethren something of the keen pleasure I personally always feel in the contemplation of machinery and engineering work generally. Perhaps I may be permitted to add that I have always felt that we should none of us be worse architects for understanding a little of the subject. Short of this I do not see any better way of ensuring that advance in building so desirable to keep pace with the marvellous development of engineering than a closer alliance with those who have made engineering their study and practice. Professional exclusiveness and jealousy may yet die down sufficiently for this. Already the majority of architects consult the other profession very largely; but not as much, I think, as they will in future. I have not much necessity to do so myself, because it is part of the tradition of my office to lay down the engineering schemes in all their details in all buildings. Yet that very fact has taught me how much this matter affects, or should affect, the design and details of a building. The profession of an architect calls for so wide and varied a knowledge of ever-increasing details that purely engineering work would appear a serious addition to our labours; but certainly the knowledge of so much as applies to the purposes of our own buildings is most desirable. Short of this, it is absolutely essential to acquire so much as will enable us to associate ourselves appreciatively with the professional engineer whom we consult. I may add, by the way, that it would be to the advantage of the *building* work carried out by engineers (public bridges, for instance) if they would consult an architect—and a good one—and take his advice with respect to the architectural 'trimmings.' Probably the architect would say, 'Don't have any'; but the work as a whole would not suffer.

Adjoining the boiler-house should be a large coal store, and, within bounds, the larger the better. It should have direct communication with the boiler-house and the public street.

### *Administration.*

We arrive now at the administration of the building. The superintendent's apartments should be designed like any other private house, and it should have separate access to the public street. Six, or at most eight, rooms are all that are necessary, and, as I mentioned before, they should be comfortable and as roomy as can be afforded. A board or committee room is necessary, and our clients will never complain if we lavish a little architectural display therein—and small blame to them. Unpaid public work deserves comfortable and, indeed, elegant surroundings. A superintendent's store for towels, soap, and other necessaries is essential. It should scarcely have less area than 150 ft., and may be nearly twice that size with advantage. If either of the baths are to be used at times for a gymnasium or public entertainments we can scarcely have too much rough storage room, which may be in basement or even subways. Without going into many other details which would occupy the rest of the evening to deal with exhaustively, I think it well to mention briefly the important matter of drainage, because there are special conditions to be met in public baths. In the first place the swimming bath drains should not be connected to the general system, and if possible each bath should drain direct into the public sewer, with the usual disconnecting trap, &c., of course. If they are connected to the general system the enormous pressure and bulk of the bath-water will quickly choke back the flow from any other part of the building, if it does not even find its way up the pipe into the lower parts. A large sluice-valve is necessary close to the bath outlet. It is important, too, to bear in mind that the outlet should be covered with a close grating. Some few years since, in letting off a certain amount of water to lower its level in a swimming bath, a boy was drawn by the strong suction right into the outlet-pipe and, of course, drowned.

The warm baths may be taken direct into an ordinary drain, provided the latter discharges over an open trap. The end of the drain-pipe should be continued up in iron as a ventilator. A further precaution against foul air entering the room is to trap each bath. The Midland Superintendent I referred to writes me that at this establishment the wastes are carried untrapped through the floor into a subway to discharge over a channel in the floor of this subway, which leads the water off to a trap; but, he adds, that in this case the channel is too shallow, and so the bath-water is practically discharged on to the subway floor with unpleasant results. I mention the matter as an instance of the want of that care and forethought which are so essential in dealing with the subject. It is not a bad idea to discharge over such a channel if it is only deep enough and can be regularly cleaned with a hose. Finally, every part of the drainage should be easily accessible, for delay in removing a stoppage might seriously disorganise the work of the establishment.

Before I close my paper I should like to ask you to recognise the courtesy of the gentlemen who have so kindly lent me—I should say us—the plans which are hung round the room. In asking for them I took leave to say that I was sure you would, with me, feel indebted to them for their good nature. Personally, I always feel that it is a duty we architects owe to one another, to the world, or to our country, and not least to ourselves, not to hide our light under a bushel from a narrow spirit of caution (I will not say jealousy) lest others may draw some benefit from the products of our brains. I only regret that this narrowness of vision, or some other motive which I cannot fathom, has prevented one or two other architects to whom I applied, complying with my request for the loan of drawings just for this evening. The loss is theirs no less than ours.

I fear on the whole I have treated the subject in a very inadequate manner, but if I have succeeded in placing before you matter for a full and interesting discussion I shall be more than content with my effort. The subject is a large one, and I have tried to impart to you in the short time at my disposal as much as possible, and I trust if I have told you anything new, you will in your turn give me of your knowledge in criticism."

The Chairman, in proposing a vote of thanks to Mr. Saxon Snell, said that the paper did not clash with one on the same subject recently read in that room by Mr. Hessell Tiltman.[*] Both were very interesting papers. He had been thinking that it was rather remarkable that Englishmen, who experienced so much trouble in getting a cold bath in the morning at a foreign hotel, should be looked upon, collectively, as was the case in France, as a nation needing a lot of washing; and it was also strange that the Germans and Austrians are, in many respects, before us in their public baths and washing arrangements. This was especially so in regard to the douche system, which was in many respects better than the slipper system. He thought it would be well when we got rid of the private slipper bath and got more of the douche instead. In thinking of the transept system for getting a large number of small boxes round a bath, it had occurred to him that, instead of having the boxes all round the sides, and often only getting a small number, a sort of semi-circular transept could be arranged on the sides. Quite double the number of boxes could in this way be obtained, and the douche could be arranged in the middle of the semi-circle; the bather could thus readily take the douche on leaving his box, and afterwards plunge into the bath; and at the same time all the boxes would be under complete supervision. As regards the relation between architecture and engineering, what he had said recently as to the architect joining hand in hand with the artist in order to get the best results in work, applied equally to architects and engineers. Architects could not pretend, with the great amount of work they had to do, and the many subjects they had to be more or less acquainted with, to be engineers as well, and he thought that there was no harm in an architect getting an engineer to carry out purely engineering work in a structure, always remembering that their work, although distinct, had by force of circumstances to be combined. The more confidence architects placed in engineers, the more confidence they would place in architects. As to the character of Turkish baths, people had got to look upon them as something Eastern, and they seemed to think an Eastern or Moorish style pleasing. Some of those baths were undoubtedly pleasing, and the style lent itself to decorative treatment; there were great possibilities in it. He hoped that Mr. Saxon Snell's so-called "new humour in design" would be equally satisfactory.

Mr. T. N. Didwiddy said that in planning baths the difficulty of getting women to wash was often overlooked, with the result that too many slipper baths for women were provided. Women used the baths in far less proportion than men, and this should be remembered in designing such buildings. He would like to ask Mr. Snell if there was any satisfactory alternative to the slate curb to swimming baths? The slate was undoubtedly good in appearance, but it was slippery. In that connexion, he would be glad to know what was the material that Mr. Snell had in his mind for the platform round a bath. Mosaic had not been mentioned; cork pavement, though unsightly, was essentially non-slippery and might be used. As to water supply, it is found that well water is cheaper than a company's supply. Considering that there is steam power on the premises, and an engineer's staff, it would be undoubtedly more economical for the Bath's authorities to have their own supply. It would be quite possible to use the engine necessary for driving the laundry machinery alternately for pumping purposes. With a well, a storage tank would, of course, be necessary.

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[*] See the *Builder* for February 11 last, page 139.

Mr. E. Harding Payne said that there was one point which it was very necessary to attend to in all baths, and yet it was frequently neglected, viz., cross-ventilated lobbies between lavatories and public baths. Any one who had bathed in a public swimming bath, where such lobbies were not provided, on a warm afternoon would know that the smell from such places would travel to the service of the water and remain there. It was most obnoxious to swimmers. Another point was as to galleries. In most large public baths galleries were provided for purposes of entertainment—swimming entertainments in the summer and other entertainments in the winter. In nine baths out of ten those galleries were practically useless, for, with the exception of the first row, people sitting in those galleries could not see what was taking place in the water. If entertainments of this kind were to be provided for, the galleries should be designed so as to be of use. Another fault was that at entertainments, especially swimming entertainments, there were no means of getting from one end of the bath to the other. That was a great fault with most baths, and it was a fault in what was probably the best bath in London—the one at Shoreditch, where there was another defect, viz., the gallery, which, though well arranged for spectators to see from, projected too far over the water. Baths being built as they were now, it was almost impossible to design a gallery from which people could see conveniently. As to warm douches in swimming baths, he did not think they would be used much. He thought that English people would object to being told to take a warm douche before entering a bath; and even if the douche were used, he did not think it would be of much use. What affected the water most of all was not the animal dirt, but the dirt brought into a bath by the feet of bathers. A mere douche would not remove dirt from the body unless soap and towel were used. He did not think it was necessary as a rule to have a club room in connexion with the second-class bath, and as far as he knew, there were very few London baths having clubs connected with the second-class swimming bath. He did not quite agree with Mr. Snell as to making one entrance do for both sexes. He did not think it would be desirable yet—it might be some time in the future; at the same time, he did not like the arrangement adopted at some baths (notably at Newington) of having a number of pay-holes to one pay-box. The best arrangement for the division of the various classes, he thought, was such as was to be seen at Shoreditch. He did not think that subways were used as much as they should be for the collection and distribution of towels. In every bath and every department there might be shutes going down to the subway; towels and bathing-dresses could be put down these and then collected in baskets and carried to the service laundry and store, and from there to the pay-box by means of a lift. In concluding his remarks, Mr. Payne showed on the blackboard a suggestion of his own for overcoming difficulties in the provision of galleries in baths, to carry out which would only entail a little extra cost and a slightly extended site.

Mr. C. H. Brodie said that he did not see why subways, where they were provided, could not be used by competitors at swimming entertainments as a means of getting from one end of a bath to the other. Where subways were provided, access to them from the bath would have to be made, and then competitors would be able to get from one end of the bath to the other without difficulty. He did not see why rubber should not be used for the platform round a swimming bath—such rubber as was used at St. Pancras station, for instance, which would stand a lot of wear. He thought that Mr. Payne's point as to bathers' feet fouling the water was a good one. If public bath authorities could be induced to do away with slipper baths, which were most unsatisfactory, and introduce instead the douche bath, the gain would be great—for one thing, the cost of a building would be less, and the bathing would be more effectual.

Mr. H. F. Clark said he would like to ask Mr. Snell what the cost of a public swimming bath per cubic foot would be.

Mr. Ernest Herbert said that amongst the plans exhibited by Mr. Snell he had not noticed anything like the plan of a small public bath in Edinburgh which he was thinking of. In that bath, the entrance passage extended all the way round the back of the boxes and, consequently, as the bathers left their boots in their boxes, dirt was not carried on to the platform round the bath. That arrangement did away with some of the platform on the side of the bath, and, where a gallery was not required above, it gave room for the slipper baths on the first floor round the sides of the bath. That was rather an economical treatment, but there was a waste of space on the ground floor, and that, he supposed, was why more had not been seen of it, especially in London. He was a competitor for the Shoreditch baths, and he set the front of the gallery right back to the line of the box fronts and got his private baths under the additional width of the gallery —not a very nice arrangement, perhaps, but it did provide a gallery from which all could see at least two-thirds of the bath area. As to the best kind of material for the platform round the swimming bath, he thought that rubber would be an unsuitable material; for one thing, it was not stiff enough. As to slate, it only became slippery when it was polished; if kept sufficiently rough it was not slippery.

A visitor asked, in reference to Mr. Snell's remark that baths should be emptied three times a week, if that was sufficient in London? The City Engineer of Bristol had obtained replies from a number of superintendents of provincial baths as to this point. The general rule in the provinces seemed to be to empty the pond about two or three times a week, and more in the summer months. One superintendent replied that he had no fixed rule; it depended on the number of people who used the bath and, to a large extent, on their condition. As to condensation on the roof of a swimming pond, he recently entered a new bath where the usual condensation gutter was provided, but it proved to be quite inadequate, and he would like to know how Mr. Snell provided for that. Also, would Mr. Snell say what provision he made for screens in polo matches in baths, so as to prevent the spectators getting splashed?

Mr. O. L. Marchant, Superintendent of the Marylebone Baths, said that it was true that dirt was carried into a bath by the feet, but it was difficult to prevent that. The remedy was to see that proper supervision was given and that the attendant kept the place clean. As to the question of how often a swimming bath should be emptied, at Marylebone it was emptied every day in the height of summer. He thought that in Scotland, where difficulties about sites were not so great as in London, baths were more complete than in the Metropolis. There clubs, baths, barbers' shops, &c., were all combined, and an annual subscription was made as payment for same. It would be a good thing if something of the same kind could be done here. He agreed, in reference to the difficulty of getting from one end of a swimming bath to the other during entertainments, that provision by subways was desirable. As to galleries, he thought it was almost impossible to design one so that more than two or three rows of people could see, and he thought that it was not possible to erect a gallery so that spectators could see both sides of a bath. But he thought that, as so many swimming baths were being erected, in nearly every parish in the city, the great swimming baths would become unnecessary, and baths of, say, 100 ft. by 35 ft. would be found quite sufficient. He thought that the feeling was growing that baths of that size were more desirable than larger ones as designed for entertainments, and which, if filled with clean water daily, were expensive and added greatly to the cost of working expenses; and clubs preferred to hold entertainments (except large polo matches) in the immediate neighbourhood where they and their friends reside. As to warm shower or douche baths, he agreed with what Mr. Payne had said—viz., that warm water alone would not remove dirt from the body. At Marylebone there were warm baths fitted with warm and cold showers over the same, the cold one being included in the price for a warm bath, the hot shower 3d. extra; what he wanted to convey to the members was that at Marylebone they had practically what Mr. Hessell Tiltman advocated recently, and what was largely in use on the Continent—viz., a warm douche which could be had instead of a warm bath; but they did not find that the public preferred it. What the public liked was to have the ordinary warm bath and rinse the soap off with the clean tepid shower; which, in his opinion, met the requirement as regards infection.

Mr. F. Peck, in the course of some remarks, spoke of the desirability, when an architect consulted an engineer, of seeing that the gentleman he consulted really was an engineer.

Mr. E. J. Wakeling, Chairman of Committee, Shoreditch Baths, said he could not agree that much was to be learnt from Scotland. At Aberdeen he had seen what was called one of the finest baths in Scotland. It was situated on the shore—the site costing nothing—and one had to pass down a flight of stairs in order to reach the gallery and another flight of stairs to get to the swimming bath, the platform edge of which was of white marble—no doubt very nice, but very dangerous. He agreed with what Mr. Payne had said as to the gallery at Shoreditch Bath, but if those people who were placed at the back of the gallery stood up, they could see as well as people sitting in the front row. An ideal size of a swimming pond was, he considered, 100 ft. by 40 ft. The great difficulty bath authorities and architects had to contend with was the site, and many sites that were otherwise suitable could not be used in consequence of the requirements of the London County Council as to the provision of three entrances each in three different streets.

Mr. Matt Garbutt said, as to the material for the platform round a bath, that, as a general rule, the edge of a bath was more slippery than was quite safe. In a German bath he once saw a railing running all round, with openings at fairly frequent intervals. That struck him as a useful arrangement, and would prevent repetitions of the serious accidents that had occurred through bathers slipping and falling awkwardly, not into the water, but on to the edge of the bath.

The vote of thanks was then put to the meeting and heartily agreed to.

Mr. A. Saxon Snell, in reply, said that he thought the Chairman's idea as to circular ends and sides to bath halls for the purpose of getting more accommodation was a very good one where the site was not restricted. In addition to the extra number of boxes which would be obtained by such a plan, and the delightful arrangement of the shower bath in the centre of the arc as shown on his plan, it would have a fine architectural effect. As to the advisability of going to an engineer about the engineering part of one's work, he thought that that was very desirable, unless the architect was perfectly able to carry the whole scheme through himself, which was preferable; but, as one speaker had said, they must take care that the man they consulted *was* an engineer—a professional man. He should take care, too, that the engineer did not lay down the course of the pipes in a bath in such a way that the architectural effect of the building was spoilt. As to the material for the curb round a swimming-bath, he did not think that slate was slippery if it was kept clean, and it was the duty of the attendant to see that it did not become dirty. It was a good suggestion to have it slightly roughed. He had used Portland stone and marble. Portland stone wore quickly and got green in spite of cleaning. Marble was decorative, but not so good as slate; and, as to rubber, he would like to see it tried as an experiment. The material which he had referred to in his paper, but had not named, was glass mosaic, the surface of which was rough. It might, he thought, afford a good foothold. As to the provision of cross-ventilated lobbies in order to secure the ventilation of closets and urinals, it was a most important point, but on a good many sites room could not be found. A suggestion he would make was to heat the closets, &c., above the temperature of the bath hall; if this were done the air would not enter the bath hall. As to galleries being useless to see from, that was not so at Shoreditch. He did not think that enough was made of end galleries, where the best view could be obtained. At Shoreditch there was one end gallery, of seven or eight rows. One speaker had suggested extending the gallery over the sides and providing warm baths underneath, though he did not appear to think much of the idea; but he (the speaker) thought it was a good idea. In a German or Belgian bath he had seen it done, and he thought it was a good arrangement. He thought it would be abominable to have an entrance passage at the back of the boxes, and as to dirt being carried in on the feet of the bathers it was the business of the attendant to see that the baths were kept clean. A club-room for a second-class bath was a useful provision. It could be used for parties of school children. The amphitheatre arrangement suggested by Mr Payne would have a fine effect, given plenty of room. Where subways were provided, they could be used as Mr. Brodie had suggested. As to the cost per cubic foot of a bath, if a modern set could be built at less than one shilling a foot cube he would be glad if some one would tell him how to do it. As to the frequency of emptying a bath, it depended to some extent on the number of the bathers. Condensation in a bath was chiefly got rid of by having good ventilation; as an auxiliary he had found condensation gutters answer very well. As to screens for polo matches, he had never had to provide them. For lining baths, he did not use asphalte himself, but when it was used it should be laid on in two thicknesses, for with only one coat no one could be certain that there would be no pinholes. With two coats that danger was reduced to a minimum. If they economised by omitting the asphalte lining, using cement trowelled very smooth, the bath tank must be built very much as a gas-holder tank was built. But those tanks were water-tight mainly by reason of the puddle wall behind them. At Brussels there was a fine set of baths, with every possible convenience, including one swimming bath kept quite warm. As to railings round a swimming bath, they would save people from slipping into the water, but they would not be otherwise satisfactory, as it was desirable to have access to the water all round.

The meeting then terminated. The next meeting will be held on March 17, when Mr. Reginald Blomfield will read a paper entitled "Reflections on the English Renaissance."

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## THE SURVEYORS' INSTITUTION.

AN ordinary general meeting of the Surveyors' Institution was held on Monday in the temporary premises of the Institution, Savoy-street, Victoria Embankment, W.C., Mr. T. M. Rickman, Vice-President, in the chair.

The minutes of the last meeting having been read and confirmed, and donations to the library and library fund having been announced,

Mr. F. J. Smith read a paper on "The Working of the Light Railways Act, 1896," in the course of which he dealt with the Act not from the legal point of view, but only as affecting the practice of a surveyor. Having quoted some of the sections of the Act on which the "Order" of the Light Railway Commissioners is based, he said, in referring to the procedure of arbitrations on acquiring lands for a light railway and in assessing compensation, that the ordinary method of proceeding to arbitration under sections of the Lands Clauses Consolidation Act, 1845, was not to be adopted under the Light Railways Act; but, in lieu thereof, all arbitrations are to be conducted under the Arbitration Act, 1889 (52 & 53 Vict., c. 49), with this exception, that if the parties do not concur in the appointment of a single arbitrator the Board of Trade shall make the appointment. This simplified the mode of procedure and decreased the expense; but there was apparently an element of difficulty in the parties agreeing on a single arbitrator as foreshadowed by the saving provision of the Board of Trade. It was probable that occasions would arise when owners might prefer the nomination as arbitrator of a local surveyor, whose knowledge of the country through which a projected light railway will pass would be advantageous, or they might desire some well-known expert as arbitrator. On the other hand, the promoters of a light railway might have an equal preference for an arbitrator with less local knowledge or influence, and might even prefer the nominee of the Board of Trade to any other, with the ultimate result that the Board of Trade would have to appoint the arbitrator. To avoid such a contingency, he mentioned the course he had taken. The names of three surveyors were suggested—not necessarily local men—persons of repute, and, where possible, Fellows of the Surveyors' Institution, with a request that the promoters select one of them as the arbitrator. As to the provision that the arbitrator shall have regard to the extent to which the remaining and contiguous lands and hereditaments belonging to the same proprietor may be benefited by the proposed light railway, much might be said on the many important questions which will have to be dealt with. This touched the principle of betterment. The determination of any benefit which might arise was left entirely to the discretion of the arbitrator. He might allow as little or as much as he pleased; and, without any definite guidance or precedent, the arbitrator appeared to be placed in a peculiarly onerous and difficult position. He was by law directed to do that which was for the most part practically impossible. He "shall have regard to the extent" of any improvements or benefits which might accrue to the adjacent lands by reason of the light railway; presumably on and after its construction. And the extent of such benefit must be conjecturally estimated at the time of determining the amount of compensation. The motive for inserting this provision in the Act was not so evident as the principle involved; but apparently it was made part of the section with a view to meeting the customary addition of 10 per cent. (or more) for compulsory sale. When the Bill was before the Standing Committee on Trade a provision was inserted to the effect that, in determining the amount of compensation, no additional allowance was to be made in this respect. The provision was, however, eliminated when the Bill reached the Report Stage of the House of Commons, with the result that the ordinary method of arriving at the value of the land taken will be adopted; to which may be added the usual allowance for compulsory sale, leaving it to the discretion of the arbitrator to consider any sum arising out of the improved value (if any), and to decide whether it be due immediately on, or subsequent to, the construction of the light railway as a prospective valuation. If this be the proper construction of this section and provision, of which there could be little doubt, it was clear the object was to place every case of compensation and of betterment on its merits, doubtless in anticipation of cases where the principle of betterment could not be applied nor any improved value possibly accrue from the construction of a light railway; for example, where the property was already served by an existing railway, or where stations, sidings, and other accommodation works were not required. It was conceivable that a light railway might either immediately or ultimately improve the value of adjoining property to a greater or less extent, and under conditions precedent affecting the character of the property through which the railway would pass, and its general adaptability for improvement or development on the completion of a light railway.

The author said he would disregard property bearing no improved value; he then divided that which might be improved into two sections and dealt at some length with, first, property which might derive some immediate benefit on the construction of a light railway; and, secondly, property which might be ultimately improved after the construction of a light railway; or, more concisely, immediate and deferred beneficial value. In this connexion he said that the following principles are deducible:—(1) "The basis of compensation is the value of the land taken, and the loss by depreciation, severance, and injuriously affecting any land held therewith; and as all damage must be assessed with, and at the same time as the value of the land (*vide* Section 68, Lands Clauses Act), so also must any question of betterment or improved value under Section 13 of the Light Railways Act (which incorporates Section 68 of the Lands Clauses Act) be assessed at the same time as the value of and compensation for land taken. (2) As both value and compensation must be based on the present value of the land to the owner; and any compensation assessed at the time of takng such land; and not on the value it may have after being acquired by the promoters, so too, must any visible betterment or immediate beneficial value be assessed, and settled, at the time of taking the land, and not on a basis of ultimate effect, or benefit to contiguous lands held by the same owner."

The author then passed under review the ways and means adopted by the Act for the construction of light railways, in providing the necessary capital and the repayment of loans and advances; after which he submitted a comparative statement of the difference between railways constructed under the various methods laid down by the Act, and their effect upon property and owners. In concluding his remarks under this head, he said that should a County Council be successful in an application for an Order for a light railway, surveyors and arbitrators would find it difficult, if not impossible, to adjust matters of compensation and beneficial value under the Act in the absence of any instruction contained in the Order. To obviate or mitigate some of the difficulties which would arise in this connexion with respect to rating by authority of County Councils, he suggested that where power was given by Parliament to apply the principle of betterment to any property likely to be enhanced in value by reason of a public improvement, and where the owners of contiguous property, or owners of property in any district to be served by the railway, were to contribute to the cost of the railway or the improvement, a preliminary assessment of each property for rate-in-aid purposes should be made some time previous to the construction of the light railway. If it be not deemed satisfactory any ratepayer should be at liberty to apply to the Local Government Board not sooner than three nor later than five years after the railway is opened for traffic, in order that the Board might appoint an arbitrator to make an ultimate assessment of the improvement, and such property should be rated accordingly. This would afford adequate means of ascertaining any beneficial value by results. The "preliminary assessment" suggested should form the basis of rating for the first three years; no rate to be made payable until the railway be opened for traffic; and on the railway paying 3 per cent. net, the rates to graduate or cease. Obviously a system of rating a district could only be equitable where the traffic arises in the district so rated, and not where the traffic, or most of it, passed through the district rated.

Having briefly dealt with the stages of procedure for acquiring power to construct a light railway, the author gave a brief description of the Basingstoke and Alton Light Railway, with a statement of the estimated cost. As to the future of light railways, he said that if the signs of the times fairly indicated probabilities, we might at least look for a considerable number of light railways in the course of the next few years. Their financial success, however, depended entirely upon the purposes for which they might be constructed, and on their mode of construction, management, working with existing railways, facilities for public use, and general convenience. All legal costs for acquiring powers to construct should be simple and inexpensive, and disbursed by the State where light railways were constructed for the public benefit. Free grants in aid might also be made by the State to local councils; who, alone, or jointly with private companies, may construct light railways, where it can be shown that such railway is a public boon, and will be beneficial to agriculture, or any definite industry defined by the Act. The promoting company would meet a pressing need if they provided suitable trucks for carrying producers, loaded vans or wagons over the rails, without breaking bulk; and also receive for transit, at their stations or stopping places, small parcels and goods, at fixed times, and at graduated rates of charges. In this manner whole truck loads of produce and goods might be collected and forwarded to destination. Then there was the desirable co-operation of landowners and tenants, with private companies, or existing railway companies (under even conditions) and of engineers and surveyors; for as two heads were better than one, in laying out a line the engineer's eye may not at all times see that which was evident to the surveyor.

The following is the estimate of cost of the Basingstoke and Alton Light Railway:—Earthworks: Cuttings, chalk and soft soil, and roads, 11,600*l.*; embankments, bridges, accommodation works, culverts, fencing of roads and level crossings, and gate-keepers' houses, 13,200*l*. Permanent way, including fences: 12 m. 4 f. at 1,750*l*. per mile, 21,875*l*.; permanent way for sidings and cost of junctions, 2,000*l*.; stations, 3,000*l*.; five per cent. contingencies, 2,583*l*. 15s.; land and buildings (100acres), 10,000*l*. Total, 64,258*l*. 15s. The above includes the value of the land taken for railway No. 2, in length 3 furlongs 3·5 chains, being the line in junction with the South Western Railway at Basingstoke. On the basis of this estimate the cost will be 5,140*l*. per mile.

The number of Light Railway Orders applied for to December 1, 1898, is 175, 129 of which are for light railways in England, sixteen in Wales, and thirty in Scotland.

A discussion on the paper then took place, in which the following gentlemen joined:—Messrs. G. Langridge, A. G. Rickards, H. W. Towse, J. L. Crouch, W. H. Warner, and L. R. S. Walcott.

A vote of thanks to Mr. Smith having been heartily agreed to, and that gentleman having replied, the meeting terminated.

## *COMPETITIONS.*

Schools, Dartford.—In the competition for three new schools to be erected on the York-road, East-hill, Dartford, the first premiated design is by Mr. Henry Hall, F.R.I.B.A., 19, Doughty-street, Mecklenburg-square, London, W.C. (motto, "School"); and the second, by Mr. G. H. Tait, M.Inst.C.E., Dartford, Kent (motto, "Omdurman").

## *ARCHITECTURAL SOCIETIES.*

The Northern Architectural Association.—On the 1st inst. a meeting of the Northern Architectural Association was held at the Art Gallery, Newcastle. Mr. Rich, President, occupied the chair, and wore for the first time the presidential chain, each link of which has been presented by a past President, and bears the name and date of office. Mr. J. W. Taylor read a paper on "The Bricks Used in Northumberland and Durham." The lecturer showed specimens of various brick, and gave particulars as to price. A vote of thanks concluded the meeting.

Edinburgh Architectural Society.—At the meeting of this Society on the 1st inst., Mr. A. Balfour Paul read a paper on "The Staircase." Mr. A. Lorne Campbell, the President, was in the chair. At the outset Palladio's requirements of astaircase were stated, and this formed the text for subsequent remarks. These requirements are spaciousness, light, and facility of ascent; and each depends on the other two. On the first of these it was pointed out that what was sufficient headroom in a small stair was quite inadequate in a large and wide one where 8 ft., though practically ample, would give the feeling to those ascending that contact between their heads and the soffit was imminent. Top and wall lighting were then contrasted. The top light gave the opportunity for a lantern, but was only of real use at the top flight; at the same time it was very economical of space and wall in planning. The rules for ascent were touched on next. None of them held good in extreme cases. Winders were constantly used in modern stairs because space was so small and floor to floor heights so great; but in any but circular stairs they were mere mantraps, and the circular stair was condemned as wholly unsuitable to modern requirements.—A discussion followed, mainly devoted to points in planning.

York Architectural Society.—Twenty-three members of this Society paid a visit to Sheffield on the 4th inst., and were received at the Midland Station by Messrs. C. Hadfield (past President), J. B. Mitchell-Withers, Thomas Winder (members of Council), W. C. Fenton (hon. secretary), C. F. Innocent, representing the Sheffield Society of Architects and Surveyors. The visitors included Messrs. George Benson (President of the York Society), W. G. Penty and A. Pollard (past Presidents), A. B. Burleigh (hon. secretary), and others. The party were conducted to the Town Hall, after paying a passing visit to the Corn Exchange and viewing the High-street improvements. An attempt was made to view the city from the height of the upper balconies of the tower, but the atmospherical conditions were unfavourable for the purpose, and the visitors were only able to see the immediate neighbourhood of the Town Hall. Under the guidance of Mr. Charles Hadfield, the Royal Hospital was then visited, and its general arrangements were described by him. The visit concluded with dinner at the Thatched House Hotel.

## THE NEW VAUXHALL BRIDGE.

Many of our readers will have seen the following letter, which appeared in the *Times* of Monday the 6th, but we think it well to put it on record in our columns:—

"To the Editor of the *Times*.

Sir,—Will you allow us to call the attention of your readers to a matter which seems to us of urgent importance? A new bridge over the Thames, occupying an important situation and involving an outlay of half a million, cannot and ought not to be regarded as a mere utilitarian structure for traffic alone. It should be so designed as to be also a work of architectural beauty and fitness—a new ornament to the capital. To this end it seems to us that its architectural and decorative treatment ought to be entrusted to one who has made a life study of such matters.

The London County Council's design, prepared by their Chief Engineer, was published in the *Builder* in January. Its structural merits we do not question; but, while the intention of making what is called a 'handsome' bridge is evident enough, there is evidence also of the absence of the artist's hands refining and harmonising the whole.

The publication of the design at once roused protests in your columns and elsewhere from those most competent to form an opinion upon such matters. The leading London architectural societies (the Royal Institute of British Architects and the Architectural Association) have condemned the design in unqualified terms. The Institute coupled its protest with a request that the Chairman of the London County Council would receive a deputation on the subject from some of its leading members.

This proposal has been declined, and all protests ignored. To all appearance the County Council is bent upon carrying out a design at once pretentious and costly, but lacking in those qualities which would make it in any way comparable to Waterloo or London Bridges, of which we are justly proud.

We desire to make our emphatic protest against the execution of this design in its present form, and to express our opinion that in this country, as in France, the design of an important bridge, where any attempt is made beyond utilitarian construction, ought to be placed in the hands of a competent artist, who should be responsible for its architectural detail as the engineer is for its structure.

For the want of this collaboration of the architect with the engineer, we have already seen the erection of three bridges of deplorable design—those at Blackfriars, Battersea, and Hammersmith—we are now threatened with a fourth. The substitution of a good design, so far from increasing the cost of the bridge, would be rather likely to diminish it, since some of the features added for the purpose of adornment appear to us incongruous and unnecessary.

The London County Council has to seek Parliamentary powers for the erection of any bridge across the Thames.

If it refuses to listen to advice or suggestion on matters artistic, the ratepayers of London, or those among them who care about the architectural dignity and improvement of the capital, should look to Parliament for some future safeguard against any repetition of the expenditure of public money upon structures such as that now proposed, which, in despite of the costly nature of its architectural accessories, will, we fear, reflect no credit upon contemporary architecture, upon London, or upon the London County Council.

We are, &c.,

F. Cantuar.
Westminster.
Wemyss.
M. London.
Edward J. Poynter, P.R.A.
Edwin A. Abbey, R.A.
George Aitchison, R.A., President R.I.B.A.
Thos. Brock, R.A.
E. Onslow Ford, R.A.
T. G. Jackson, R.A.
W. B. Richmond, R.A.
R. Norman Shaw, R.A.
L. Alma Tadema, R.A.
Hamo Thornycroft, R.A.
A. Waterhouse, R.A.
G. F. Watts, R.A.
Arthur W. Blomfield, A.R.A.
G. F. Bodley, A.R.A.
Wyke Bayliss, President B.A.
F. C. Penrose, ex-President R.I.B.A.
G. H. Fellowes Prynne, President Architectural Association.
W. Butterfield.
Mervyn Macartney, Master Art Workers Guild.
John R. Clayton."

## THE SANITARY INSPECTORS' ASSOCIATION:

### SMOKE PREVENTION.

At the meeting of this Association, held on the 4th inst. at Carpenters' Hall, London Wall, presided over by Mr. T. J. Moss Flower, C.E., a lecture was delivered by Professor Pullen on "Smoke Prevention." The lecture was illustrated by a large number of lantern views thrown on a screen, showing some of the most effective mechanical contrivances for the abatement of the smoke nuisance. The complete and economic combustion of coal, said the lecturer, was a problem that had been attempted by a great many engineers since Watt, but it had been solved by comparatively few. One of the first views showed an "econometer," an instrument for indicating the percentage of carbon dioxide, one of the most important elements in furnace gases, this percentage being a measure showing the relative economy of the furnace. The presence of black smoke in the burning of fuel was evidence that combustion was incomplete, and, therefore, wherever there was smoke there was waste. Among the most important of the views by which this was followed, were a number of mechanical "stokers" that are in successful use in various manufacturing centres, among them being Proctor's and Bennis's "Sprinkling Stokers," the "Murphy" furnace, and Meldrum's stoker, the use of any of which practically solves the problem. Experience showed that very careful hand firing will, with most kinds of coal, prevent smoke, if the fires are not forced too hard; but where one careful fireman can be found, there are many who cannot be placed in the same category. Dense black smoke can always be avoided if the proper means are adopted to prevent it, but the conditions under which many steam boilers are worked do not permit of an absolutely smokeless chimney. A considerable difficulty in the way of sanitary inspectors was the want of a means of estimating the quantity and denseness of smoke emerging from a chimney; and a method was mentioned—the invention of Ringelmann—which is easily applicable by the inspector for overcoming this difficulty.—A discussion followed the reading of the paper, the Chairman, Messrs. West (Walthamstow), Woonton (Paddington), Legg (Hackney), Dee (Westminster), Fairchild (Clapham), Duckworth (Plumstead), (and also one or two manufacturers who had had practical experience of some of the furnaces and appliances described in the lecture) taking part in the discussion. The evidence given by Mr. Clinch, manufacturer, of Chesterfield, testified strongly to the perfect success of Murphy's furnace as applied by him during the last year or two to tubular boilers developing 100 h.-p. at Chesterfield. With an iron chimney only 55 ft. high there was no smoke and no discolouration. In the first six months after putting in the furnace he had saved 100*l*. in his coal bill, and, in the working of the whole of the year 1898, 200*l*. Instead of burning anthracite or smokeless steam coal, he was able to burn coal of the very lowest quality which was called "smudge," and which cost 3s. 6d. per ton at the pit. Mr. Dee, who had inspected this furnace last year on the invitation of Mr. Clinch, also testified as to its perfect effectiveness, and said that Professor Lewes, in a lecture given five years ago before the members of the Association, pointed out that the question of smoke prevention was a mere matter of perfect combustion. There could be no excuse now for a continuance of the nuisance so far as manufacturing chimneys were concerned.

A cordial vote of thanks was given to Professor Pullen, who, in replying, said he held no brief for any manufacturer of smoke-preventing appliances or furnaces, most of which were perfectly effective when properly fired. He had no interest in the subject except the desire to reduce the smoke nuisance, and to see manufacturers burning coal economically. In many parts of the country only six minutes were allowed per day when black smoke might be emitted. Many firms gave premiums to their firemen on the saving of coal, and made them pay the fines in the case of a prosecution.

New Manufactory, Warrington.—Messrs. Archibald Smith & Stevens ask us to mention that they supplied the electric lifts for Messrs. Fletcher, Russell & Co.'s new works, described in our columns in a previous issue.

## DRAWINGS FOR THE ROYAL ACADEMY.

As usual, we shall be glad to forward to the Royal Academy any drawings sent to the office of this journal in time to be photographed for publication (if considered suitable) before sending them in.

The last day for receiving drawings at the Royal Academy is Monday, March 27; and the latest time at which we can receive any to be delivered from this office is *11 a.m. on Saturday the 25th.* Any drawings sent here later than that we cannot take charge of.

The following are the requirements of the Royal Academy in regard to drawings :—

1. That every drawing should be in a gilt frame.
2. That there should be a label affixed to the back of it giving the title of the drawing and the artist's name and address, and the distinguishing number of the drawing (if more than one is sent).
3. That a similar label should be affixed to the frame by a string, so as to hang over in front.
4. That the drawing be accompanied by a letter to the secretary of the Royal Academy containing the same information as on the labels.

We can take charge of no drawings which do not comply with these regulations. *We cannot provide or affix labels where they have been omitted by the sender of the drawing.*

# Illustrations.

## THE THESEION AND THE CARYATIDE PORCH OF THE ERECHTHEION.

We give the illustrations of these two remarkable monuments of Greek architecture, which have not been illustrated for many years in our pages, as accompaniments to Professor Aitchison's lectures on Greek architecture. They are too well known to need comment, but this is an opportunity for introducing a representation of them which may be useful to refer to.

The view of the Theseion,* almost a side elevation, shows the side entrance, which, however, is not original, but was made when the building was used as a Christian church.

## DESIGN FOR PARISH HALL AND ALMSHOUSES, SALTWOOD.

THIS design, by Mr. Beresford Pite, was submitted in a limited competition last summer, in which Mr. James Brooks acted as assessor. His award, which the promoters have ignored, included this design in its recommendations.

The scheme was interesting, as six dwellings, single or semi-detached, were required, with a parish hall to accommodate 300, the necessary funds being provided by a trust bequest.

## ST. PAUL'S, FAIRHAVEN, LYTHAM.

THIS is a seaside church on a tempestuous coast. The detail is, therefore, kept simple and bold, and the tower sturdy in treatment. The church and parsonage are both mainly in brick, and are designed to suit that material. Where stone is used it is not so much for relief or for decoration as for constructional reasons.

The plan of the church, with two naves and an aisle to each, is ruled by the requirements. For some years rather more than 400 places only are wanted—ultimately about 800. As the church is placed on the site, the south nave with the south aisle, the chancel with its side chapel and vestries, the west and south porches, and the tower, will make a complete looking building to begin with. The doors are so arranged that whichever way a gale may be blowing there will always be at least one door sheltered from the wind. The angles rather than the faces of the tower being turned to the cardinal points is an arrangement not without precedent—at home and abroad—and was adopted here because it was perceived that it would show to most advantage so placed, when seen from the two chief approaches, east and west.

The parsonage is compactly planned. Its most used family room will catch the sun nearly all day long. It is an economical house for a small living.

J. MEDLAND TAYLOR.

## PLAISTOW PUBLIC BATHS.

THE Plaistow Public Baths, now in course of erection for the borough of West Ham, are situate in Balaam-street, Plaistow. The establishment will comprise two swimming-baths and twenty-seven private baths.

The main central entrance gives access through a vestibule to a waiting-hall, which will be handsomely finished with teak joinery, enamelled tile dadoes, and mosaic floor. On either side of the vestibule are respectively the pay and superintendent's offices. Separate entrances are provided, the latter being next the pay office. On the left of the waiting-hall is the men's first-class swimming-bath, with a water area of 100 ft. by 27 ft., and a depth ranging from 3 ft. 6 in. to 6 ft. 6 in. There are sixty-two dressing-boxes, and a gallery runs the whole way round above them, with sufficient space for two rows of seats. The bath sides and bottom will be lined with 6 in. white glazed tiles, relieved with a majolica border all round and tile slips, &c. The curb will be of rubbed slate, and the footways paved with tiles or mosaic. The walls of the hall will be lined up to underside of gallery with white glazed tiles, and above the same with white glazed bricks, relieved with coloured bands.

On the right side of the hall is the second class swimming bath with a water area of 60 ft. by 27 ft., and a depth of from 3 ft. to 6 ft. The bath walls will be lined with 6 in. white glazed tiles, and the bottoms with white glazed bricks relieved with blue bands and borders. The curb will be of slate and the footways paved with tiles. The gallery to this bath is confined to one end only. There are fifty dressing-boxes.

Between the swimming baths are the second-class men's private baths with the waiting-room. Twelve compartments are provided, and they are formed with enamelled slate partitions and doors 6 ft. 6 in. high. Each compartment will be fitted with a porcelain enamelled bath fixed on glazed brick bearers and with a teak top. The floors will be paved with tiles and the walls lined with glazed tiles. In front of the first-class swimming bath are the men's first-class private baths (five) and waiting-room, which will be finished and fitted in a manner similar to the second-class bath but more elaborately. The bath-room, which has not the benefit of top light, will be lighted by window openings in front filled in with Luxfer prisms. Beyond this room is a club-room in connexion with the first-class bath. In front of the second-class bath are second-class women's private baths, finished and fitted as before and lighted in a similar manner to the men's first-class bath-room. Beyond this is a club-room for the second-class bath. The above-mentioned club-rooms and the area beyond the men's second-class private baths are designed as means of extending the private baths when required.

A staircase on the south side of the waiting hall leads to the women's first-class private baths, fitted as before described. A similar staircase on the north side leads up to the first floor to a committee-room and superintendent's apartments. Doors on both these staircases give access to the galleries in the swimming baths. A door in the south (women's) staircase gives access to the second-class swimming bath, which will be used alternately for women. The superintendent's apartments comprise two sitting-rooms, kitchen, and three bedrooms, bath-room, &c. A store-room is provided in the basement for towels and necessaries.

In the rear of the second-class swimming-bath are the boiler house (fitted with two steam boilers), engine-room, and towel-laundry. The walls of these rooms will be faced for a height of 7 ft. with white glazed facings. The swimming-baths will be heated by steam injectors and circulating pipes. Hot water will be supplied from large steam heaters in the basement. The water supply will come for the present from the East London Water Company's mains, but the Corporation has under construction an independent water supply. The building will be lighted throughout by electricity supplied from the public mains.

The frontage next Balaam-street will be of Leicestershire red bricks relieved with Portland stone cornices and dressings. The roofs will be covered with Westmoreland green slates.

The building is being carried out by Messrs. Spencer, Santo, & Co., of Earl-street, Westminster, from the designs, and under the superintendence of the architect, Mr. A. Saxon Snell. The amount of the contract, which includes all engineering, drainage, and other works to leave the building complete, amounts to 22,308*l*.

## MAGAZINES AND REVIEWS.

IN the *Architectural Review* (Boston) the principal illustrations are the elevation and details of a new New York House, of the most Parisian aspect, by Messrs. Haydel & Shephard. There is also a clever but rather rampant design by Mr. Friedlander for "Triumphal piers for the return of a victorious army"—a very French army, we should think. These, and some elevations of a house, are all alike without scales attached to them, an omission which of course detracts immensely from their practical value to architects. The essay on "Good and Bad Colonial Architecture," by Mr. Blackall, is continued.

The *Art Journal* includes an illustrated article by Mr. Warren Clouston on the interesting subject of "Front Doors," suggesting that more attention should be given to imparting artistic character to a front door. The author gives some interesting examples of old doors, the design of which is quite adaptable for modern use; we cannot unfortunately admire his example of an original design for a panelled door ; the leafage in the panels is too large and quite out of scale. We quite agree with the author in advocating a less common-place and more artistic treatment of knockers ; but he does not seem to perceive that four out of six of the ancient examples of knockers given have the usual fault—they do not look like things to knock with. That is the common defect of knocker designs, old and new. Among the other articles in the number is No. II. of "Jewels—Ancient and Modern," an article on the works of M. Anquetin, the last newly-discovered French painter, and a short article on wall-papers by Mr. Day, under the heading "Recent Industrial Art." The second issue of the Jubilee series of reprints of articles from early issues of the *Art Journal* is as interesting as the first. The frontispiece is Landseer's "The Stag at Bay" engraved by Mottram ; both picture and engraving suggesting another world of art from the present one.

In the *Magazine of Art* the personal article on Mr. Abbey and his works is continued into a second part, followed by a similar article on the works of another artist, Mr. Housman. This is a fashionable way now of advertising artists (for that is what it comes to), and we suppose the defence is that "everybody does it"; but it is not a fashion we can admire. The symposium on "Is Photography an Art?" is continued by a contribution from Mr. A. Lys Baldry, and a kind of summing up is added by the editor, who takes the negative side of the question ; a view fully supported (whether intentionally or not) by the illustration of "The Goddess of the Grove" in the middle of the page, which shows in a piquant enough manner how impossible it is for photographs from life to cope with the demands of a purely ideal subject. The number includes a review of Mr. R. Blomfield's "Renaissance Architecture," rather late in the day. The choice of the drawing of the interior of St. Stephen's Walbrook for one of the illustrations is not the most fair to the author, for the drawing of the dome is out of perspective, as is so often the case in attempts to show the interior of a dome up to the crown in a perspective drawing. It is a choice of difficulties in fact ; either you must assume the standpoint so far off that only the lower part of the dome can be seen under the supporting arch ; or you must take a position which assumes a larger angle of vision than a picture will bear. The latter is the case in this drawing ; and the consequence is, as in every similar attempt we have seen, that the dome appears tilted.

The *Artist* includes illustrations of "Some Objects of Continental Applied Art" which are of some novelty and interest, especially a scheme for a smoking-room and some designs for metal door-handles, both by Mr. Van de Velde of Brussels.

The *Studio* (February 15) includes an article on recent work by M. Charpentier, accompanied by illustrations of some beautiful modelled work in bronze and other material; and one on the designs of M. Steinlen, one of the modern painters of the ugly and mean side of life, the illustrations to which are hideous. An article on "Modern Applied Art in Vienna" contains some interesting illustrations of decorative work, of which "a book-cover" by Adolf Böhm is the best.

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* We adopt the Greek spelling "Theseion" and "Erechtheion," to assimilate them with "Parthenon," which has become almost an English word. If we write "Erectheum," we ought consistently also to write "Parthenum," which would appear almost grotesque after our familiarity with the Greek form of the word.

The most important article in the *Engineering Magazine* is that on "The Tall Building *versus* Fire," in connexion with which some photographs are given of the condition of portions of these "fire-resisting" structures after a fire. It is noted, among other things, that the plaster and wire-lathing partitions were totally destroyed.

The *Antiquary* includes an article on "Roman Ribchester," by Mr. Garstang, and the first of a series of articles on "Some Kentish Churches," commencing with St. Martin's, Eynsford. The illustrations serve to explain the text, but they might surely be better, if given at all.

In the *Nineteenth Century*, Prince Kropotkin, in his "Recent Science" article, goes into the subject of the present scientific position and future prospects of weather prediction; an exceedingly interesting article. We quote the following as to the use of weather forecasts in the United States:—

> The daily weather-charts and the forecasts are prepared in the States with wonderful rapidity. The forecasts are ready one hour and forty minutes after the observations have been made (at eight o'clock of the 75th meridian) at from 2,700 to 2,960 stations scattered over the States and Canada, as well as at the auxiliary stations of Mexico and the West Indies. Immediately the forecasts are telegraphed and spread broadcast, reaching nearly 30,000 persons and institutions. The local and the auxiliary bureaus, as well as the post offices, spread them by all means, including free postcards and telephone messages. The warnings of frosts and blizzards in February, of night frosts in the spring, of storms on the coasts and squalls on the lakes, of inundations, and so on, are the subject of a special care. Thus, last winter, when a cold wave and a blizzard were expected in the west, 650 points in twelve ranching States, as also all the railway and steamboat stations, and thousands of private persons were warned from the Chicago weather bureau. Immediately most ranchers took their flocks of sheep under shelter (200,000 head of sheep and cattle in one single small spot), and masses of both sheep and cattle were saved from an almost certain destruction by an awful blizzard. In April last most valuable crops of strawberries were saved in the same way. The strawberries were covered with straw, or artificial clouds were made."

The writer sums up the subject as follows:—

> "Some modest attempts at forecasting weather a few days ahead are already made, and we find them, in the shape of hints, at the end of the daily meteorological summaries of weather. To make these previsions more secure, one thing is, however, of first necessity. It is the knowledge of how the great circulation of the atmosphere goes on at a given moment, and this knowledge can only be gained by regularly exploring the higher strata of the atmosphere. A beginning of this is being made by means of the meteorological stations that are planted in every civilised country of the world on the tops of some mountains by means of cloud observations, of international balloon ascents carried out at regular intervals, and especially by means of kites provided with meteorological instruments, which have lately been brought to a very high degree of perfection in America at the Blue Hill Observatory. But these high-level investigations are so full of interesting and instructive results that they must be analysed separately."

*Scribner* devotes some space and some good illustrations to the portraits of Mr. J. W. Alexander, a very clever American painter with whom sprightliness and originality rather take the place of style; his portraits are exceedingly dramatic, but want dignity and repose.

*Harper* gives the first instalment of a very interesting essay by Mr. Russell Sturgis on "The Building of the Modern City House," with numerous plans and views of houses. The subject is treated, of course, from the American point of view. Mr. Sturgis seems to think city houses both in London and New York are architecturally far below what they ought to be; in London because of the leasehold system, in New York because it is not the New Yorker's way to build houses with care and forethought. He will not take the trouble to build so long as such well-arranged and agreeable houses are offered to him for purchase. "The question is," says the author, "whether such houses will ever be properly planned and adequately built;" and he gives some curious details as to the bad building. We may return again to this essay.

The only point of artistic interest in the *Century* of this month is the frontispiece engraving after what must be a very fine painting by an American artist, Mr. Ross Turner (the President of the Boston Art Club), of "The Golden Galleon," an old-fashioned Spanish ship gliding lazily over a long swell.

In the *Revue Générale* the continuation of M. Arnold Goffin's essay on Florence is unusually interesting, dealing as it does with the great Medici period, and also containing some original and thoughtful remarks on the relation of art to the people—or its want of such relation, in that period.

The *Pall Mall Magazine* has an illustrated article on Puvis de Chavannes, with a full-length portrait; and Mr. Gibson's "Sketches in Egypt" are admirable specimens of his peculiar art in black and white work.

The *Quarry* includes a paper on "Steam Cranes," read by Mr. D. B. Donald at a meeting of the Manchester Association of Engineers. Mr. Elsden's useful articles on "Applied Geology" are continued.

We have received the *English Illustrated Magazine*, *Knowledge*, and the *Genealogical Magazine.*

## THE ARCHITECTS' BENEVOLENT SOCIETY.

THE annual general meeting of the subscribers and donors of this Society was held in the rooms of the Royal Institute of British Architects, No. 9, Conduit-street, W., on Wednesday, Professor Aitchison, R.A., presiding.

The minutes of the last meeting having been read and confirmed, the following report was read by Mr. Percivall Currey, hon. secretary, and adopted:—

> "The Council of the Architects' Benevolent Society, in presenting their forty-ninth annual report, have the pleasure of congratulating the members of the Society on a year of useful work, in which much has been done to relieve the necessities of deserving applicants, the sum of 654*l.* 14s. 10d. having been distributed amongst thirty-nine persons. They have also to report that there has been an increase in the amount received in subscriptions (471*l.* 10s. as against 459*l.* 13s. received in 1897), and that the following gentlemen have added their names to the list of annual subscribers: Mr. Cecil Orr, Mr. E. Monson, Mr. H. Huntly-Gordon, Mr. Sydney Perks, Mr. H. Alexander Pelly, Mr. John Ford, Mr. W. G. Cooke, Mr. H. P. Monckton, and Messrs. Patman & Fotheringham. While there has been this increase in the subscriptions, the Council regret that there has been a considerable falling-off in the amount received in donations, the sum of only 105*l.* 12s. having been received as compared with 300*l.* 17s. 7d. received in 1897. Amongst the donations the following may be mentioned: Colonel Edis, 21*l.*; Mr. Aston Webb, 15*l.* 15s.; Dr. R. Rowand Anderson, 10*l.* 10s.; Mr. A. Hessell Tiltman, 10*l.*; Mr. George Inskipp, Mr. Wm. Woodward, Mr. W. West Neve, Mr. J. T. Christopher, and Mr. G. Elkington, 5*l.* 5s. each. The Tylers and Bricklayers' Company also gave 5*l.* 5s., Messrs. Patman & Fotheringham 3*l.* 3s., and Mr. Sidney R. J. Smith 3*l.* Various smaller sums were also gratefully received.
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> The steady increase in the number of subscribers during the past few years (the amount being now more than 50 per cent. in advance of that received in 1892) is however an indication that a growing interest is being taken in the Society, and that the work which it performs in assisting unfortunate architects, their widows and children, is becoming more widely recognised. Still, the Council feel that the number of subscribers (a little over 300) is small compared with the number of practising architects who are in a position to contribute to the Society's funds; and they would cordially invite inquiries from non-subscribers as to its scope and objects. It has long been felt that the Society would be more generally supported if its existence were more widely known, and with a view to extending the knowledge of its aim and work, your Council have recently had under consideration the question of an annual dinner. It was thought, however, that this would be undesirable at the present time, and that the same object might be served if the fiftieth anniversary of the Society, which would occur in 1900, were celebrated by a dinner. A small sub-committee has therefore been formed to make the necessary arrangements for such an event, and your Council trust that the committee's efforts will be heartily supported by members of the Society and by the architectural profession at large.
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> The proposal carried at the Annual General Meeting last year to increase the number of the Society's pensioners from three to six, and the amount of the pensions from not less than 15*l.* to not less than 20*l.*, was confirmed by a subsequent general meeting specially convened for the purpose on July 13. The available pensions were therefore duly advertised at the beginning of the present year, and allotted to the most deserving candidates.
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> The Council have much regret in recording the death of three of the oldest members of the Society—Professor Hayter Lewis, Mr. J. J. Edmeston, and Mr. T. C. Hine. Professor Hayter Lewis, who has bequeathed 100*l.* to the Society, was one of its original members, and one of its most generous benefactors. He served on the Council on many occasions, and acted as Honorary Treasurer, with advantage to the Society, from 1886 to 1889. Mr. Edmeston had been a subscriber since 1860, and had also served on the Council. Mr. T. C. Hine was an original member, and acted as a corresponding member of the Council from 1855 to 1870. . . .
>
> The following gentlemen, being the five senior members, retire by rotation from the Council, namely:—Mr. Arthur Crow, Mr. E. A. Gruning, Mr. G. T. Hine, Mr. Arthur Cates, and Mr. Aston Webb. To fill the vacancies caused by these retirements, the Council have the pleasure to nominate Sir Arthur W. Blomfield, Colonel R. W. Edis, Mr. Edwin T. Hall, Mr. T. M. Rickman, and Mr. R. A. Briggs. The balance-sheet and income account for the year ended December 31, 1898, were duly audited by Mr. C. Forster Hayward, F.S.A., and Mr. George Lethbridge. . . . The Council, in closing their report, desire to express their sense of the indebtedness of the Society to the Royal Institute of British Architects for office accommodation, &c., and to the officers for their always helpful courtesy."

The income account and balance-sheet were also read and adopted.

Mr. W. Hilton Nash, Hon. Treasurer, announced that Mr. J. Macvicar Anderson had made a donation of 18*l.* 10s., which made the total of his donations 150*l.* He also acknowledged a donation of 5*l.* from Mr. J. M. Brydon.

On the motion of Mr. T. M. Rickman, seconded by Mr. E. B. I'Anson, a vote of thanks was passed to the retiring members of Council, viz., Messrs. Arthur Crow, E. A. Gruning, G. T. Hine, Arthur Cates, and Aston Webb.

Mr. J. Macvicar Anderson then moved that the following gentlemen be elected as Council for the ensuing year, viz., Messrs. H. L. Florence, J. T. Christopher, Sydney Smirke, W. Grellier, E. W. Mountford, R. St. A. Roumieu, W. Woodward, E. B. I'Anson, E. H. Martineau, Sir Arthur Blomfield, Colonel R. W. Edis, Edwin T. Hall, T. M. Rickman, and R. A. Briggs.

Mr. Z. King seconded, and the motion was agreed to.

The following motions were then agreed to:—A vote of thanks to Mr. Nash for his services as Hon. Treasurer, and a motion for his re-election to that office, proposed by Mr. H. L. Florence, and seconded by Mr. Christopher; and a vote of thanks to Mr. Percivall Currey for his services as Hon. Secretary, and a motion for his re-election, proposed and seconded by the same gentlemen.

Mr. Nash, in the course of a few remarks, said he regretted that there had not been a greater accession to the funds of the Society from year to year. What was wanted were more annual subscribers, and it was to be regretted that more members of the profession did not support the Society.

On the motion of Mr. I'Anson, seconded by Mr. W. Grellier, a vote of thanks was accorded to the auditors, Messrs. C. Forster Hayward and G. Lethbridge, and on the motion of the Chairman, Messrs. Dawson and King were elected auditors for the coming year.

Mr. Woodward moved, and Mr. Lethbridge seconded, a vote of thanks to the Royal Institute of British Architects for the use of the Institute premises for meetings.

On the motion of Mr. Nash a vote of thanks was accorded to the Chairman for presiding.

The Chairman, in reply, said he hoped the Society would become better known, not only to architects but to the public at large. Some architects who were doing very well in life appeared to quite forget the existence of such a useful society, though he felt that as it became better known it would not continue to be neglected. The architectural profession did a great deal for the country in which it flourished; it produced works for the people to admire, and those works excited the admiration of foreigners who visited the country. That being so, and considering the inadequate remuneration of architects, he thought the public generally could not do better than help to strengthen the work of a body such as the Architects' Benevolent Society. That society was as deserving of support as other similar societies which flourished more, and, as a means of getting better known, he was glad to hear that a public dinner was to be held next year. The meeting then terminated.

## THE LONDON COUNTY COUNCIL.

THE usual weekly meeting of this Council was held on Tuesday, in the County Hall, Spring-gardens, Mr. T. McKinnon Wood, Chairman, presiding.

*Loans.* — On the recommendation of the Finance Committee it was agreed to lend the Islington Vestry 38,750*l.* for electric lighting purposes, and the Library Commissioners of St. George's (East) 1,800*l.* for the purchase of land on which to erect a library.

*The Plasterers' Dispute.*—The Finance Committee reported the receipt of a letter from the National Association of Master Builders of London, with reference to the plasterers' dispute, and asking the Council for the co-operation and support of its Works Department in the course of action that might be adopted by the Association, in order to rid the building trade of the harassing and indefensible restrictions sought to be imposed by the Plasterers' Union. The Committee observed that the standing orders of the Council precluded them from directing the manager of the Works Department either to join the lock-out or to discharge any foreman on the question of his membership or non-membership of a trade union. They, therefore, took no action in the matter.

Sir A. Arnold said he thought some reply should be sent to the Master Builders' Association, who conceived that the position of the Works Department was exactly similar to that of members of the Association. Although the Works Department stood in relation to the Council somewhat in the position of a contractor, yet that could not be the position which the Department occupied towards the public. The Department was not carried on for private gain, but in the public service. It was, therefore, not possible to place it in the category of employer and employed, and it would not be proper for the Department to take any part in the dispute.

Lord Welby (Chairman of the Finance Committee) replied that the letter of the Masters' Association had received the usual acknowledgment. It appeared to the Committee that they could not anticipate the action of the Council, but must leave the Council to take their own procedure in the matter.

Mr. Howell Williams thought it very undesirable that the Council should interfere.

Mr. Burns, M.P., said he cordially agreed that there was no reason why the Council should prosecute the matter any further.

The report was adopted.

*Land at Manor-lane, Lee.*—On the recommendation of the Parks and Open Spaces Committee it was agreed to authorise the purchase, for the sum of 8,500*l.*, of about 8¾ acres of land at Manor-lane, Lee, for the purposes of an open space to be laid out and maintained by the Council, the amount of the Council's contribution to the purchase being limited to 3,500*l.*, and being made conditionally upon the Lee District Board agreeing to provide the whole of the remainder of the cost of acquisition, and subject to the entrance from Old-road being increased in width to at least 80 ft.

*Low Flash Oil.*—The Public Control Committee recommended, "That a communication be addressed to the Home Secretary urging the Government to introduce or support a measure for raising the statutory flash point of petroleum, fixed by the Petroleum Acts, from 73 deg. Fahrenheit to 100 deg. Fahrenheit (Abel close test)." This was agreed to.

*New Theatre, Shaftesbury - avenue.* — The Theatres and Music Halls Committee reported as follows :—

> "We have considered drawings . . . of a theatre which it is proposed to erect with frontages in Shaftesbury-avenue, Archer-street, and Rupert-street. The total boundary of the site is 403 ft., of which 146 ft. front to Shaftesbury-avenue and Rupert-street, which are streets of the width prescribed by the regulations, and 111 ft. to Archer-street, which is slightly narrower than the prescribed width. As considerably more than half the total boundary abuts on public streets, we think the fact that Archer-street is not quite of the required width may be overlooked, and the site be considered satisfactory. The theatre will accommodate 1,072 persons, and the regulations as to exits, &c., are shown to be complied with."

They recommended, and it was agreed, that the drawings be approved.

*The Horton Estate.*—The Asylums Committee recommended, and it was agreed, (1) to insert in the estimate deposited in connexion with the General Powers Bill 8,600*l.* for the acquisition of lands and the construction of works for the purposes of railway sidings Nos. 1 and 2 on the Horton estate ; (2) that the supplemental estimate submitted by the Finance Committee for the expenditure of 2,000*l.* for the extra works necessary to enable one of the blocks at the Manor Asylum to be utilised for 110 male patients and staff be approved.

*Factory and Workshops Acts, 1878 to 1895.*—The Building Act Committee reported as follows, the recommendation being agreed to :—

> "Our attention has been called to the fact that at present there seems to be no provision in the Factory and Workshop Acts for dealing with cases where unauthorised alterations are made in the means of escape which existed in a factory commenced after 1891, or in a workshop commenced after 1895, at the date when the Sanitary Authority issued a certificate in respect of such means of escape under Section 7 (Sub-section 1) of the Act of 1891, or where alterations have been made to, or in the use of, the premises which have the effect of rendering such means of escape partly or entirely unavailable. It also appears doubtful whether any proceedings could be taken if similar alterations were made affecting the means of escape provided in other factories and workshops pursuant to requisitions served under Sub-section 2 of that section. Further, it would much facilitate the carrying out the rapidly-increasing work thrown on the Council under Section 7 of the Factory and Workshop Act, 1891, if persons building factories or workshops which need certificates under Sub-section 1 were required to deposit with the Council plans showing the means of escape provided, as a record of the state of things to which the certificate applies. Such plans are necessary for the purposes of the Council, but cases have occurred in which persons have refused to furnish them, and much difficulty has in consequence been caused. We are of opinion that it would be desirable for the Council to bring these matters to the notice of the Home Secretary, with a view to their being dealt with, if possible, in the Factory and Workshop Amendment Bill of the present Session. We recommend that the attention of the Home Office be called to the matters above referred to, with a view to their being dealt with, if possible, in the Factory and Workshop Amendment Bill of the present Session."

*Fire Brigade Work.* — The Fire Brigade Committee recommended, and it was agreed, (1) that the tender of Messrs. R. Harding & Son to execute certain repairs and alterations at the Waterloo-road station for 107*l.* 16s. 4d. be accepted ; (2) that the tender of Mr. C. F. Kearley to carry out for 385*l.* the work required at the Notting-hill station and No. 3, Ladbroke-terrace-mews be accepted.

*Brook-street, Limehouse, Scheme.* — The Housing of the Working Classes Committee recommended that the amended tender of Messrs. R. A. Yerbury & Sons, amounting to 4,423*l.*, for the erection of cottages on plot 11. of the land acquired under the Brook-street, Limehouse, scheme, be accepted.

This was agreed to.

*Gas Company's Charges.*—Mr. Cornwall, Chairman of the Parliamentary Committee, moved "That the Council do oppose the Gas Light and Coke Company's Bill, against which it has resolved to present a petition, and that the costs and expenses of and incidental to the said petition and the proceedings consequent thereon be charged to and paid out of the county fund." On a division 90 voted for the motion and only 3 against.

*Vauxhall Bridge.*—Mr. Ward, Chairman of the Bridges Committee (in reply to a question by Mr. Shaw-Lefevre), said :—I am glad of an opportunity of going into this question. I feel that many of those gentlemen who have signed the letter in the *Times* would not have signed such a letter had they been cognisant of the facts. The Bridges Committee has received deputations from the Art Committee of the Royal Institute of British Architects on several occasions on this subject, and they have gone a long way to meet the various suggestions which have been received. As a result of a letter, the Art Committee were received by the Bridges Committee on May 23, 1894, the President of the Royal Institute of British Architects introducing the deputation. On December 12, 1894, the Standing Art Committee of the Institute again saw the Committee, and the Engineer was instructed to furnish the Art Standing Committee with sections of the bridge, and give information as to the form of construction. On July 17, 1895, the Bridges Committee received the third deputation from the architects, who submitted a sketch design for the piers and abutments. This was referred to the Engineer for consideration. Several letters passed, and the Engineer was instructed to avail himself as far as desirable of the suggestions with which the Bridges Committee had been favoured. A model was subsequently prepared of the Engineer's design, which included several modifications suggested by the Art Committee, and the Engineer invited Mr. Waterhouse and Mr. Mountford to see the model. On February 19, 1898, Mr. Waterhouse wrote, "Dear Sir Alexander Binnie, — The great courtesy shown Mr. Mountford and myself on Saturday last in allowing us to see and have the advantage of your personal explanation of the drawings, model, and details of your new Vauxhall Bridge merits some expression on our part beyond mere verbal thanks. We congratulate you heartily on the general design and proposed construction of the bridge." They, however, went on to make some half dozen further suggestions ; probably three or four of these will be adopted in carrying out the working drawings for the superstructure which are now being made. It is manifest we have gone a long way to meet the views of the architects, and in the end we feel that our Engineer must be the person responsible for the design. It would hardly do to put an irresponsible advisory committee in his place. It had been stated that a deputation asked to see the Chairman of the Council. The explanation of that was that the clerk opened the letter, and, seeing that it referred to bridges, at once sent it on to the Bridges Committee. The Chairman of the Council had stated that he had not seen that letter, but no doubt he would be willing to receive the deputation. The contract for the piers had been let, and the only thing that the committee could now alter was the superstructure. A sketch design had been sent in, but it was so unworkable in many respects that it could not be adopted.

The Council, having transacted other business, adjourned.

## *ARCHÆOLOGICAL SOCIETIES.*

ROYAL ARCHÆOLOGICAL INSTITUTE. — A general meeting of this Institute was held on the 1st inst., Sir Talbot B. Baker, Bart., V.P., in the chair. Mr. F. G. Hilton Price exhibited forty-seven pewter and base metal spoons found in London during the last few years. They illustrated a dozen varieties ranging from the fourteenth century down to the eighteenth century. They consisted of various types known as "Diamond Points" (fourteenth century); "Acorn" (fifteenth century) ; "Maidenheads," "Crowns," "Strawberry," "Baluster Knops," "Seal Tops" (sixteenth century) ; "Slipped in the Stalk" (sixteenth and seventeenth centuries) ; "Puritan," "Split Ends," and "Wavy Ends" (seventeenth century). Among the earlier spoons one was of special interest and of great rarity. The stem of this one was hexagonal, knopped with a female head wearing a horned head dress of the type in fashion during the period of Henry V. in the early part of the sixteenth century. The exhibition was interesting from the fact that the relative dates of the spoons can be fixed by comparing them with hall-marked silver spoons of similar design. Many of the spoons also bore marks in imitation of hall marks, as well as makers' stamps of interesting character.—Mr. W. H. Knowles communicated a paper on "An Effigy of a Knight in Warkworth Church, Northumberland." This figure is one of particular interest, for to the mail hood is attached a moveable visor, which must have been pivoted to a plate cap worn inside the hood ; an arrangement unique, as far as is known, on effigies. The details of the armour point to a date between 1310-30.—Mr. H. S. Cowper read a paper on the "Influence of the Roman occupation on the distribution of population in Cumberland and Westmoreland." He pointed out that the method he had adopted in this inquiry was somewhat new, and the conclusions pointed to would no doubt require further discussion. It would be natural to imagine that on the Roman evacuation the Britons would form permanent settlements in the deserted camps. When, however, he tabulated those in his district he found that while ten camps were occupied by mediæval towns or villages, seventeen were isolated, and about eight were in the vicinity of villages, but not built on. It appeared that the Anglian settlers who came in the seventh century carefully avoided the Roman camps, for there are only three towns on Roman sites which bear Anglian names, while there are about fifteen camps where, though the names are Anglian, there are no towns on the sites. In like manner though the Danish termination "by" is common in the vicinity of Roman camps, there are only four camps which have themselves names which seem Danish. Mr. Cowper suggested that this pointed to these Teutonic settlers finding the camps deserted and ruinous, and, in consequence, avoiding them as "uncanny" places, for if they had been inhabited by Britons there would have been a conflict, after which the newcomers, if victorious, would have occupied the sites. The evidence of the early Christian church seemed to give similar indications: there appeared no good proof of Christian foundations in this district before the sixth century. The Kentigem churches, which preceded by 100 years the Anglian settlements, were in the same way placed clear of the Roman camps, and the Patrician dedications told the same tale. One could not help feeling that if when the earliest missionaries arrived the Roman camps were the centres of British population, there the missionaries would have planted the earliest churches. Yet it was not so. Coming to historical evidences, Mr. Cowper pointed out how little there was recorded of this district. There is, however, the sixth century chronicler, Gildas, and though he has been repeatedly questioned, Skene has shown how much there is dependable in this historian's work. Gildas has recorded in ghastly detail the weakness and cowardice of the Britons about the Roman wall, and what terrible and repeated massacres were inflicted on them by the Picts and Scots at and just after the Roman withdrawal; and his evidence, coupled with that of the sites themselves and the nomenclature, almost seems to justify us in the belief that the Britons on the frontier were almost annihilated, and that when the Teutonic settlers appeared on the scene the district was depopulated, and the camps and forts left desolate and in ruins.

**British Archæological Association.**—The seventh meeting of the current session of this Association was held at the rooms in Sackville-street on the 1st inst., Mr. C. H. Compton, V.P., in the chair. Dr. Perry, President of the Spalding Gentlemen's Society, exhibited a so-called hand brick about 4 in. in length, tapering from 2 in. wide at one end to 1½ in. at the other end, which was considered to have been used in the formation of a pavement, as similar hand bricks were discovered in the foundation of an old church at Waynfleet, *in situ*, as a pavement; in this case they were rudely-shaped cylinders of baked clay. Mrs. Day exhibited some fine drawings and engravings of St. Magnus' Cathedral, Orkney, and Mrs. Collier some engravings of brasses from Brandish Church, Suffolk. The Rev. W. S. Lach-Szyrma, M.A., read a paper upon an interesting but little-known subject, viz., "Ancient British Costume," or, rather, the costume of the early inhabitants of this island prior to the Aryan immigration here of the Celts and Cymri. He said we find little to lead us to any satisfactory conclusion as to the probable ancient costume of the inhabitants of Early Britain from the study of the habits and customs of the savage races of Australia and Africa, because the climate of those countries is more or less warm all the year round; but the climate in Britain in winter, since man settled in the island, must always have been severe; and we could hardly imagine an English winter in which the people had no need for fairly warm clothing. In Cornwall the people, assuming they were the Cassiterides (the people seen by the Phœnician traders), wore long black tunics like the tragic Furies of the Greek drama; and it was curious that the labouring class both of Cornwall and Wales to this day had still a liking for black clothing for their men in holiday attire. The women's plaids in South Wales were black and red, which, in the absence of evidence to the contrary, perhaps, might be taken as a tradition from early British times. The weaving of two textures was remarked by Roman writers as a characteristic of the Celts. The most striking survival of this was in the varied tartans of the Scottish clans. But there must have been a time anterior to weaving when mankind must have needed clothing in Britain, and the most handy material for men and women in cold climates must in early days have been the skins of animals. Perhaps the most striking survival of this kind of dress was that of the Russian peasant. The author conceived that the traditional costume of early Britain might be best traced in Wales and the Scotch Highlands. In the discussion following the paper, Dr. Birch remarked that primæval man would seem to have worn no clothing, and that clothing was afterwards used as a mark of distinction. In early Welsh seals in the British museum the men were represented without clothing, or with only a kilt and a cap. In the Roman period also no clothing was represented.

## *ENGINEERING SOCIETIES.*

**Society of Engineers.**—At a meeting of this Society, held at the Royal United Service Institution, Whitehall, on the 6th inst., Mr. J. C. Fell, President, in the chair, a paper was read on "The Shan Hill Country and the Mandalay Railway," by Mr. E. Wynter Wagstaff, A.M.Inst.C.E., Executive Engineer, Burma Railway. In this paper the author gave some particulars of surveys carried out by him in connexion with the location of a line of railway through the Northern Shan States from Mandalay to the Salween, now known as the Mandalay-Kunlon Railway. The paper contained a special description of the work on that portion of the line known as the Gokteik Gorge, a deep ravine or cañon which cuts the line about eighty miles from Mandalay. The chief engineering difficulties were the Ghât between the fifteenth and thirty-fifth mile, with a rise of about 3,200 ft., and the Gokteik Gorge, with a fall and rise of about 1,400 ft. in eight miles. The author described the method of conducting the survey which was carried out in this remarkable ravine under great difficulties, and sometimes dangers. The system adopted was a series of compass traverses along the hill-side above and below the belt on which it was assumed the line would probably fall. A way was cut through the jungle by a working party, the compass officer following with a couple of levellers. These were followed by another leveller, and behind him came yet another taking cross sections. Each day's work was plotted on return to camp. A rack line was marked out on the basis of an incline of 8 per cent., and submitted to the Government. Subsequently a new survey was made with the view of a 4 per cent. adhesion line. Ultimately another survey of the gorge was made, and a 2½ per cent. grade was obtained, thus making this portion uniform with the rest of the line, which has a ruling gradient of 1 in 50. The works included a viaduct 2,000 ft. in length, with a maximum pier height of about 320 ft.

## APPLICATIONS UNDER THE LONDON BUILDING ACT, 1894.

At the meeting of the London County Council on Tuesday, the Building Act Committee brought up the following list of applications under the 1894 London Building Act. Those applications to which consent has been given are granted on certain conditions.*

### *Lines of Frontage.*

*Strand.*—Two iron and glass shelters at the Hotel de l'Europe, at the entrances in Leicester-square and Leicester-place respectively (Mr. W. Emden for Mr. R. Baker).—Consent.

*Dulwich.*—Houses with shops on the south-western side of Grove-vale, Dulwich, between Bourton-street and the land belonging to the School Board for London (Mr. J. W. Brooker for Mr. W. H. Thompson).—Consent.

*Finsbury, Central.*—Rebuilding of Nos. 2 to 5 and 12 to 29 (inclusive), White Lion-street, Pentonville (Mr. T. H. Watson for Captain F. T. Penton).—Consent.

*Hammersmith.*—Houses on the eastern and western sides of Blomfield-road, Shepherd's Bush (Mr. G. B. Hall for the Albion Estates Company Limited).—Consent.

*Hampstead.*—A one-story addition in front of No. 318, High-road, Kilburn, to flank upon Netherwood-street (Messrs. Physick & Lowe for the London and South Western Bank).—Consent.

*Hampstead.*—That the application of Mr. A. P. Johnson for the Vestry of Hampstead, for an extension of the periods within which the erection of a one-story library building on the eastern side of Westbere-road, Hampstead, at the corner of Sarre-road, was required to be commenced and completed, be granted, upon condition that the building referred to be commenced within one year, and completed within two years from May 3, 1898.—Consent.

*Kensington, South.*†—An inclosed porch in front of No. 13, Cottesmore-gardens, Kensington (Messrs. C. Saunders & Son, Limited, for Mr. W. S. Richards)—Consent.

*Lewisham.*—Houses, with shops, on the east side of High-street, Lewisham, between Mount Pleasant-road and Roxley-road (Mr. J. Norton for Mr. E. MacF. Patterson and Mr. C. C. Story).—Consent.

*Paddington, South.*—An addition to the lodge at the entrance to the Lock Hospital, Harrow-road, Paddington (Mr. A. N. Cruikshank for the London Lock Hospital and Rescue Home).—Consent.

*Westminster.*—One-story shops on part of the forecourts of Nos. 90, 92, 94, and 124, Victoria-street, Westminster (Mr. E. Browne-Martin).—Consent.

*Clapham.*—One-story shops on part of the forecourts of Nos. 181 and 183, Lavender Hill, Battersea (Mr. C. H. Brodie for Mr. H. B. Atkinson).—Consent.

*Battersea.*—Two houses with shops on the east side of Queen's-road, Battersea, adjoining the London, Brighton, and South Coast Railway (Mr. H. Bignold for Mr. W. Peacock).—Refused.

*Dulwich.* †—A projecting clock in front of No. 199, Maple-road, Penge (Mr. W. Forrest).—Refused.

*Hackney, South.*—A porter's lodge at the entrance to the workhouse on the west side of Sidney-road, Homerton (Mr. F. R. Coles for the Guardians of the Poor of the Hackney Union).—Refused.

*Hampstead.*—A block of residential flats on the northern side of Finchley-road, Hampstead, at the corner of West Hampstead-avenue (Mr. J. Reynolds). Refused.

*Hampstead.*—Frontages of two houses numbered 79 and 81, on the south side of Greencroft-gardens, Hampstead (Mr. W. H. Cove).—Refused.

*Hampstead.*—Houses on the eastern side of Fordwych-road, Hampstead (Mr. J. Phœnix, for Messrs. Bridge & Neal).—Refused.

*Islington, North.*†—A building on the west side of Stroud Green-road, Islington, between Nos. 101 and 109 (Messrs. Edmeston & Gabriel for the Aylesbury Dairy Company).—Refused.

*Kennington.*†—Buildings with oriel windows on the south side of Kennington Oval, Kennington, on the site of No. 55 (Mr. C. Barker for the Duchy of Cornwall).—Refused.

*Peckham.*—A one-story shop on the north side of Hanover Park, Rye-lane, Peckham (Messrs. H. Jarvis & Son for Messrs. Jones & Higgins, Limited).—Refused.

*Strand.*—An exit staircase from the dressing-rooms at the Avenue Theatre, on the eastern side of Craven-street, Strand (Mr. W. G. R. Sprague for Mr. C. Hawtrey).—Refused.

*Wandsworth.*†—A one-story shop upon part of the forecourt of No. 84, Upper Richmond-road, Putney (Mr. A. Chasemore for Mr. H. Durbin).—Refused.

*Westminster.*—A three-story oriel window at No. 26, New Tothill-street, Westminster, at the corner of Dacre-street (Mr. P. Hoffmann for Mr. C. M. Owen).—Refused.

*Woolwich.*—A building on the west side of Yateley-street, Woolwich, to abut also upon Bowater-road and Siemens-road (Messrs. Siemens Brothers & Co., Limited).—Refused.

### *Width of Way.*

*Strand.*—An addition at the rear of No. 5, Strand, at less than the prescribed distance from the centre of Northumberland-street (Mr. W. Woodward).—Consent.

*Finsbury, Central.*—That the Council do make no order with respect to the application of Messrs. H. Wakeford & Sons for Mr. H. Leach, for consent to the erection of a granite pilaster to the "George the Fourth" public-house, No. 39, Goswell-road, Clerkenwell, at less than the prescribed distance from the centre of Great Sutton-street.)—Agreed.

*Hackney, Central.*—That the Council do make no order with respect to the application of Mr. A. Brown, for consent to the erection of two-story workshops at the rear of Nos. 1 to 5, Wilman-grove, London Fields, Hackney, to abut upon Appleby-road.—Agreed.

### *Space at Rear.*

*Hampstead.*—That the Council do, in the exercise of its powers under Section 41 (1) (vi.) of the London Building Act, 1894, allow a modification of the provisions of that section with regard to open spaces about buildings, so far as relates to the proposed erection of a block of residential flats on the west side of Cannon Hill-road, West End-lane, Hampstead, with an irregular space at the rear (Messrs. Boehmer & Gibbs for Mr. E. J. Cave.)—Agreed.

### *Deviation from Certified Plans.*

*Strand.*—Certain deviations from the plans certified by the District Surveyor, under Section 43 of the London Building Act, 1894, so far as relates to the proposed erection on the site of Nos. 1 and 2, Northumberland-street, Strand, of an annexe to the Grand Hotel, Northumberland-avenue (Mr. W. Woodward for the Gordon Hotels Company.)—Consent.

*City of London.*—Certain deviations from the plans certified by the District Surveyor, under Section 43 of the London Building Act, 1894, so far as relates to the proposed rebuilding of the "King's Arms" public-house, Water-lane, City (Mr. H. M. Wakley for Messrs. Reid & Co., Limited).—Consent.

*Hampstead.*—Certain deviations from the plans certified by the District Surveyor, under Section 43 of the London Building Act, 1894, so far as relates to the proposed rebuilding of the "Horse and Groom" public-house, No. 68, Heath-street, Hampstead (Mr. K. D. Young for Messrs. Young & Co.'s Brewery, Limited).—Consent.

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* Names of applicants are given in brackets. Buildings are new erections unless otherwise stated.

*Strand.*—Certain deviations from the plans certified by the District Surveyor, under Section 43 of the London Building Act, 1894, so far as relates to the proposed rebuilding of the "Green Man and French Horn" public-house on the site of No. 96, Dean-street, and No. 1, Titchfield-street, Soho (Mr. W. T. Farthing for Mr. W. Sumpton).—Refused.

*Chelsea.*—Certain deviations from the plan certified by the District Surveyor under Section 43 of the London Building Act, 1894, so far as relates to the proposed rebuilding of the "King's Arms" public-house, No. 51, Sloane-square, Chelsea, at the corner of a roadway leading into Eaton-square (Mr. J. K. Cole and Mr. K. Wood for Mr. J. King).—Refused.

### *Width of Way and Construction of Building.*

*Mile End.*—A covered playground at the Portman-place School, Globe-road, Mile End Old Town, at less than the prescribed distance from the centre of Allas-road (Mr. T. J. Bailey for School Board for London).—Consent.

*Hoxton.*—Two covered playgrounds at the Wellington-street School, Hackney (Mr. T. J. Bailey for the School Board for London).—Consent.

*Whitechapel.*—A temporary wood and iron corridor to connect two of the temporary school buildings on the west side of Vallance-road, Whitechapel (Mr. T. J. Bailey for the School Board for London).—Consent.

### *Formation of Streets.*

*Lewisham.*—That an order be issued to Mr. H. Porter, sanctioning the formation or laying-out of a new street for carriage traffic, to lead from Adamsrill-road to Perry-rise, Lewisham (for Mr. A. J. Dorrell). That the name Adamsrill-road (in continuation) be approved for the new street.—Agreed.

*Wandsworth.*—That the Council do approve of a variation from the plan, sections, and particulars sanctioned on February 28, 1898, for the formation or laying-out for carriage traffic of new streets to lead out of Hotham Villas-road, the formation of an extension of that road into Erpingham-road, and the widening of portions of Worple-road, so far as relates to the proposed widening of part of Hotham Villas-road (Mr. W. Rivett-Carnac).—Agreed.

*Brixton.*—That an order be issued to Mr. J. Fasnacht, refusing to sanction the formation or laying-out for carriage traffic of new streets upon the Lambeth Wyke estate to lead out of Holland-street and Hackford-road, Brixton (for Capt. T. T. Jennings, R.N.).—Agreed.

*Fulham.*†—That an order be issued to Mr. W. C. Poole, refusing to sanction the formation or laying-out for carriage traffic of a street 45 ft. wide in continuation of Woolneigh-street, Wandsworth Bridge-road, Fulham (for Messrs. Allen & Norris).—Agreed.

### *Working Class Dwellings.*

*Bermondsey.*—That the Council do make an order as follows—Whereas Messrs. N. S. Joseph, Son, & Smithem, of Moorgate Station-buildings, 45, Finsbury-pavement, E.C., on February 8, 1899, under the provisions of Section 42 of the London Building Act, 1894, delivered on behalf of the trustees of the Guinness Trust, at the County Hall, a plan of an intended dwelling-house, to be inhabited by persons of the working class and proposed to be erected, not abutting upon a street, on a site at the rear of houses on the east side of Weston-street, Bermondsey. . . . . Now the Council, in the exercise of its powers under Section 42 of the said Act, but in no way otherwise than under such section, does by this order sanction the said plan. . . . .—Agreed.

### *Means of Escape at Top of High Buildings.*

*Strand.*—That Messrs. White & Co. be informed that the Council, in the exercise of its powers under Section 63 of the London Building Act, 1894, is not prepared to grant a certificate in respect of the means of escape in case of fire to be provided for the persons dwelling or employed on the topmost floor of a building proposed to be erected on the site of Nos. 173 to 179 (inclusive), Strand, and No. 2, Norfolk-street.—Agreed.

### *Buildings for the Supply of Electricity.*

*Greenwich.*—That the Council do approve of the plans submitted with the further application of Mr. F. Forbes Glennie, on behalf of the Blackheath and Greenwich District Electric Light Company, Limited, for the construction of a generating station and works on the north-west side of Blackwall-lane, East Greenwich.—Agreed.

### *Height of Buildings.*

*Wandsworth.*—A theatre building on the east side of Balham-hill, Balham, with a portion of the flank of such building to exceed in height the width of the new street (to be named Yukon-road), on the side thereof (Mr. W. G. R. Sprague for the Royal Duchess Theatre Company, Limited).—Consent.

*Dulwich.*—The south wall of the Camberwell Palace of Varieties at the rear of the "Golden Lion" public-house, No. 23, Denmark-hill, Camberwell, to abut on a proposed street to be named Orpheus-street (Mr. E. A. E. Woodrow for Mr. Venner).—Refused.

### *Conversion of Building.*

*Hoxton.*—That the Council do, in the exercise of its powers under Section 211 of the London Building Act, 1894, allow the conversion of a proposed warehouse on plots 6 and 7, Boundary-street, High-street, Shoreditch, between Old Nichol-street and Church-street, into a dwelling-house (Messrs. Ford, Son, & Burrows for Messrs. J. Rotherham & Co., Limited).—Agreed.

### *Cubical Extent.*

*Whitechapel.*—That, subject to the provisions of Section 76 of the London Building Act, 1894, consent be given to the erection at the Albion Brewery, Brady-street, Whitechapel-road, Whitechapel, of additions on the roof of the existing ale-store to exceed in extent, together with such ale-store, 250,000 but not 450,000 cubic feet, and to be used only for the purposes of the trade of a brewer (Mr. R. Spence for Messrs. Mann, Crossman, & Paulin).—Agreed.

*The recommendations marked † are contrary to the views of the Local Authorities.*

## THE BUILDING TRADE DISPUTE.

A MEETING of the members of the National Association of Master Builders was held at the Midland Hotel, Derby, on the 2nd inst., Mr. Alderman Holdsworth, of Bradford, presiding. There were present representatives from Plymouth, Leeds, Derby, London, Bradford, Birmingham, Sheffield, Cardiff, Nottingham, Liverpool, Leicester, &c. The proceedings were private, but the speakers contended that unless there existed a determination on the part of the Association of Operative Plasterers to persist in the objectionable practices complained of, there could be no reason why the assurance required of them should not be immediately given. Therefore, failing the undertaking that these practices should be discontinued, the Master Builders' Association were fully justified at once in declaring a lock-out against the Operative Plasterers' Association, and that the lock-out should continue until such assurance was given. The meeting lasted over two hours, and eventually a resolution was carried to the effect that no existing rules sanctioned the practices objected to, and, whilst the employers were willing to meet the men in conference, provided they first submitted their proposals in writing, yet, in view of the fact that all their original requirements were still persistently refused, the lock-out declared for March 6 could not be withdrawn.

On the 3rd inst. the result of the ballot taken of the members of the National Association of Operative Plasterers was announced. In regard to the first question as to whether the members approved of the action already taken by the Executive Committee, 10,211 voted in the affimative and 36 against. On the second point balloted on, viz., "Are you prepared to submit to the terms of the employers?" 36 were in favour of the masters' proposals, and 10,176 against. As to the limitation of apprentices almost all the branches state there is no restriction. The last question asked was whether any of the branches had been guilty of any of the "objectionable practices" complained of by the masters, and 158 branches say "Decidedly no," while four branches admit that under extreme pressure they have committed the offences referred to. Mr. M. Deller, the general secretary, further added that they never objected to work with non-unionists, but that their members had been ordered to leave work where "blacklegs" had been given employment.

On the same day Mr. T. Costigan, Secretary of the Central Association of Master Builders, addressed a letter to all the members of the Master Builders' Association, requesting that all members of the National Association of Operative Plasterers, after having received rule, notice of one hour, be paid off, and that on Monday morning only plasterers giving a definite verbal assurance that they were not members of the union should be employed. On Saturday members of the Plasterers' Union employed by building firms connected with the Association in London and the provinces were paid off.

The newly-formed Employers' Parliamentary Committee, which resulted almost directly from the engineering trade lock-out, but which has no connexion with the Master Builders' Association, has promised to afford the master builders whatever help it can, financially or otherwise.

The Master Builders' Association of Leicester have locked out the whole of the unionist plasterers in their employment. Altogether about 100 of the operatives are directly affected by this decision.

Notices by the master plasterers of Liverpool and district came into effect on Monday, and it was stated that, as a consequence, between 300 and 400 plasterers have been thrown idle.

The building trade in Wolverhampton is brisker than it has been for several years past, and a number of important contracts are in hand. The plasterers' lock-out is, therefore, not being joined in by all the master builders. Some of the associated building firms, however, locked out about fifty men, and more may follow.

At Birmingham 156 plasterers were locked out on Monday, which is less than a third, it is stated, of the total number employed.

So far as Leeds is concerned, the attempt, it is stated, of the London Masters' Executive to secure a lock-out of the men is but partially successful. A number of local masters are not members of the Federation, and have resisted pressure to join the movement. As a result only 50 per cent. of the Leeds plasterers have been paid off—the others remain at work.

About 120 unionist plasterers are affected in Cardiff by the lock-out, but this is comparatively a small proportion of the plasterers engaged in the town.

Nearly the whole of the 400 plasterers, with about ten exceptions, locked out by the masters at Plymouth have, it is stated, found employment with speculative builders not members of the Masters' Federation. The men are being paid by their new employers in the majority of cases at the rate of 8½d. per hour.

The members of the local branch in Nottingham of the National Association of Master Builders were quite unanimous in supporting the action of the Association, and the necessary notices were given to the operatives. It was officially stated that the number of men affected was between eighty and ninety, but the returns were not complete, and it is thought that this number will be considerably augmented.

## PRECAUTIONS IN FOUL SEWERS.

THE Corporation of Salford have issued the following regulations, drawn up by their Borough Engineer, Mr. Corbett, for providing for the safety of men employed in sewers in which foul gas may have collected. They may be useful for adoption in other districts :—

"Whenever men have to go down into an old and foul sewer or cesspool the following precautions must be taken :—

1. Open the lids of two adjacent manholes so as to provide a down-cast and an up-cast shaft; or if only one manhole is available and there is no other outlet by an open sewer or vent-pipe, place a wooden tube about a foot square down the one manhole for use as a down-cast shaft.

2. Use one manhole, or the wooden pipe above described, as a down-cast shaft, by means of a heavy shower of water from a large watering can with a rose jet, or else from a rose jet on a hose pipe from the Town's water mains.

3. Where there are two manholes near together, use one for the downcast shaft, by means of the shower of water above described; and use the other for the hoisting and working shaft.

4. Test the air in any shaft before men go down it, by lowering a lighted candle down it. If the light burns dull, even without going out, the shaft must not be entered. Ventilate the shaft as before described and test it again, and do not enter it until a light will burn brightly in it.

5. Beware of any mixture of combustible or explosive gas in the sewers and their manholes, and if any signs of such gases are found, obtain skilled men and safety lamps from some colliery, and let those men direct the work, giving them the help of ventilation, &c., as before described.

6. When a man has to descend a risky manhole or shaft, he must have a strong rope properly tied about his shoulders, so that he could be lifted by it, and the ropes must be kept in hand ready to lift him up if he becomes overpowered by the gas.

When a man has to crawl along a risky sewer he must have a short rope securely tied to his ankles and a rope from it to hand so as to draw him back if he becomes overpowered by the gas.

7. In any case of special difficulty or danger, report the case immediately to the Borough Engineer, so that he may take the responsibility of the work."

## BOOKS RECEIVED.

MODERN HOUSE CONSTRUCTION. By G. Lister Sutcliffe. Divisional-vol. IV. (Blackie & Son).

◆

ABERDEEN CORPORATION ELECTRIC STATION.—On the advice of Mr. J. A. Bell, electrical engineer, the boiler and engine equipments are to be increased at a cost of 7,500*l*.

## Correspondence.

*To the Editor of* THE BUILDER.

### OUR TRADE DISPUTES.

SIR,—Although the plasterers are simply going straight against the agreed rules, and the situation does not admit of discussion, it may not be altogether out of season to urge a point which, although it has, no doubt, occurred to many, I have never yet seen mentioned in print.

To work to the many sets of regulations that have been formulated during the past ten years or so has been a source of constant trouble to masters and men; but what must it have been to the general foreman! And, far beyond these vexatious regulations—which have been so many successive victories for the Unions—the resulting arrogance and growing incompetence amongst the men must be, and, I know, is, well nigh intolerable to the man who still aims at "bringing his job out right" by fair means. On the one side, he is still expected by his employer to exercise sufficient good selection and management of the men to make the job a financial and structural success, against what has become tremendous odds; by the other side he is laughed at, and cannot even call a man to order in the mildest manner without an almost certain demand to be "brassed up." He sees many of the regulations are bad, but has no voice in the matter; and yet his living and reputation depend upon his getting along with both sides.

Has he ever been asked his opinion upon the various agreements entered into between the parties, or consulted in any way upon the question? I think not. At any rate not officially and collectively. And yet, whose position so qualifies him to judge of the whole question? An architect was once appointed referee—the result is not forgotten. In the last case the opponents "settled" between themselves rules that are hated on the one side and despised on the other.

Now, if masters and men both invited the general foremen to express their views upon the whole question, with a view to the rules being adjusted by them, I believe the foremen would rise to the occasion and show that judgment was ready to be delivered from the most competent source, and that interest, and not fighting-power, had been enlisted equally by both sides.

When it was felt that this had been accomplished, surely the ensuing verdict would be better respected than those obtained heretofore.

A BRITISH BUILDER.

### THE NEW BRIGHTON TOWER CASE.

SIR,—My attention has been called to your "Note" on the New Brighton Tower case in your issue of February 18 on page 161, wherein you quote from the *Manchester Guardian*, which I am very sorry to see has not stated the facts as clearly as they should have been stated. I send you herewith a copy of my agreement with the New Brighton Tower Company, from which you will observe that I had to act as architect for the company, and receive from them the usual commission of 5 per cent. You will also note that this commission does not include remuneration for the extra labour and skill in designing elaborate fittings, furnishings, and decorations. Clause 5 you will find provides that should material alterations or deviations from the designs be made I shall be entitled to charge a special fee. Clause 6 also provides that as I had supplied builders with quantities on which to form their tenders I should be entitled to be paid by such builders the usual surveyor's charges and commissions for quantities. These are the only charges that I have made to the builders, and they are the only commissions of any shape, manner, or form that I have ever been paid by them.

My firm has been in existence for over thirty years, and during that time I can honestly state that we have never received a commission from any contractor other than the 2½ per cent. for quantities. It was in order to remove any question that I insisted upon having clause 6 inserted in my agreement.

The company are now contending that I had no right to charge quantities on excavations and on the concrete work for the cycle track, and it is this which they say that, as a matter of law, I am not entitled to.

I am sorry that I had not noticed the way that the report of the case was put in the *Manchester Guardian* or I should certainly have asked them to correct it. I send you herewith a verbatim account of the case, and trust that you will kindly put the matter right in the next issue, as I perfectly agree with you that for an architect to receive commissions from contractors is a most unprofessional and unjustifiable proceeding, but so long as the practice holds good, as it does in the North of England, for the quantities charge to be added to the builders' estimates, I fail to see that there is anything unprofessional in receiving these charges from the contractors, provided that you do so with the full knowledge and consent of your clients.

Of course the *Manchester Guardian* puts it as though I had to be paid some usual architect's commission by the contractors for any additional work or deviations from the original plan. This, of course, is altogether wrong, and is, as you will see, an absolute misstatement of the facts of the case, and I am sure there is no one will regret it more than the *Manchester Guardian* people.

FRANCIS WM. MAXWELL.

41, *Corporation-street, Manchester*, March 2, 1899.

⁂ The above letter arrived too late for publication last week.

### BREWERY FLOORS.

SIR,—In answer to the inquiry of "Doubtful" in your issue of the 4th, the most suitable material for the floors of racking-rooms, and one which has been thoroughly tested and employed by a well-known firm of brewers and distillers at Dublin, is laminated opaline (not to be confounded with opalite), employed in 1 in. thickness and in large slabs, so as to avoid many joints. This material is acid proof and of the greatest cleanliness. If "Doubtful" will apply to Messrs. Adams & Co., Sanitary Engineers, Leeds, that firm will without doubt be happy to afford all particulars of this material and its use for the above purpose.

ARCHITECT.

### CHARGES FOR LAND SURVEYING.

SIR,—Will you or one of your readers kindly inform me what is the usual scale of charges for small surveys and also for plotting the same?

ENQUIRER.

## The Student's Column.

### ARCHITECTURAL HYGIENE:

X.—SANITARY FITTINGS *(Continued)*.

TROUGH CLOSETS *or Latrines* are, on account of ease and economy in working, often used in factories, schools, and barracks. They merely consist of a glazed stoneware channel, raised at one end so as to leave a water area of sufficient size and depth to prevent the soil becoming objectionable. The illustration (fig. 117) shows one of Messrs. Doulton's manufacture. It is made in salt glazed stoneware, and the partition walls, if used, would come over the joints of the trap. The closet is flushed out by means of an automatic flushing tank, which should hold enough water to thoroughly displace the water in the trough and flush out the contents. An S or P trap is placed at the end of the range and should be ventilated at its outgo.

It will be seen that there are no risers to the seats, so that the trough can be thoroughly cleaned internally and externally.

*Automatic Flushing Closets* are now much used in public buildings, &c. By means of weight the seat is raised on the user rising; this has the effect of starting the siphon in the water-waste preventer, and also renders the closet ready to be used as a urinal. The automatic flushing may also be effected by means of the shutting of the door, &c.

3. *Flushing Cisterns and Water Waste Preventers.*—These are now used to all ordinary wash-down closets and urinals which are fitted with S or P traps. They are of several varieties, and some illustrations are given. They usually, by the regulations of the water companies, contain only two gallons, but wherever possible three gallons should be provided. The best are those which work on the siphonic principle, so that the chain attached to the plug only requires pulling, and even if let go immediately the contents of the cistern are at once discharged. It is a great advantage over the ordinary valve, which required the chain to be held until the contents of the cistern were emptied (see fig. 114).

Fig. 115 shows a flushing cistern of the ordinary plug siphon type. By raising the plug by the chain, the water rushes through the opening, and starts the siphon by raising the water over the top of the siphon bend; the siphonage, once being started, continues until all the water is drawn through. The cistern is then refilled from the supply cistern, until it reaches just below the top of the bend, when it is stopped by the ball valve. It is then ready for use again. It is not always a waste-preventer, as, if the valve leaks, the water may waste down the flush pipe into the pan.

Another form is that shown in fig. 116, which is an ordinary dip. In this case the chain, being pulled, lifts the disc in the enlarged mouth, which forces the water over the bend, and creates a vacuum which starts the siphonage, and empties the cistern, which again refills to the proper height. This is a waste-preventer, because the water would come out at the overflow before discharging down the siphon.

4. *Soil Pipes and their Ventilation.*—Lead soil-pipes should be made of strong hydraulic-drawn lead; they should be at least of 8-lbs. thickness (*i.e.* weighing 8 lbs. to the square foot). Thus, a 4-in. pipe should weigh rather more than 8 lbs. to each foot of its length. Soil-pipes should be as straight as possible from the bottom to the top; they should be placed on an external wall, and not in chases in the wall, because they are difficult to repair in that position.

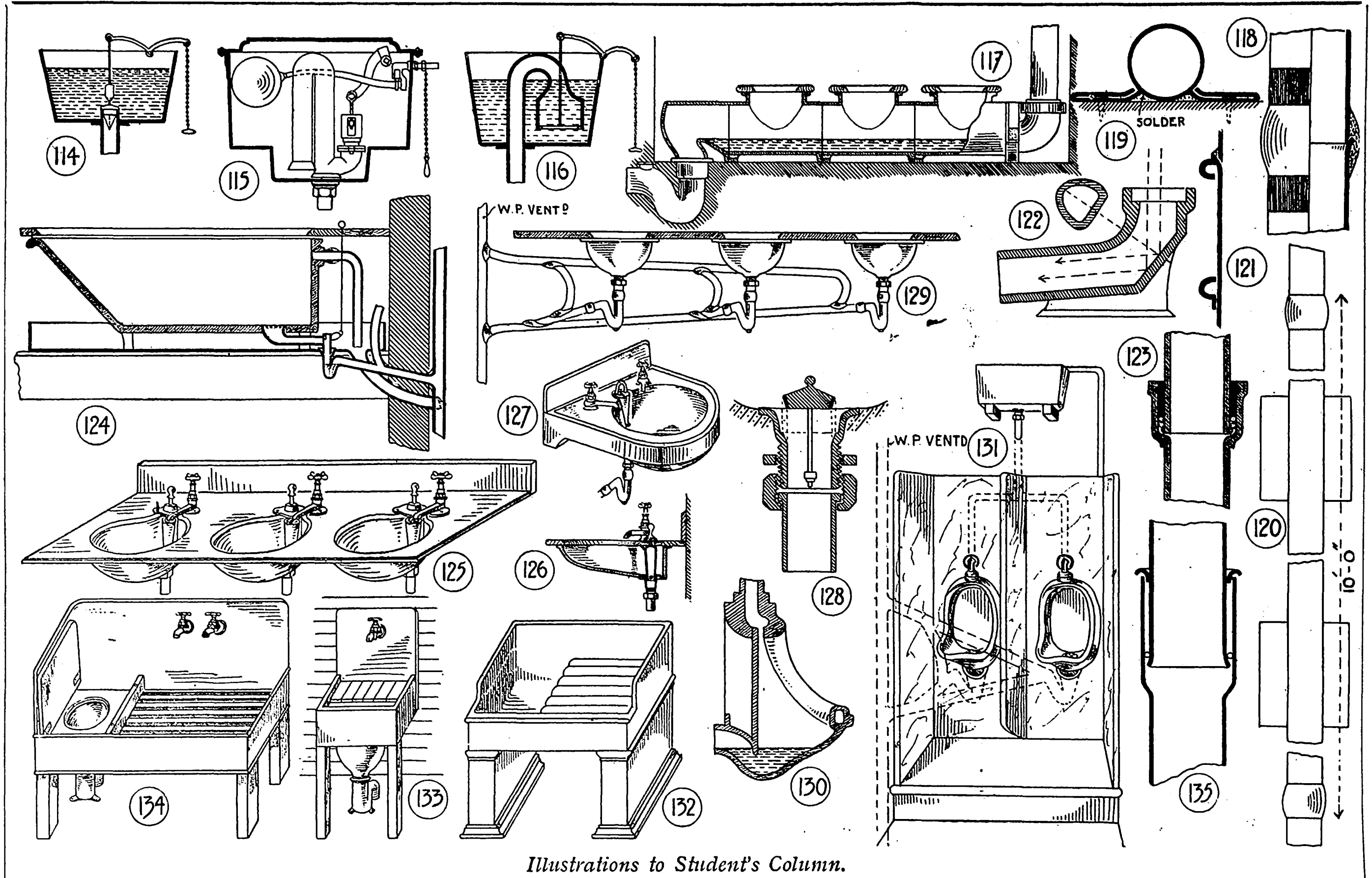
Although 8-lbs. lead is required for a soil-pipe, the portion above the topmost water-closet or sets of water-closets, and which is used merely for a ventilating pipe, need not be made out of stouter material than 6-lbs. lead. Some authorities advise as little as 3-lbs. lead, but even 4-lbs. lead is nearly too thin to retain its shape. When inside a building the London County Council requires the soil-pipe to be continued upwards of the same substance, and this should always be done in the best work. Joints in lead pipes should be "wiped" joints, which are made by the plumber in the following way (see fig. 118):—A socket is formed on the upper end of the lower of the two pipes to be joined, by means of the "turning pin," the spigot of the upper pipe is rasped off to a feather edge, so as to fit into the lower pipe. The pipe ends, for a distance of about 4 in. to 9 in., are then covered with a mixture of size, lampblack, and powdered chalk, called "soil" or "smudge," which prevents the solder *tinning* (adhering) to the pipe beyond that part that the joint is to occupy. The extreme ends of the pipes are then cleaned of the soil by scraping. Molten solder is then poured around the joint and wiped into shape by means of a cloth, the "soil" preventing the solder adhering beyond the point desired. Soil pipes are sold in such lengths that a soldered joint is generally required about every 10 ft. in height.

The soil pipes are secured to the wall by "tacks" of 7 lbs. or 8 lbs. lead, often placed about 5 ft. apart centre to centre, and usually 10 in. deep. In best class of work three tacks are used to each 10-ft. length of pipe. They are, therefore, put on with about 3 ft. 4 in. centres. These tacks may be made in pairs or singly, and are merely soldered to the back of the soil pipe and secured to the wall by two or three wall hooks to each tack. Illustrations are given in figs. 119 and 120. In better-class work a feature is made of the jointing, and what are known as "astragal" joints with tacks are employed. This joint consists of a combination of a wiped solder joint and tacks, hollow lead mouldings being soldered on to the face of pipe for effect. See fig. 121, which shows a section of this joint.

The soil pipe should be carried well above all windows, or, better still, carried up to the ridge of the roof; but there does not appear to be any reason why it should rest on the tiles or slates of the roof, where it is an eyesore to every passer-by. It may be taken up inside the rafters, being enclosed in a wooden or other casing to prevent it being damaged. The unreasoning extent to which some Local Sanitary Authorities through their surveyors will go in demanding the execution of their own private fads in this direction is remarkable. No harm can come of hiding the ugly soil pipe above the eaves. It is bad enough, but necessary, that our walls should have to carry our soil pipes, but to see them sprawling in all directions over our roofs without any reason is simply to cause an unnecessary eyesore.

The junction of the soil pipe with the water-closet trap has been already dealt with, but its junction with the earthenware drain-pipe has not yet been referred to. It is one of the most important joints in the whole system of drainage. It is effected by means of a brass ferrule joint similar to the connexion of the water-closet. This already has been explained and illustrated. The lead is protected by the brass collar, connected to it by solder, and the space between the brass and the earthenware flange is filled in with neat cement. It will be readily understood that sewage is liable to gather at this point, and this has led to a patent being taken out for the special shaped pipe by the Loco Drainage Company, of which an illustration is given in fig. 122. In this the sewage is deflected down the earthenware drain more easily than in the ordinary bend. This pipe must, of course, have a proper foundation of concrete, as explained under "Drainage."

Above we have merely dealt with lead soil pipes, because they are generally considered the best. A lead soil pipe is, as a rule, smoother, and therefore cleaner than an iron



*Illustrations to Student's Column.*

one. It can be bent to any position, the joints of wiped solder are perfect, and the lead pipe will "give" a little in case of any settlements. Urine, being corrosive, will act on iron more than lead. Lead pipes do not require painting, whereas iron pipes do. If iron soil pipes are used, they should be galvanised to prevent rust, and treated with some process, like the Bower-Barff, or with Dr. Angus Smith's solution.

They should be of special thickness, and the jointing should be of the caulked lead type, made in the following way, as shown in fig. 123. Two or three rings of spun yarn are placed in the socket to prevent the molten lead from getting into the pipe, then the molten lead is run in and well caulked into the joint. The groove in the socket will check any tendency of the lead to come out.

The comparative advantages of iron and lead soil pipes have been frequently discussed. In American cities lead soil-pipes are prohibited as iron is considered a better material for the purpose. It may be so in the States because the climatic conditions necessitate that the soil pipes be placed inside the building; in which position lead is more likely to be damaged. In several instances we have come across cases in which nails have been driven through floor-boards and casings and have thus perforated lead soil pipes. In one case the soil pipe ran through a bedroom, and holes had been made in it, evidently by a carpenter's chisel, while putting up the casing.

In consequence of this liability to damage many consider it advisable that soil pipes when placed internally should be of iron.

5. *Baths and their Wastes.*—Baths are made of various materials, such as enamelled iron, copper, and porcelain. The wooden enclosure, which was considered so necessary a few years back, is now almost discarded, and rightly so. We have already insisted on the advantage of doing away with all "casings," and the subject need not be further pursued. "Out of sight out of mind" is a saying which every householder should remember and act up to. The bath should be washed periodically both outside and inside in order to keep it clean and wholesome.

The floor may be laid with tiles on concrete, or with mosaic, and should be sloped to an outlet pipe and provided with a skirting all round.

A bath-room should, if possible, have a fire-place for ventilation. A section is given of a bath on a first floor, which shows the usual treatment (fig. 124). In this case the bath is of porcelain, and stands on four legs without any casing. It is fitted with 1½ in. lead waste (it never should be less), having 1½ in. anti-D trap (ventilated to prevent siphonage), discharging into a 2-in. main waste which is carried up and ventilated.

The overflow is a 2-in. pipe, and is carried into the lead safe. When the floor is not impervious, there should be placed under the bath a lead safe, bossed out of 4-lb. lead, with 2½ in. left at the edges and the slopes to throw the water towards the outlet, and having a 2-in. overflow direct to the open air with brass flap at the end.

The waste from a bath is often delivered over a rain-water head, and this system is preferred by many; but if this happens to be near a window, the effluvia from the dirty water is often offensive.

In confined situations especially, as, for instance, in the light and air wells of blocks of flats, these rain-water heads give off very objectionable smells. It is perhaps, therefore, better to connect branch wastes from baths and basins to main waste by means of Y junctions rather than discharge them into successive hopper heads.

According to the Metropolis Water Act the supply pipes must come into the bath above the water line, but this is too high for the hot-water service, and causes the room to be filled with steam. It is therefore better that the hot water should be brought in at the bottom of the bath.

Bath fittings are too numerous for us to enter upon, except to mention that valves are preferable to screw-down cocks. In order that the bath may be quickly filled supply pipes of not less than 1 in. diameter should be used for upstair baths, and not less than ¾ in. for downstair baths.

Of course the size depends really on the height of cistern and hot-water tanks, and consequent head of water; but those mentioned are generally ample.

6. *Lavatories and their Wastes.*—Lavatories are of several types, and are usually made in glazed earthenware, but may be roughly divided into

*a. Ordinary basin with plug.*
*b. Tip-up lavatories.*

The latter are much used and preferred by many, as they have the advantage of emptying the basin quicker. The receiver, in which the dirty water is thrown, should be cleaned periodically, as the smell arising from decomposing soapsuds is most unpleasant and unhealthy.

An illustration is given of an improved type of lavatory, figs. 125 and 126, showing the treatment of the waste, which should discharge over an open rainwater head or into a gully trap (if on the ground floor), and which is therefore entirely disconnected from the drain. The anti-D trap should be ventilated in order to prevent siphonage. If several lavatories occur in stories one above the other, the wastes from each should be taken into a main waste pipe which is carried up and ventilated and which discharges into an open gully at the bottom.

In this case, the traps to each lavatory are ventilated into a main ventilating pipe, which is carried up and connected with the main waste 6 ft. above the highest fitting.

The waste pipe from a single lavatory should be at least 1¼ in., or even 1½ in., in diameter. The overflow is always a cause of annoyance in consequence of the difficulty of keeping it clean. The illustration, fig. 127, shows one of Mr. Hellyer's lavatories in which the back part of the basin is recessed to receive a trumpet plug of gun metal, which also forms the overflow, the water falling over the top when it reaches that level. This is readily removed for cleansing purposes.

Care must be taken in bath and lavatory fittings that the plug and washer give a clear way of 1¼ in. for the outlet, as shown in fig. 128.

In a range of lavatory fittings, as in a school or club, each fitting should be trapped by means of an anti-D trap, which should be ventilated, as shown in fig. 129, to prevent siphonage.

7. *Urinals* are not as a rule necessary in a private house. The wash-down closet with hinged seat should be placed in the ground floor water-closet, and this answers the purpose of a urinal.

One great point in sanitation is not to increase the number of sanitary fittings more than is necessary. If a water-closet will answer the purpose of a urinal, as it may do perfectly well, let it be used for such a purpose. Urinals where used should be trapped like other sanitary fittings, fig. 130, and the waste-pipe ventilated exactly like a soil-pipe. Fig. 131 shows Mr. Hellyer's "Wide-fronted" basin *in situ.* with the traps ventilated by an anti-siphonage pipe, which should be carried up above the topmost fitting and then connected to the ventilated waste-pipe.

Urinals sometimes discharge into an open glazed half-pipe. This latter should be trapped at its lower end and the trap ventilated. This is sometimes preferred, as it can be more easily cleaned down.

8. *Sinks and their Waste.*—This part of our subject may be divided into three parts—

(*a*) *Scullery Sinks.*
(*b*) *Housemaids' Sinks.*
(*c*) *Butlers' Sinks.*

(*a*) Scullery sinks are best when made of glazed stoneware, so as to be easily cleaned. The old-fashioned York stone sink is bad; it absorbs the grease, and is impossible to keep clean. A scullery sink is generally about 3 ft. by 2 ft., the height of the top edge being 2 ft. 6 in. from the floor, and it may be supported on half-brick walls rendered with Portland cement. Some makers, however, now make white glazed ware pedestals, 20 in. high, on which the sink can rest, as in fig. 132. The bottom of the sink should have a good fall towards the outlet, which is placed in the corner of the side adjacent to the outer wall, and should be provided with a 3½-in. bell-mouthed "cobweb" grating to arrest the solids. The waste should be at least of 2 in. internal diameter, and should be trapped with an anti-D trap, fitted with inspection screw in case of blockage, and should discharge into an open pipe connected at its lower end with a trapped gulley so as to be disconnected from drain.

One difficulty to be contended with is that the grease, which naturally is shot down the scullery sink, if it is allowed to enter the drains, is liable to clog them, as explained in the chapter on house drainage.

(*b*) *Housemaids' Sinks.*—The housemaid's sink is usually fitted up in connexion with a slop sink for the emptying of dirty water. It is true that the slops from the bedrooms can be thrown down the water-closet in an ordinary house, and bearing in mind the value of not multiplying sanitary fittings more than possible in small houses, this can be done with advantage provided the closet basin is provided with a lift-up seat, or with a "slop top." Fig. 133 shows an ordinary slop sink in slate with an earthenware pan and trap with tap in back slab. Fig. 134 shows a Doulton's combined wash-up and slop sink. It has an earthenware basin and trap and supply valve for hot and cold water. The wash-up sink is provided with a wooden grating to prevent crockery being broken against the hard slate bottom.

(*c*) *Butlers' Sinks* are as a rule lined with lead, the sides being of 7 lbs. lead, and if they are to have much hard work the bottoms being of 10 lbs. lead.

They can be obtained of glazed earthenware, but it is found that in consequence of the unyielding nature of this material, breakages are more frequent than if of wood lined with lead as described. Some are now made of copper lined with tin. A butler's sink is fitted with hot and cold water with bib taps, and should be about 15 in. deep. This depth is required so that bottles or decanters may be held underneath the taps. The waste pipes should be fitted with anti-D traps to which a screw inspection cap is attached.

Where a lead waste pipe has a large amount of hot water continually passing through it, the joints are sometimes constructed on the principle shown in fig. 135. This is known as a "telescope" joint, and allows for expansion and contraction of the pipe. This is obtained by means of a solid rubber ring passing round the inside of the upper pipe, and allowing it to move up and down in the socket of the lower one.

## *OBITUARY.*

MR. GEORGE PEARSON. — Mr. George Pearson died at his residence, Brickendonbury, near Hertford, on the 3rd inst., after an illness of several weeks' duration. Mr. Pearson was formerly head of the firm of contractors, Messrs. S. Pearson & Son, of Westminster. He was born in 1834.

## *GENERAL BUILDING NEWS.*

RESTORATION OF MALMESBURY ABBEY.—On the 28th ult. the first meeting of the committee appointed to consider the proposed restoration of Malmesbury Abbey was held at the Town Hall, Chippenham. The draft statement for the consideration of the committee was presented, and among other matters it contained the following:—"It was resolved, first, to undertake the restoration of the church as now used for a parish church; next, to make the ruined portions of the great abbey church safe from further decay; and, lastly, if it should seem advisable and funds were forthcoming, to rebuild the three westward bays of the nave, which were almost entirely destroyed in the sixteenth century by the fall of the western tower. The present arrangement of the interior dates from 1822. Owing to the excellent character of the stonework, the church has been maintained for a long time in good repair, and little else has been done to the fabric beyond the renewal of the outer roofs. But the time has now come when something must be done to prevent impending mischief of a more serious character. The flying buttresses to the nave-vault have in places suffered much from long exposure to the weather, and several of these are in so dangerous a condition that it may be necessary to rebuild the arches. This will not, however, be done unless it is found impossible to repair them otherwise. As there are in all eleven flying buttresses, the cost of making them sound will be considerable; and if taken in hand one at a time a large sum will have to be expended in the necessary shoring, cradling, and scaffolding. The vaulting throughout the church fortunately seems to be in good condition. After the buttresses, the bases of all the walls will need repair, and the parapets must be made secure in places. All the drainage, too, must be thoroughly attended to and probably renewed; and new lead gutters and down spouts must be provided. The roof timbers appear to be in sound condition throughout, but in the case of the aisles the laths which carry the stone slate covering are now rotten, and on both sides of the church it will be necessary to strip the roofs and rehang the slates. If funds are forthcoming, it will be desirable to substitute lead for the poor blue slates at present covering the nave roof. There are minor repairs, such as the repairs of the stone staircase to the room over the porch, &c. Another matter demanding consideration is the treatment of the ruins of the transepts and central tower, which have been preserved as supports to the east end of the church. All loose or dangerous parts of these must be made secure and the tops of the walls protected from the action of the weather." A draft of the public appeal was considered by the committee and approved. Mr. Harold Brakespeare, the architect appointed to carry out the restoration of that portion of the abbey required for use as a parish church, having reported on the building and the work necessary to put it in proper repair, a resolution was adopted that Mr. Brakespeare be requested to prepare the plans and specifications for the work. After some further business had been disposed of, the meeting was adjourned to a date in April.

REOPENING OF WEST STAFFORD CHURCH, DORSETSHIRE.—The restoration of this church has just been carried out. Little is known about the original building, the date of which is placed towards the close of the thirteenth century. But an extensive restoration was carried out in 1640. The carved oak screen, pulpit, and seats are doubtless of this date. Before that time the church was quite narrow, the marks of the old roof being still discernible on the stones of the tower arch; but the church was then widened by an addition on the north. This accounts for the present awkward position of the tower arch, which, instead of being in the middle of the west end, now appears quite on one side. By the building of an extension 16 ft. to the eastward, sitting accommodation is now provided for 140 persons—an increase of forty seats. More room has also been made in the pews. Mr. C. E. Ponting, the Diocesan Architect, has been engaged in the restoration. Under his direction, the work has been carried out by Mr. Hoskings, builder, of Hungerford. The walls have been repointed, and a dry area has been constructed around them. During the recent violent storms portions of the ivy clinging to the tower have been torn from their grasp, and revealed serious injury to the joints of the stonework. The gaps have been plastered up; but while the ivy is retained, through affection for old sights and memories, the condition of the tower can never be considered satisfactory. The chief piece of work is the extension, which is built in memory of Canon Smith, the late Rector of West Stafford. The church had no chancel, architecturally considered, and it has been determined not to build one, but simply to extend the nave eastward, and to convert the further end of the extension into a ritual chancel. For this purpose the screen, which used to bisect the monument to John Gould, has been moved forward a corresponding distance, together with the pulpit and its sounding-board. This has allowed of more room in the nave for new pews. It was desirable that they should correspond, as far as possible, with the old oak pews, and the swinging doors of the latter, which were removed for the sake of convenience, have served as pew ends for the new pews, the carving of doors and pew ends being of the same pattern. A reredos of oak, in keeping with the old woodwork of the church, has been erected. Within the chancel is the new altar tomb, with the recumbent statue of the late Canon Smith, carved in English alabaster. The figure is life size. This work has been carried out by Messrs. Harry Hems & Sons, of Exeter. A new oak seat has been placed beside the altar, and a reading desk and seat. The old brass candelabrum hanging in the chancel has been repaired, and also the sconces fixed to the chancel screen and pulpit. Three ancient brasses found over vaults in the old chancel have been removed and affixed to the walls of the nave close to the screen. While the workmen were scraping the walls they came upon remains of black lettering over the south door and on the opposite wall, the words being portions of the Ten Commandments and the Creed. The old waggon-headed roof, with its oak ribs, has been extended over the east-end addition, with an increase of ornamentation in the woodwork. A number of improvements have been effected in the basement of the tower. The west door leading into it was hitherto fastened permanently and converted into a cupboard; but it has now been reopened, and will be used as an entrance. An oak screen has been put across the lower part of the tower arch, thus making a little vestry, from which a new flight of steps, also of oak, lead up to the gallery.—*Dorset Chronicle.*

MALVERN COLLEGE NEW CHAPEL.—A new chapel has been erected as an addition to the buildings of Malvern College. The new building provides accommodation for 500 boys, besides masters and visitors. The style is Perpendicular. The chapel is 118 ft. in length internally, by 33 ft. in width, exclusive of a narrow aisle on the south side, originally designed for future extension, but by a subsequent decision of the council carried out in the present building. Over the vestibule is a gallery 14 ft. wide, in which will be placed an organ presented by the Society of Old Malvernians. The materials used in the construction are Milton stone with Bath stone dressings externally, and Bath stone internally, except where the walls will ultimately be covered with panelling or other applied decorative work. The present chairs are to be replaced with oak seats, and there will be no pulpit. The architects were Sir Arthur Blomfield, A.R.A., & Sons, and the contractors Messrs. Collins & Godfrey, of Tewkesbury. The amount of the contract, exclusive of fittings, was 10,470*l.* Much of the decorative work for the interior is now in the hands of the carvers. The total cost of the chapel will be about 14,000*l.*

ST. MICHAEL'S PARISH CHURCH, BELFAST.—On the 4th inst. the foundation stones of this church were laid. The site is in Craven-street, off the Shankhill-road. The dimensions of the church will be 104 ft. by 74 ft. It will accommodate between seven and eight hundred people, while the plans provide for the erection of a gallery, which will seat about one hundred and fifty more. The style is Gothic and the material used will be perforated brick, with Dumfries red-sandstone dressings. The inside columns are to be built of white bath-stone, and all the internal woodwork will be pitchpine. The builder is Mr. James Kidd, and the architect Mr. Samuel P. Close, of Belfast.

PROPOSED RESTORATION OF SURFLEET CHURCH.—A movement is on foot at Surfleet, South Lilcolnshire, for the restoration of the Parish Church. The building has been examined by Mr. C. Hodgson Fowler, F.S.A., of Durham, who estimates that the proposed work will cost about 2,000*l.*

NEW CHURCH, HANDFORTH.—On the 3rd inst. the new parish church of St. Chad, Handforth, was consecrated. The new building takes the place of a church built about fifty years ago and found to be unsuited to the present requirements of the parish. The style of the church is fifteenth century with modern detail. The walls are faced with red brick, with Alderley stone dressings to windows, doorways, and buttresses. The roof is covered with Staffordshire tiles of a dark brown colour. The interior woodwork, including the open timbered roof, is of pitch pine. The accommodation is for 300 and the total cost about 4,000*l.* Mr. Thomas Browne, of Chester, is the builder, and the work throughout has been carried out from the designs of Mr. John Brooke, architect, of Manchester.

SCHOOLS AND WORKSHOPS FOR THE EASTERN COUNTIES ASYLUM FOR IDIOTS, COLCHESTER.—A block of buildings, to be used as schools and workshops, is to be erected at Colchester in connexion with this building. The new schools will have a frontage of 84 ft., and a height of about 25 ft. to the eaves; the depth is 47 ft. The hon. architects are Messrs. F. & W. Chancellor, of Chelmsford. The building is to be of white brick with Portland stone facings. Mr. Fred Bennett (Ipswich) is the contractor, Mr. J. Noller foreman of works.

PROPOSED NEW POORHOUSE, ABERDEEN.—Mr. W. Kelly, architect, Aberdeen, has been requested to advise the City Parish Council as to altering and extending the East Poorhouse, or building a new one on another site, to take the place of both the existing poorhouses.

CO-OPERATIVE PREMISES, NEW HIRST, NORTHUMBERLAND.—On the 4th inst. the new branch premises which have been built at New Hirst for the Ashington Equitable Co-operative Society were opened. The premises are of red brick with stone dressings. On the ground-floor are departments for the various trades, and on the first-floor are the store-rooms. The buildings have been erected from plans by Mr. Osborne Blythe, of Alnmouth.

CONGREGATIONAL HALL AND SCHOOLS, WEST BRIDGFORD, NOTTS.—The Friary Congregational Hall and Schools, which have been erected at the junction of Musters-road and Millicent-road, as the first part of a scheme which includes the erection of a church, were opened on the 2nd inst. The buildings are of red brick with stone facings. The plans of the hall were designed so as to constitute an adjunct to the proposed church. There are four entrances to the hall, with lobbies, two being from Musters-road and the others from Millicent-road. The dimensions of the hall are 56 ft. by 25 ft., ten class-rooms having been provided at the side, with folding partitions. The superintendent's apartment, library, &c., are located near the boys' main entrance. The architects were Messrs. R. C. & E. R. Sutton, of Nottingham, and the building was erected by Mr. W. Maule, of the same town.

New Theatre, Ealing.—This building is being erected on the site of the old Lyric Hall in the Broadway, close to the Great Western and District Railway-stations. Entered direct from the Broadway is the outer vestibule (32 ft. by 21 ft.), the right hand of which branches to the grand corridor, from which, ascending a few steps, is reached the reception lounge, which will run, at the rear of the grand circle, across the entire breadth of the theatre. From either side of the grand circle access is obtained to the stalls, and to the balcony or family circle access is likewise gained from the outer vestibule. A corridor direct from the Broadway will lead to the pit. The theatre is being constructed to seat 1,400 persons, and is being built without columns, and an uninterrupted view of the stage will be given from all parts of the auditorium. Special attention is to be paid to the stage, which has a superficial area of 2,700 ft. The whole building is to be of entirely fireproof construction, and electricity alone will be employed for illumination and stage effects. The artists' dressing-rooms (which are in a self-contained block, and separated from the main building by fireproof doors) will be well appointed and up to date. The County Council's rules relative to exits are being rigidly observed, and the site is well situated for these. The entrances to every portion of the theatre are to be duplicated by a similar number of special exits to be used in case of emergency. The domed ceiling and the fronts of the grand and upper circles will be treated in the early Grecian classic period; panels of Wedgwood representing Thespian subjects, divided by small Corinthian columns, are to be introduced in the grand circle front, whilst Grecian vases alternate with the upper circle panels, the figures of which, in low relief, will represent the Fine Arts. The proscenium frame being square and gilded solid, will resemble a huge picture frame. On the eastern side of the theatre is planned a wide corridor, leading direct from the Broadway to the restaurant. At the end of this corridor is reached the reception hall, surmounted, at a height of 50 ft., by a glass dome, and surrounded by a marble balcony on the first-floor level, from which ascends the marble staircase to the principal rooms on the first and second floors. From the ground floor are entered the Montagu rooms, constituting the principal ball-room suite. The ball-room will have a dancing space of 65 ft. by 35 ft., exclusive of a permanent orchestra platform at the north end, and ante-rooms on the east side. The ball-room floor will be laid on springs and the walls lined with fitted mirrors. The Perceval rooms, at the end of the building, will form a suite for small social gatherings and suchlike functions. The Leopold rooms occupy the entire Broadway frontage on the first floor, the largest room measuring 40 ft. by 35 ft.; adjoining this is a reception-room and ante-rooms; French casement windows connect with an open balcony overlooking the Broadway. The masonic temple occupies the second floor of the Broadway frontage, and includes an organ chamber. In addition to the suites mentioned there will be included in the building a grill-room, café, billiard-room, buffet, and reading-room. The kitchens, larders, glass and silver pantries, services, &c, will be in the central top portion of the building, and connect with service and wine stock rooms on each floor, whilst the basement will contain an extensive range of cellarage. The building is being erected from plans by Mr. G. H. Pargeter and Mr. Walter Emden, (who is the consulting architect for the theatre portion), and Messrs. Beer & Gash, of Wharf-road, City-road, are the contractors for the whole block. The Broadway elevation is being built in biscuit-coloured terra cotta, by Messrs. Doultons, and the back elevation is being treated in brickwork.

New Bethel, Lowestoft.—A new Bethel has been erected at Lowestoft, on Battery Green, near the Fish Markets. The architect was Mr. F. W. Richards, of Lowestoft, and Mr. C. R. Cole, of Lowestoft, was entrusted with the contract. The buildings comprise a chapel, 72 ft. 6 in. long by 36 ft. wide, a school-room 35 ft. by 20 ft., with reading-room 20 ft. by 15 ft., and a room measuring 20 ft. by 12 ft., for small meetings. There are also a kitchen and lavatory. Accommodation is provided for 800 or 900 people. The building is of red brick, and the heating is by hot water apparatus, fixed by Messrs. Waller & Smith, of Lowestoft. The cost of the building and land is about 4,420*l.*

New Railway Hotel near Peterhead.—The new hotel at Cruden Bay, for the Great North of Scotland Railway Company, was opened on the 1st inst. The building, which is constructed of the red granite found in the district, is situated about half a mile from the recently-opened branch railway from Ellon to Boddam (near Peterhead), with which it will be connected by a narrow-gauge electric railway. The south frontage measures 120 ft., the central tower is 84 ft. high, and there are eighty bedrooms. There are tennis-courts on the grounds, and an eighteen-hole golf-course has been laid out on the links or downs adjoining. The total cost is understood to be about 40,000*l.* The plans were by Mr. John J. Smith, architect to the railway company. The lift was supplied by the Otis Elevator Company, London; tiles, sanitary apparatus, &c., by Messrs. Doulton & Co., Lambeth; patent glazing by Messrs. Helliwell, Brighouse; and locks and brass work by Mr. N. F. Ramsay, Newcastle-on-Tyne; while, as previously mentioned in the columns of the *Builder*, the contractors for the other works were all tradesmen in Aberdeen.

Proposed Town Hall, Ilford.—It is proposed to erect a town hall at Ilford, from plans prepared by Mr. B. Woollard. The plan is arranged so that the offices and town hall form one block, but so planned that the hall can be entirely shut off from the offices. The offices are entered from the High-road, and contain, on the ground floor, surveyor's, rates', medical officer's, and sanitary inspector's offices, and spare rooms, with staff lavatory, fireproof muniment room, and plan room, with grand staircase to upper floor, and secondary stair and entrance in Oakfield-road, leading to the back of the council chamber. The first floor contains clerks' offices, committee-rooms, and council chamber, with ante-room and lavatory; and on the floor over, rooms for the caretaker are arranged. The town hall is entered from the High-road, and has also exits in the Oakfield-road and the back roads, which could serve as entrances. On either side of the main entrance is a cloak-room. The hall is about 57 ft. by 74 ft., and has a stage at the fire-station end 33 ft. wide, with two retiring-rooms on the same level, separated by a corridor, and one below on a level with the back road, by which they can be entered. Under the stage there is a large chair store. The hall is about 36 ft. high, and has a large curved ceiling, through which the light is admitted. There is a small gallery over the entrance-hall and cloak-rooms. There are exits at both ends and in the centre. The elevations are to be of stone. The large central pavilion will contain a room in connexion with the clerks' block, and is also intended for a large tank for water to supply the hydrants for first aid in case of fire.

## *SANITARY AND ENGINEERING NEWS.*

Castle Eden and Wingate Mill, &c., Water Supplies.—The contract for supplying these places with water has been let to Mr. Thomas Bell, contractor, of Market Weighton, Yorkshire. The water for Castle Eden is pumped from the sandstone at Wingate Colliery into a reservoir at sufficient altitude to command the district. There will be from three to four miles of cast-iron water mains with the necessary air, stop and scour valves, and the water will be distributed by means of Kennedy's self-closing, anti-freezing pillar wells. The water for Wingate Mill supply, &c., is obtained from the sand-feeder underlying the limestone, and will be pumped into a tank by a forcing set of pumps attached to the main pumping engine but distinct and separate from the other pumps. The analysis certifies the water to be good and wholesome. After reaching the small tank, the water will be again pumped into two iron storage tanks, to be erected at Wingate Mill, of capacity equal to several days' supply. The tanks will be elevated above ground so as to afford ample pressure and the water will be distributed in cast-iron main with the necessary valves, &c., over the villages. The engineers are Messrs. D. Balfour & Son, civil engineers, of London and Newcastle, and the resident engineer is Mr. G. H. Humble.

Bacterial Filter Bed, Tonbridge.—The Tonbridge Urban District Council, at the suggestion of their Engineer and their Medical Officer of Health, have sanctioned the construction of a small experimental bacterial filter bed at the lower part of the sewage farm. In constructing it a portion of the old storm bed was utilised, the three walls being raised to the necessary height, and an entirely new wall built on the west side, the finished size of the filter being 45 ft. long by an average width of 25 ft., and 4 ft. 6 in. in depth. The floor was formed of cement concrete, laid to proper levels, to an outlet governed by a screw-down valve, and discharging into one of the existing brick effluent carriers. The floor of the bed has a centre line of 4-in. agricultural pipes, and eighteen rows of 2-in. pipes on either side, laid herring-bone fashion. These pipes are packed round with large pieces of the coke. The next portion of the filtering medium is 15 in. of 1½in. coke, then 9 in. of ¾-in. coke, and then about 6 in. of fine coke breeze. There are eight ventilating pipes, and the bed is charged from the precipitation tanks with a head of 4 ft. 6 in., the sewage being distributed over the entire surface of the bed by means of iron pipes, which have about 350 perforations. The sewage received on the bed has been—(1) roughly screened (2) passed through a channel, where it has been in contact with alumino-ferric and (3) passed through a sedimentation tank. This partially treated sewage is received on to the bed, and allowed to remain for two hours, then run off, and the bed left empty to aërate for two hours, before a fresh charge is received. In this way about three charges can be dealt with during the day and the filter left empty during the night. After the bed had been made water-tight, and filled in with coke breeze, sewage was begun to be treated on November 17, 1898. The constructive arrangements and regulation have been carried out by the Engineer (Mr. Bradley), and the Resident Engineer (Mr. J. W. Ashby), and the Medical Officer (Mr. Tew) has already made a number of analyses. After the filter has accumulated a sufficient bacterial activity, which should be reached in about three months from the commencement of its use, he proposes making further chemical comparisons between the tank sewage and the filter effluent.

New Dust Destructor for Whitechapel.—At a recent meeting of the Whitechapel District Board, the Electrical Committee recommended that the amended offer of Messrs. Manlove, Alliott, & Co. for the erection of a new destructor for this district, at the cost of 17,740*l.* 16s., be accepted. The report was adopted.

Iron Sand for Sewage Filtration.—Mr. G. W. Rogers, A.M.Inst.C.E., writes that Messrs. Wake & Hollis, of Skerne Iron Works, Darlington, have obtained permission from the Urban District Council to make further experiments with their carbonaceous iron sand under his supervision, excellent results having been already obtained in the filtration of sewage with this material. The carbonaceous iron sand being a by-product from the various separating plants of Messrs. Wake & Hollis, can be obtained at a comparatively low price and in large quantities. The works can be inspected and results shown by appointment at any time to those interested.

Sewerage Works, Newport Pagnell, Bucks.—A Local Government Board inquiry was held recently at the Urban Council Offices at Newport Pagnell by Mr. E. A. Sandford Fawcett, Inspector, for sanction to a loan for 9,000*l.* for works of main sewerage and sewage disposal. The scheme has been designed by Messrs. D. Balfour & Son, civil engineers, London and Newcastle-on-Tyne. The whole of the town is to be properly sewered with fireclay, socketted pipes, and where subsoil is wet, Hassall's water-tight jointed pipes are to be used, especially adjoining the Rivers Ouse and Ouzel. The sewage will discharge into an underground storage tank, from which it will be lifted by centrifugal pumps driven by gas engines in duplicate and forced through a rising main to the disposal works, where it will be specially treated by chemical or bacteriological tanks and land. Special means are to be taken also to prevent the flooding of the town during heavy rains by means of relief culverts.

## *FOREIGN.*

New Hotel, Rangoon.—A large hotel is being erected by Mr. J. W. Darwood on the Strand between Lewis-street and Thirty-eighth-street. The entrance is in the Strand, through an entrance-hall, leading to the large central hall, 130 ft. by 33 ft., containing the staircase and the office. On the right of the hall is a reading-room, situated so that it can be used as a waiting-room for people calling upon visitors of the hotel; and on the left is the drawing-room, opening also into the dining-room and hall. The former is a large room on the left of the drawing-room, at the corner of the Strand and Thirty-eighth-street, opening on to a wide verandah on two sides. On the Lewis-street front, behind the reading-room, are the billiard-rooms and the bar. The latter is a very large and well-designed room, and the former, in addition to containing space for six tables, has ample room for spectators. Opening off the billiard-room are lavatories and water-closets fitted up with the latest and best appliances. At the back of the billiard-room is a side entrance for luggage. Beyond this are the assistants' bedrooms and visitors' servants' rooms and bath-rooms opening on to an area, upon the other side of which is a block containing the kitchen, hotel servants' quarters, stabling for six horses, and the electric light installation buildings, with boiler room, fuel store, &c. The central hall runs through the full height of the building, namely, three stories, and is covered in with decorative open timber skylight and ventilator, the rooms on both the upper floors being approached by corridors opening off a gallery running round the hall. With the exception of about twenty bedrooms the rooms are designed with sitting-room, bed-room, dressing-room, bath-room, and water-closet *en suite*, every two sets of rooms having a separate approach corridor, and each provided with verandahs. The rooms are all large, the smallest being 24 ft. by 15 ft., and are lofty and provided with ventilating panels in the frieze. In a city like Rangoon, where the summer temperature often continues above 100 deg. in the shade for long periods, lofty rooms are necessary to allow for the swing of the punkahs, which must be kept going day and night in all rooms. The provision of a bath-room and water-closet to each room may appear extravagant, but in Singapore it was found necessary and adopted, and has since been copied in most Eastern tropical hotels and houses. Externally the building has been treated plainly; the lower part has a verandah in front of the main rooms, consisting of a series of elliptical arches between piers supporting carved brackets carrying an architrave, frieze, and bold cornice, above which is an order of Corinthian columns in couples running through two stories, with large wall spaces and windows between. Along the whole length of the front a wrought iron portico will be built, covering the footpath. Internally the principal rooms will be treated with a teak panelled dado, 8 ft. high, with Burmese carving, the walls above being plain finished, with a polished "chunam" finishing coat to receive paint, the whole surmounted by an enriched plaster frieze and cornice, and lighted by large arched opening filled with glazed screens, the arches springing from the top of the panelling. The ceilings are of teak, panelled and moulded, the constructional beams being exposed. The main staircase is of teak. Throughout the interior of the building, wherever carving occurs, Burmese will be employed to carry it out, and the work will be of Burmese design, as it is found that whilst they are really good carvers of this style of work, they fail at any other, no matter how carefully full-size details are prepared; therefore, each carver will design his own particular work, the architect simply giving him the subject. The whole of the building will be lighted with electric light, and all rooms will be fitted with electric fans, which will be constantly working through the hot season. The building has been designed by Messrs. Swan & Maclaren, of Singapore, and is being built by Messrs. Deacon, Clark & Co., of Rangoon.

## *MISCELLANEOUS.*

PROFESSIONAL AND BUSINESS ANNOUNCEMENT.—Owing to failing health, Mr. Henry Knight has retired from the firm of Henry Knight & Son, builders, of 16, Bruce Grove, Tottenham. The remaining partner, Mr. Henry Avory Knight, will in future carry on the business under the present title at the same address.

SANITARY INSPECTORS. — In the House of Commons on the 2nd inst., in reply to Mr. Hobhouse, Mr. Chaplin said: An association has been formed, with the concurrence of the Local Government Board, for holding examinations of persons desirous of obtaining certificates of competency for the office of sanitary inspector or inspector of nuisances. The association has been registered as a company with limited liability. One of the objects of the association is to prescribe such course of study and technical training as may be calculated to ensure the fitness of persons desirous of qualifying for the offices above mentioned. Several bodies, some of whom provide instruction for those who desire to become sanitary inspectors, will be represented on the examination board, and representatives may be elected by such additional bodies as may from time to time be approved by the Local Government Board.

ABERDEEN MASTER MASONS' ASSOCIATION.—The annual dinner was held on 3rd inst. in the Imperial Hotel, Aberdeen. Mr. John Fyfe, granite merchant, occupied the chair, and the croupiers were Mr. John Morgan, President of the Association, and Mr. Robert Slessor. The toast of "The Architects" was responded to by Mr. James Souttar, President of the Aberdeen Architects' Association, who spoke on the evils of jerry-building.

BYRON STATUE FOR ABERDEEN.—The sub-committee in charge of this movement recommend that Mr. Pittendrigh Macgillivray, A.R.S.A., Edinburgh, be appointed as sculptor, and that he should also report as to the most suitable site for the proposed statue.

THE HOUSES OF PARLIAMENT.—Civil Service estimates relating to Public Works and Buildings show an increase of 2,000*l.* for the Houses of Parliament. The total vote for that building is 36,000*l.* A hydraulic lift in the Speaker's residence will cost 1,000*l.*, and the reconstruction of Members' staircase to the terrace 500*l.* The total for lighting for the coming year is 5,900*l.*, of which 2,600*l.* is for gas and 3,300*l.* for electric current.

HULL ELECTRIC LIGHTING.—At the Town Hall, Hull, on the 28th ult., Mr. H. H. Law, Local Government Board Inspector, held an inquiry into the merits of an application made by the City Council for sanction to borrow 16,000*l.* for electric lighting purposes. The Town Clerk said the Provisional Order for electric lighting was obtained in 1890. The present population was estimated at 234,270; the annual assessable value of the city at 909,544*l.*; whilst the loans for all purposes amounted to 1,197,298*l.* Mr. Barnard (electrical engineer) said the total capacity of the present works was—Dagger-lane, 22,000 lamps of eight-candle power; Sculcoates-lane, 29,666; total, 51,666. There were, however, equivalent to 69,350 eight-candle power lamps connected with the mains, and, in addition, notice had been received of about 5,800 such lamps now being fitted up. The present plant was entirely inadequate to meet the demand in the near future. There was no opposition to the application.

THE LYCEUM THEATRE.—A company is about to be formed to purchase, for 275,000*l.*, the freehold estate—covering 22,700 ft. superficial, and valued at 260,000*l.*—of the theatre together with rentals of shops and cellars in Exeter-street, and the interest of the present lessee, Sir Henry Irving. It is not commonly known that the Lyceum is one of the oldest established playhouses in London. It was originally built in 1765, after James Payne's designs, as an academy and show-room under that name, for a society of artists, from whom Garrick bought the lease, to prevent its conversion into a play-house. In 1790, one Lingham, of the Strand, a breeches-maker, bought the premises and opened them for musical performances. In 1794-5 Lingham leased some adjoining land to Dr. Arnold, who there built a theatre which was subsequently devoted to exhibitions of paintings, musical, equestrian, and other entertainments. In 1803-4 Winsor showed there some experiments in gas-lighting. In 1809 Mr. S. A. Arnold enlarged the building and opened it as the English Opera House. It was rebuilt, from Samuel Beazley's designs, in 1816, and consumed by fire on February 16, 1830. The theatre was again rebuilt at a cost of 35,000*l.* by Beazley, westwards of its predecessor, whose site was taken for the laying out, in 1830-1, of Wellington-street, and opened with English opera on July 14, 1834. Thirteen years afterwards the interior was richly decorated for Madame Vestris, who there made her last appearance in Planché's extravaganza, "Once Upon a Time." In 1891 the late C. J. Phipps carried out some alterations of the interior, and enlarged the building by taking in the two restaurants that stood on either side of Beazley's portico. Beazley also built a new green-room, in 1838, and a room at the Lyceum for the "Sublime Society of Beefsteaks," founded by Rich and Lambert at Covent Garden Theatre in 1735, who had migrated thence to the (old) Lyceum in S. Arnold's day, and, after a sojourn (1830-8) at the "Bedford Head," returned to the new Lyceum, erected in 1831-4. The society's effects were sold at Christie's rooms in 1869, but we understand that their room at the Lyceum has been restored, and that the meetings are revived. The old set of chairs belonging to the society were bought at the sale by the late Dodgson Foster, and removed to the board-room of M. B. Foster & Co., Marylebone-road. The premises to be acquired by the new company comprise No. 21, Wellington-street, and five shops in Exeter-street, with frontages of 130 ft. to Wellington-street, 140 ft. to Burleigh-street, and 160 ft. to Exeter-street.

SALES OF BOOKS AND TOPOGRAPHICAL DRAWINGS.—Amongst the books recently sold at Hodgson & Co.'s auction rooms we may notice the following:—Symond's Renaissance in Italy, 7 vols., 18*l.* 15s.; Pilkington's Dictionary of Painters, 15*l.*; Dugdale's Monasticon, 8 vols., 18*l.*; Ackermann's Microcosm of London, 3 vols., 10*l.* 10s.; Surtees's Durham, 4 vols., 26*l.*; Nicholl's Leicester, 4 vols., 39*l.* 10s.; Whitaker's Richmondshire, 2 vols., 12*l.*; and of the Kelmscott Press issues, a parcel containing Tennyson's Maud, Morris's Gothic Architecture, Amis and Amiles, and some German fifteenth century woodcuts, 4 vols., 10*l.* At Sotheby's rooms:—Gazette des Beaux Arts, 35 vols., 10*l.*; C. Blanc's Histoire des Peintres, 11*l.* 10s.; and some prints by Bartolozzi and others, 96*l.* In the dispersal of the late J. Holbert Wilson's collection (second portion) of engravings and drawings illustrative of the domestic history of London and the environs were comprised Payne's Somerset House, terrace front, 14*l.* 15s. (Colnaghi); G. Hunt's aqua-tint of the Elephant and Castle tavern, after S. J. E. Jones (1826), 23*l.* (Lee); Hollar's Execution of the Earl of Strafford, with a black-letter ballad and the Earl's "last speech" on the scaffold, 22*l.* (Noseda); John Norden's London Bridge in 1597, a very rare specimen of the first state before the plate was reduced, 30*l.* (Jones); T. Hosmer Shepherd's Cheyne-walk and old Chelsea Church, 19*l.* (Sotheran); old Spring Gardens, 10*l.* 15s. (Lee); Rowlandson's Salutation Tavern, Greenwich, on an Easter Monday, 30*l.*; the old Eel-pie House, Twickenham, 23*l.* 10s., with water-colour views of Rag Fair, Putney Bridge, Rotherhithe, and Wapping Old Stairs, and (by T. H. Shepherd) of the Fleet Prison.

LONDON ALMSHOUSES.—The Hackney Vestry have in view the purchase, for purposes of a public recreation ground, of the site of the Ironmongers' Company's almshouses and their chapel in Kingsland-road, at the corner of Pearson-street. The premises were built on the foundation of Sir Robert Geffery (1703), who by will directed that the greater portion of his estate should be converted into money and that the Company should therewith buy land and erect an almshouse for as many poor persons as the rents and proceeds—after allowance made for paying each inmate 6*l.* 15s. yearly—would sustain. The existing site was bought accordingly, and fourteen houses, with a chapel, were erected thereon. Sir Robert also left 400*l.*, the interest to form the chaplain's stipend, and the endowment was subsequently increased under the will (1846) of William Wild, who left the Company a sum of 3,500*l.* Consols in trust, of which the dividends were to be shared equally by the almspeople; the annual income derived from the Geffery bequests (including some charities in Erney and Landrake, Cornwall) amounts to about 1,700*l.* The next adjoining premises, in Kingsland-road, comprise the almshouses of the Framework Knitters' Company (incorporated in 1663), originally founded in 1727 by Thomas Bourne's bequest of 3,000*l.* for the purchase of land and the building thereon of a house for twelve of the Company's poor freemen, in favour of whom subsequent donors added a further aggregate amount of 2,500*l.* The land cost 145*l.*, the house was built for 800*l.*, and the four charities now yield about 134*l.* per annum.

THE OLYMPIC THEATRE.—It is stated that the lessee has offered to sell to the London County Council for 12,000*l.* his interest—otherwise computed to be worth 25,000*l.*—in the lease of the theatre, consisting of an unexpired term of fifty-one years, from December 31 last, at a rent of 2,250*l.* per annum. The theatre comes within the limits of the Council's plans for the proposed new street from High Holborn to the Strand—for which, by the way, the name of "Gladstone-avenue" is already suggested. The old Olympic Theatre (whose history we briefly described in a "Note," July 13, 1889) was rebuilt by Messrs. Holliday & Greenwood, contractors, eight years ago, after the plans and designs of Messrs. Crewe & Sprague, who made further alterations, with redecoration, of the premises, in the autumn of 1893, in view of their conversion for purposes of a music-hall. The building covers a total area of 14,000 ft. superficial, and the stage is said to be, in size, second to only that of Drury-lane Theatre.

IRON HOUSES FOR RAILWAY WORKERS. — One hundred houses or huts entirely of iron have been sent out for the workmen employed on the Uganda Railway, it being necessary to have dwellings which would sufficiently protect the inmates from wild beasts. The houses were made by Messrs. A. J. Main & Co., of the Clydesdale Ironworks, from a pattern selected in competition and approved by the Government engineers in charge of the work.

INDUSTRIAL ASSURANCE.—The Prudential Assurance Company announce in their Annual Report that the premiums received during the year from the Industrial branch showed an increase of 167,165*l.* over the previous year. The Report states also that, public attention having been for some time past directed to questions of thrift and provision for old age, the directors have had under consideration how they can further assist those policyholders who, from age and diminished earnings, find some difficulty in maintaining the payment of premiums on their policies, and they have therefore made provision for all policyholders in the Industrial branch who have been assured for twenty-five years to be free from the payment of further premiums as they attain the age of seventy-five. This alteration takes effect at once.

ETRUSCAN ANTIQUITIES.—Concurrently with a rearrangement and extension of the exhibited objects in the Græco-Roman basement, British Museum, a novel departure has been made. Dr. A. S. Murray has fitted up two recesses in partial resemblance of rock-hewn tombs; in one he gives us facsimiles of the wall paintings and central column of the Etruscan tomb at Vulci, as discovered in 1833; in the other, which is a copy of the Grotto Dipinta, at Bomazo, in Etruria, is deposited a sarcophagus, the walls being painted with a dado of swimming fish, above which are painted an urn, four sea-horses, and human heads.[*] The large semi-circular mosaic pavement, of probably the third century, found at Halicarnassos in 1856, and representing Venus (Anadyomene) with two female Tritons is now set up against the east end wall, where it can be seen to greater advantage, albeit not in its normal position. Another interesting relic is the large Roman hydraulic wheel, of wood, found, with the axle and hub of another, in the north lode of the Rio Tinto mines in Spain, 1886.

THE ESTIMATES: PUBLIC WORKS AND BUILDINGS.—Of the grants for the twelve months from the 31st instant we may notice the following:—New filter-bed at Kew Gardens, 2,700*l.*; improvement of the Roehampton entrance, with a new lodge, Richmond Park, 900*l.*; wood-paving between Marlborough and Buckingham Gates, and lighting the roads and footpaths in St. James's, Hyde, and the Green Parks, 5,000*l.*; electrical lighting of the Natural History Museum, 2,000*l.*, on account—the total estimate being 7,500*l.*; a gallery in the Pre-historic Saloon, a room for the Waddesdon (Baron Ferdinand de Rothschild) bequest, and improved lighting of other rooms at the British Museum, 1,000*l.*; and a new hothouse at Hampton Court, 500*l.* The increased expenditure for Royal parks and pleasure grounds, the Houses of Parliament, surveys, Peterhead Harbour, Irish railways, and similar purposes, amounts to 23,751*l.*, whilst a decrease of 63,190*l.* is set against Royal palaces, Marlborough House, revenue, and other public buildings in Great Britain, harbours under the Board of Trade, and public works and buildings in Ireland; so that there is an actual net decrease of 39,439*l.* from the total, 1,935,061*l.*, for the official year that ends with this month.

DECORATION OF LIVERPOOL TOWN HALL.—Under the direction of Professor Simpson, acting at the request of the Finance Committee, and in connexion with the City Surveyor, the alterations and redecorations of the Town Hall are approaching completion. For some months the large ball-room has been under repair—a new roof being supplied. The whole suite of reception-rooms has been redecorated, a most pleasing and effective scheme of colour being introduced, and it is expected that in the course of a few weeks the rooms will be available for the use of the Lord Mayor for civic hospitality on a larger scale than has been possible for some time.—*Liverpool Mercury.*

INSTITUTION OF ELECTRICAL ENGINEERS. — We are informed by the Secretary that as a very large number of members and others failed to gain admission to the meeting on March 2, Mr. Marconi has kindly promised, at the request of the Council, to repeat his lecture and demonstration on Thursday, March 16, in the theatre of the Examination Hall on the Victoria Embankment, adjoining Waterloo Bridge. Up to 7.45 p.m. admission will be only by tickets, to be obtained by members on application to the Secretary.

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[*] Confer Mon. dell' Inst. I., pl. 42, and II., pls. 53-4.

EASTBOURNE MASTER BUILDERS' ASSOCIATION.—At the annual meeting of this Association, held at Hermitages Rooms on the 28th ult., the report and balance-sheet for the past year were received and adopted, with thanks to the retiring officers. The committee for the year was elected as follows: Mr. Joseph Martin, President, re-elected; Mr. E. Cornwell, Vice-President, re-elected; Messrs. M. Martin, Stanbridge, Winter, Breach, Miller, Bainbridge, and Lacey. It was unanimously decided to join the South-Eastern Counties Building Trades Employers' Federation.

## *CAPITAL AND LABOUR.*

THE PLASTERERS' DISPUTE, AND ITS EFFECTS ON THE MANCHESTER DISTRICT.—What will be the exact effect in Lancashire of the lock-out, an official of the union told one of our correspondents, is a matter which cannot be calculated. In London, it will mean every man in the trade, but in the country things are different. There are many travelling plasterers who take a job, here, there, and everywhere, avoiding the districts where there are branches of the union, and there are also large numbers of plasterers in many of the towns in the immediate neighbourhood of Manchester who are not members of the union, and who will not be affected by the dispute. In Manchester and Salford 600 men are members of the union, and the whole of these who are in the employ of the federated firms will be sufferers. In Oldham, on the other hand, the union is weak, only about fifty men in the trade being members of the union. Bolton has about 120 and Bury nearly 100, while Stockport has about sixty, and at Padiham, Warrington, Southport, and Blackburn there are prosperous branches.—*Manchester Evening News.*

STAFFORDSHIRE BUILDING TRADES.—The building trade throughout North Staffordshire is showing a general improvement, and there are now more encouraging signs of its continuance than for some weeks past. There is a great demand all over the district for a better class of artisans' dwellings, and a number of builders are directing their attention to this particular class of buildings. Bricklayers have a small percentage of men out of work, but joiners are very busy in all towns, and in some instances overtime is being worked. Painters are slack, and are not averaging more than four and a half days per week. Plumbers are very busy, full time being general. Stonemasons are moderately employed, there being no great demand for masonry at present. Labourers of all classes are fully employed. In all the brick and tile yards of the district there is great activity, and the operatives are working full time. At Leek the general condition of the building trade is in a fairly prosperous condition, and all classes of operatives are well employed. At Crewe trade is moderate, and employment is fair. At Stafford all classes of operatives with the exception of painters are working full time, and they are averaging only four days per week. At Cheadle, Tean, and Uttoxeter the building trade is exceptionally busy, and the operatives are working full time, and in some instances joiners are working overtime.—*Staffordshire Sentinel.*

ABERDEEN HOUSE PAINTERS.—The strike has been ended by the employers conceding a rise of ½d. per hour in the wages. The men resumed work on Wednesday morning.

## *LEGAL.*

### FOREMAN'S ABSENCE—MASTER'S RESPONSIBILITY.

AT Brompton County Court on Friday last week, before his Honour Judge Stonor and a jury, a case was heard in which Charles Thomas Baldock, a builder's labourer, of Battersea, sought to recover damages, under the Employers' Liability Act, from his former employers, Messrs. Henry Smith & Son, builders, 5, Wetherby-terrace, Earl's Court-road, London, S.W., for personal injuries said to have been caused through neglect, for which the defendants were responsible The claim was for 218*l.* 8s. Mr. Moyses was counsel for the plaintiff, and Mr. Crisp, counsel, defended.

The plaintiff stated that he had been in the employ of the defendants for about two years, and on August 18 last was helping to repair the inside of the roof of the Parish Room adjoining St. Philip's Church, Earl's Court. In order to get to the work, it was necessary to erect a scaffolding. In accordance with the instructions of the foreman, Piper, a scaffold was formed with two pairs of trestles, 17 or 18 ft. high, with a plank laid upon the top steps. This, however, was not high enough, and at one end of the plank was placed a chair, at the other end a wooden box and five short pieces of quartering, and from the chair to the box was laid another plank. Three men who had been working upon this scaffold had just got down, and plaintiff was about to follow, when the top plank slipped, and he fell a distance of nearly 30 ft. to the ground. He sustained serious fractures of the bones of the right arm and wrist, and concussion of the brain.

Cross-examined: He was positive the foreman saw the scaffold with the box and chair, and told him to work upon it.

Other evidence was given in corroboration.

For the defence, John Piper, the foreman, totally denied having seen the scaffold in question, although, judging from its description, he considered it to have been perfectly safe. His instructions to the men were to erect a scaffold with the trestles and planks, for he was under the impression that nothing more would be required. At the time of the accident there was no foreman on the job.

The three men who had been working on the scaffold, just before the accident occurred, each stated that the box, chair, and upper plank were erected in the foreman's absence, and without his instructions. Each of these witnesses also said that the plaintiff missed his footing while in the act of descending from the scaffold.

His Honour said it was for the jury to say (1) Whether the plaintiff fell through a pure accident; or (2) Whether there had been a defect in the scaffold, or otherwise negligence on the part of the defendants.

A juryman: Suppose the foreman were not present when the scaffold was erected, would that relieve the defendants from liability?

His Honour: No; the master would be liable for any negligence on the part of his servants.

The jury found that the scaffolding was an unsafe one, and that there was negligence on the part of the defendants or their foreman, in allowing such a scaffolding to be used. They assessed the damages at 125*l.*

His Honour gave judgment for the plaintiff accordingly, and allowed costs.

### BUILDER'S DAMAGES AGAINST ISLINGTON VESTRY.

AT the Clerkenwell County Court, before Judge Edge, on Wednesday, John Boldero, trading as J. Winget & Co., builder and decorator, 54, Freeling-street, Caledonian-road, made a claim against the Islington Vestry for 9*l.* 15s. for damage done and loss of rent sustained, caused through the workmen employed by the Vestry to execute certain drainage work leaving plaintiff's premises in an unfinished state.

The action raised a question of considerable importance. The Vestry's workmen went to the house, which was sublet to several tenants, to execute drainage work, but did it in such a way that when they left the premises, owing to the damage they had done, the amount sued for was expended to put them right again.

It was denied, on the part of the Vestry, that the repairs for which a claim was made had not been carried out; but his Honour found against the Vestry, and gave a verdict for the plaintiff for 6*l.* for work done, with costs, and allowed plaintiff 10s. for loss of rent.

### INTERFERENCE WITH ACCESS OF LIGHT:

DAMAGES AGAINST A BREWERY COMPANY.

IN the Chancery Division of the High Court of Justice, on Friday, March 3, the case of Savage *v.* the Wenlock Brewery Company came on for hearing before Mr. Justice Byrne. The case was originally heard before Mr. Justice (now Lord Justice) Romer, and was one for an injunction to restrain the defendants from erecting a new building so as to interfere with the access of light to plaintiff's premises. 18, Red Lion-street, W.C. The court on that occasion said that as the damage, if any, seemed to have been done, the new buildings being then practically completed, the case had better be referred to an expert, and it was ordered that the matter be referred to Mr. Henry Currey, architect, of 37, Norfolk-street, Strand, to ascertain whether the plaintiff had sustained any damage by the erection of the building, 62 and 63, Red Lion-street, and to assess the amount of such damage (if any), and by consent of the plaintiff and defendants, the report of Mr. Currey and the assessment of the damage to be final.

The report (said Mr. Neville, Q.C., for the plaintiff) was as follows: "I am of opinion that the plaintiff has sustained some damage by reason of the new buildings aforesaid, and I assess the amount of such damage to the plaintiff's premises, 18, Red Lion-street, at 25*l.*

Mr. Neville said the only question that now remained was as to the costs. He submitted that the costs should follow the result of the reference. He wished to point out that the plaintiff's interest in his premises was only a six-year's interest, and the consequence was that 25*l.* must have represented something like a deterioration of the premises to the amount of 5*l.* a year, because, of course, the plaintiff could not recover damages in respect of any period outside his term. He (counsel) therefore thought that the damage to the premises might be taken as representing a very much larger sum, and he submitted that in such circumstances that when the plaintiff brought his action he was clearly entitled to an injunction, and ought now to have the costs.

Mr. Levett, Q.C., for the defendants, argued that as the damages awarded by the arbitrator were so small, the plaintiff should bear the costs, or else that each party should pay their own.

His Lordship, however, on the principle that the plaintiff had succeeded in showing damage to his premises by what the defendants had done, ordered the defendants to pay the costs, and gave judgment for the plaintiff for 25*l.* with costs.

## MEETINGS.

FRIDAY, MARCH 10.

*Architectural Association* (*Discussion Section*).—Mr. H. C. Corlette on "Colour." 7 p.m.

*Royal Institution.*—Professor H. L. Callendar on "Measuring Extreme Temperatures." 9 p.m.

*Institution of Civil Engineers (Students' Meeting).*—Mr. H. Lapworth on "The Construction of the Elan Aqueduct, Birmingham Waterworks." 8 p.m.

SATURDAY, MARCH 11.

*Edinburgh Architectural Association.*—Visit to Colinton House, Colinton Castle, and Redhall.

*Royal Institution.*—The Right Hon. Lord Rayleigh on "The Mechanical Properties of Bodies." V. 3 p.m.

*Sanitary Institute* (*Demonstrations for Sanitary Officers*).—Inspection at Frien Barnet Sewage Works. 3 p.m.

*Institution of Junior Engineers.*—Conversazione at Westminster Palace Hotel. Reception at 7 p.m.

MONDAY, MARCH 13.

*Sanitary Institute* (*Lectures for Sanitary Officers*).—Dr. Joseph Priestley on "Ventilation, Warming, and Lighting." 8 p.m.

*Bristol Society of Architects.*—Mr. G. H. Oatley on "Bills of Extras."

TUESDAY, MARCH 14.

*Northampton Institute, Clerkenwell.*—Lectures on Mediæval Architecture, by Mr. Francis Bond, M.A. X.—"Monks and Monastic Architecture." 7.45 p.m.

*Institution of Civil Engineers.*—Papers to be dicussed: (1) "Water-tube Boilers for Marine Engines," by Mr. J. T. Milton; (2) "Recent Trials of the Machinery of War Ships," by Sir John Durston. 8 p.m.

*Sheffield Society of Architects and Surveyors.*—Mr. E. P. Warren on "Theory, Practice, and Tradition." 8 p.m.

*Perth Architectural Association.*—Mr. W. M. Page on "Art." 8 p.m.

WEDNESDAY, MARCH 15.

*Sanitary Institute* (*Demonstrations for Sanitary Officers*).—Inspection of Disinfecting and Filtering Appliances at the Lambeth Disinfecting Station, Wanless-road, Loughborough Junction. 3 p.m.

*Builders' Foremen and Clerks of Works' Institution.*—Ordinary meeting of the members. 8 p.m.

*Society of Arts.*—Sir Marius Samuel on "Liquid Fuel." 8 p.m.

*British Archæolcgical Association.*—(1) Mr. C. A. Donelly on "The Crannog at Dumbuck." (2) Mr. C. Dack on "Survival of Old Customs at Peterborough." 8 p.m.

THURSDAY, MARCH 16.

*Royal Institution.*—Mr. William Poel on "English Playhouses in the Fifteenth, Sixteenth, and Seventeenth Centuries." II. 3 p.m.

*Society of Antiquaries.*—8.30 p.m.

*Sanitary Institute* (*Lectures for Sanitary Officers*).—Dr. H. R. Kenwood on "Infectious Diseases and Methods of Disinfection." 8 p.m.

*Society for the Encouragement of the Fine Arts.*—Mr. E. Doran Webb, F.S.A., on "The Diary of a Sarum Worthy of the Seventeenth Century." 8 p.m.

*Institution of Civil Engineers.*—Students' visit to the Generating Station of the South London Electric Supply Corporation, in course of construction. 2.30 p.m.

FRIDAY, MARCH 17.

*Architectural Association.*—Mr. Reginald T. Blomfield on "Reflections on the English Renaissance." 7.30 p.m.

*Glasgow and West of Scotland Technical College* (*Architectural Craftsmen's Society*).—(1) Mr. W. G. Peddie on "Electric Lighting of Buildings." (2) Mr. G. Davidson on "Levelling." 8 p.m.

SATURDAY, MARCH 18.

*Royal Institution.*—The Right Hon. Lord Rayleigh on "The Mechanical Properties of Bodies." VI. 3 p.m.

*Sanitary Institute* (*Demonstrations for Sanitary Officers*).—Inspection at Morden Hall Farm, Morden, Surrey. 3 p.m.

*Perth Architectural Association.*—Visit to Brahan House, near Tulloch.

## RECENT PATENTS:

ACCEPTED SPECIFICATIONS.

*Open to Opposition until May 1.*

[1897.]—27,876, The Liver Acetylene Gas Co. & Evans, Generation of Acetylene or other Gas Generated by the Addition of a Liquid to a Solid; and [1898] 4,129, Coulson & De Thiersant, 9,023, Dargue, and 9,384, Kitchen, Acetylene Gas. [1898.]—1,803, Codds, Electrical Arc Lamps. 4,115, Sugg & Lofts, Ventilating Cowls. 4,472, Armfield, Machines for Assorting, Separating, and Grading Materials of Various Sizes by means of Sieves, &c. 4,549, Sprague, Electrical Control of the Hoisting Mechanism of Elevators, &c. 4,716, Bornet, Rock Boring and Perforating Machinery. 4,850, Ryan, Door Holders. 5,242, Palmer & Candy, Mechanical Fitters. 6,187, Goddard, Stopping and Locking Arrangement for Cage Hoists. 6,318, England, Device for Regulating the Size of Fires in Kitchen and other Ranges or Grates. 7,283, Harrison, Miners' Lamps and Electrical Lighting therefor. 8,025, Hillman, Tool Holders and Tools for the Slide Rests of Lathes, &c. 8,287, Herriot, Combined Atmospherical Burner and Mantle and Chimney Lifter or Bearer. 8,584, Down & Eck, Automatical Switch for Electrical Cooking Utensils. 8,604, Tonks, Locks Fitted with both Locking and Latching Bolts. 8,717, McHardy & Froy, Ventilating Apparatus. 8,767, Fuge, Coating Metals with Vitreous Enamel. 8,787, Youlten, Centre for Centre-hung Windows. 9,053, Myers, Weighing Apparatus. 9,127, Shanks, Enamelling Cast-iron Baths, &c. 9,147, Bownes, Pick and other Tool Handles. 9,155, Brown, Continuous Kilns for Burning Bricks, &c. 9,334-5, Hewitt, Tiles, and their Fixing to Ceilings, Walls, &c. 9,376, Mills, Construction of Roadways, Footpaths, &c. 9,501, Turner, Packings, Joint-washers, and so on, for Pipe, Manhole and other Joints. 9,789, Hirst & Collings, Electroliers and Incandescence Electrical Lamp Pendants. 9,895, Davy & Thomas-Davies, Raising and Lowering Arc Lamps. 10,046, Lilienthal, Fire-proof Floors. 11,447, Sanderson, White-lead Paint. 12,193, Pryce, Guards for the Moving Parts of Machines, to prevent accidents. 12,292, Swan, Sliding Socket Drain-pipe. 14,548, Bowles, Electrical Contact Makers. 19,002, Robinson, Woven Wire-fencing. 20,120, Hass, Cupboard and Drawer Locks, and Making the Openings for them. 21,320, Fletcher, Stoves. 21,533, James, Imitation Mica-marble and Stone. 23,513, Ward, and 25,464, Shipman, Rope-traction, Conveying, and Hoisting Apparatus. 25,058, Solomon, Electrical Cut-outs. 25,920, Berth, Cooking Stoves. 26,136, Lehner, Electrical Measuring Instrument. 26,143, Toelpe, Apparatus for Use in Constructing Concrete Buildings. 26,208, Marks, Pipe-joining. 26,662, Newman, Opening and Closing Apparatus for Fanlights, &c. 26,804, Binnie, Construction of Subterranean Tunnels and Machinery therefor. 27,339, von Forell, Production of Cement from Limestone and Blast-furnace Slag. 27,484 and 27,550, Lobpitz, Dredging Machinery. [1899] 76, Erie Safety Window Co., Frames and Sashes. 140, Rockefeller, Adjustable Saw-tables. 349, Tuttle, Air Registers or Ventilators. 1,094, Harris, Fire Escapes. 1,309, Davies, Device for Trimming Oil Lamps and Stoves. 1,481, Pick, Wire Lathing for Applying Plaster, &c., to Wall Surfaces. 1,486, Naylor, Construction of Marking and Cutting Gauges. 1,682, Armstrong, Lining for Lavatory Basins, Sink-wells, &c.

### ABSTRACTS OF PATENTED INVENTIONS.

24,707.—ACETYLENE GENERATOR: *C. Guy.*—A gas bag opens, according to the consumption of gas, a slide valve, through which granular carbide falls into water in a closed tank attached to the carbide holder by means of a hinge and packing ring, and also connected by tubes with the bag's interior; the bag is made to bear against a plate, which, whilst held up by a spring, is connected, by a rod a lever, with a slotted plate that shifts over another slotted plate of the slide valve of the carbide holder; in action the bag, partly inflated, holds the valve in such a way that the slots register and allow carbide to fall; if the consumption decreases the bag's expansion against the plate closes the valve, and if it expands more the lever releases another spring-held lever to open the end of a tube through which gas will escape from the tank until the pressure again becomes normal; should the bag collapse altogether the valve becomes closed; the generated gas passes into the lower end of a purifier and thence to the outlet.

24,757.—COOKING RANGES: *C. Mills.*—To adapt the range for use as an open stove the fire-cover is put back beneath the top part of the hob, where it strikes against an arm which turns a rock-shaft in such a way as to press lever arms on to studs made in the side-cheeks of the hood, and thus to push the hood forwards into position.

24,765.—SASH FASTENERS: *A. M. Tyler.*—To the upper sash is fixed a bracket which has a spindle carrying a cam and a projecting arm, a flexible arm is attached to a base-plate upon the lower sash; a milled head is turned to bring the cam and arm into position for unfastening the sashes; upon closing the sashes the flexible arm turns the cam and the other arm into the locked position, the bracket limits the motion, either way, of the cam, whose under surface may be roughened to engage with the roughened surface of the lower sash plate.

24,781.—COLLECTION OF HOUSE AND STREET REFUSE, &c.: *S. L. Kinsbruner.*—The main object of the invention is to prevent the escape of dust when refuse is being transferred into a cart or receiver; the bin is hooked on to a closed cart and is then tilted for the discharge of its contents, in course (about half-way) of its being overturned a projection of the door of the bin engages with the loop of the door of a frame hinged at the cart's bottom edge—the latter door being pivotted at its upper edge and connected by a crank to a flap hinged to the cart's cover; when the bin is turned up about 90 deg. the two doors are automatically opened by the crank arms, the space between the frame and the flap is closed with a strip of flexible material, and stops support the bin when it is tilted.

24,815.—MANTLES FOR INCANDESCENT GAS LAMPS: *H. Ottenbruch.*—Platinum wires are woven or united with the fabric or netting of the mantles in order to strengthen them; in one variety the mantles are corrugated, and the platinum wires radiate from a platinum ring fixed around the mantle's top.

24,827.—ELECTRICAL INSULATORS: *H. Köttgen.*—The screws used for fixing the insulators on walls, &c., go through prismatic plugs composed of an easily fusible alloy; if two plugs are used, a strengthening plate is laid over them, a cardboard washer being placed between the plate and the two plugs; the plugs are set by means of plaster of Paris filled into grooves therein.

24,862.—HEATING GREENHOUSES, CONSERVATORIES, &c.: *F. Le Poidevin.*—From the boiler, placed upon the floor, the rising outflow pipe passes to the closed tank above, and the down-flow pipe to the warming pipes, a return pipe being fitted into the boiler. A tank at the top receives the water which is forced out of the closed service tank by steam, whence it can flow into the warming pipes.

24,905.—SLOW-COMBUSTION STOVES: *A. Pogonyi.*—The stove body, for the most part, is composed of earthenware or other badly-conducting material, and the combustion chamber is made of metal. The stove can be arranged so that it is fed with fuel from a room adjacent.

24,969.—VENTILATING CLOSETS: *W. Dalton.*—An outer depending flange that engages with the basin, to which a detachable rim is fitted, is perforated to allow access of air, and the inner flange is perforated to permit the passage of fumes, &c., to pass away to an exhaust pipe.

25,092.—MINERS' SAFETY LAMPS: *W. Ackroyd.*—The lamp cannot be locked unless the gauze is in position; the flange of the gauze is normally secured by the glass when the following ring is screwed up, and a locking-bolt engages with a rack beneath the ring when the bottom of the lamp is screwed in; if, perchance, the gauze is forgotten, a screw upon the ring allows the latter to be screwed up until the locking-bolt no longer engages with the rack; so the lamp cannot then be locked.

25,182.—MOULDING BRICKS: *T. C. Fawcett, Limited, & J. D. Fawcett.*—In order that a polish or finish may be given to the sides of the brick by causing it to slide within the mould whilst being pressed therein, the inventors contrive that a pair of toggle levers shall operate the upper plunger in the customary manner, whilst the lower plunger is forced upwards by toggle-joints and springs which act upon a lever, the downward motion of the plungers compresses the springs, causing the lower plunger, with the brick upon it, to rise as the upper plunger is raised.

25,183.—LAMP AND OTHER BRACKETS: *C. Darrah & T. Gibson.*—The invention lies in using flexible metallic tubing for the construction of brackets and arms of gasaliers, electroliers, &c.: and in stiffening the tubing with copper or other stripping, so that the brackets can easily be turned to any desired position or angle, and will so remain, the adoption of swivel or other joints being rendered unnecessary; the flexible tubing may be retained by a sliding clip, or a short length of rigid band, and may be lined with a thin copper tube for the passage of gas or electrical wires.

25,252.—COMBINED HEATING AND COOKING STOVE: *Richmond & Co. and E. W. T. Richmond.*—A perforated plate is fixed over the burners so as to deflect the products of combustion over the bottom of the oven placed within the stove, whence they pass up the sides to another deflector which turns them to the outlets; on the stove's top is fitted a burner for boiling water, &c., and the casing around the lower burners is made of cast-iron, perforated.

25,257.—SIPHON DISCHARGE AND WATER-WASTE PREVENTERS: *M. J. Adams.*—The trap is divided into passages (two or more in number) by means of webs, the device is intended to facilitate the starting of automatical siphons wherein a head of water drives out the water-seal.

25,279.—BRICK-MOULDING MACHINES: *D. Black.*—Radial moulds are formed around a wheel that revolves on a fixed shaft, and in a fixed casing. the hopper charges each mould in its turn, whilst projections upon the wheel operate the "doctor" for levelling the clay, then a cover is dropped in to be held in position by its contact with the casing's inner surface, and by the pressure of a plunger which is moved by a cam; the plunger receives a further motion (for thrusting out the brick with its palette or cover) from a cam upon the sleeve of the shaft, and the brick and pallette fall upon arms operated by the projections on the wheel, or by the cam, and are laid upon a travelling band; surplus clay escapes through holes in the sides of the mould, which are closed at the proper times by means of a plate moved by cam surfaces upon the casing. In one modification of the machine the compression of the clay in the mould is effected by another set of plungers, which are carried in slides on the wheel's outer side and are moved by cam surfaces upon the casing; in another modification the sides and top of the brick are pressed by plungers that take their motion from inclined surfaces upon the casing—the filling hopper may be provided with a hollow plunger having a bottom which is separately movable.

25,356.—SIPHON-DISCHARGE AND WATER-WASTE PREVENTERS: *W. Ross.*—The mechanism, which can be worked by the hand, comprises a bell to which is attached an open tube which slides over the stand-pipe; a bowl-shaped float, made in one piece with the bell, is fitted with an auxiliary siphon; the float and bell rise together with the rising water until a stop is reached, whereupon the water flows over into the bell and, in making its fall, sets the flush in action; the auxiliary siphon being started by the flush, empties the float.

## SOME RECENT SALES OF PROPERTY:

### ESTATE EXCHANGE REPORT.

| | |
|---|---|
| February 23.—By CHESTERTON & SONS. | |
| Crouch End.—10, 12, and 37, Topsfield-parade, u.t. 94 yrs., g.r. 75l., r. 355l. | £4,750 |
| Kew.—Battenberg-rd., f.g.r. 13l. 6s., reversion in 94 yrs. | 360 |
| By JONES, SON, & DAY. | |
| Bethnal Green.—273 and 275, Globe-rd., f., r. 54l. 12s. | 530 |
| Limehouse.—51 and 53, Ropemaker's-fields, f., r. 39l. | 230 |
| Stepney.—22, 22a, 24, and 24a, Durham-row, f., r. 91l. | 1,520 |
| 14 and 16, Ben Jonson-rd., f., 50l. 14s. | 680 |
| Rotherhithe.—266, Rotherhithe-st., and plot of land in rear, f. | 170 |
| Hatfield Broad Oak, Essex.—Freehold house and premises and fire-engine house adjoining | 225 |
| Limehouse.—24 to 39, Dalgleish-st., u.t. 7½ yrs., g.r. 190l. | 355 |
| By C. C. & T. MOORE. | |
| Mile End.—23a and 24, Tollet-st., area 1,870 ft., u.t. 24½ yrs., g.r. 9l. 5s. | 740 |
| Shadwell.—224, High-st., c. | 810 |
| Clapton.—55, Powerscroft-rd., u.t. 79 yrs., g.r. 7l., e.r. 36l. | 415 |
| Homerton.—10 and 12, Coopersale-rd., u.t. 76½ yrs., g.r. 8l. 10s. | 580 |
| Rotherhithe.—14, Tunnel-sq., u.t. 83 yrs., g.r. 15l. | .00 |
| Chingford.—15, 17, and 19, Willow-st., f. | 640 |
| By STIMSON & SONS. | |
| Camberwell.—62 to 76 (even), Peckham-rd., area 1 a. 1 r. 34 p., f., r. 432l. 10s. | 10,000 |
| Hammersmith.—42, Raynham-rd., u.t. 70 yrs., g.r. 10l., e.r. 55l. | 400 |
| Old Kent-rd.—Cooper's-rd., f.g.r.'s 22l. 8s., reversion in 15½ yrs. | 1,475 |
| Cooper's-rd., f.g.r.'s 44l., reversion in 34¼ yrs. | 1,525 |
| Earl-rd., f.g.r. 9l., reversion in 34¼ yrs. | 320 |
| Rivet-st., f.g.r. 3l., reversion in 19½ yrs. | 200 |
| Rivet-st., &c., f.g.r. 12l., reversion in 15½ yrs. | 940 |
| By H. S. WOODCOCK. | |
| Wimbledon.—9, St. George's-rd., u.t. 51 yrs., g.r. 6l. 12s., r. 42l. | 450 |
| Wandsworth.—357, Wandsworth-rd., f., r. 50l. | 985 |
| 2, Southville, f., r. 13l. | 165 |
| South Lambeth.—19 and 21, Viceroy-rd., f., r. 60l. | 1,140 |
| Norwood.—66, Cobden-rd., f., r. 19l. | 315 |
| By FAREBROTHER, ELLIS, & CO. | |
| Clapham.—Lambourne-rd., f.g. rents 25l., reversion in 49 yrs. | 790 |
| Grange-rd., f.g. rents 30l., reversion in 44 yrs. | 870 |
| Bournemouth, Hants.—Christchurch-rd., f.g.r. 234l. 8s. 1d., reversion in 69 yrs. | 9,425 |
| Adeline-rd., f.g.r. 12l. 12s., reversion in 69 yrs. | 410 |
| Spa-rd., f.g.r. 100l., reversion in 69 yrs. | 3,500 |
| Christchurch-rd., the Chine pleasure grounds, f.g.r. 75l. 2s. 6d., reversion in 69 yrs. | 3,000 |
| Christchurch-rd., a building site, area 1 acre, f. | 7,000 |
| By NEWBON, EDWARDS, & SHEPHARD. | |
| Crouch End.—37, 39, 40, 42, 45 to 54, 56 to 59, 61, 62, and 64, Palace-rd., u.t. 65 yrs., g.r. 147l., r. 659l. (in lots) | 6,770 |
| Canonbury.—42, Poet's-rd., u.t. 50½ yrs., g.r. 7l., r. 40l. | 415 |
| 16, Sebbon-st., u.t. 29½ yrs., g.r. 5l., r. 28l. | 180 |
| Highbury.—128, Highbury-hill, u.t. 78 yrs., g.r. 6l., r. 38l. | 415 |
| Hackney.—22 and 23, Victoria-st., u.t. 49½ yrs., g.r. 7l., r. 53l. | 620 |
| 1, Victoria-st., u.t. 53 yrs., g.r. 3l. 10s., r. 26l. | £310 |
| Holloway.—3 and 5, Thane Villas, u.t. 51 yrs., g.r. 16l. 16s., r. 90l. | 920 |
| Islington.—32, Morton-rd., u.t. 43 yrs., g.r. 5l., r. 30l. | 335 |
| Pentonville.—17 and 18, Warren-st., u.t. 28½ yrs., g.r. 10l. 10s., r. 64l. | 425 |
| 19 and 20, Warren-st., u.t. 28½ yrs., g.r. nil, r. 53l. | 480 |
| Stoke Newington.—172 and 174, High-st., u.t. 51 yrs., g.r. 30l., r. 175l. | 2,900 |
| Kingsland.—104, Boleyn-rd., with warehouse premises adjoining, f., e.r. 200l., with goodwill | 3,310 |
| Highbury.—48, Avenell-rd., u.t. 78 yrs., g.r. 7l., r. 36l. | 375 |
| Highgate.—69, Claremont-rd., u.t. 95 yrs., g.r. 7l., r. 38l. | 375 |
| Bloomsbury.—14, 15, and 16, Tower-st., u.t. 52 yrs., g.r. 10l., r. 170l. | 1,570 |
| By GEORGE BRINSLEY (on the Premises). | |
| Dulwich.—Thurlow Park-rd., Selmeston, f. | 2,360 |
| By FRANKLIN & JONES & TUCKETT & SON (at Stow-on-the-Wold). | |
| Stow-on-the-Wold, Glos.—Market-sq., "The Wine Vaults" p.-h., and 0 a. 2 r. 28 p., f., r. 45l. | 1,100 |
| February 24.—By MAY & ROWDEN. | |
| Clapham Common.—69, South-side, f., r. 90l. | 1,690 |
| By A. J. SHEFFIELD. | |
| Bromley-by-Bow.—40, 42, and 44, High-st., f., r. 75l. 12s. | 1,180 |
| West Ham.—43 to 49 (odd), Brunel-st., u.t. 62 yrs., g.r. 16l. | 225 |
| Bethnal Green.—1 to 4, Tuscan-st., u.t. 43 yrs., g.r. 18l. | 480 |
| Victoria Docks.—27, Freemason's-rd., u.t. 87 yrs., g.r. 6l. 6s., e.r. 55l., with goodwill, &c. | 520 |
| By DOLMAN & PEARCE. | |
| Haverstock Hill.—2 and 3, Maitland-pk Villas, u.t. 53 yrs., g.r. 24l., r. 126l. | 1,095 |
| Hampstead.—25, Belsize-sq., u.t. 53 yrs., g.r. 18l., r. 60l. | 455 |
| King Henry's-rd., i.g.r. 12l., u.t. 63 yrs., g.r. 2l. | 210 |
| By HOBSON, RICHARDS, & CO. | |
| Hampstead.—67, Priory-rd., f., r. 120l. | 2,110 |
| St. John's Wood.—208, Belsize-rd., u.t. 56 yrs., g.r. 10l., r. 55l. | 705 |
| Fulham.—297, Fulham-rd., u.t. 75 yrs., g.r. 20l., r. 185l. | 3 380 |
| Kensington.—46, Shepherd's Bush-rd., u.t. 77 yrs., g.r. 9l., r. 120l. | 1,800 |
| Brondesbury.—92 and 96, Brondesbury Villas, u.t. 66 yrs., g.r. 21l., r. 110l. | 1,075 |
| Brixton.—Acre-lane, i.g.r. 146l. 15s., u.t. 36½ yrs., g.r. 121l., with reversions from 3½ to 18 yrs. | 250 |
| Highbury.—136, Petherton-rd., u.t. 49½ yrs., g.r. 6l. 6s., r. 55l. | 265 |
| Kilburn.—28 and 30, Salusbury-rd., u.t. 80½ yrs., g.r. 18l. 18s., r. 103l. | 1,490 |
| By Messrs. SPELMAN (at Norwich). | |
| Norwich.—89, Green's-lane, f., r. 10l. 17s. 4d. | 150 |
| 1, 3, and 5, Green's-lane, f., r. 23l. 8s. | 200 |
| 91 to 105 (odd) St. George's Middle-st., f. | 520 |
| 70 to 82 (even), Calvert-st., f. | 540 |
| By SALES & CLARKE (at Woolwich). | |
| Plumstead, Kent.—40, 46, 50, and 52, Coxwell-rd., u.t. 67½ yrs., g.r. 14l. | 860 |
| 32, Liffler-rd., u.t. 64 yrs., g.r. 3l. 12s. | 205 |
| 93, Park-rd., u.t. 99 yrs., g.r. 4l. 10s. | 255 |
| 57 and 63, Sladedale-rd., u.t. 99 yrs., g.r. 7l. | 375 |
| Sladedale-rd., f.g.r. 4l., reversion in 99 yrs. | 100 |
| February 27.—By CLIMPSON & JOHNSON. | |
| Balham.—29 to 35 (odd), Dornton-rd., part f. and part u.t. 75 yrs., g.r. 7l. 10s., r. 144l. | 2,200 |
| 2, 3, and 4, Verran-rd., u.t. 71 yrs., g.r. 19l. 10s. | 540 |
| Kew Bridge.—21 to 27 (odd), Spring-grove, u.t. 61 yrs., g.r. 10l. | 650 |
| By WEATHERALL & GREEN. | |
| Wimbledon.—28, 29, and 30, Broadway, f., r. 210l. | 7,660 |
| Gladstone-rd., a strip of land, f. | 100 |
| Alexandra-rd., f.g.r.'s 155l., reversion in 83 yrs. (in lots) | 4,470 |
| Alexandra-rd., f.g.r. 35l. for 11 years, then rising to 45l., reversion in 89½ yrs. | 1,400 |
| Alexandra-rd., f.g.r.'s 154l. 16s., reversion in 81 yrs. (in lots) | 4,500 |
| By WOOTTON & GREEN. | |
| Regent's Pk.—34 and 35, St. George's-sq., f., r. 107l. | 1,620 |
| Hampstead.—45, Narcissus-rd., u.t. 109 yrs., g.r. 4l. | 525 |
| 20 and 23, Ulysses-rd., u.t. 85 yrs., g.r. 11l. 18s., r. 72l. | 730 |
| By ALEXANDER PHILLIPS. | |
| Willesden.—Roundwood-rd., Cedar Bank and Rose Bank, u.t. 96 yrs., g.r. 10l. 10s. | 520 |
| 76 to 86, 90, 92, 106, 108, 114, 118, 120, and 122, Roundwood-rd., u.t. 96 yrs., g.r. 73l. 10s. | 3,530 |
| 34, 36, and 38, Roundwood-rd., u.t. 96 yrs., g.r. 21l., e.r. 135l. | 915 |
| 35, 37, and 41, Leopold-rd., u.t. 95½ yrs., g.r. 15l. | 780 |
| 36 and 38, Brownlow-rd., u.t. 95½ yrs., g.r. 12l. | 550 |
| Harlesden.—27, Fortune Gate-rd., u.t. 91 yrs., g.r. 6l., r. 32l. | 330 |
| Cricklewood.—23, Melrose-av., u.t. 96 yrs., g.r. 7l. 10s., r. 50l. | 495 |
| By H. HOLYOAK & SON (at Luton). | |
| Luton, Beds.—Mill-st., "The Royal Commercial Hotel," f., with goodwill | 6,100 |
| February 28.—By BOYTON, PEGRAM, & BUCKMASTER. | |
| Regent's Park.—16, Sharples Hall-st., u.t. 67½ yrs., g.r. 7l., r. 35l. | 325 |
| By J. DAVEY & CO. | |
| Peckham.—11, 13, 17, and 19, Sunwell-st., u.t. 66 yrs., g.r. 15l. | 795 |
| By GODWIN, BASLEY, & ELDRIDGE. | |
| Hampstead-rd.—10, Harrington-st., u.t. 25½ yrs., g.r. 7l. 10s., r. 55l. | 605 |
| Brentwood, Essex.—2 and 3, Avenue-rd., f., r. 80l. | 1,105 |
| Richmond.—10, Park Hill, u.t. 6[illegible] yrs., g.r. 8l., r. 60l. | 550 |
| Stroud Green.—79, Stapleton Hall-rd., u.t. 79 yrs., g.r. 10l., e.r. 60l. | 690 |
| By EASTMAN BROS. | |
| Sydenham.—65, High-st, f., e.r. 50l. | 660 |
| By GREEN & SON. | |
| Chiswick.—16, Sutton Court-rd., u.t. 84½ yrs., g.r. 100l., r. 150l., with piece of freehold land in rear | 860 |

# COMPETITIONS, CONTRACTS, AND PUBLIC APPOINTMENTS.

## COMPETITIONS.

| Nature of Work. | By whom Advertised. | Premiums. | Designs to be delivered. |
|---|---|---|---|
| House | Doncaster Grammar Sch. Trustees | 50*l*. ; 25*l*. | Mar. 30 |
| Concert Hall, Paragon Gardens | Ramsgate Corp. | 50*l*. ; 20*l*. ; 10*l*. | April 30 |
| *Kursaal | Harrogate Corp. | 150*l*. ; 100*l*. ; and 75*l*. | June 3 |
| *Elementary School | Willesden S B. | ........ | No date |

## CONTRACTS.

| Nature of Work or Materials. | By whom Required. | Forms of Tender, &c. Supplied by | Tenders to be delivered. |
|---|---|---|---|
| Electricity Works | Canterbury Corp. | R. Hammond, C.E. 81, Victoria-st. S.W. | Mar. 14 |
| Stabling, Wissahickon, Eaglescliffe Yorks | H. Taylor | C. H. Marriott & Son, Archt. West Park-street, Dewsbury | do. |
| Offices, &c. Shipbuilding Yard, Thornaby | Craig, Taylor & Co. | do. | do. |
| Granite Road Metal (4 700 tons) | Newark R.D.C. | C. D. M. Trinder, Surv. Brant Broughton, Newark | do. |
| Iron and Brass Work, Pipes, &c. | Preston Corp. | Boro Surv. Town Hall | do. |
| Road Materials | Bath U.S.A. | C. R. Fortune, Surv. Guildhall, Bath | do. |
| Four Villas, Pontypool | ...... | J. J. Francis, Archt. Abergavenny | do. |
| *Works and Materials (various) | St. Giles Dist. B. of W. | G. Wallace, 197, High Holborn, W.C. | do. |
| *Road Making and Paving | Willesden D.C. | O. C. Robson, Public Offices Dyne-road, Kilburn | do. |
| Electrical Plant, &c. | Dundee Gas Commrs. | W. H. Tittensore Engr. Dudhope-Crescent-road, Dundee | Mar. 15 |
| Eighteen Houses | Birstall Indus. Co-op. Soc. | A. England, Birstall, Yorks. | do. |
| Mortuary at Workhouse | Mansfield Union | R. F. Vallance, Archt. Mansfield | do. |
| Burial Ground Works, Burngreave, Sheffield | Brightside Bierlow Burial Bd. | G. H. Wilkinson, Vestry Offices, Burngreave-road, Sheffield | do. |
| House and Shop, Brynamman | W. Rees | J. C. Rees, Archt Neath | do. |
| Villa, Blackwell-road, Carlisle | ...... | H. H. Hodgkinson, Archt Scotch-st. Carlisle | do. |
| Schools, Cathys-terrace | Cardiff Sch. Bd. | E. W. M. Corbett, Agent. Castle-st. Cardiff | do. |
| House and Shop, Cross-st. Morecambe | T. Baxter | Marshall Bros. Archt. Morecambe | do. |
| *Asphalte Paving, &c | St. Saviours Dis. Bd. of Wks. | G. R. Norrish, Offices, Emerson-st. Bankside, S.E. | do. |
| *Cleansing and Painting at Various Stations | Midland Railway | Co.'s Archt. Cavendish House, Derby | Mar. 16 |
| *Cast Iron Pipes and Laying | Mullingar (Ireland) Union | C. Mulvany, C.E. Athlone | do. |
| Alterations to C. M. Chapel, Blaenau Festiniog | ...... | D. Edwards, 13, Tanymanod-ter. Blaenau Festiniog | Mar. 17 |
| Club Premises, Newton-road, Ipswich | .. | T. W. Cotman, Archt. Ipswich | do. |
| Well Sinking, High-street | Poplar Union | F. J. Warden-Stevens, Engr 34, Victoria-st. S.W. | do. |
| *Additions, Beverley House, Bridlington Quay | Neal & Son | S. Dyer, Archt. Bridlington Quay | Mar. 18 |
| Alterations to Building, Gloucester | Y. M. C. A. | W. B. Wood, Archt. 12 Queen-st. Gloucester | do. |
| Portland Cement, &c | Eastbourne T. C. | Boro Engr. Town Hall | do. |
| *Road Making | Hanwell U.D.C. | S. W. Barnes, Offices, Church-rd. West Hanwell, W | Mar. 20 |
| Additions to Hospital, St. Albans | Committee | F. Hibbert, 45, St Peter's-st. St. Albans | do. |
| Additions to Police Station Thorpe-le-Soken | | H. W. Gibson, Shire Hall, Chelmsford | do. |
| *Pipes, Castings, &c. | Warrington Corp. | Jas. Deas, Water Engr. Town Hall | do. |
| Sewers, Upper Gardens | Bournemouth Corp. | F. W. Lacey, Boro Engr Town Hall | do. |
| Twenty-two Cottages, Miles Platting | Manchester Corp | City Surv Town Hall | do. |
| *Road Making | Beckenham U.D.C. | J. A. Angell, Council Offices | do. |
| *Heating of Swimming Baths, &c. | do. | do. | do. |
| *Well and Boring | Rochford Union | J. Mansergh, 5, Victoria-st. S.W. | do. |
| *Alterations to Vestry Hall | Camberwell Vestry | W. Oxtoby, Vestry Hall, Peckham-rd. S.E. | do. |
| *Building Works and Paving, and Drainage Works | Brentford U D C. | N. Parr, Clifden House, Boston-rd. Brentford | Mar. 21 |
| *Steel Girders, Joists, &c. | Belfast Corp. | A. Brumwell Thomas, 7, Queen Anne's Gate, S.W. | do. |
| Cottage, Fenny Compton, Warwicks | G. W. Ry. Co. | G. K. Mills, Paddington Station, W | do. |
| Sewers, Preston | Croston U.D.C. | F. E. Dixon, C.E. 49, Lune-st. Preston | do. |
| House, Braintree | A. Downing | Clare & Ross, Archt. 66, Duke-st Chelmsford | Ma 22 |
| Sewers | Hemsworth R.D.C. | T. H. Richardson, Surv. Hemsworth | do. |

## CONTRACTS—*Continued.*

| Nature of Work or Materials. | By whom Required. | Forms of Tender, &c. Supplied by | Tenders to be delivered |
|---|---|---|---|
| *Gravel Ballast, &c. Asphalt Repairs, Tar Paving | Wood Green U D C | C. J. Gunyon, Town Hall, Wood Green, N. | Mar. 24 |
| Electric Lighting | Stockport Sunday Sch. Com. | W. B. Leigh, Committee Room, Stockport | do. |
| Road Materials | Maldon (Essex) R.D.C | H. G. Keywood, C.E. 6, Market-hill, Maldon | Mar. 25 |
| Church, South Kirkby | ...... | G. F. Pennington, Archt, Central-chmbrs. Castleford | do. |
| Post Office, Westport, Ireland | Office of Public Works, Ireland | Office of Works, Custom House, Dublin | do. |
| *Heating and Ventilation of Hospital | Norwich Corp | A. E. Collins, Guildhall, Norwich | Mar. 27 |
| *School Seating and Furniture | East Ham S B. | R. L. Curtis, 120, London-wall, E.C. | do. |
| *Dust Destructor | Beckenham U.D.C. | J. A. Angell, Council Offices, Beckenham | do. |
| *Coroner's Court, Mortuaries and Shelters | Poplar B. of W. | Lansdell & Harrison, 38, Bow-lane, E.C | Mar. 28 |
| Workhouse Infirmary | Kingston-on-Thames Union | W. H. Hope, C.E. Archt. Portsmouth-rd Kingston | do. |
| *Stabling and Cottage | Wandsworth B. of W | Offices, East Hill, Wandsworth, S W | do. |
| *Boiler and Engine House | Metropolitan Asylums Board | Offices, Norfolk House, Norfolk-st. W.C. | Mar. 29 |
| Additions, Borough Asylum | Ipswich Corp. | E. Buckham, Boro. Surv. Town Hall | April 1 |
| Sewers | King's Lynn Corp. | E. J. Silcock, C.E. King's Lynn | April 4 |
| Alterations to House, &c. at Gasworks | Bury (Lancs) Corp. | H. Simmonds, Engr. Gasworks, Elton, Bury | April 5 |
| *Public Baths | Leyton U.D.C. | Town Hall, Leyton, E. | April 4 |
| *Painting and Graining, Shepherd's Bush | ........ | F. and A. Church, 266, Portobello-road, North Kensington, W. | No date |
| Sanatorium, Farm Buildings, &c. Shadwell | Leeds Sch. Bd. | W. S. Braithwaite, Archt. School Board Offices, Leeds | do. |
| Rebuilding Black Horse Hotel, Otley | W. Whitaker & Co Ltd. | H. Chippindale, Archt. Guiseley, nr. Leeds | do. |
| Lodge, near Auchinblae, Aberdeen | ...... | Davidson & Garden, 12, Dee-st. Aberdeen | do. |
| Gas Works | Swadlincote (Leicester) U.D.C. | R. Cartwright, Gas Works, Swadlincote | do. |
| Three Cottages, St. Mellons, Mon. | ........ | David Oaklands, St. Mellons | do. |
| Laundry Building, Victoria-st. Goole | Goole Steam Laundry | Mr. Roberts, Clarkson's Hotel, Goole | do. |
| Stores and Premises, Starbeck | Harper Bros. | A. A. Gibson, Archt. Yorkshire Bank-chmbrs Harrogate | do. |
| Sanatorium, Baguley Lodge | Withington U.D.C. | J. B. Broadbent, Archt. 15, Cooper-st. Manchester | do. |
| Twelve Houses, Wood-st. &c. Walthamstow | .. .. | Land Co. 5, Adelaide-place, London Bridge | do. |
| Painting Public Baths | Longton (Staffs.) T.C. | J. W. Wardle, C.E Court House, Longton | do |
| Gas Mains, Chartham | Visitors of Kent County Asylum | W. J. Jennings, Archt. Canterbury | do. |
| Bricks, Tiles, &c. | Canterbury Gas and Water Co. | J. Burch, Castle st. Canterbury | do. |
| Granite (10,000 tons) | Gainsborough R.D.C. | R. Maxwell, Surv. Lea-rd. Gainsborough | do. |
| Street Works, Kirklands, Peebles, N.B. | ........ | R. S. Anderson, C.E Peebles | do. |
| Church, Cardiff | ........ | F. R. Kempson Archt. 16, High-st. Cardiff | do. |
| Pair Cottages, Aberfan, Wales | ........ | W. Dowdeswell, Archt. Caerphilly | do. |
| House, Haltwhistle | R. Hastewell | H. Higginson, Archt. Carlisle | do. |
| House, High-st. Brightlingsea | A. Wenlock | C. E. Butcher, Archt. 3, Queen-st. Colchester | . |
| *Additions to Court Hall | Godmanchester Corp. | Townsend & Fordham, Cross-st. Peterboro | do. |

## PUBLIC APPOINTMENTS.

| Nature of Appointment. | By whom Advertised. | Salary. | Application to be in. |
|---|---|---|---|
| *Clerk, Surveyor's Dept. | Battersea Vestry | Commence 100*l*. per an. | Mar 16 |
| *Outdoor Foreman | Longton Corp. | 2*l*. 10s. per week | Mar. 18 |
| *Clerk of Works | Cheltenham Corp. | 3*l*. per week | Mar. 20 |
| *Assistant Sanitary Inspector | Wandsworth B. of W. | 2*l*. 2s. rising to 3*l*. 5s. per week | do. |
| *Clerk of Works | Camberwell Guardians | 4*l*. 4s. per week | No date |
| *Architectural Assistant | L.C.C. | 2*l*. 12s. 6d. per week | do. |

*Those marked with an asterisk* (*) *are advertised in this Number.* *Competitions, p.* iv. *Contracts, pp.* iv. vi. viii. x. & xxi. *Public Appointments, pp.* xix. & xxi.

| | |
|---|---|
| By Frank Jolly & Co. | |
| Forest Gate.—56 to 74 (even), Tower Hamlet's-rd., u.t. 61 yrs., g r. 40*l*. | £1,420 |
| 222, 224, 228, 230, 232, and 234, Sebert-rd., u.t. 82 yrs., g.r. 27*l*. | 1,280 |
| By Mullett, Booker, & Co. | |
| Hyde Park.—57, Gloucester-ter., and 11, Brook-mews North, u.t. 38¾ yrs, g.r. 24*l*. | 1,800 |
| 5, Kensington Garden-ter., u.t. 35¾ yrs., g.r. 36*l*. | 1,450 |
| 3 and 4, Marlborough Gate-stables, f. | 2,065 |
| By C. P. Whiteley. | |
| Twickenham.—Staines rd., Shugar Cottage; 1 and 2, Woodbine-cottages, and land adjoining | 550 |
| By Hards & Bradly. | |
| Hackney.—266 and 268, Dalston-lane, u.t. 47 yrs., g.r. 2*l*., r. 90*l*. | 1,025 |
| Battersea.—21, Tyneham-rd., u.t. 73 yrs., g.r. 5*l*., r. 32*l*. | 340 |
| Greenwich.—24, 26, and 28, Blackwall-lane, u.t. 11 yrs., g.r. 3*l*. | 125 |
| 8, Catherine-grove, u.t. 19 yrs., g.r. 3*l*. 10s. | 130 |
| Deptford.—120, Douglas-st., u.t. 54 yrs., g.r. 2*l*. 8s. | 295 |
| 75, Warwick-st., u.t. 63 yrs., g.r. 2*l*. 8s. | 300 |
| 16, Amersham-vale, u.t. 34 yrs., g.r. 3*l*. | 265 |
| Lewisham.—41, 42, and 43, Thurston-rd., u.t. 64 yrs., g.r. 7*l* 10s. | 730 |
| 6, 7, and 8, Horton-st., u t. 64 yrs., g.r. 6*l*. 12s. | 695 |
| 28, Thornford-rd., f., r. 28*l*. | 485 |
| By Hepper & Sons (at Leeds). | |
| Holbeck, Yorks.—Charlotte-st., "The Nelson Inn"; 12, Moore-st, and 23, Nelson Inn-yard, area 382 yds., f. | 5,750 |
| Potter-st., a plot of building land, f. | 280 |
| By Norton, Trist, & Gilbert. | |
| Wapping.—Meeting House-alley, a warehouse and 12, Chandler-st. in rear, area 4,200 ft., f., r. 60*l*. | 1,100 |
| Ponder's End, Middx.—Freehold waterside land, 8 a. 0 r. 11 p. | £810 |
| Roydon, Essex.—Enclosure of meadow land, 14 a. 2 r. 3 p., f. | 505 |
| By Fortescue & Branson (at Shepherd's Bush). | |
| Shepherd's Bush.—26, Coningham-rd., u.t. 67 yrs., g.r. 6*l*. | 290 |
| By W. Rolfe (at Masons' Hall Tavern). | |
| Clapham.—Rectory-grove, "The Bull's Head" p.-h., with goodwill, and house and shop adjoining, u.t. 51½ yrs., r. 175*l*. | 9,500 |
| By Wilkinson, Son, & Welsh (at Brighton). | |
| Brighton, Sussex.—28 and 29, Devonshire-pl., f. | 910 |
| By Chadwick & Sons (on the premises). | |
| Kensington.—136, Sinclair-rd., u.t. 80 yrs., g.r. 15*l*. | 520 |
| March 1.—By E. H. Henry. | |
| Balham.—Balham Hill, Kenley House, u.t. 68½ yrs., g.r. 49*l*. 14s. 2d, r. 130*l*. | 1,050 |
| Battersea.—23, 45, and 47, Lavender-ter., u.t. 40 yrs., g.r. 12*l*. | 415 |
| Stockwell.—25 and 27, Landor-rd., u.t. 21 yrs., g.r. 20*l*. | 400 |
| By Linnett & Lane. | |
| Willesden.—8, 9, 11, 15, 16, 17, 143, 144, 145, and 146, Steele-rd., u.t. 85 yrs., g.r. 51*l*. (in lots) | 1,595 |
| By Chadwick & Sons. | |
| Fulham.—75, Dawes-rd., f., r. 44*l*. 4s. | 460 |
| By P. & G. Geen. | |
| Lewisham.—4, Hillyfields-cres., u.t. 97 yrs., g.r. 16*l*. | 650 |
| Dulwich.—55, Wood-vale, u.t. 83 yrs., g.r. 11*l*., r. 65*l*. | 660 |
| By G. Head & Co. | |
| St. John's Wood.—25, 31, 35, and 37, Loudoun-rd., u.t. 38½ yrs., g.r. 35*l*., r. 223*l*. | 1,700 |
| 14, St. John's Wood-rd., u.t. 24 yrs., g.r. 20*l*., r. 90*l*. | £750 |
| By Victor Vaughan. | |
| Willesden Green.—33 and 35, Lechmere-rd., u.t. 83 yrs., g.r. 15*l*., r. 68*l*. | 485 |
| Finchley.—28 and 32, Manor Park-rd., u.t. 82 yrs., g.r. 11*l*. 6s. | 410 |
| Notting Hill.—76 and 78, Walmer-rd., u.t. 62¾ yrs., g.r. nil | 900 |
| Westbourne Pk.—48, Cornwall-rd., u.t. 63½ yrs., g.r. 13*l*., r. 55*l*. | 400 |
| Reversion to 53 and 82, Portland-rd., u.t. 50½ yrs., g.r. 16*l*., e.r. 70*l*., lives aged 50 and 52 | 60 |
| March 2.—By Arthur Barton. | |
| Lee.—51, Micheldever-rd., u.t. 82 yrs., g.r. 6*l*. 6s. | 350 |
| By Ellis & Son. | |
| Whitechapel.—80, Leman-st., area 3,100 ft., f., r. 100*l*. | 3,100 |
| By Glasier & Sons. | |
| Clapham.—192, Clapham-rd., r. 100*l*., and 2a, Portland-pl. North, r. 50*l*.; also l.g.r. 30*l*., u.t. 21 yrs., g.r. 21*l*. | 1,750 |
| By S. Walker & Son. | |
| Soho.—17, Rupert-st., f.; 18, Rupert-st., lease for 17¾ yrs., r. 80*l*., and 19, Rupert-st., lease for 16 yrs., r. 130*l*. | 1,800 |
| Hoxton.—50, Linton-st., u.t. 28 yrs., g.r. 5*l*. 5s., r. 30*l*. | 265 |
| Islington.—31, Ockendon-rd., u.t. 42 yrs., g.r. 6*l*. 5s., r. 40*l*. | 400 |
| Hackney.—12, Church-rd., u.t. 62 yrs, g.r. 6*l*. 6s., r. 32*l*. | 360 |
| By Stimsom & Sons. | |
| Bermondsey.—71, Bermondsey New-rd., with workshops and stabling adjoining, f., r. 150*l*. | 3,020 |
| Walworth.—227, Walworth-rd., f., r. 90*l*. | 1,780 |
| Camberwell.—14, Addington-sq, f., r. 30*l*. | 525 |

| | |
|---|---|
| Peckham.—70, Lyndhurst-rd., u.t. 68 yrs , g.r. 7l. 10s., r. 50l. | £630 |
| Wandsworth.—1 and 3, Richmond-pl., u.t. 11 yrs., g.r. 2l. | 125 |
| Forest Hill.—53 to 63 (odd), Standstead-rd., f. | 1,445 |
| Norwood.—125, 127, and 129, Gipsy-rd., u.t. 71 yrs., g.r. 18l., r. 126l. | 755 |
| 12 and 14, Whiteley-rd., u.t. 67½ yrs., g.r. 12l., r. 70l. | 595 |
| Catford.—64, Faversham-rd., f., e.r. 35l. | 345 |
| Brockley.—133, Brockley-rd., u.t. 63 yrs., g.r. 4. 15l., r. 30l. | 280 |

By NEWBON, EDWARDS, & SHEPHARD.

| | |
|---|---|
| Hoxton.—1 and 2, Herbert-st., u.t. 44 yrs., g.r. 10l. 10s., r. 68l. | 740 |
| 87 and 88, Herbert-st., u.t. 43½ yrs., g.r. 12l. 12s., r. 101l. | 1,010 |
| 7, Gifford-st., u.t. 70 yrs., g.r. 5l. 10s., r. 42l. | 435 |
| 49, Essex-st., u.t. 70 yrs., g.r. 6l. 5s., r. 40l. | 435 |
| Canonbury.—15, Grosvenor-rd., u.t. 50 yrs., g.r. 8l. 10s., r. 50l. | 490 |
| Barnsbury.—57 and 59, College-st., r. 72l., also l.g.r. 5l., u.t. 17 yrs., g.r. 15l. | 370 |
| 31, Charlotte-st., u.t 22 yrs., g.r. 5l. 5s., e.r. 38l. | 240 |
| Camberwell.—13a, Wyndham-rd., u.t. 56½ yrs., g.r. 5l., r. 30l. | 275 |
| Clapton.—12, Alexandra-ter., u.t. 97½ yrs., g.r. 5l., r. 40l. | 560 |
| Edmonton.—Gloucester-rd., f.g.r. 30l., reversion in 97½ yrs. | 750 |

By THOMAS WOODS.

| | |
|---|---|
| Shalford, Surrey.—The Unsted Mills and 14 a., f., with goodwill, water rights, &c. | 8,000 |
| Godalming, Surrey.—Ockford Mills, 4 a., the beneficial lease for 19 yrs., r. 90l., with goodwill, &c. | |

March 3.—By HARPER, WALTON, & CO.

| | |
|---|---|
| Camberwell.—165, Camberwell-grove, u.t. 54 yrs., g.r. 7l. 10s., r. 52l. | 500 |
| Balham.—82, Sistova-rd., u.t. 78 yrs., g.r. 7l. 7s., r. 38l. | 350 |

By SLADE & BUTLER.

| | |
|---|---|
| Peckham.—51 to 59 (odd), Kirkwood-rd., f., r. 143l. | 1,810 |

By P. J. DIXON & SON.

| | |
|---|---|
| Old Ford.—70, Eglinton-rd., f. | 420 |
| Bethnal Green.—6, Hamilton-rd., u.t. 52½ yrs., g.r. 3l. | 260 |
| 192, Grove-rd., u.t. 53½ yrs., g.r. 5l., r. 32l. | 335 |
| Limehouse.—Narrow-st., &c., f.g.r. 38l. 16s., reversions in 932 and 938 yrs. | 1,475 |
| Camberwell.—1, Windsor-rd., u.t. 55 yrs., g.r. 11l. 11s., r. 60l. | 505 |
| Old Ford.—98 and 100, Armagh-rd., f. | 780 |
| Clapton.—109, Clifden-rd., u.t., 72½ yrs., g.r. 4l. 10s. | 260 |
| Hackney.—7, 9, and 17, Mansford-rd., f. | 1,180 |

By J. HOOD & SONS.

| | |
|---|---|
| Canning Town.—22 to 36 (even), Swanscombe-st., f. | 1,890 |
| Plaistow.—1, 3, 5, and 7, Brown's-rd., f. | 865 |
| 81, Brook's-rd., f. | 345 |
| 181 to 189 (odd), Balaam-st., f. | 1,930 |
| Hornsey.—37, 39, and 41, Clarendon-rd., f., r. 58l. 10s. | 830 |
| Forest Gate.—583, 585, and 587, Romford-rd., f., e.r. 84l. | 1,350 |

By BAKER & SONS

| | |
|---|---|
| Forest Hill.—Brockley View, Eglantine and Orielton, f., r. 107l. 10s. | 1,700 |
| Catford.—4, Brighton ter., f., r. 25l. | |
| Forest Hill.—Brockley View, Ingleholme, Malvinas, and Bella Vista, f., r. 180l. | 2,240 |
| Duncombe Hill, Cardigan Lodge, f., r. 40l | 500 |

*Contractions used in these lists.*—F.g.r. for freehold ground-rent; l.g.r. for leasehold ground-rent; i.g.r. for improved ground-rent; g.r. for ground-rent; r. for rent; f. for freehold; c. for copyhold; l. for leasehold; e.r. for estimated rental; u.t. for unexpired term; p.a. for per annum; yrs. for years; st. for street; rd. for road; sq. for square; pl. for place; ter. for terrace; cres. for crescent; yd. for yard, &c.

## PRICES CURRENT OF MATERIALS.

### TIMBER.

| | | |
|---|---|---|
| Greenheart, B.G. ton | 8/0/0 | 0/0/0 |
| Teak, E.I. ... load | 10/10/0 | 15/10/0 |
| Sequoia, U.S. ft. cu. | 1/9/0 | 2/0/0 |
| Ash, Canada, load | 3/17/6 | 5/5/0 |
| Birch, do. | 3/0/0 | 5/0/0 |
| Elm, do. | 4/12/6 | 5/15/0 |
| Fir, Dantsic, &c. | 1/10/0 | 3/10/0 |
| Oak, do. | 3/5/0 | 3/15/0 |
| Canada | 4/0/0 | 6/0/0 |
| Pine, Canada red. | 0/0/0 | 0/0/0 |
| Do. yellow | 4/7/6 | 6/5/0 |
| Lath, Dantsic, fath | 4/10/0 | 5/10/0 |
| St. Petersburg | 4/0/0 | 6/10/0 |
| Wainscot, Riga, &c., log | 3/15/0 | 6/5/0 |
| Odessa, crown | 3/15/0 | 6/5/0 |
| Deals, Finland 2nd & 1st std. 100 | 9/15/0 | 10/5/0 |
| Do. 4th & 3rd | 9/15/0 | 10/5/0 |
| Do. Riga | 8/5/0 | 9/5/0 |
| St. Petersburg, 1st yellow | 11/15/0 | 14/5/0 |
| Do. 2nd yellow. | 10/15/0 | 12/5/0 |
| Do. white | 9/15/0 | 11/15/0 |
| Swedish | 9/15/0 | 16/15/0 |
| White Sea | 10/15/0 | 18/0/0 |
| Canada, Pine 1st | 18/15/0 | 25/5/0 |
| Do. do. 2nd | 13/15/0 | 17/0/0 |
| Do. do. 3rd, &c. | 6/15/0 | 10/0/0 |
| Do. Spruce, 1st. | 8/5/0 | 10/5/0 |
| Do. do. 3rd and 2nd | 7/0/0 | 8/5/0 |
| New Brunswick | 7/0/0 | 7/15/0 |
| Battens all kinds | 5/0/0 | 16/0/0 |
| Flooring boards, sq., 1 in., prep. 1st | 9/0/0 | 15/3/0 |
| Do. 2nd | 7/0 | 12/3 |
| Other qualities— | 5/3 | 6/6 |
| Cedar, Cuba, ft. | /4 | /4½ |
| Honduras, &c. | /4 | /4½ |
| Mahogany, Cuba. | /5½ | /7½ |
| St. Domingo, cargo av. | /5 | 1/3 |
| Mexican, do. do. | /3½ | /4 |
| Tobasco, do. do. | /4 | /6½ |
| Honduras, do. | /4½ | /6 |
| Box, Turkey, ton. | 6/0/0 | 15/0/0 |
| Rose, Rio | 7/0/0 | 16/0/0 |
| Bahia | 6/0/0 | 14/0/0 |
| Satin, St. Doming. | /6 | 1/0 |

### TIMBER (*continued*).

| | | |
|---|---|---|
| Satin, Porto Rico | 0/0/9 | 0/2/0 |
| Walnut, Italian | 0/0/3 | 0/0/7½ |

### METALS.

| | | |
|---|---|---|
| Iron—Pig, in Scotland ... ton | 2/14/3½ | 0/0/0 |
| Bar, Welsh, in London | 6/0/0 | 6/5/0 |
| Do. do. at works in Wales | 5/15/0 | 5/17/6 |
| Do. Staffordshire, in London | 6/5/0 | 7/10/0 |
| COPPER—British cake and ingot | 75/10/0 | 76/10/0 |
| Best selected | 76/0/0 | 76/10/0 |
| Sheets, strong | 78/0/0 | 0/0/0 |
| Chili bars | 70/10/0 | 0/0/0 |
| YELLOW MTL. lb. | 7d. | 7½d. |
| LEAD—Pig Spanish ... ton | 14/10/0 | 0/0/0 |
| English com. Brands | 14/15/0 | 0/0/0 |
| Sheet, English 6 lbs. per sq. ft. and upwards | 15/15/0 | 0/0/0 |
| Pipe | 16/5/0 | 0/0/0 |
| ZINC—English sheet ... ton | 30/0/0 | 0/0/0 |
| Vieille Montagne | 31/0/0 | 0/0/0 |
| Spelter | 26/15/0 | 27/0/0 |
| TIN—Straits | 106/17/6 | 0/0/0 |
| Australian | 107/0/0 | 107/10/0 |
| English Ingots | 110/0/0 | 111/0/0 |
| Banca | 0/0/0 | 0/0/0 |
| Billiton | 0/0/0 | 0/0/0 |

### OILS.

| | | |
|---|---|---|
| Linseed ... ton | 17/5/0 | 0/0/0 |
| Cocoanut, Cochin | 27/15/0 | 0/0/0 |
| Do. Ceylon | 24/10/0 | 0/0/0 |
| Palm, Lagos | 21/15/0 | 0/0/0 |
| Rapeseed, English pale | 22/15/0 | 0/0/0 |
| Do. Brown | 21/5/0 | 0/0/0 |
| Cottonseed ref. | 15/0/0 | 16/0/0 |
| Oleine | 17/0/0 | 18/0/0 |
| Lubricating U.S. | 0/5/3 | 0/7/6 |
| Do. Black | 0/5/0 | 0/6/6 |
| TAR—Stockholm barrel | 1/5/0 | 0/0/0 |
| Archangel | 0/18/0 | 0/0/0 |
| Turpentine | 32/10/0 | 0/0/0 |

## TO CORRESPONDENTS.

H. C. amounts should have been stated).

NOTE.—The responsibility of signed articles, letters, and papers read at public meetings, rests, of course, with the authors.

*We cannot undertake to return rejected communications.*

Letters or communications (beyond mere news items) which have been duplicated for other journals are NOT DESIRED.

We are compelled to decline pointing out books and giving addresses.

Any commission to a contributor to write an article is given subject to the approval of the article, when written, by the Editor, who retains the right to reject it if unsatisfactory. The receipt by the author of a proof of an article in type does not necessarily imply its acceptance.

All communications regarding literary and artistic matters should be addressed to THE EDITOR; those relating to advertisements and other exclusively business matters should be addressed to THE PUBLISHER, and *not* to the Editor.

## TENDERS.

[Communications for insertion under this heading should be addressed to "The Editor," and must reach us *not later than* 10 *a.m. on Thursdays.* N.B.—We cannot publish Tenders unless authenticated by the name and address of the sender; and we cannot publish announcements of Tenders accepted unless the amount of the Tender is given, nor any list in which the lowest Tender is under £100, unless in some exceptional cases and for special reasons.]

CHOPWELL (co. Durham).—For the erection of store premises, cottages, &c., for the Co operative Society, Ltd. Messrs. Liddle & Brown, architects, Mosley-street, Newcastle:—

| | | | |
|---|---|---|---|
| Ed. Taylor | £7,160 2 10 | John Westgarth | £6,421 8 6½ |
| J. G. Bradley | 6,881 10 0 | Stephen Sheriff | 6,312 18 0 |
| G. T. Manners | 6,850 0 0 | M. A. Armstrong | 6,152 15 2 |
| Reay & Son | 6,722 0 0 | H. Atkinson, Blaydon* | 6,130 15 7 |
| Davison & Bolan | 6,653 16 0 | Thos. Doin | 5,974 8 6 |
| T. Hutchinson | 6,535 10 0 | T. & J. White | 5,516 9 2 |
| Thos. W. Wilson | 6,462 15 11 | | |

* Accepted on amended tender.

DOVER.—For a public convenience and additions to the Museum, Gaol-lane, for the Town Council. Mr. H. E. Stilgoe, C.E., Town Hall, Dover. Quantities by the Borough Engineer:—

| | | | |
|---|---|---|---|
| C. F. Keeler | £1,445 0 0 | H. Richardson | £1,283 0 0 |
| H. Warren & Son | 1,393 15 7 | W. Logan, Maidstone* | 1,279 0 0 |
| G. Munro | 1,393 9 2 | | |

* Accepted.

HARROW.—For road and sewer, Parkfield Estate, Harrow, for Mr. A. Sykes:—

| | | | |
|---|---|---|---|
| Dupont | £2,050 | Wimpey | £1,799 |
| Neave | 1,911 | Killingback | 1,797 |
| Adams | 1,833 | Free & Son | 1,760 |

HEBBURN-ON-TYNE.—For the erection of a house and shop, Carr-street, for Messrs. Newlands & Newlands. Mr. J. W. Wardle, architect, South Shields:—

| | | | |
|---|---|---|---|
| C. Henderson | £559 15 0 | Stuart Craig, Jarrow-on-Tyne* | £498 5 3 |
| Cooper & Henderson | 538 0 0 | | |
| T. Lumsden | 500 0 0 | | |

* Accepted.

HORSHAM (Sussex).—For new shop-front to 63, West-street, for Messrs. Rice Bros. Messrs. Findlay & Roques, architects and surveyors, London:—

| | | | |
|---|---|---|---|
| Dewdney Bros. | £286 10 | G. Potter | £270 0 |
| Rowland Bros. | 279 0 | E. Steer (accepted) | 195 0 |

LONDON.—For the erection of a house at Gunnersbury-lane, Ealing Common, W. Mr. Eustace C. Frere, architect, Lincoln's Inn, W.C.:—

| | | | |
|---|---|---|---|
| T. H. Adamson | £5,935 | F. T. Chinchen | £5,277 |
| J. Christie | 5,690 | T. Nye | 5,148 |
| Kinninmont & Son | 5,375 | | |

LONDON.—For alterations, &c., at Nos. 367 and 368, Central Meat Market, E.C., for Messrs. T. Borthwick & Sons. Mr. W. Ernest Hazell, architect, 23, Moorgate-street, E.C.:—

| | | | |
|---|---|---|---|
| Bristow & Sons | £424 | Stevens Bros.* | £335 |

* Accepted.

LONDON.—For alterations, &c., at No. 49, Russell-square, W.C., for Mr. T. Borthwick. Mr. W. Ernest Hazell, architect, 23, Moorgate-street, E.C.:—

| | | | |
|---|---|---|---|
| Stevens Bros. | £2,012 | Bristow & Sons | £1,698 |
| Parkinson & Sons | 1,732 | C. W. Patter (accepted) | 1,689 |

LONDON.—For the erection of a church at Gospel Oak, N.W. Mr. Beresford Pite, architect, Harley-street, W.:—

| | | | |
|---|---|---|---|
| W. King | £5,936 | Houghton Bros. | £5,600 |
| Coulson & Marks | 5,720 | H. Wall & Co. | 5,585 |
| Patman & Fotheringham | 5,692 | Parker | 5,569 |
| G. Neal | 5,687 | Godson & Sons | 5,565 |
| F. T. Chinchen | 5,639 | F. J. Coxhead | 5,353 |

LONDON.—For the erection of stables, &c., for the Victoria Wine Company, at Berner-street, Whitechapel, E. Mr. George Waymouth, architect, 23, Moorgate-street, E.C.:—

| | | | |
|---|---|---|---|
| Bristow & Sons | £2,286 | Barlow & Roberts | £1,850 |
| W. Gladding | 1,919 | Stevens Bros. (accepted) | 1,765 |

LONDON.—For repair of and provision of glass roofs to the stairways of Woolwich ferry pontoon, for the London County Council:—

| | | | |
|---|---|---|---|
| H. Young & Co. | £1,450 | W. Macfarlane & Co. | £1,158 10 |

LONDON.—For alterations at the "College Arms," Bethnal Green, for Mr. Lakeman. Mr. Edward Brown, architect, 161, Commercial-street, Bishopsgate:—

| | | | |
|---|---|---|---|
| A. Hood | £512 0 | R. Preston | £311 10 |
| E. Lancaster | 487 0 | | |

*Pewtering.*

| | | | |
|---|---|---|---|
| W. Paddon, jun. | £77 0 | B. J. Grimes & Son | £68 0 |
| W. Rogers & Sons* | 68 10 | | |

*Gasfitting.*

| | | | |
|---|---|---|---|
| J. Miller & Co. | £53 0 | J. Steadman* | £50 0 |
| Dupuy, Potter, & Adams. | 50 0 | | |

* Accepted.

LONDON.—For the erection of a factory at Erskine-road, Chalk Farm, N.W. Mr. Alfred Conder, architect, Palace Chambers, 9, Bridge-street, Westminster. Quantities by Mr. E. J. Paine, 11, Great James street, Bedford-row:—

| | | | |
|---|---|---|---|
| L. H. & R. Roberts | £4,389 | Stimpson & Co. | £3,870 |
| T. D. Steed | 3,992 | Turtle & Appleton | 3,840 |
| J. Carmichael | 3,950 | James Chapman | 3,791 |
| J. Smith & Sons | 3,983 | Wm. Goodman | 3,619 |
| J. Grover & Son | 3,938 | John Greenwood | 3,568 |
| Wm. Akers & Co. | 3,912 | E. Toms (accepted) | 3,549 |

LONDON.—For erecting the "Boleyn" Tavern, Upton Park. Messrs. Shoebridge & Rising, architects:—

| | | | |
|---|---|---|---|
| H. L. Holloway | £14,983 | G. Parker | £14,701 |
| Dearing & Son | 14,864 | Killby & Gayford | 14,436 |
| J. Carmichael | 14,859 | Lascelles & Co. | 14,329 |
| W. Shurmur | 14,786 | Edwards & Medway | 14,144 |
| J. Anley & Son | 14,782 | | |

LONDON.—For erecting house and shop, Nile-street, Hoxton, for Mr. G. Rutter. Mr. G. Baines, architect:—

| | | | |
|---|---|---|---|
| C. Dearing & Son | £1,680 | Wm. Shurmur | £1,593 |
| J. Jarvis & Son | 1,623 | W. V. Goad | 1,581 |
| S. J. Scott | 1,623 | Battley, Sons, & Holness | 1,487 |
| H. L. Holloway | 1,600 | Chas. King | 1,362 |

LONDON.—For erecting a factory at Friar's-court, Southwark, for Messrs. Harmsworth & Co., Ltd. Mr. H. C. Ellis, architect:—

| | | | |
|---|---|---|---|
| Patman & Fotheringham | £4,561 | W. Shurmur | £3,829 |
| J. Outhwaite & Sons | 4,297 | Killby & Gayford | 3,534 |
| B. E. Nightingale | 3,985 | | |

LONDON.—For erecting a house and shop, Nile-street, Hoxton, for Mr. Geo. Rutter. Mr. Geo. Baines, architect:—

| | | | |
|---|---|---|---|
| S. J. Scott | £1,467 | Wm. Shurmur | £1,397 |
| C. Dearing & Son | 1,460 | W. V. Goad | 1,395 |
| H. L. Holloway | 1,399 | Battley, Sons & Holness | 1,290 |
| J. Jarvis & Sons | 1,395 | Chas. King | 1,179 |

LOUGHBOROUGH (Leicester).—For the construction of a filter bed, &c., Nanpantan, for the Corporation. Mr. A. H. Walker, Engineer, Municipal Offices, Ashby-road, Loughborough. Quantities by the Engineer:—

| | |
|---|---|
| J. F. Price, Sherwood Rise, Nottingham* | £1,398 14 3 |

* Amended tender.

LUTON.—For roads and sewers, Leigh Estate, Luton, for Messrs. J. Cumberland & Son:—

| | | | |
|---|---|---|---|
| Geo. Powdrill | £3,475 | Killingback & Co. | £2,745 |
| Free & Son | 2,930 | Hollingsworth | 2,665 |
| S. Adams | 2,889 | Bell | 2,590 |
| A. T. Catley | 2,770 | | |

MANSFIELD (Notts).—For the construction of sewers, &c., for the Town Council. Mr. R. F. Vallance, C.E., Town Hall, Mansfield:—

*Intercepting Sewer.*

| | | | |
|---|---|---|---|
| J. Tomlinson | £15,500 0 0 | J. D. Nowell & Sons, Nottingham* | £9,999 0 0 |
| G. Bell | 12,290 0 0 | | |
| J. F. Price | 11,900 0 0 | | |

*Littleworth Outfall Sewer.*

| | | | |
|---|---|---|---|
| J. F. Price | £1,210 0 0 | W. A. Vallance | £493 0 0 |
| J. Tomlinson | 775 14 2 | J. Bradley | 409 18 0 |
| Fisher Bros. | 680 10 0 | J. Greenwood, Mansfield (accepted) | 430 0 0 |
| J. D. Nowell & Sons, | 580 13 9 | | |

*Pleasley Hill Sewerage.*

| | | | |
|---|---|---|---|
| J. D. Nowell & Sons. | £7,800 0 0 | W. A. Vallance | £4,595 0 0 |
| G. Bell | 5,290 0 0 | J. F. Price | 4,502 5 0 |
| J. Greenwood | 5,100 0 0 | Fisher Bros. | 4,418 0 0 |
| Bradley & Wilkinson | 4,820 0 0 | J. Lane & Son, Skegby* | 3,985 12 0 |
| G. H. Rawson | 4,800 0 0 | | |

* Accepted.

MARLBOROUGH.—Accepted for new reading-room and classrooms, Marlborough College, Wilts. Mr. Thos. Garner, architect, Gray's Inn-square, W.C. Quantities by Messrs. Northcroft, Son, & Neighbour, Charing Cross, W.C.:—

| | |
|---|---|
| Messrs. Stephens, Bastow, & Co., Limited | £8,000. |

PETERBOROUGH.—For the erection of three shops, Fletton, for the Peterborough Co-operative Society. Messrs. Townsend & Fordham, architects, Cross-street, Peterborough. Quantities by Mr. Fordham:—

| | | | |
|---|---|---|---|
| Cracknell | £2,207 19 0 | Watson & Lucas | £1,589 0 0 |
| W. Wade | 2,195 0 0 | J. Bridgefoot & Son, Woodstone, Peterborough* | 1,565 14 0 |
| R. J. Nichols | 1,665 0 0 | | |
| S. Hipwell & Co. | 1,620 0 0 | | |
| Hicks Bros. | 1,590 12 8 | | |

* Accepted.

RUSHDEN.—For two houses, to be built in Moor-road, Rushden, for Mr. W. Garner. Mr. Harry Knight, architect and surveyor, Rushden, R.S.O.:—

| | | | |
|---|---|---|---|
| T. & C. Berrill | £432 0 | T. Swindall | £399 0 |
| Whittington & Tomlin | 429 0 | Hy. Sparrow | 398 0 |
| F. Henson | 425 0 | Dickens Bros. | 382 10 |
| C. E. Bayes | 413 0 | Hacksley Bros. | 379 0 |
| R. Marriott | 409 0 | Wm. Packwood* | 366 18 |
| T. Willmott | 399 10 | | |

* Accepted.

ST. ALBANS.—For the erection of the St. Alban's Liberal Club, Hatfield-road. Mr. S. Doddimeade Edmunds, architect, 22, Verulam-road, St. Albans, and Bow, E.:—

| | | | |
|---|---|---|---|
| Whibley & Jervis | £1,074 | G. Wiggs | £945 |
| Boff Bros. | 961 | E. Dunham* | 933 |

[* Modified estimate of £878 accepted.]

WIGSTON MAGNA (Leicestershire).—For the erection of residence and stabling. Messrs. Miles & Beasley, architects and surveyors, Friar-lane, Leicester. Quantities by architects:—

| | | | |
|---|---|---|---|
| S. Briers | £2,220 | J. O. Jewsbury | £1,984 |
| Bradshaw Bros. | 2,216 | C. Gurney* | 1,934 |
| Jos. Wright | 2,100 | | |

* Accepted.

[All of Leicester].

WINDERMERE.—For the erection of a bridge over the River Troutbeck. Mr. J. Bintley, County Surveyor, 7, Lowther-street, Kendal:—

| | | | |
|---|---|---|---|
| T. & M. Atkinson | £1,080 0 0 | A. Jackson, Ambleside (accepted) | £720 0 0 |
| W. Grisenthwaite | 870 10 3 | | |

## LONDON SCHOOL BOARD TENDERS.

AT the last meeting of the London School Board, the Works Committee submitted the following lists of tenders:—

"ALMA."—Manual Training Centre for forty children:—

| | | | |
|---|---|---|---|
| W. V. Goad | £1,231 5 | J. Garrett & Son | £1,046 0 |
| Rice & Son | 1,165 0 | W. Hammond | 1,016 0 |
| T. Hooper & Son | 1,163 0 | W. Downs | 1,007 0 |
| Staines & Son | 1,130 0 | E. Triggs | 1,000 0 |
| W. Akers & Son | 1,129 0 | J. Marsland* | 988 0 |
| F. T. Chinchen | 1,074 0 | | |

BROAD-STREET.—Providing new drainage system, refitting offices (all departments) with separate pans and siphon cisterns, and providing new wastes and channels under lavatories :—

*Second Competition.*

| | | | | | |
|---|---|---|---|---|---|
| J. W. Falkner & Sons | £3,890 | 0 | Johnson & Co. | £2,970 | 0 |
| J. & C. Bowyer | 3,117 | 0 | E. Lawrance & Sons | 2,953 | 0 |
| W. Scrivener & Co. | 3,098 | 0 | E. Triggs | 2,909 | 0 |
| J. Carmichael | 3,007 | 0 | Ashby & Horner | 2,849 | 10 |
| W. Akers & Co. | 2,995 | 0 | F. G. Minter | 2,792 | 0 |
| McCormick & Sons | 2,982 | 10 | Lathey Bros.• | 2,791 | 0 |

CAPLAND-STREET (Boys and Girls).—Providing and fixing swivel sash partitions to divide the large class room in each department :—

| | | | | | |
|---|---|---|---|---|---|
| Stevens Bros. | £210 | 0 | J. Stones | £182 | 14 |
| F. T. Chinchen | 208 | 10 | Thompson & Beveridge | 155 | 0 |
| T. Cruwys | 105 | 0 | McCormick & Sons | 146 | 0 |
| Marchant & Hirst | 189 | 10 | F. Britton• | 133 | 0 |

ESSENDINE-ROAD.—Providing and fixing low-pressure hot-water apparatus for ground, first, and second floor halls, and six class-rooms, drawing class-room, corridors, cloak-rooms, and lavatories :—

| | | | | | |
|---|---|---|---|---|---|
| H. C. Price Lea & Co. | £506 | | J. Wontner-Smith, Gray, & Co. | £397 | 0 |
| B. Harlow & Son | 589 | | Wenham & Waters, Lim. | 396 | 0 |
| J. & F. May | 490 | | Bates & Pearce | 388 | 0 |
| Strode & Co. | 445 | | J. C. & J. S. Ellis, Ltd. | 385 | 0 |
| Wippell Bros. & Row | 425 | | T. S. Knight & Sons | 384 | 0 |
| G. Davis | 420 | | Russell & Co.• | 329 | 10 |

GROVE-VALE.—Providing and fixing low-pressure hot-water apparatus for ground, first, and second floor halls, and six class-rooms, drawing class-room, corridors, cloak-rooms, and lavatories :—

| | | | | | |
|---|---|---|---|---|---|
| H. C. Price Lea & Co. | £570 | 0 | Wenham & Waters, Ltd. | £425 | 0 |
| A. Dougill & Co., Ltd. | 560 | 0 | W. G. Cannon & Sons | 399 | 0 |
| E. Oldroyd & Co., Ltd. | 466 | 0 | J. Grundy | 371 | 16 |
| Dargue, Griffiths & Co., Ltd. | 435 | 10 | Duffield & Co | 360 | 0 |
| J. Wontner-Smith, Gray & Co. | 432 | 0 | W. Truswell & Son | 331 | 8 |
| | | | A. J. Kallaway & Co., Ltd.• | 315 | 0 |

HANBURY-STREET.—Drainage and sanitary work :—

| | | | | | |
|---|---|---|---|---|---|
| G. Godson & Sons | £1,718 | 0 | Ashby Bros. | £1,478 | 0 |
| C. W. Killingback & Co. | 1,713 | 0 | F. & F. J. Wood | 1,420 | 0 |
| W. V. Goad | 1,624 | 10 | F. G. Minter | 1,399 | 0 |
| Unsigned | 1,556 | 0 | E. Triggs | 1,340 | 0 |
| Willmott & Sons | 1,538 | 0 | F. Britton• | 1,320 | 0 |
| Lathey Bros. | 1,479 | 0 | F. Bull | 1,296 | 0 |

• Accepted.

HOLLAND-STREET.—Removing present partition separating rooms B and C in the boys' and girls' departments, and providing sliding glazed partitions to re-divide the rooms into three rooms in each case. Also providing stepped flooring in class-room A (infants' department) :—

| | | | | | |
|---|---|---|---|---|---|
| J. Harvey | £453 | 0 | J. F. Ford | £297 | 0 |
| H. Line | 445 | 0 | J. Marsland | 265 | 0 |
| Johnson & Co. | 420 | 0 | Wake & Dean | 265 | 0 |
| W. Hornett | 387 | 0 | B. E. Nightingale• | 222 | 0 |
| J. Stones | 351 | 15 | | | |

MANSFIELD-ROAD.—Special school for forty children :—

| | | | |
|---|---|---|---|
| T. L. Green | £3,089 | H. Wall & Co. | £2,931 |
| McCormick & Sons | 3,057 | F. Gough & Co.• | 2,854 |

OLD CASTLE-STREET.—Providing additional light and ventilation to class-rooms on ground floor; refitting male infants' water-closets with separate pans and extending the urinal; refitting all lavatories, and alterations to infants' lavatory; removing teachers' water-closets on first floor and erecting new water-closets on ground floor; alterations to existing drainage; converting into a hall the disused correspondents' room, teachers' rooms, lavatory, &c., on first floor :—

| | | | |
|---|---|---|---|
| G. Parker | £1,710 | McCormick & Sons | £1,545 |
| Johnson & Co. | 1,690 | Ashby Bros. | 1,535 |
| J. W. Falkner & Sons | 1,679 | E. Triggs | 1,505 |
| T. Cruwys | 1,678 | Lathey Bros.• | 1,417 |
| Stevens Bros. | 1,629 | | |

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|---|---|---|---|---|---|
| A. Dougill & Co., Ltd. | £690 | 0 | Dargue, Griffiths, & Co., Ltd | £435 | 10 |
| H. C. Price, Lea, & Co. | 570 | 0 | J. C. & J. S. Ellis, Ltd | 419 | 0 |
| J. & F. May | 545 | 0 | W. G. Cannon & Sons | 399 | 0 |
| E. Oldroyd & Co., Ltd. | 535 | 0 | J. Grundy | 371 | 16 |
| C. Kite & Co. | 475 | 0 | Russell & Co. | 359 | 10 |
| Strode & Co. | 467 | 0 | Duffield & Co.• | 355 | 0 |

RILEY-STREET.—Enlargement—Boys, 392: Girls, 392; Infants, 394 (seat basis); total 1,178. [Present accommodation—Boys, 230; Girls, 230 Infants, 308; total, 768. Net gain—Boys, 162, Girls, 162; Infants, 86; total, 410]. The plans include hall, staircases, cloak-rooms and teachers room for each department; re-dividing and re-stepping existing class-rooms; new water-closets, and drainage scheme; new schoolkeeper's house; and enclosing, draining, and tar-paving the additional land :—

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| T. L. Green | £19,125 | 0 | 0 | F. & H. F. Higgs | £17,545 | 0 | 0 |
| Treasure & Son | 18,710 | 0 | 0 | Stimpson & Co. | 17,477 | 0 | 0 |
| L. H. & R. Roberts | 18,431 | 0 | 0 | G. E. Wallis & Sons | 17,476 | 0 | 0 |
| C. Miskin & Sons | 18,409 | 6 | 7 | B. E. Nightingale• | 17,079 | 0 | 0 |
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The number of Free Policies granted during the year to those Policyholders of five years' standing, who desired to discontinue their payments, was 66,379, the number in force being 604,564. The number of Free Policies which became Claims during the year was 12,231.

The total number of Policies in force at the end of the year was 12,949,679: their average duration exceeds eight and a half years.

The Assets of the Company, in both branches, as shewn in the Balance Sheet, are £33.599,708, being an increase of £3,161,371 over those of 1897.

Public attention having been for some time past directed to questions of thrift and provision for old age, the Directors have had under consideration how they can further assist those Policyholders who from age and diminished earnings find some difficulty in maintaining the payment of Premiums on their Policies, and they have therefore made provision for all Policyholders in the Industrial Branch who have been assured for twenty-five years to be free from the payment of further Premiums as they attain the age of 75. This alteration takes effect at once, and has of course necessitated a considerable addition to the Reserves.

Messrs. Deloitte, Dever, Griffiths & Co. have examined the Securities, and their certificate is appended to the Balance Sheets.

THOS. C. DEWEY, } *Joint*
WILLIAM HUGHES, } *General*
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*The full Report and Balance Sheet can be obtained upon application to the Secretary.*

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*Refer also to* "TOO LATE" *column, page* xxi.

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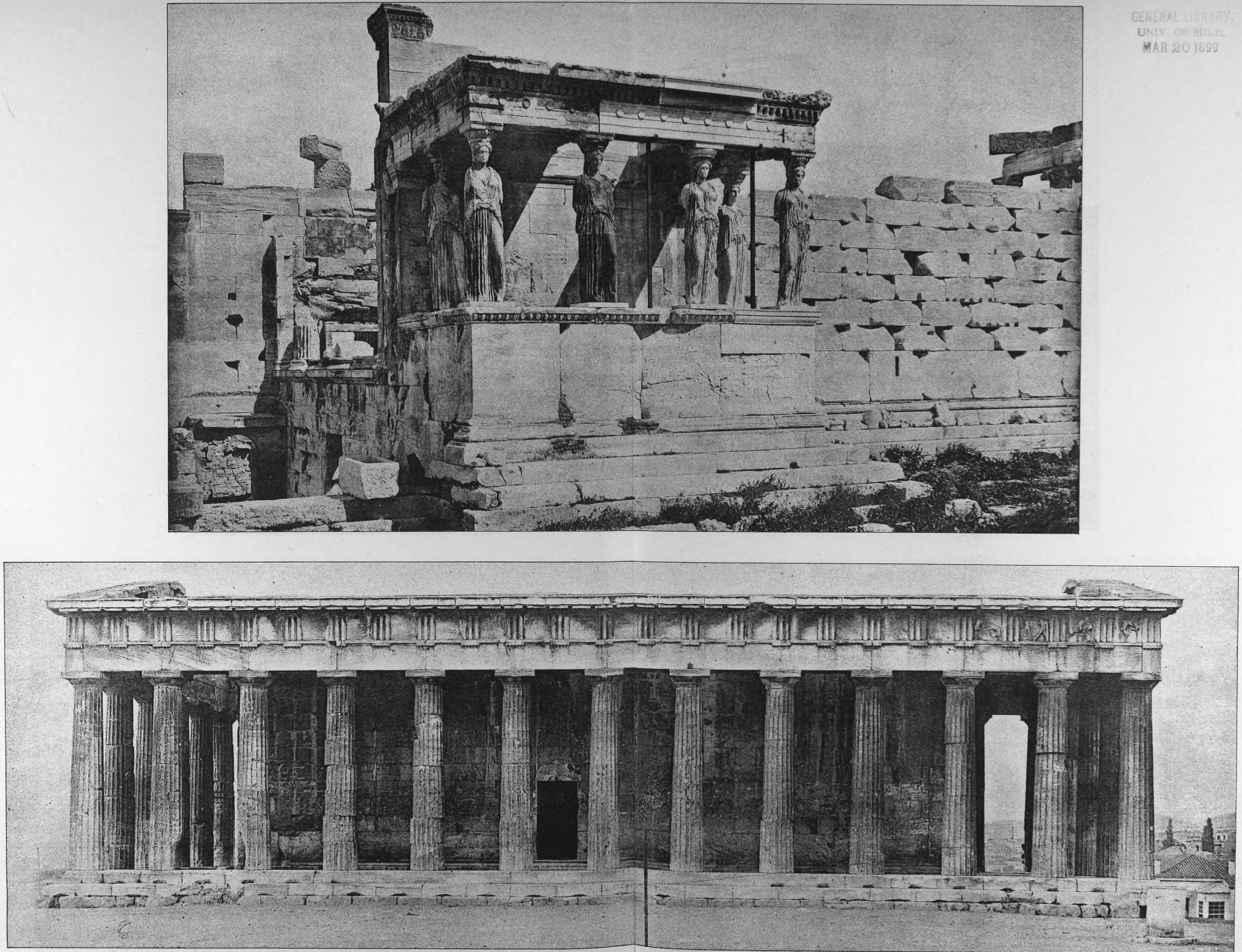

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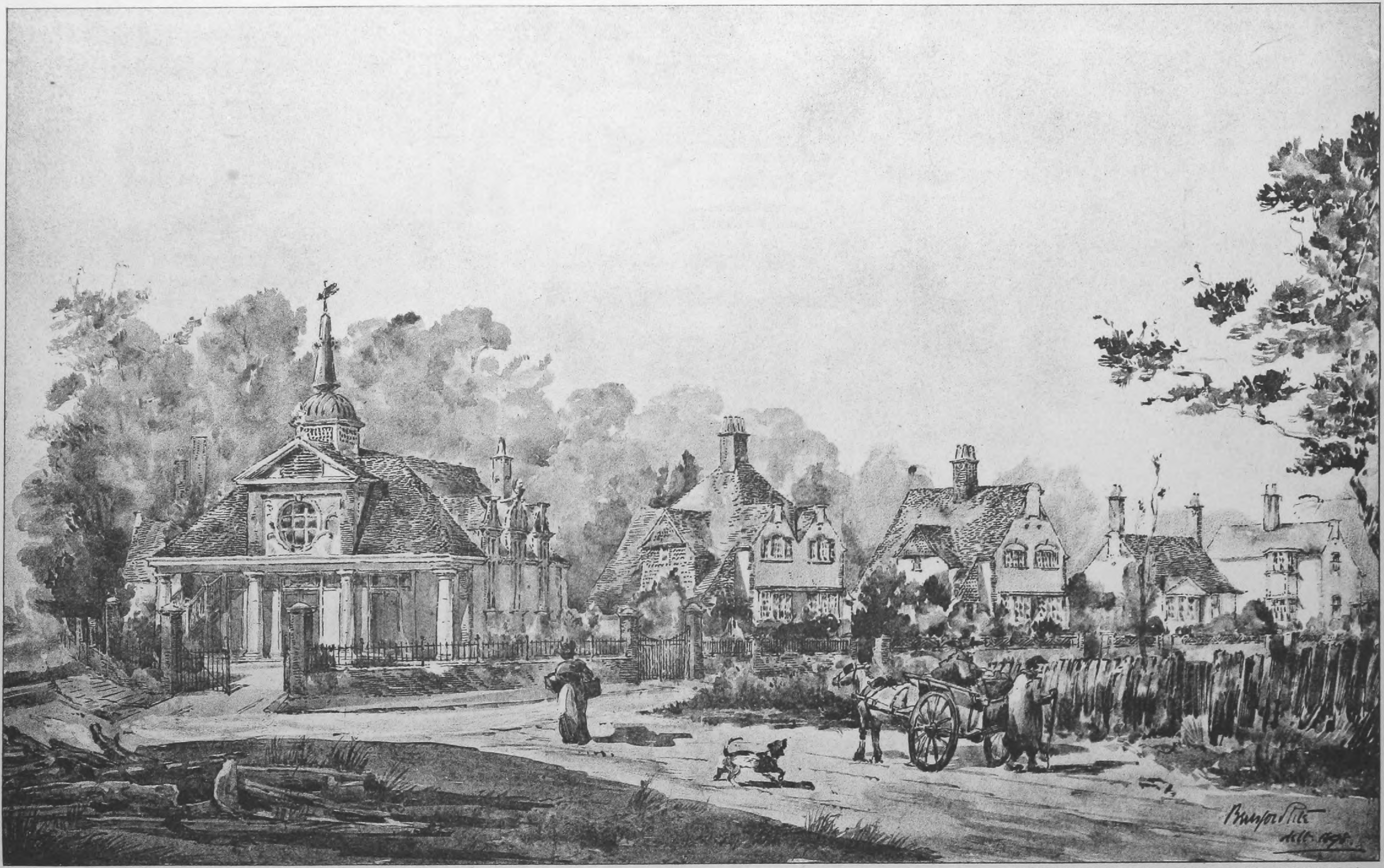
THE THESEION: AND THE CARYATIDE PORCH OF THE ERECHTHEION.

*(In illustration of Professor Aitchison's Lectures on Greek Architecture.)*


Beresford Pite
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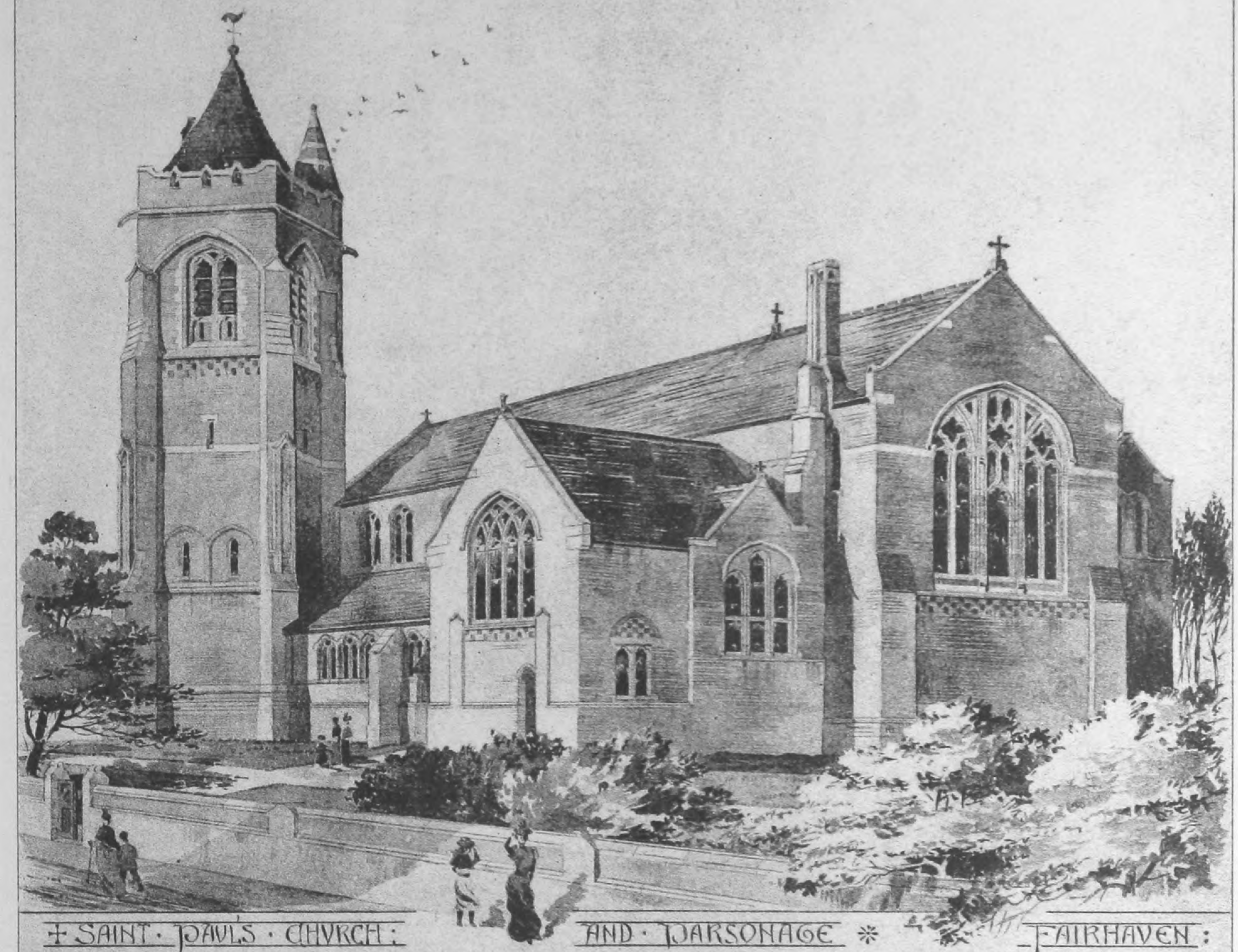
DESIGN FOR SALTWOOD PARISH HALL AND ALMSHOUSES.—By Mr. Beresford Pite, F.R.I.B.A.



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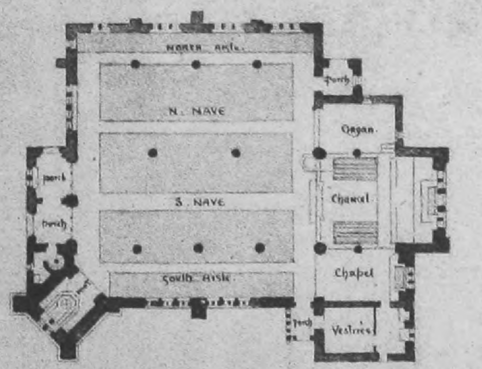
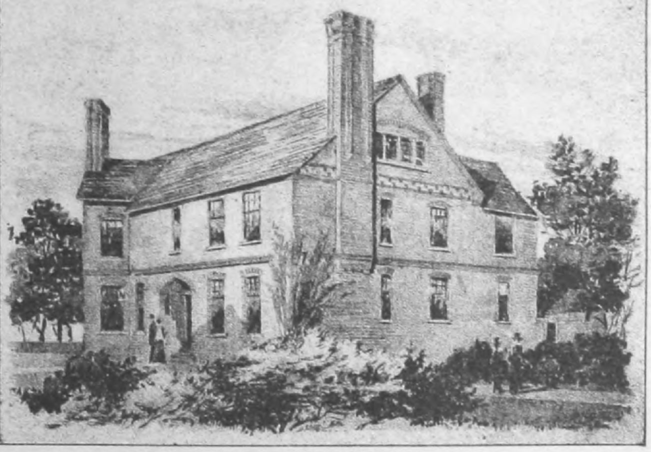

North Aisle.
Porch
N. NAVE
Organ.
porch
S. NAVE
Chancel.
Porch
Chapel
South Aisle.
Porch
Vestries

✻ MEDLAND · TAYLOR : ARCHITECT : ✻
2 · SAINT · ANNES · CHURCH-YARD : MANCHESTER :



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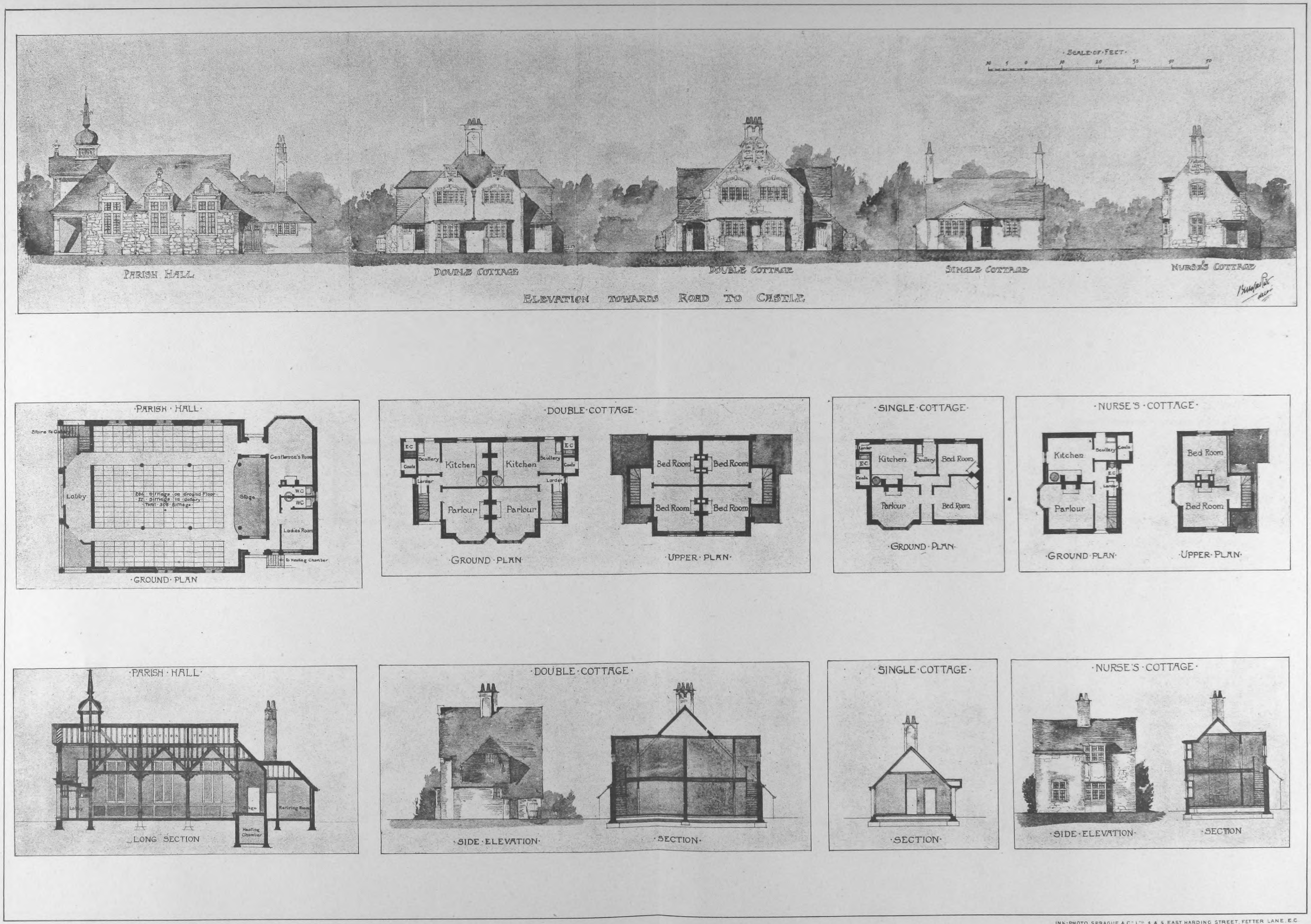
SCALE OF FEET
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PARISH HALL
DOUBLE COTTAGE
DOUBLE COTTAGE
SINGLE COTTAGE
NURSE'S COTTAGE
ELEVATION TOWARDS ROAD TO CASTLE
PARISH HALL
Stairs to Gallery
Lobby
286 Sittings on Ground Floor
22 Sittings in Gallery
Total 308 Sittings
Stage
Gentlemen's Room
W.C
WC
Ladies' Room
To Heating Chamber
GROUND PLAN
DOUBLE COTTAGE
EC
Coals
Scullery
Kitchen
Kitchen
Scullery
EC
Coals
Larder
Larder
Parlour
Parlour
GROUND PLAN
Bed Room
Bed Room
Bed Room
Bed Room
UPPER PLAN
SINGLE COTTAGE
Larder
EC
Coals
Kitchen
Scullery
Bed Room
Parlour
Bed Room
GROUND PLAN
NURSE'S COTTAGE
Kitchen
Scullery
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EC
Larder
Parlour
GROUND PLAN
Bed Room
Bed Room
UPPER PLAN
PARISH HALL
VENTILATION TRUNK
Lobby
Stage
Retiring Room
Heating Chamber
LONG SECTION
DOUBLE COTTAGE
SIDE ELEVATION
SECTION
SINGLE COTTAGE
SECTION
NURSE'S COTTAGE
SIDE ELEVATION
SECTION

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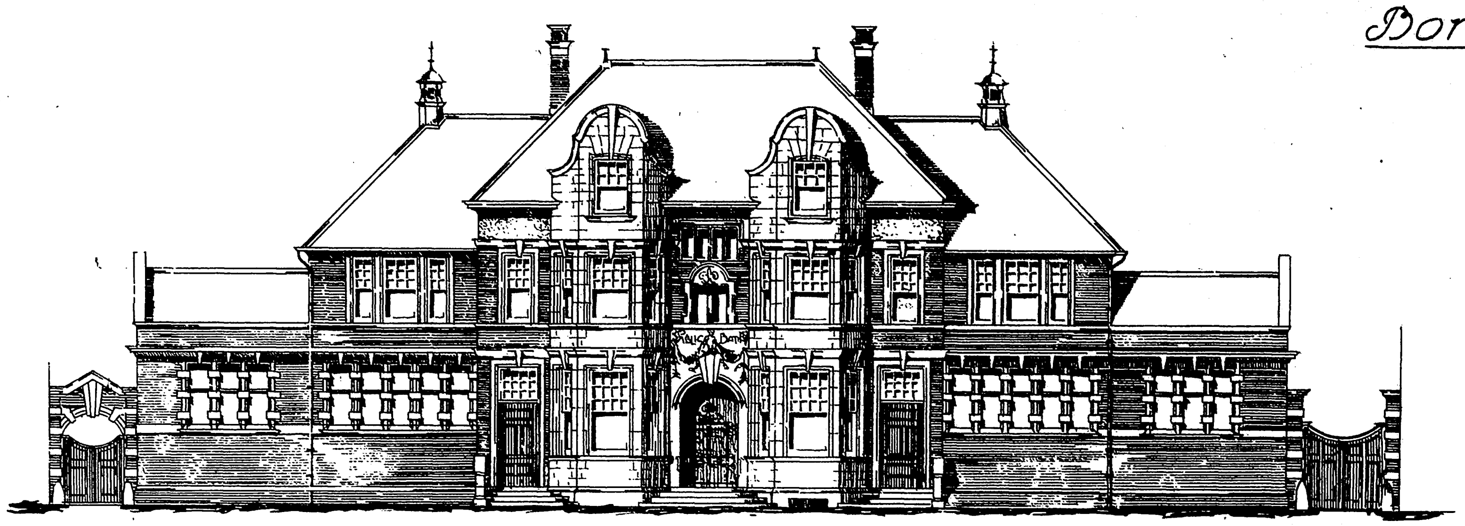
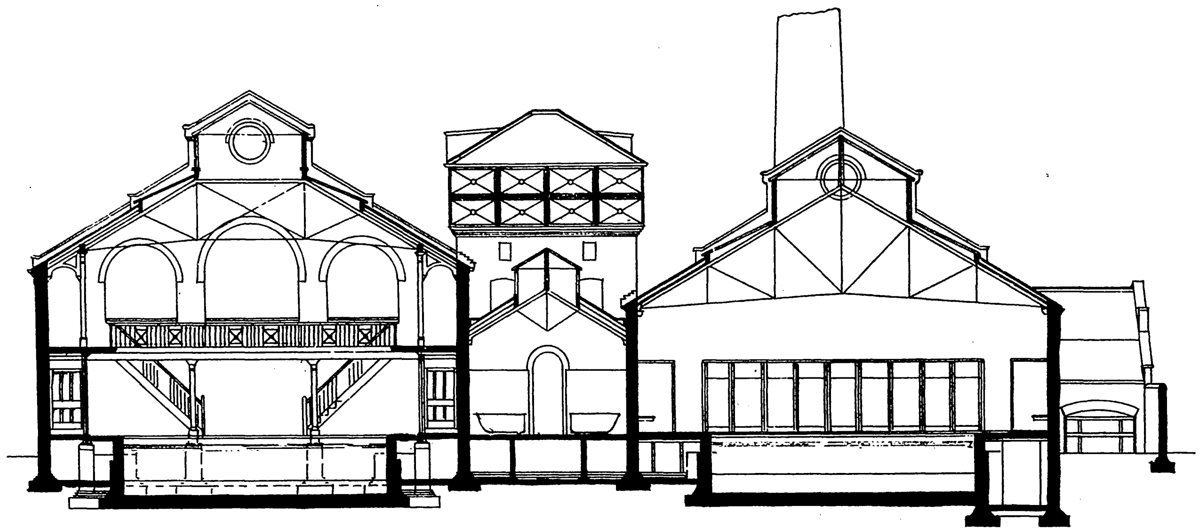
DESIGN FOR SALTWOOD PARISH HALL AND ALMSHOUSES.—BY MR. BERESFORD PITE, F.R.I.B.A.

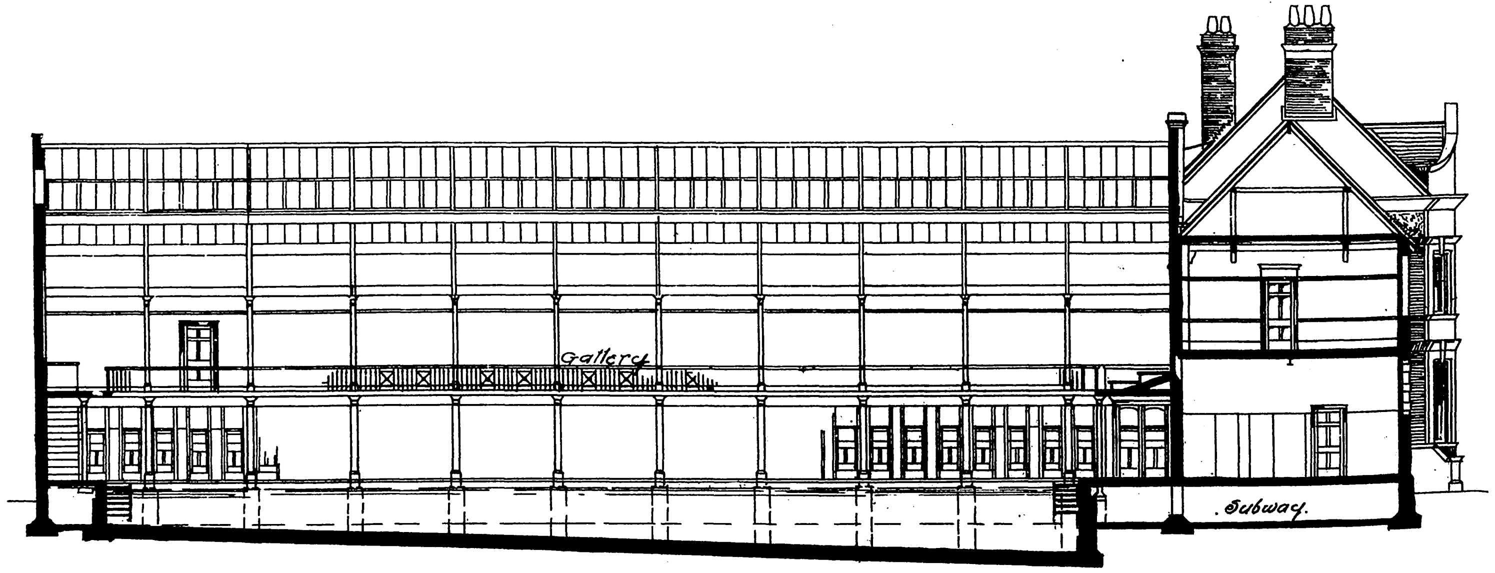
# Borough of West Ham
## Public Baths Plaistow



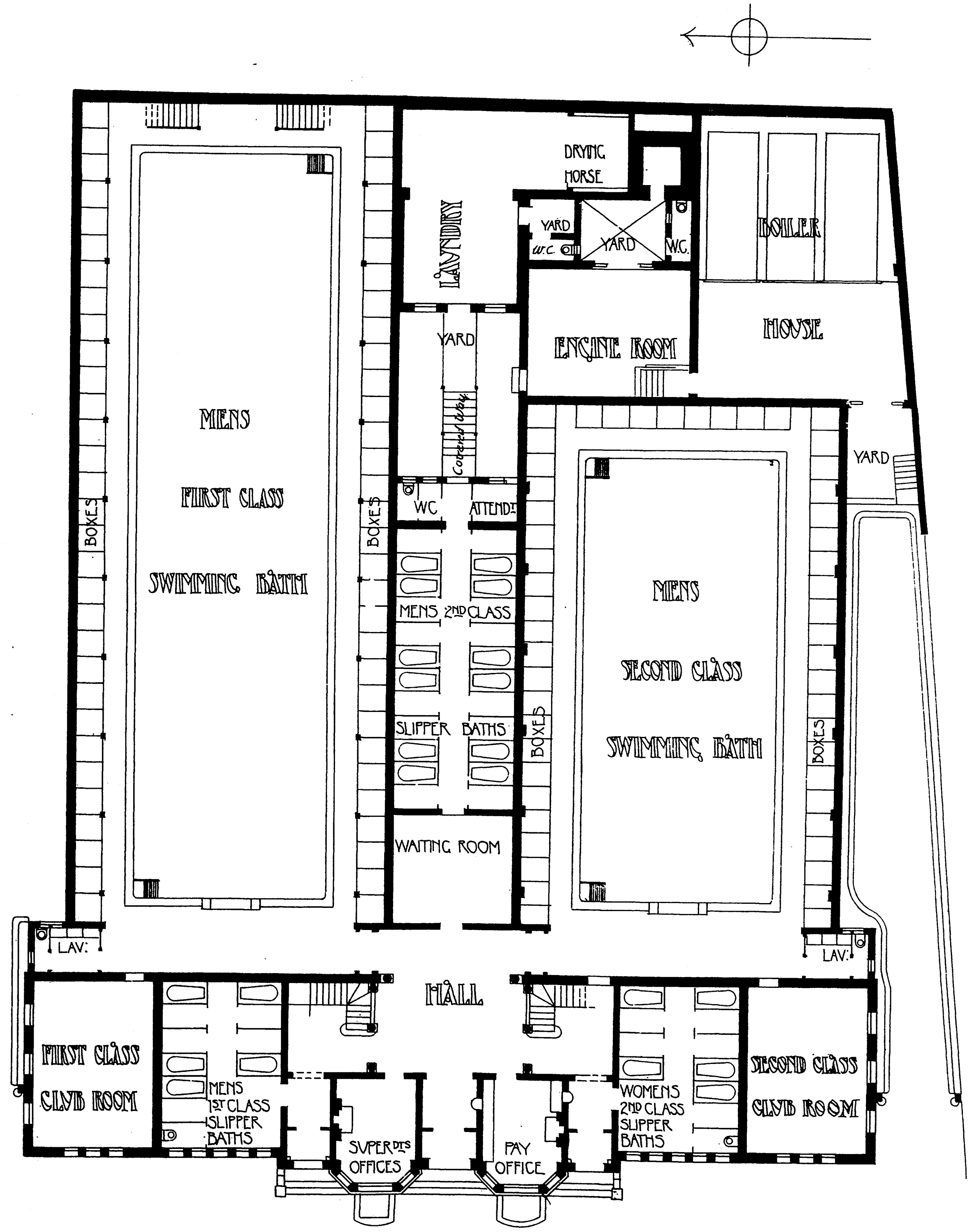
Elevation to Balaam Street



Transverse Section


Gallery
Subway

Longitudinal Section


DRYING HORSE
LAUNDRY
YARD
W.C.
YARD
W.C.
BOILER
HOUSE
ENGINE ROOM
YARD
Covered Way
YARD
WC
ATTENDT
BOXES
MENS FIRST CLASS SWIMMING BATH
BOXES
MENS 2ND CLASS SLIPPER BATHS
WAITING ROOM
BOXES
MENS SECOND CLASS SWIMMING BATH
BOXES
LAV.
LAV.
HALL
FIRST CLASS CLUB ROOM
MENS 1ST CLASS SLIPPER BATHS
SUPERDTS OFFICES
PAY OFFICE
WOMENS 2ND CLASS SLIPPER BATHS
SECOND CLASS CLUB ROOM

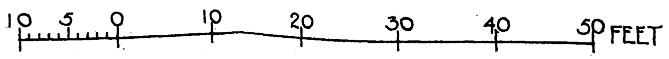

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PHOTO-LITHO. SPRAGUE & Co Ltd 4 & 5, EAST HARDING STREET, FETTER LANE, E.C

PUBLIC BATHS, PLAISTOW.—Mr. A. Saxon Snell, F.R.I.B.A., Architect.

*(Given as an illustration to Mr. Snell's Paper at the Architectural Association.)*

# The Builder.

VOL. LXXVI. No. 2928.

MARCH 18, 1899.

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St. Catherine's College, Cambridge.—Measured and Drawn by Mr. Heaton Comyn ........ *Three Double-Page Photo-Lithos.*

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## *London Topography.*

A SOMEWHAT modest meeting at Clifford's Inn on Thursday afternoon, the 9th inst., marked the starting of a new Society for collecting and recording topographical illustrations of old London. The "London Topographical Society" has in fact taken over the work of the late "Topographical Society of London," which, for reasons we need not concern ourselves with here, came to an end. It is to be hoped that the new Society, with similar aims and a nearly similar title, will have a more permanent existence. The interest in tracing out and preserving as far as possible the past history of this largest city of the world, and placing on record by illustration old remains which may eventually have to be destroyed, is becoming more and more appreciated by a section at least of the public, and if the new Society shows that it is really in earnest in desiring to carry out this work in a thorough manner, funds ought not to be wanting.

The work at present proposed by the Society is described in the Report of the Organising Committee submitted at the meeting already referred to. They have completed the publication, commenced by the former Society, of the reproduction of Porter's map of London and Westminster (1660), from the copy in the library of the Society of Antiquaries. It was intended that this should be followed by the publication of Norden's maps of 1593, but this has been abandoned for the present in order to carry on the publication of the *Illustrated Topographical Record* commenced by the original Society. A series of drawings made for this purpose by Mr. Emslie, of various old buildings and sites in London, are still in hand and unpublished, and these are to be issued as a second series of the *Topographical Record.*

Of the entirely new work proposed to be undertaken by the London Topographical Society, the most immediate and important is the proposed publication of a collection of drawings which has come into the possession of the MS. Department of the British Museum. This is a series of large drawings, forming really one continuous drawing or panorama, showing the plans of the buildings on the roads from Hyde Park Corner to Counter's Bridge (where Addison-road railway bridge now is), with the complete elevation of one side of the road. This is a really remarkable topographical document. It is in fact a kind of survey, extending over about fifty sheets, all dated June, 1811, and is the handiwork of Joseph Salway, of Sloane-street, surveyor to the Kensington, &c., Turnpike Trust. It consists of general plans of the several roads traversing Knightsbridge, Kensington, Brompton, Pimlico, Chelsea, Walham Green, and Fulham, under the trustees' management, together with coloured detail plans of each road (both sides), and elevations (along one side) of every house, building, fence, wall, hedge, and so on—the whole being drawn to a scale of 1 in. to 20 ft., and executed with singular minuteness and elaboration; every post and even every gulley and paving-stone are delineated, the altitudes are shown, and the construction of each road, path, and drain is fully described.

One set of fifteen sheets, with accompanying plans, is devoted to the high road, 2 m. 4 f. 80 yds. long, from the toll-gate at Hyde Park Corner to the east boundary of Fulham parish at Counter's (more correctly Caunter's) Bridge, where, at an altitude of 9 ft. above high-water level, the road crossed the present West London Railway line at Portland-street. The former bridge took its name from the Caunter's brook or creek, which, running from its source at the "Red House" on the Harrow-road, a little west of St. John's Church, Kensal Green, along the east side of the West London line, with tributaries from ponds at Portobello Farm and Notting Hill Barn, joined the Eel Brook at the "Swan," Walham Green, and flowed into the basin of the Kensington Canal, south-west of Edwardes-square, and so into the Thames opposite Battersea parish church. The little stream, now forgotten, is the Stanford Brook named in No. XII. of the second volume, "Knightsbridge to Fulham Bridge," covering a distance of 3 m. 4 f. 30 yds., wherein it is depicted as crossed by a bridge carrying Bridge-street (Fulham-road) at an altitude of only 8 ft. 11 in. above high-water level. In another volume we find Hyde Park Corner to Pimlico toll-bar; Stones End, Buckingham Gate, to Battersea Bridge; Fulham; Walham Green; and Hammersmith. The West Bourne, by the "Nell Gwynne" tavern, is shown flowing along the east sides of Lower George-street and Wilderness Row (Chelsea Bridge-road), which we see also in No. II. of the first volume as crossing beneath the main road (altitude 20 ft. 3 in.) at Knightsbridge, between the "Old Fox" and "White Hart" taverns, where is now Albert Gate (1844-6), with Bartolozzi's two stags removed thither from the Ranger's House in the Green Park. That drawing delineates, next to the "Queen's Head," Holy Trinity Chapel, built in 1789, and re-built after Brandon and Eyton's designs; westward stands the Cannon brewhouse. At the turnpike, Hyde Park Corner, opposite St. George's (old) Hospital—a conversion, by Ware, in 1733, of Lord Lanesborough's house—stands the "weighing engine"; a short distance westwards are the Foot Barracks, and opposite to them is the Conduit, which yet remains within the park railings. On the pavement at the north-west corner of Sloane-street is a cobbler's stall, whilst a watch and engine house occupies the corner of the triangle at the junction with the road to Brompton.

Beyond the Horse Barracks, at a point due south of the powder-magazine in Hyde Park, is the "Half-Way House" (pulled down in 1848-9) opposite Lord Stair's house; then, just before we reach Gore-lane, is plotted "William Wilberforce's" house. The "Dun Cow," at the corner of Hogmore-lane (Gloucester-road), and the toll-bar, face the old Cavalry Barracks; close by the latter, within the Gardens, is the summer-house (since removed to the hollow at Marlborough Gate) attributed to Wren. Amongst the most interesting buildings in Kensington should be noticed the "King's Arms" inn (burnt down on June 10, 1857), well remembered by readers of "Esmond," whose site was taken in 1893 for the "Royal Palace" Hotel; the watch and engine houses at the south-west corner of Church-street; the old parish church in which Queen Anne was christened (subsequently rebuilt by Sir G. G. Scott), and the National Schools, designed by Sir John Vanbrugh, with sculptured figures of a boy and girl. At Brown's-buildings, near the church, we enter the parish of St. Mary Abbott out of St.

Margaret's Westminster parish, and after passing the wall in front of Holland House, leaving to our right hand the "White Horse" inn, a favourite resort of Addison and Steele —rebuilt in 1866 by the sign of the "Holland Arms"—we emerge into open country, and so reach the end of the route at the "Hand and Flower," opposite Lee & Kennedy's nursery (Olympia), by Caunter's Bridge.*

Lack of space compels us to render but scanty justice to the other and much larger portion of the entire survey. On the south side of the road, adjacent to Chelsea Hospital, and just opposite No. 4, Paradise-row (now Queen's-road) is plotted "Jno. Soane, Esq.," this being his official residence as surveyor of the Hospital; and in Cheyne-row, the fifth house westwards from the corner of Manor-street is "Don Saltero's." According to the planning of Grosvenor-row (now Pimlico-road) there were *two* Chelsea Bun-houses, standing together on the north side of the street, and each having a row of posts carrying a portico over the footpath. What is commonly described as the "old original Bun-house," whose renown had been established before the close of the seventeenth century, survived until the sale of the materials and the "museum" on April 13, 1839—see the *Gentleman's Magazine* for May following. Here we are near the site of "Jenny Whim's," or "Jenny's Whim," a tavern, and a highly popular resort situated at the end of the wooden bridge which crossed the Grosvenor canal at the point where is now St. George's-row leading to Turpentine-lane; the canal extended to the basin of the Chelsea Waterworks, the present site of Victoria Railway Station. A little further northwards, at the corner of Stafford-place, in Stafford-row, between Charlotte-street and Buckingham Gate, is plotted another famous tavern, the "Gun," which was taken under arbitration in 1854 for improvements of the highway; and at the corner of Osnaburgh-row (Hobart-place), opposite the south-west corner of the wall around the gardens of Buckingham Palace, stands the "3rd Guards Hospital." Stafford-row was named after Sir William Howard, Viscount Stafford, beheaded in 1680, the second son of Thomas, Earl of Arundel, Surrey, and Norfolk, for whose wife, Aletheia, was built, by Nicholas Stone, the sculptor and mason, the adjacent Arundel House, latterly known as Tart Hall, where a remnant of the Arundel marbles was sold at auction for 6,535*l.* in 1720. Shortly afterwards Tart Hall was demolished, the carved seats, by Inigo Jones, being taken by Lord Burlington to Chiswick.

In connexion with the subject of this remarkable survey we may observe that there appears to have been, during the early portion of the present century, rather a tendency to the practice of making detailed elevations of a whole road or street, and that it is possible that other documents of this kind may be in existence. We know of two in the Crace Collection, which we presume the Committee of the Society also know of; one of the elevations of the whole length of Regent-street as originally erected, and another of the two sides of Pall Mall before the erection of any of the clubs, and showing Schomburg House before it was half removed and half transformed into a part of the War Office quarters. These would be worth putting on record by publication; but what we wish specially to suggest is the probability that if elevations of two or three streets were made in this form, other drawings of the same kind may also be in existence, and should be looked for.

As to the future continuation of the *Topographical Record*, the Committee have raised the question as to whether the attempt should be made to do this by drawings, or whether photography should be employed. It appears to be partly a question of expense; there is no doubt that photography would be cheaper, but there may be occasions when an exterior view, such as a photograph would supply, ought to be supplemented by a plan, and in that case the draughtsman will be wanted in addition. One reason why we should, however, support the substitution of photography for drawing is that we doubt if the race of patient and scrupulously exact topographical draughtsmen who executed such drawings as many of those preserved in the Crace Collection, have any adequate successors in their particular quality. A draughtsman nowadays, if asked to draw an ancient building, is commonly inclined to think more of pictorial effect and character than of exactness; and though that renders his drawing more attractive as a work of art, it is of less value as a record.

One proposal which was made at the meeting at Clifford's Inn we feel but little sympathy with. The Committee seem to have been impressed with the fact that the ancient maps (Porter's & Norden's) with which they had been dealing represented London as Shakespeare saw it, and this has suggested to them the idea of a Shakespeare memorial, to take the form of a restoration of the Globe Theatre as Shakespeare knew it, as nearly as can be ascertained, and that Shakespeare's plays should be acted in it under the same conditions as at their first representation. This scheme seems to us, in the first place, rather a foolish one in itself, as it is attempting what cannot be carried out with any certainty; there are not really the data for a historical reconstruction of Shakespeare's play-house—much of it can only be conjecture; and secondly, it is out of the proper scope of the London Topographical Society. Their proper business is to preserve records and to illustrate what still exists, not to make fanciful restorations; and they had better apply whatever funds they have to that object.

◆

## THE LONDON CHAMBER OF COMMERCE AND SECRET COMMISSIONS.

THE Report of the Special Committee of the London Chamber of Commerce on Secret Commissions is a document which, it may be hoped, will lead to some practical results. It would be in the highest degree ridiculous if a report of a representative business chamber were not to bear some fruit. So far as the Report goes, it does not contain new information, since, for a long time past, no one has doubted that the practice of taking secret commissions under various forms to use a celebrated political formula, has increased, is increasing, and ought to be diminished. The value of the Report, so far as fact goes, lies in this, that it places the subject beyond doubt. A number of business men, who have obtained information from various sources, state deliberately that secret commissions in various forms are prevalent in almost all trades and professions to a great extent, and that in some trades the practice has increased and is increasing; and they are of opinion that the practice is producing great evil, alike to the morals of the commercial community and to the profits of honest traders. After such an expression of opinion there is no more to be said either in regard to the question of the widespread existence of secret commissions or to the desirability that the practice should, if possible, be stopped.

It is when we come to the question of how the practice can be prevented that the difficulties arise. For, unfortunately, it is obvious when a practice is so widespread as is this, that the public conscience is not sufficiently awake to its illegality and immorality. Very short consideration also shows that the really critical question is whether or not there should be legislation on this subject. No one will doubt that it is most desirable that all professional and trade bodies should "make an emphatic declaration on the subject of secret commissions." Equally, also, if bodies can be found, such as the Calico Printers' Association, who will formulate a definite agreement that nothing in the form of a bribe, commission, or present shall be given to any one, it will do good. But we doubt whether anything less than some form of legislation will really bring the illegality of the practice of secret commissions home to the public generally. It is pretty clear that the numerous civil decisions which have been given of late from time to time are not putting an end to the practice. Nor is it likely that business men will embark in civil litigation. It is too troublesome, too expensive, and will be so seldom resorted to that persons may take commissions as a rule without fear of actions being brought against them.

There therefore remains the question of criminal legislation, and on this point the Committee make this recommendation: "If legislation is to be attempted, it should render criminal the payment, the receipt, the offering, and the solicitation of any corrupt payment; and also the giving of any invoice or other document calculated to enable the recipient to conceal a fraud upon his principal, and that it is expedient that such legislation should be initiated by your Chamber." We entirely agree with a previous statement of the Committee that "it is never safe for criminal legislation to advance very far beyond the public conscience." The public conscience must, however, be taken to be that of the right-thinking members of the business world; and we have no doubt that the business world generally is desirous of putting an end to the practice of secret commissions. The very unanimity of this Report shows that a representative business body condemns the practice; the evidence that has been laid before them equally demonstrates the fact that great numbers of business men give secret commissions not because they think them desirable, but because they are afraid of losing customers if they do not. For legislation there is a precedent. Just ten years ago there was passed the Public Bodies Corrupt Practices Act, the preamble of which recites that "it is expedient more effectually to provide for the prevention and punishment of bribery and corruption of and by members, officers, or servants of corporations, councils, boards, commissions, and other public bodies." An Act based on this statute is what, so far as it is possible to see, is the necessary remedy for the present state of things.

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* With the views of the route between Knightsbridge and Kensington Church should be compared the drawings, 1811-49, by C. Bigot, in the Crace Collection.

But there is a distinct blemish in the Act of 1889, for no prosecution can be commenced without the consent of the Attorney-General. We believe this Act has not been used as it should have been, and we can see no reason why public bodies should not be allowed to prosecute for offences under the Act without getting this consent. We have no doubt that were this Act strictly enforced it would do a great deal to put an end to, or, at any rate, to lessen, the present evil. It would deal with one considerable branch of the subject; it would afford opportunities of showing the illegality of secret commissions to the public. Legislation, it must be remembered, is required, not only for its direct, but its indirect use. By that we mean that the *morale* of business men requires to be strengthened. They hesitate to prevent their employees from taking commission. Once there is an act on the Statute-Book which makes the practice illegal, employers will be able to say to their clerks, buyers, and others that any illegal practices will not be allowed. Now the practice is too often winked at, more or less because there is no general law which makes it in so many words illegal. Civil decisions, as we have said, are not known sufficiently, and do not formulate the criminal law.

It is also to be observed that there are various practices in regard to trade discounts which, while they cannot be said to be illegal, yet tend to foster the spirit of secret commissions. Thus, if a building owner goes straight to the manufacturer of grates, ranges, &c., he will have to pay what may be called a non-professional price. If these same articles are purchased by the builder for the house owner they will be charged to him at the non-professional price, and a trade discount will go into the pocket of the builder. A practice such as this really helps to breed improper commissions, a practice which we sincerely hope will from the issue of the present Report diminish. Political corruption does not exist now as in the eighteenth century, and the time has come when commercial morality should also be brought to a higher level. But legislation is necessary for this purpose. When that has taken place the various moral recommendations of the Committee, if they may be so-called, will be far more effectual. "Much good in many cases may be done by circulars or notices warning against the payment or receipt of bribes." Such notices will have increased force when based on an Act of Parliament. Of more practical and immediate advantage is the suggestion that "buyers and others employed in very responsible positions and have very important duties to perform are paid inadequate salaries," and are thus more likely to deal in secret commissions than if they were better paid. A well-paid servant can afford to adhere to a higher standard of business morality.

◆

VALUE OF CITY LAND.—A freehold of about 1,600 ft. in Crutchedfriars and abutting on the new street now in course of construction between Fenchurch-street and Crutchedfriars has been sold by private treaty, it is stated, for about 9,000*l.*

## NOTES.

**The L.C.C. Architect's Appointment.** WE have no official information as yet on the subject of the appointment of a successor to Mr. Blashill, but we hear, on what appears to be good authority, that after all the delay and the raising of the salary in order to obtain the fittest person, the Council are about to confer the appointment on a man who is not an architect at all, who is entirely unknown to fame, and unacquainted with London building work. This seems almost incredible, but if it turn out to be true, it will add one more proof that the London County Council as at present constituted is a totally unfit body to have any kind of control over London architecture.

**The Workmen's Dwellings Bill.** THIS Bill was introduced into the House of Commons by Mr. Chamberlain on Tuesday. It is not easy to see what connexion it has with the Colonies, the Department over which Mr. Chamberlain presides. In truth, it is a mere bit of electioneering and political advertisement. Why should a workman who lives in a house of the value of 300*l.* be given the right to ask the Local Authority to make him an advance in order to buy it? Why has not the clerk who lives in a house worth 500*l.* just as good a right? But as the Local Authority need never lend unless they like, nor need the house owner sell unless he is willing, the Act, if passed, will be more or less a dead letter. We have considerable doubt whether there is a strong desire among artisans to purchase their houses. It fixes them down too much. The power of moving, indeed the desire for moving, is growing more and more every year. The prudent artisan or clerk who wishes to become the owner of his house can now generally do so if he belongs to a building society, and we cannot but think that this is the best agency for the purpose.

**The Progress of Trade-Unions.** THE Report of the chief labour correspondent of the Board of Trade on Trade-Unions in 1897 contains a great deal of interesting and suggestive information. We have so often commented at length on these annual Reports that we must content ourselves now with stating a few of the most important points contained in the present publication. It is stated that during 1897 the number of trade-unions decreased by twenty-one, partly owing to amalgamations, and now stands at 1,287. The membership has, however, increased from 1,491,007 to 1,609,909, or nearly 8 per cent. When we come to the financial position of the trade-unions, it appears that all the figures indicate expansion, though the funds were greatly affected by the engineers' strike. Nine and a quarter million pounds were spent, nearly four and a half millions were paid as friendly benefits, more than two millions were expended on dispute pay, and the balance of about a million and a half went in working expenses. Of course, the engineers' strike makes 1897 an exceptional year, and we think that it will be a long time before trade-unionists again rush into so disastrous a struggle; for it is clear that hardly more than something over one-half of the receipts have gone in real benefit pay to the members. When the sum paid for working expenses also is considered, it becomes obvious how important a person the permanent official of the trade-union has become. He is like the managing director of a limited company, to whom the shareholders hand themselves over. The return clearly and accurately presents the present position of the trade-unions in this country, and indicates with very great force both their power and their responsibilities.

**The New Telegraphy.** IN the discussion on Mr. Marconi's paper last week at the Institution of Electrical Engineers, Mr. Campbell Swinton showed a very simple electrolytic current interrupter for Ruhmkorff coils, invented by Dr. Wehnelt of Charlottenburg, which has great advantages over the ordinary make and break arrangement for telegraphic purposes. Tuning with Marconi's arrangement is quite impossible, and so we are met with the very serious difficulty that the signals from all the sending stations in a neighbourhood would get hopelessly mixed up at the receiving stations. Mr. Campbell Swinton showed that with the Wehnelt interruptor it was perfectly easy to tune the signals, and hence by its use one of the most serious drawbacks to Hertzian telegraphy will be removed. It will also be very useful in Röntgen photography, as it will considerably shorten the time required for exposure. Mr. Gavey, the new electrician to the Post Office, made a valuable contribution to our knowledge of this new telegraphy. The Post Office has made a series of experiments at Fort Burgoyne, near Dover, with Marconi's apparatus. Amongst other interesting results obtained it was proved that the transmitting and receiving vertical wires need not be of the same height. For transmitting signals a sending wire 70 ft. high and a receiving wire 36 ft. high were quite as efficient as two vertical wires 50 ft. high each. Another point they discovered was that with the same apparatus you could signal farther over water than over land. Mr. Gavey was of opinion that the reflection from the surface of the water assisted the transmission. He pointed out that signalling by reflectors in the way suggested by Mr. Marconi would, if practicable, be far preferable to Marconi's ordinary way, as it would get over the very serious difficulty of the mixing up of the signals.

**Harrogate Pump-room Competition.** THE last stage of this competition does little credit to the Harrogate Town Council. After inviting architects to compete for a new building or the alteration of the old one, they have passed a resolution that the Borough Surveyor should submit "one of the designs at present in his office, for a glass and iron building," to the next meeting of the Committee. A member of the Council, Alderman Simpson, had the good sense to oppose this resolution; pointing out that they had advertised for competitive designs and received fifty-six designs, and that it was not fair to the architects who had competed to throw them over for a design produced from the pigeon-holes of the Surveyor's office. But that is a point about which Town Councils in general care very little, and the recommendation was carried by a large majority of votes. This is like going back to the glorious old days when architectural competitions were admittedly promoted by municipalities as a little amusement, before having the building carried out by their own surveyor. We really thought we were getting beyond that kind of thing now.

**French Architectural Teaching.**

IN the recent discussion of the vote for Art in the French Chamber, a deputy of the Seine, M. Stanislas Ferrand (Editor of the Journal *Le Bâtiment*) sharply criticised the teaching of architecture at the Ecole des Beaux-Arts, where, according to him, theorists rather than practical constructors are turned out. The remedy, M. Ferrand suggests, would be found in the constitution of provincial or district schools of architecture ("écoles régionales"), where the pupils would learn the use of the building materials of the district and the treatment of practical problems of construction, in which, he affirms, the architects who come out of the Ecole des Beaux-Arts are much lacking. The architects, he urged, should take up again the local traditions of building, in order to revive the genius shown in the French architecture of the middle age and the Renaissance. We have heard something like this in England, too, of late.

**Cottenham, co. Cambridge.**

AMONGST the properties now in the market is the quaint old house, with certain tenements, known as the Lordship, Cottenham, which is commonly believed to have been for a while the home of Samuel Pepys. Geoffrey, Abbot of Crowland, sent to Cottenham some monks, who, it is said, first established a regular course of academical instruction at Cambridge (seven miles distant) in or about 1110. According to the Court Rolls of the Manor of Pelhams, in Cottenham, one Thomas Pepys was bailiff of the Abbot of Crowland's estates in Cambridgeshire, *temp.* Henry VI., and his posterity were settled at Cottenham early in the sixteenth century. John Pepys, a grandson of John Pepys, of Cottenham, and father of the author of the "Diary," traded in London as a tailor. Yet it seems he also occupied a country house at Brampton, near Huntingdon, which he had inherited from his brother, and whither he eventually retired. He was married in St. Mary's, Newington, 1626, and about twenty-five years later, when his son was entered at Cambridge University, is described as a citizen of London. By one account his son Samuel, born February 23, 1632, was born at Brampton (the register does not begin until 1654), and, as he himself records, went to the school at Huntingdon* before going to St. Paul's School, in London. Richard Pepys, of Cottenham, became Lord Chief Justice of Ireland in 1664, and his descendant, Charles Christopher, Lord High Chancellor of Great Britain in 1836 and 1846, was created Lord Cottenham in 1836, and advanced, on his retirement from office in 1850, as Earl of Cottenham.

**Haydn's Birthplace.**

IT is stated that a fire which broke out at Rohrau, in Lower Austria, consumed some of the houses in the village, including the one wherein Haydn was born in the early morning of April 1, 1732. The thatched cottage was first built by his father, Mathias, the wheelwright, but Sir George Grove states in his "Dictionary of Music" that the cottage has been twice rebuilt since in its original form. It stood at the end of the market place of the village, on the River Leitha, that separates Hungary from Lower Austria, and was marked with commemorative tablets in 1877.

**Pictures of Gardens.**

"OLD-WORLD GARDENS" is the title of the collection of water-colour drawings by Mr. E. Arthur Rowe, on view at Messrs. Dowdeswell's Galleries. The revived taste for old gardens with massive clipped hedges has impressed itself on the art of the day, and two or three artists have followed Mr. Fulleylove's lead in seeking subjects for pictures from them. Mr. Rowe's greens are rather harsh, but he has made some charming pictures from various English and Italian gardens of this type; and he floods his scenes with sunlight, under which alone such formal gardens are seen at their best. They are creations for summer and sunlight; in winter the clipped trees look unhappy. Among the best things in the collection are "Doddington Hall" (12), a beautiful old brick house; "Geraniums—Bulwick" (15), with a very true effect of sunlight and shadow on the broad flagged path; "A Summer's Afternoon—Arley" (17), where the peacock furnishes a spot of bright colour in the scene; "The Umbrella, Levens" (24), a very clear an incisive drawing; "Lemons—Villa Lante" (44), a fine piece of colour, with a distant hill for background; and "Late Afternoon—Arley" (53), with a very true effect of afternoon sunlight. There are about seventy drawings in all, and they make a very attractive collection.

**"Amants de la Nature."**

THE exhibition, at 8, Rue de Furstemberg, Paris, of the society who call themselves "Amants de la Nature," includes among the 184 exhibits a good deal of clever work. Among the best are the architectural subjects by M. Deslignières (is architecture "nature," by the way?), which show a remarkable realism of effect. We may mention also two charming water-colours by M. Leteurtre, "Le Terre Plein du Pont-Neuf" and "Quai à Boulogne-sur-Mer"; some fine studies by M. Chancel, the Dutch scenes by M. Risler, and the views in the Forest of Fontainebleau by M. Dainville. The exhibition is the best which this society has held.

**The London Sketch Club.**

THE second exhibition of the London Sketch Club consists entirely of two-hour "time sketches" on given subjects, and as such is a collection of very clever and interesting work. In some cases we can trace where two or three drawings arose from the same subject, and notice the variety of suggestion which a single word may give rise to. Thus, "Reflections" with Mr. Charles Fripp suggests a broadly-handled landscape sketch (31) in which the title is illustrated by a flock of white geese on the brook in the foreground, while with Mr. Lee-Hankey the subject takes the form (66) of the interior of an Oriental bath and a nude woman whose figure is reflected in the water. The same artist's "Poppyland" and "By the Sea" (68 and 69) are among the best contributions. "On the Road" suggests to Mr. Dudley Hardy a capital sketch of Don Quixote and Sancho. "When Daylight Fails" (63) is treated by Mr. Frank Jackson as a view of Trafalgar-square; and "Under a Changing Sky" (4) suggests to Mr. Haité also a City scene. Mr. Dudley Hardy's "In the Distance" (58) is a good sea-piece; and Mr. Lance Thackeray's various social sketches, "After the Shower" and "After the Theatre" have point and vivacity. Almost every kind of subject is sketched—hunting scenes, dogs, &c., as well as human figures and landscape, and the exhibition shows a high level of talent in extemporising.

## THE DAVY IMPROVED ARC LAMP.

MR. W. DAVY gave an exhibition of his new "enclosed" arc lamp last week at the offices of Messrs. Eldon, Edmonds, & Hayward, at Finsbury House, Blomfield-street, London. The whiteness of the light and the general daylight effect produced by the electric arc when enclosed in a practically air-tight glass globe are now well known, but there are some serious objections to many of the types now on the market. The cleaning of the inner globe is of the greatest importance, as the efficiency and candle power depend to a large extent on the transparency of this globe. After being in use for a week or a fortnight the globe gets covered inside with a grey-white dust, due apparently to impurities in the carbon, which greatly impairs the efficiency of the lamp. In many of the enclosed arc lamps, we have seen, the inner globe is so small that getting the hand in to clean it is an impossibility, and hence cleaning it, especially when stains make their appearance, is very difficult, and takes a long time. In the Davy lamp the globe can be taken off, thoroughly cleaned, and fixed on again by any one in less than a minute, as the hand can easily be inserted.

The lamp we saw was running very satisfactorily on the City circuit, which supplies alternating current at a frequency of one hundred. Mr. Davy said that it would work equally well if the frequency were fifty, and that his lamps were equally efficient on either alternating or direct current systems. The lamp is about 2 ft. long and weighs only 12 lbs. As many enclosed lamps we have tested weigh from 30 lbs. to 40 lbs., this is a great point in its favour.

Owing to the simplicity and fewness of the working parts, it can be made cheaply, and is durable and easy to repair. As the lamp is so easy to trim, and the mere act of replacing the carbons accurately centres them, it is perhaps no great advantage that they only need to be replaced every 150 hours or so. It is an advantage, however, that the electric arc is enclosed in a practically air-tight globe, so that there is no risk in using it in shops where the stock is of an inflammable nature. It can hardly be quoted as a great point in its favour over its rival the open arc that no deleterious gases are given off, for the minute quantity of poisonous gas given off by the open arc is quite innocuous. Mr. Davy is to be congratulated on having done away with the objectionable noise usually associated with alternating current arc lamps. The lamp we saw was absolutely noiseless, and even when the current was turned off and on it made no sound.

The lamp will be suitable for indoor lighting when a good substitute for daylight is necessary, as, for example, in artists' studios or in drapers' shops, as the most delicate shades of colour can be matched correctly at once—an operation which is quite impossible with the light from glow lamps or incandescent gas lamps. On the question of the efficiency of this lamp we differ from some of the published statements. We understand that it takes five and a half amperes at one hundred volts; the cost would, therefore, be equivalent to that of ten 16-candle-power glow lamps. It certainly did not give as much light as eighty 16-candle-power glow lamps, and hence to describe it as eight times as efficient as glow lamp lighting is misleading. In our opinion the luminous yield from an enclosed arc is but little better than that which can be obtained from glow lamps for the same cost, but the quality of the light given off by it makes it highly desirable in some cases. The various kinds of lamps have each their own field of usefulness, and until the advent of the Nernst lamp the enclosed arc lamp need fear no serious rival in its own sphere.

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* The Grammar School, founded *temp.* Henry II. by David, Earl of Huntingdon, the Sir Kenneth of "The Talisman." The governors propose to commemorate the tercentenary of Oliver Cromwell's birth by enlarging the school where he was educated under Dr. Beard.

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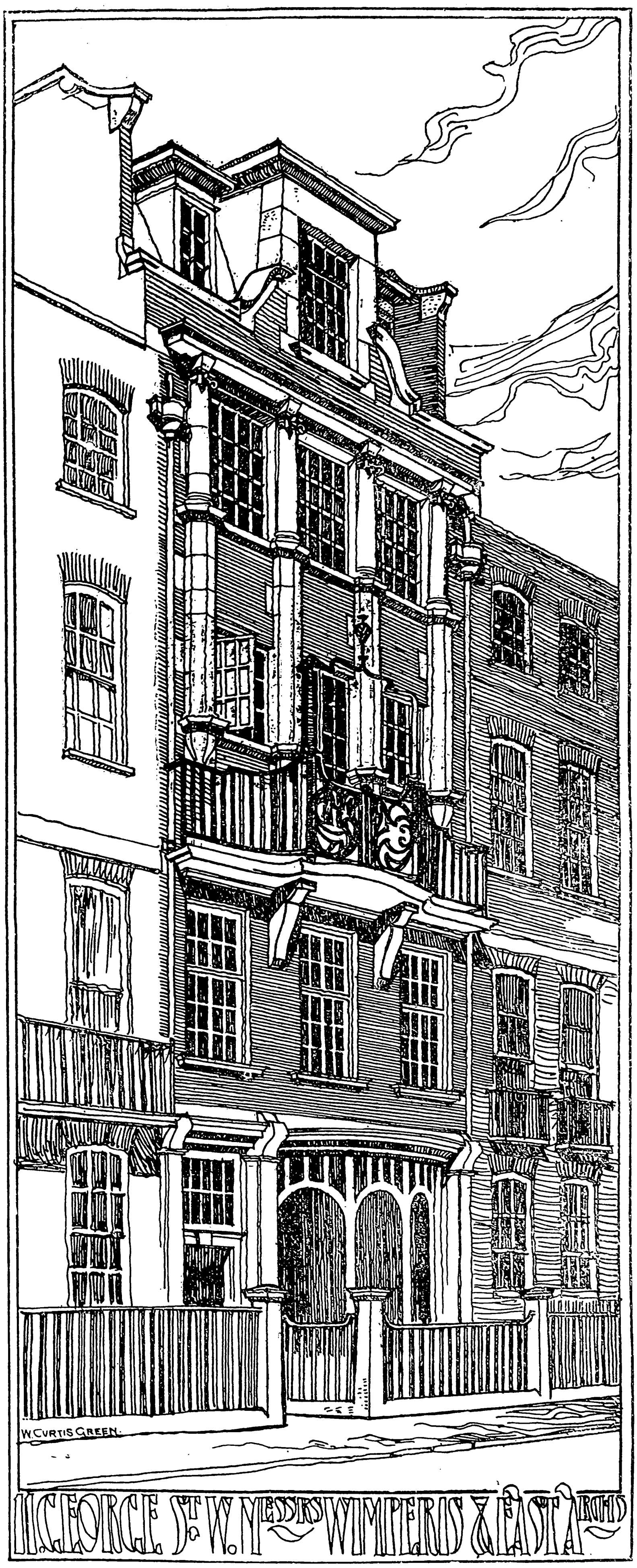
## HOUSE FRONT, 11, GEORGE-STREET, HANOVER-SQUARE.

THIS front, which forms No. XXX. of our series of sketches of London street architecture, is the design of Messrs. Wimperis & East. It is built of red brick facing, with Portland stone dressings.

It was designed as a West End business house; a tailor's shop on the ground floor, a milliner's above, and a large work-room in the attic.


W. CURTIS GREEN.
11 GEORGE St W. MESSRS WIMPERIS & EAST ARCHTS

*Sketches of London Street Architecture. No. XXX.*

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## THE ARCHITECTURAL ASSOCIATION SPRING VISITS:

### GREAT CENTRAL RAILWAY HOTEL, &C.

A LARGE number of members (not less than 150) assembled on Saturday last at the Great Central Railway Hotel, where they were met by the architect of that building, Mr. R. W. Edis, F.S.A. After a few preliminary words of explanation, Mr. Edis conducted the party over the building, explaining very fully and clearly to the members all the details of this undertaking. The building is at present not quite finished, but is expected to be ready for use in May. The work has been carried out by the Hotel Company without a contractor and under the management of Mr. Holloway, who, under Mr. Edis, has arranged and supervised every detail of the work. The whole of the necessary plant and machinery has been purchased, and it is expected that it can be sold at the completion of the work for about two-thirds of its original cost. Mr. Edis informed the visitors that the hotel is one of the largest in the world and certainly larger than any hotel in London. It contains 650 bedrooms. It has a central court 99½ ft. square, which will be entirely roofed with glass, the walls lined with faïence and the floor covered with cork or thick linoleum. Into this court-yard cabs will be able to drive through an archway in the Marylebone-road front. Surrounding this central court there are, on the north side a lounge 100 ft. by 25 ft., which will be covered with coloured glass of a kind not before used in this country, and on the three remaining sides, corridors, 12 ft. wide, which serve as footways round the court and also as loggias in which tea and lunch, &c., can be served at small tables. Among other special features of the hotel there are provided premises for a bank near the main entrance, post office, and writing-room, &c., also three or four small shops opening out of the corridor just mentioned.

There is a great banqueting hall 144 ft. by 43 ft., handsomely embellished with marble columns and wall lining, the latter extending three-fourths of the height of the walls. The marble for this work has been imported from Norway, where it was discovered, so the visitors understood, by Mr. Edis himself. It is a mottled and streaked mixture of pink, grey and white, very quiet, bright, and pleasing in tone. The acoustic properties of this room are good, a result for which Mr. Edis disclaimed any credit, but which he attributed to the fact of the wall surfaces being broken up by the projecting columns, and that of the ceiling by the deep plaster-covered girders. The kitchen offices, which are on a very extensive scale, are in the basement on the opposite side of the building from this banqueting hall, but are brought into immediate communication with it by a corridor running beneath the central court. There is also a separate smaller but complete kitchen suite in the basement more closely adjoining the banqueting hall for its separate use when needed. The arrangements for service of all floors by means of service blocks and staircases on each side of the central court and by hydraulic lifts therein are very complete. The arrangement of the commissariat department are ingenious and complete, but need to be studied on the plans to be properly appreciated. The bedrooms are arranged on each side of a central corridor, as at the Carlton Hotel, recently described. In every bedroom is a signalling instrument, known as a "telesene." It is made by the Herzog Telesene Manufacturing Company of New York, and it consists of a dial with a central telescopic index. On the dial are printed a large number of "wants," so that by pointing the index to the particular "want" desired the servant is informed thereof without a journey to and from the room in question, thus saving a great amount of time and labour in so large a building as this is.

The whole of the construction is fireproof, the only woodwork in the building being that of doors, window sashes, and the floor of the banqueting-hall. The skirtings and dados in many places are of marble and in others of cement and some fireproof material such as compressed asbestos. The roofs are for the most part flat. Zinc has been used in preference to lead where metallic roofing was required, zinc being in Mr. Edis' opinion superior to lead if used of good substance and quality. There is a very complete installation of lightning conductors. At the centre of the Marylebone façade is a clock turret, and all the flues near this have been carried up in its walls, and carried over to meet at the apex of a comparatively short spire, where they terminate under a copper cage-like finial, thus avoiding the blackening of the turret and the possibility of down-blow. The heating is by hot water in radiators, supplied from three Lancashire boilers each about 6 ft. in diameter. These also supply steam for the engine which pumps the water for the hydraulic lifts. The lighting will be by electricity supplied from the generating station of the Great Central Railway close by. Mr. Edis caused the working drawings to be placed for the inspection of the visitors, and stated that the total cost will be about 250,000*l.*, and that the price per cubic foot would probably work out at between 10d. and 11d. The whole of the brickwork has been executed in cement mortar, and there are large steel stanchions and joists wherever additional strength was needed. The foundations had to be taken down through a stratum of running sand. A well was begun to be sunk, but owing to the tube having got out of the perpendicular it was abandoned and filled up.

Subsequently the party visited the Great Central Railway Station, where they were met by the resident engineer, Mr. E. Wragge, who conducted them to the great warehouse. This building will measure when complete 384 ft. by 255 ft. It consists of a basement, ground, and three upper floors, and affords a floor space, including the six well-holes for hoisting, of 11¾ acres. Seven thousand tons of steelwork have been used in its construction, and its cost amounts to about 200,000*l.*

The ground floor of the three lines of rails which traverse the whole length of the warehouse is composed of Hobson's patent arched steel floor covered with a layer of asphalte concrete, a second layer of asphalte, and finished in Jarrah wood blocks. The platforms and floors are of 2 in. deal on wooden joists supported on steel binders. The edges of platforms and well holes have beech boards. There will be three hydraulic lifts for lowering railway trucks to the basement. The whole of the hoisting cranes and tackle, also the shunting capstans will be worked by hydraulic power, the largest mains being 7 in. in diameter. The whole building is protected against fire by water sprinklers, which come into action at a temperature of 150 deg. Fah. The gradient of the van road to the basement is 1 in 30. The hydraulic power generating building was visited, and the system explained by a representative of the firm who have carried out the work. The visit was a most successful one and very well attended.

## *ARCHITECTURAL SOCIETIES.*

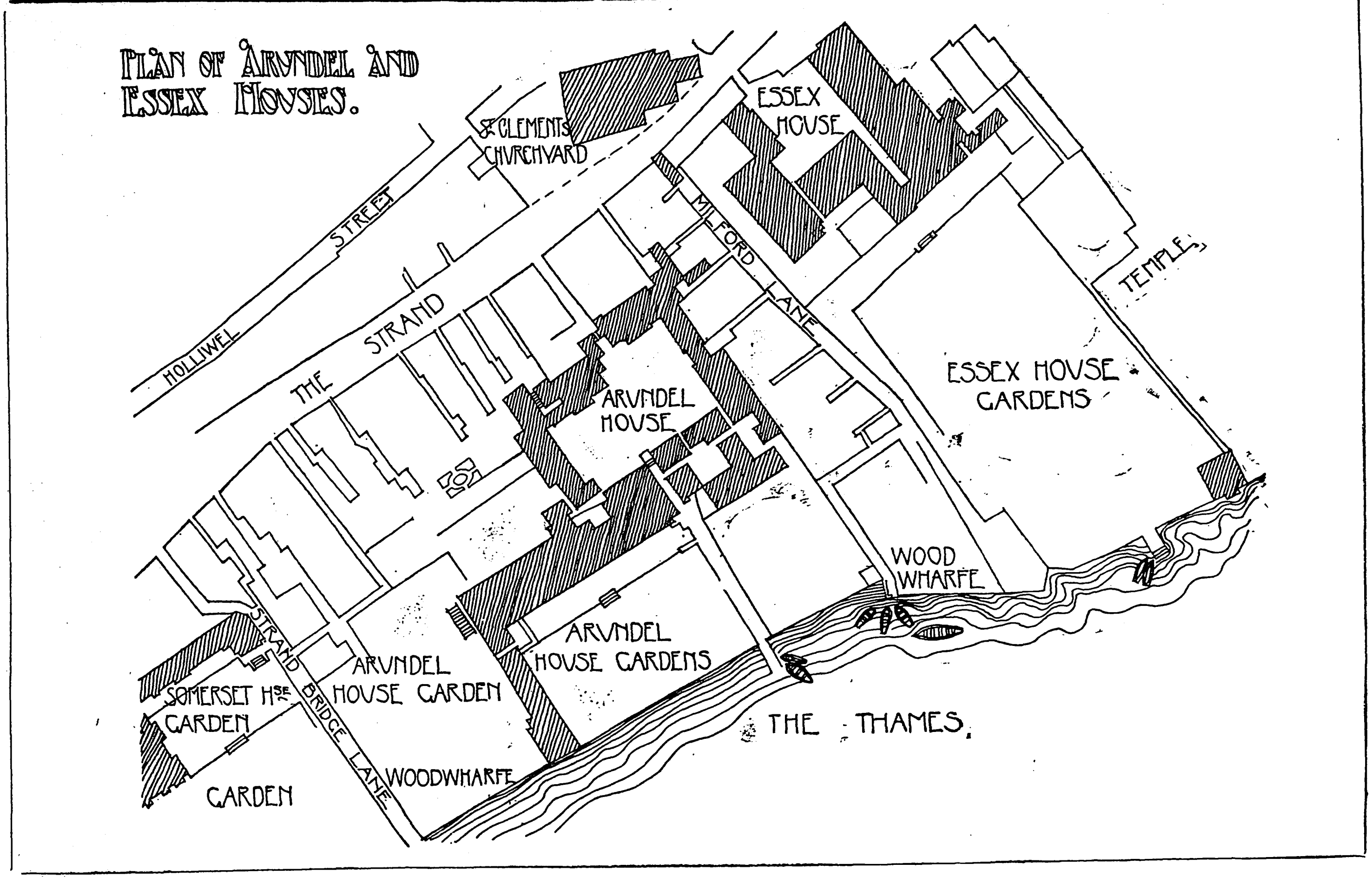
**Sheffield Society of Architects and Surveyors.**—The usual monthly meeting of this Society was held at the School of Art, Sheffield, on the 14th inst., Mr. J. Smith, Vice-President, in the chair. Five gentlemen were nominated for membership, and will be ballotted for at the next meeting. Messrs. E. Winder, jun., and C. M. Hadfield were elected auditors. Mr. E. P. Warren, of Westminster, then gave a lecture on the subject, "Theory, Practice, and Tradition." He said the value of theories in the training of students of architecture is twofold. Theories provide an excellent mental exercise and incitement to study, and such of them as are of approved authenticity, logical quality, and obvious derivation from experience pass into tradition, become axiomatic, and form part of the necessary groundwork of all architectural training. They are practically statements of first principles, and should form the initial exercises of the student. They are, to use a military parallel, the exercises of the drill ground, and the preliminary essentials of future and more extended manœuvres. The appliance of first principles must, to be really useful, become instinctive, almost unconscious and is never more valuable than in the critical consideration of architecture, old or new. A sound theory, soundly remembered and applied, is an admirable corrective of appreciation or depreciation too thoughtlessly bestowed. Few things, after the prime necessities of trained imagination and constructive instinct, can be of more importance to an architect than the discriminating, the critical faculty, and it could never have been of greater importance than to-day. We have inherited the legacy of nearly a century of architectural unrest, we are beset by such a profusion of conflicting literature, we have reached such a chaos of conflicting styles, tastes, ideas, and examples, that the course of the student is a maze of confusion. He needs the moral compass of trained discrimination, with its needle of principle ever veering to the north point of truth; provided with this, he can afford to make a few experimental divagations—he can always recover his true direction. It is often said that the profession of an architect is a modern one; it appears to be understood that he has evolved himself, has created his profession and its modern condition, as they stand. That is an impossible view. The evolution was gradual, and very clearly traceable from the Mediæval master builder upwards. The Renaissance brought new and foreign ideas and forms, and with them the need of a trained interpreter, a man of education. Inigo Jones, Wren, and Chambers all were interpreters. The architect has to supply the imaginative element that makes building architecture; he is rendered necessary by the inability of the working builder to originate and organise comprehensive schemes. The difficulties of producing real architecture under modern conditions are great and complex. Commercialism is against us; the rush and hurry of the age are against us; and perhaps our worst obstruction is the almost absolute lack of real sympathy with architectural ideals, the extreme paucity of educated taste which we meet with in our patrons, and our public traditions are broken, and have to be revived, or created afresh. The enormous help and value of strong tradition, the immense benefit of a real vernacular expression in architecture, are abundantly apparent to those of us who carefully study the past, who read between the lines of architectural history, and who are struggling to apply true principles under exasperatingly antagonistic conditions. There is, however, hope for the future; we seem to have done with revivals, with mere copying of a dead past. Our danger in that respect lies in a too violent tendency in the opposite direction, the exaggerated swing of the pendulum, the eccentricities of architectural revolt. We do now, at any rate, upon the whole, build, in the technical sense, well; better, indeed, than the last four centuries built in England. We have to see to it that, building soundly, we also build beautifully.—On the motion of Mr. Hadfield, seconded by Mr. E. M. Gibbs, and supported by Messrs. Mitchell Withers, and Smith, a vote of thanks was accorded to the lecturer, and the meeting closed.

**Glasgow Architectural Association.**—On the 7th inst., in the Rooms, 187, Pitt-street, Mr. Geo. S. Hill, A.R.I.B.A., President, in the chair, Mr. Walter S. Tucker read a paper on "The Architecture of Inigo Jones." The essayist pointed out the complete mastery which Jones had of the Renaissance, in spite of the fact that he was the first in England to design in that style. Unfortunately we possessed very few examples of Inigo Jones' work, many of his largest and most important designs having never been executed, but from his drawings we could see how great was his knowledge of proportion, grandeur of conception, and mastery of detail. The paper was illustrated by several examples of Jones' work and the work of his successors.

**Architectural Association of Ireland.**—On Tuesday last week this Association held their ordinary meeting at the Grosvenor Hotel, Mr. J. Holloway, Vice-President, in the chair, when a paper upon the structure and design of Egyptian temples was read by Mr. M. Glover, and was illustrated by lantern slides. The lecturer, after dealing with Egyptian legends of pre-historic times, traced the rise and fall of the various cults or worships. Star worship formed the earliest cult, and the temples at Edfou and Luxor, amongst many others, were erected that the priests might study and adore a particular star. For this purpose the temple was built so that its axis pointed in the direction of the star. As centuries passed and the star changed its position, the axis of the temple had also to be changed, and at the Temple of Luxor it was deviated three times to meet the star Canopus. When the sun cult arose with the worship of Osiris, Isis, and Horus additional temples were built, often at right angles to the original structure. As proof of the use of these temples for astronomical surveys, the signs of the zodiac were found sculptured in an upper chamber of the Temple at Denderah. Although dating from 700 B.C., the representations are almost identical with those of the present day. After the decline of the sun cult, the worship of the bull, and finally the ram cult, arose. The lecturer then compared the ancient monuments of other lands with those of Egypt, giving as examples Stonehenge, in Wiltshire, and Ake, in Central America. In every case the structures were so planned that, at a certain period of the year, the sun's rays would strike on a particular point in the temple. The lecturer, in conclusion, lamented the fact that the temples were fast becoming covered by the silting up of the sand, and stated that the dam now being erected across the Nile would be responsible for the destruction of many of the most interesting temples.

**Northern Architectural Association.**—The annual meeting of the Northern Architectural Association was held on the 8th inst. in the Art Gallery, Newcastle, Mr. F. W. Rich, the retiring President, in the chair. Mr. Arthur B. Plummer, hon. secretary, read the annual report, which showed a total of 153 connected with the Association—fifty members, fifty-nine associates, and forty-four students. The Treasurer's statement, with a balance of 32*l.* 19s. 9d., showed a total income of 112*l.* 0s. 3d., and after the year's disbursements the balance in hand is 32*l.* 5s. 7d. The reports were received *ncm. con.* Prizes to the successful student-associates were presented. For measured drawings to (1) Mr. Twizell, and (2) Mr. Cratney. Sketches.—Mr. J. L. Nicholson and Mr. H. A. Wilson. The election of officers and Council resulted as follows:—President: Mr. W. Glover; Vice-President: Mr. F. Caws; Hon. Secretary: Mr. A. B. Plummer; Hon. Treasurer: Mr. J. T. Cackett; Hon. Librarian: Mr. H. C. Charlewood; Council: Messrs. Badenoch, Hicks, Oswald, Reay, and Taylor; Associates: Messrs. R. Burns Dick and C. S. Errington; Mr. F. W. Rich: ex-officio Member of Council. On the recommendation of the Council: Mr. J. H. Morton (South Shields), Mr. G. T. Brown (Sunderland). The retiring President, having transferred the chain of office to his successor, the new President received a cordial recognition. He thanked the members for the honour conferred on him, and said he felt proud to be decorated with the chain of office, on whose links were engraved the names of some of the greatest men in their art the Northern counties had produced. During his membership he had taken great interest in three matters connected with the Association: first, a building to be its home; second, a good library; third, students' prizes; but to secure these practical help must be given. For No. 1 he would give 100 guineas, if they would raise 900; for No. 2 he would give 25 guineas if they would give 75; and for No. 3 he would give 25 guineas if they would give 75. He would double his offer if they would double their help. This would raise 2,000 guineas for the building, 200 for the library, and 200 for a students' fund, the interest of the latter to be devoted to prizes.

**Edinburgh Architectural Association.**—At the meeting of the Edinburgh Architectural Association in the Royal Institution on the 8th inst., Mr. Harold Tarbolton read a paper on "Plaster Work of the Renaissance period in Great Britain, and its subsequent phases." Mr. Tarbolton traced the history of plaster decoration from the somewhat isolated attempts of Italian craftsmen to pursue their art in England, and, on the death of their patron, Henry VIII., the influx of Germans and Dutch, with their strange and sometimes crude displays of decoration, and subsequently the introduction by Inigo Jones of the later and much modified Italian modes. The starting point of all plaster work was the moulding of old ceilings, which might be divided into two kinds—those with enrichments modelled in a cast from an impressionable medium such as clay, and those modelled *in situ*. Having described the two processes, Mr. Tarbolton remarked that no beautiful detail and delicacy of execution in plaster work, as in every other craft, could condone any offence against proportion. Let them take all that was best in conception from the old work; they had magnificent examples within reach. He wished especially to emphasise the importance to architects of a personal and prac-



tical knowledge of the crafts. They could not fully understand the capabilities and limitations of any material until they knew its nature and ways of working. Until they had handled clay and worked with hawk and tool in hand, and modelled *in situ*, it was next to impossible to appreciate the subtleties of the craft in plaster work. Architects should at least know thoroughly the interpretation and manipulation of one or more crafts in their endeavour to catch the spirit and vigour of the earlier Renaissance workmen. A great work was being done in the School of Applied Art in Edinburgh in familiarising students with materials and their workings, and he was confident they would see the result in the work of the next few years.—The paper was illustrated by limelight views of ceilings in England and Scotland.

## NOS. 172-9, STRAND.

THE houses to be pulled down are Nos. 172-179, Strand, with Angel-court, and No. 2, Norfolk-street ("Farley's Hotel"), upon the Duke of Norfolk's estate; the new block will be built by Messrs. C. H. White & Co., of Hastings House, Norfolk-street, contractors, from the plans and designs of Mr. John Dunn, architect of the "Norfolk Hotel," in Surrey-street, and of other buildings on the estate—including a block of offices and chambers, which will occupy the site of "Kent's Hotel" at the corner (south-west) of Howard and Norfolk Streets. Nos. 172-9, Strand, together with Surrey, Norfolk, Arundel, and Howard Streets, Angel-court, &c., cover the site of Arundel Place (or House), and its gardens entered from the Strand (at Arundel-street), and from Milford-lane, and of the several blocked courts leading short distances southwards from the main road, which are plotted in Ogilby and Morgan's survey, etched by Hollar, and made shortly before the demolition, in 1678, of Arundel Place. The house and grounds were separated from Essex House* and its extensive gardens by Milford-lane, and extended to the south-west as far as Strand [Bridge] lane, which again separated them from Somerset House and its gardens, bordering, as did the other gardens we name, with their terraces, upon the Thames. The house was originally the "inn," or town mansion, of the Bishops of Bath and Wells, standing near the Holy Ghost Chapel, the parish church of St. Mary Ursula, the Strand Inn of Chancery, and the "inns" of the Bishops of Worcester, Llandaff, and Chester—subsequently taken for his new house by Edward, Duke of Somerset. Lord Thomas Seymour received a grant of Bath Inn (Hampton Place) from Edward VI.; after his execution it was bought for 41*l*. 6s. 8d. by Henry Fitzalan, Earl of Arundel, whose daughter and heir, Mary, brought it in marriage (1556) to Thomas, fourth Duke of Norfolk. Their grandson, Thomas Howard, restored in honour as Earl of Arundel, Surrey, and Norfolk, conveyed thither (1627-8) the Arundel Marbles, whereof the greater part were given—at Evelyn's interposition—to Oxford University. Some of the inscribed stones had been used, it is said, for repairs of the house, and upon the demolition of Arundel Place in 1678 by Henry, sixth Duke of Norfolk, the collections suffered dispersal. Some objects were bought by Thomas, Earl of Pembroke; Sir William Fermor (Lord Lempster) bought many others, which, in 1755 were presented to Oxford by Henrietta, Countess of Pomfret. The Duke gave various sculptured fragments to his old gardener at Cuper's-gardens, Lambeth. The library had previously been given to the Royal Society, who met at Arundel Place for a while. Van Somers's portraits of Earl Thomas and his wife (Lady Aletheia Talbot) contain views of the picture and statue galleries at Arundel House. Earl Thomas gave lodgings to Hollar, whose highly-prized etchings, after Bierling, 1642, show that the buildings, the great hall excepted, were of a mean character, mostly of one or two storys, and gabled; his view of London, looking eastwards, was taken from the roof. Mr. F. G. Hilton Price's recent researches go to show that Nos. 172-9, Strand, stand on the site of some houses marked at the end of seventeenth century by the signs of the "Sun," "Seven Stars," "Cock," "Tully's Head" and "Checquer and Sugar Loaf." We may add that at the "Pine Apple," Speedman sold his famous pills, and at the corner of Surrey-street, the "Four Coffins," lived Hannah Ward, whose advertisement is quoted in Lysons' "Collectanea." We give above the old plan of the site, showing Arundel and Essex Houses.

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WORKMEN'S DWELLINGS AT CHISWICK.—The long talked about workmen's dwellings at Chiswick will probably soon assume tangible form. The agitation for the new dwellings has now received the support of Dr. Adsworth, the Medical Officer of Health for the parish, and he has drawn the attention of the District Council to the urgency of the movement. The matter is now being considered by the Council, and they are in communication with the Richmond authorities with a view to obtaining information as to the work of the scheme there.

## ADVERTISING DISFIGUREMENT.

UNDER this heading Mr. Richardson Evans, the founder of the "Society for Checking the Abuses of Public Advertising," contributes to the *Westminster Review* an article which should be read by all those who are interested in putting a stop to the constant disfigurement of town and country by flaring advertisements. In the course of the article, Mr. Evans says :—

> "Matters are rapidly approaching, if they have not already reached, provocation pitch. I must not reproduce here the unlovely record of the mischief done by the advertising craze in all its spectacular forms. *Si monumentum quæris circumspice.* Compare an old print of Fleet-street and Ludgate-hill with the Fleet-street and Ludgate-hill of to-day. Consider what the outlook from the windows of a railway carriage is in this year of grace with the sight which refreshed the eyes of the travellers by the stage coach. Then ask yourself whether we were right in the Jubilee Year in talking without serious reserve of the progress achieved in the reign of our gracious Queen. I do not for a moment question the advance made in other directions. Among those who deplore the deterioration in this one great department of national life are many men who have made the discoveries in science, the inventors in the useful arts of which we are justly proud, who have by sagacity and by enterprise built up the fabric of our Empire and commerce. The deliberate contempt for dignity and propriety, the wanton destruction of what is pleasing in landscape, are not incidents in industrial development, but proofs of the absence of rational restraint. Great in creating by individual or corporate effort, we have failed in the no less urgent duty of preserving the unbought and unbuyable gifts of nature. Rightly relying on the *vis vivida* of personal effort in pursuit of personal gain, we have missed the relative truth that competition, untempered by regulation, may play havoc with the best part of our common wealth. Observe that it is only as regards this single possession—comeliness and propriety of aspect in the national domain—that the oversight has occurred. To the instances of drastic regulation which I have cited already many additions may be made. The factory laws, the building Acts, the licensing system, the rules against betting and begging, will occur as leading types."

Referring to the objection sometimes urged against legislation on this subject—that it is not demanded and that people would not avail themselves of it, the author says :—

> "There is no greater delusion than the notion that representative bodies would be slow to use the powers I have sketched. An examination of the book of newspaper cuttings kept by the Society for Checking Abuses of Public Advertising would at once dispel this misconception. The only reason Town Councils do not act is that they are without legal power to grant redress, frequently having sought indirectly to give relief. Take some recent

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* Styled, in turn, Paget Place, Norfolk House, Leicester House, and lastly, Essex House; sold by Lord Paget, of Beaudesert, co. Stafford, to Thomas, fourth Duke of Norfolk.

examples. At Rhyl a licence was refused to a theatre on the pier for the simple reason that the manager had used the outside for a soap advertisement. At Richmond local outcry was enough to prevent Glover's Island from being converted into an advertising station."

## LEEDS MARKET COMPETITION.

THE following letter has been addressed to the Lord Mayor of Leeds in reference to the Leeds Markets Competition :—

"Leeds, March 13, 1899.

MY DEAR LORD MAYOR,—As President of the Leeds and Yorkshire Architectural Society, and representing the views of the Council of that body, I wish to call your attention, and also that of the Chairman of the Markets Committee, to the 'conditions to be observed by competitors' in the pending competition by architects for the proposed Market Hall and Market Shops in Vicar-lane.

These conditions are dated from the Borough Engineer's office; but they have evidently been drawn up by some one who is utterly inexperienced and ignorant of the terms upon which architects will enter into any such competition.

I enclose a copy of these conditions.

Referring to Condition 8, it is promised that the drawings will be submitted to a professional assessor. In order that competitors should have confidence in the judgment of the assessor, it is much to be preferred that he should be nominated before the issue of the conditions, that he should prepare the conditions, and that his name should be made known to the competitors.

The assessor is to select six designs as the best of those which he considers comply with the conditions, placing them in order of merit. The six designs will be submitted to the Markets Committee, but the Committee reserve to themselves the right to select *any three out of the whole number of designs submitted in competition*, and to award the prizes as their own judgment may dictate. In view of that condition, one fails to see the use of an assessor at all. It is to be presumed that the Markets Committee desire to have the best building they can possibly obtain, by means of the competition of competent architects. But the above quoted 'condition' opens the door wide to the selection of a design by personal influence rather than by merit.

There is, no doubt, in Condition 14, a paragraph which I quote, 'Any attempt to influence members of the Corporation will be a disqualification.' That is well; but how is the attempt to be discovered and proved? 'No motto, device, or distinguishing mark must be used.' That is also well; but designs can be seen and well noted before they leave the architect's office. I well remember in a certain competition in this city that the then members of the Corporation were invited to view certain designs before they were sent in.

There are throughout these conditions many things which are objectionable to those who desire to compete, but I do not propose to enumerate them. I would, however, draw your attention to Condition 5, which has evidently been drawn up by some one utterly ignorant of architectural technical terms.

'*Geometrical Drawings* of the basement and each floor, coloured in the *ordinary manner*.'

'*Geometrical Sections* coloured in the *ordinary manner*, and on the lines and of the number necessary, &c.' What other method than geometrical can be used for plans and sections, and what is the ordinary manner?

No *elevations* are asked for, but *four perspective drawings*, two showing two front *elevations* and two showing internal *elevations*. There has certainly been a confusion of mind here—but apart from that it is the fact that perspectives are now absolutely prohibited in all well-conducted competitions, for reasons which are well known.

Having in view that the proposed building is intended by the Markets Committee to be of 'first-class quality and of ornate character,' I would submit that, in order to attain that object, the Committee should reconsider the matter, withdraw the conditions, and appoint an assessor who would advise them in the general conduct of the competition, prepare revised conditions, and guide them to a proper selection, avoiding all personal influence.—I remain, my dear Lord Mayor, yours respectfully,

GEORGE CORSON, President.
FRANCIS W. BEDFORD, Hon. Sec.
Leeds and Yorkshire Architectural Society."

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THE SANITARY INSTITUTE.—At an examination in practical sanitary science, held at Glasgow on March 10 and 11, a certificate was granted to J. J. Knewstubb, Appleby. At an examination for Inspectors of Nuisances, held at Glasgow on the same days, the following six candidates were certified, as regards their sanitary knowledge, competent to discharge the duties of Inspectors of Nuisances under the Public Health Act, 1875 :—Miss A. Marwick, Glasgow; John McCaa, Stirling Castle; A. L. Reid, Bowness; T. K. Roddan, Edinburgh; J. M. Stirling, Kippen Station; and J. Turnbull, Bannockburn.

## THE ARCHITECTURAL ASSOCIATION DISCUSSION SECTION:

### COLOUR.

THE tenth meeting of the Discussion Section of the Architectural Association was held at 56, Great Marlborough-street, W., on the 10th inst., Mr. W. Bonner Hopkins, Vice-Chairman, presiding.

A paper was read by Mr. Hubert C. Corlette on the subject of "Colour." The paper was divided into two main heads—structural and applied colour. The lecturer, in dealing, first, with the former (as being that in which the architect had the most to say), said that all coloured bricks, tiles, and varieties of building stone were suitable materials for obtaining coloured effects, though emphasis was laid on the principle of obtaining local material where possible as best blending with their immediate surroundings: red stone in Devonshire, slates in Wales, for example. A successful treatment with two colours, red and white, was instanced in the back and side fronts of the Law Courts in London. Holding that some scheme of colour has always been considered essential to a perfect structure, Mr. Corlette passed on to his second point with regard to applied colour, dwelling first on the ground (*e.g.*, brickwork or stones on which colour was to be placed), and then on the colouring media itself, naming mosaic and stained glass as the most beautiful media a colourist had to deal with. The broad and beautiful colour in Albi Cathedral, near Toulouse, was specially mentioned.

In decorative work primaries and all shades of the same were very suitable, used, say, two or three colours at a time on a plain background. Using coloured backgrounds great care was needed to obtain perfect harmony of all the colouring, so that no colour stood out unduly, or was hidden (effects perfectly legitimate in pictorial colouring). In this work the workman should be allowed some scope of his own intelligence and power of design in subordination to the oversight of the architect.

Mr. Crawfurth Smith opened the discussion, followed by Mr. Hopkins, Mr. Weymouth, and Mr. Strange. Mr. Cole A. Adams, quoting a *bon mot* of Burges, knowledge of colour "is a gift of God, and nothing else," held that white bricks in time were not satisfactory, and mentioned, dealing with interiors, the glazed decorative pierced panels of Eastern design to be seen in the Arab Hall of Lord Leighton's house. Mr. L. A. Shuffrey blamed the clause so often used in specifications "bricks to be of *even* colour" and the methods of masons in cleaning down exteriors, as producing painful monotony. Stencilwork applied to a coat of distemper straight on brickwork produced a good and lasting effect.

Mr. Taylor and Mr. Hine continued the discussion, and Mr. H. C. Corlette replied to a hearty vote of thanks.

The next meeting of the Section was announced for the 24th inst., when a paper is to be read by Mr. L. Jacob on "Arbitration."

## THE LONDON COUNTY COUNCIL.

THE usual weekly meeting of this Council was held on Tuesday, at the County Hall, Spring-gardens, when Lord Welby was elected Chairman, Mr. Richard Strong, Vice-Chairman, and Mr. T. L. Corbett, Deputy-Chairman.

*Loans.*—On the recommendation of the Finance Committee it was agreed to lend the Hampstead Vestry 6,965*l.* for paving works; the St. Luke, Middlesex, Vestry 1,000*l.* for the erection of a dust destructor; the Battersea Vestry 2,851*l.* for the purchase of land for the extension of the electric light station; the Lambeth Vestry 7,645*l.* for Jarrah wood-paving works; and the Poplar District Board 5,000*l.* for local improvements and paving works.

*Cottages, Heathwall Pumping Station.*—The Main Drainage Committee recommended the acceptance of the tender of Mr. W. Hammond, at 1,069*l.*, for the erection of two cottages at the Heathwall pumping station. The recommendation of the Committee was referred back.

*Bromley Recreation Ground.*—On the recommendation of the Parks and Open Spaces Committee it was agreed to authorise an expenditure of 2,375*l.* for the laying out of Bromley Recreation Ground in accordance with the plan submitted by the chief officer of the Parks department, and approved by the Parks Committee, including the formation of two tar and wood paved gymnasiums, with attendants' rooms, shelters, and conveniences, and the provision of a band-stand, watch-box, tool-shed, and bothy.

*Places for Cremation.*—The Parliamentary Committee recommended, "That the Metropolitan Burial Authorities (Cremation) Bill be not further proceeded with. That the Parliamentary Committee be instructed to make provision in the Council's General Powers Bill, or in some other private Bill of the Council in the next Session of Parliament, to enable the Council and the Local Authorities under the Metropolitan Burials Acts to provide places for cremation."

Mr. Beachcroft moved an amendment to omit the proposal that the Council should ask for the powers in question.

Mr. Westacott seconded the amendment.

Sir A. Arnold supported the recommendation of the Committee.

Mr. Cornwall, Chairman of the Committee, pointed out that similar powers had been obtained by several provincial municipalities.

The amendment was rejected, and the Committee's recommendation was adopted.

*Building Trades School.*—The Technical Education Board reported as follows, the recommendation being agreed to :—

"In the report of the Technical Education Board for the year 1896-97, which was presented to the Council on May 11, 1897, the following passage occurs :—'With a view to ascertaining how far the present provision of technical instruction for the building trades meets the actual needs of this important industry, and in what way it can be improved, the Board has just decided to appoint a special sub-committee to inquire into the whole question.' The result of the labours of this special sub-committee is embodied in a report which is now being presented to the Council. This report has confirmed the Board's opinion that there is room for something more to be done than is being done, and with considerable success, by the polytechnics and other institutions already in London. According to the report which Mr. Llewellyn Smith prepared for the Council in 1893, the men and boys engaged in the building trades are for the most part to be found in Hackney, in the district north of the Thames; and in Wandsworth, Lambeth, and Camberwell in the district south of the Thames. Hackney has already been provided with a small building-trades school. In 1897 a favourable opportunity occurred for starting a school in Cassland House, Hackney, and this school has been carried on up to the present time entirely at the cost of the Board, pending the approval by the Privy Council of the scheme for the formation of a governing body for the administration of the Hackney share of Sir John Cass's Foundation. This scheme has now been approved, and the premises known as Cassland House will be taken over at an early date and managed by the new governing body. Up to the present time, however, nothing specially has been done to meet the wants of the large building trade population in Lambeth and Camberwell, but an opportunity now arises for securing upon very advantageous terms the site and buildings of the baths in Ferndale-road, Brixton.

The premises consist of a site of about 49,000 square feet (a little more than an acre), midway between Clapham-road and Brixton stations. The main building, which was erected for a bath, measures 180 ft. by 95 ft., and there is also a three-story building having a frontage of 36 ft. to Ferndale-road. As the buildings cover less than one-half of the total area of the site, there would be opportunity at a future date, should circumstances require it, of erecting additional buildings.

It has been stated that the premises were acquired by the Baths Commissioners at a cost of 8,000*l.*, having been valued by an eminent firm of surveyors at 13,000*l.* The Vestry has not, however, allowed the Baths Commissioners to make the requisite arrangements to adapt the buildings to the requirements of public baths, and other premises have since been acquired for this purpose on the understanding that the premises in question would be sold. The premises have been offered to us by the Vestry of Lambeth for a sum of 4,000*l.*, upon the condition that the property is retained and maintained permanently as a technical institute, and the valuer of the Council assures us that the price is reasonable. . . . We recommend that the Ferndale-road premises, known as the Brixton baths, be purchased from the Vestry of Lambeth for a sum not exceeding 4,000*l.*, and that the solicitor be instructed to make the necessary arrangements, provided that the condition that the property is retained and maintained permanently by the Council as a technical institute be withdrawn by the vestry."

*Vauxhall Bridge.*—On the report of the Bridges Committee,

Dr. Longstaff inquired whether the Royal Institute of British Architects had been consulted as to the design of the new Vauxhall bridge since the method of construction in concrete was adopted, whether the committee desired the new bridge to be an ornament to London; and, if so, what steps they proposed to take to secure that end ?

Mr. Ward, Chairman of the Committee, said the answer to the first part of the question was in the affirmative. The committee saw the Institute of British Architects three times on the subject of the original design of Vauxhall Bridge. The arches were then of steel, but as a result of these interviews, the committee, on the advice of their engineer, arranged to build the arches of concrete, faced with granite. Fresh drawings were made, and a model was prepared in plaster to a large scale. The Committee of the Institute was again invited by the engineer to view both the new drawings and model. Messrs. Waterhouse and Mountford alone came, and as the result of this interview Mr. Waterhouse wrote to express his approval. In this letter some further suggestions were made on minor matters, and some of these would no doubt be incorporated in the working drawings which were now being made for the arches. The piers had been decided on some time ago, and the contract had been let. The architects seemed to differ greatly among themselves, but even now the Committee would be glad of any further suggestions or criticisms from them. He certainly hoped the new bridge would be an ornament to London.

*Millbank Dwellings Competition.*—The Housing of the Working Classes Committee reported as follows :—

"On November 16, 1897, the Council approved the conditions upon which certain selected architects were invited to send in competitive designs for a specimen block of dwellings which, if found suitable, might be erected on a plot of land on the Millbank estate, Westminster. On the same day the Council voted a sum of 300*l.* and authorised us to divide it between the competitors in such proportion as the assessor, Mr. W. D. Caröe, should determine. We have now to report that the assessor has made his award dividing the sum of 300*l.* between five competitors in the following manner :—Messrs. Spalding & Cross, 150*l.* ; Messrs. Joseph, Son, & Smithem, 75*l.* ; Messrs. Howgate, Leeds, & Keith, 25*l.* ; Mr. H. W. Dobb, 25*l.* ; Messrs. Gibson & Russell, 25*l.* We are considering as to whether it will be possible to erect a block of dwellings according to Messrs. Spalding & Cross' plans without incurring any charge upon the county rate, and as to this we will report later."

*Improvements.* — The Improvements Committee recommended, and it was agreed, that the estimate of 4,275*l.*, submitted by the Finance Committee, be approved, and that the Council do contribute on the usual conditions one-half of the net cost of the widening of White-post-lane and the reconstruction of White-post-lane Bridge, proposed to be undertaken by the Carpenter's-road Improvement Committee, such contribution not to exceed the sum of 4,275*l.*, and to be made subject to the works being carried out to the satisfaction of the Council's Chief Engineer.

Having transacted other business, the Council adjourned soon after six o'clock.

## METROPOLITAN ASYLUMS BOARD.

THE fortnightly meeting of the Managers of the Metropolitan Asylum District was held on Saturday at the County Hall, Spring Gardens, Sir Edwin H. Galsworthy presiding.

*Darenth Asylum and Schools.*—The Committee of these Institutions, where diphtheria has recently broken out, reported that the internal soil-pipes were not joint proof, and that there were other sanitary defects. They recommended the improvement of the sanitary arrangements at an estimated cost of 2,380*l.* Mr. W. M. Acworth said it was utterly unprecedented for the Committee to propose to spend this large sum on work of a most technical kind, by the employment of labour under their own supervision. Mr. Helby, Chairman of the Committee, said that the intention of the Committee was to advertise for tenders. It should have been stated in the recommendation. Mr. Acworth : Who is to supervise the work ? Mr. Howard : It ought to be referred to the Works Committee. Mr. Helby : Our clerk of works at the asylum is an expert, and has drawn up the specifications and taken out the quantities. After further discussion the report was referred back. The Committee further recommended, and it was agreed, that twenty-eight of the gas retorts at the asylum gas works should be reconstructed on the regenerative system at an estimated cost of 1,250*l.*, and that feed water heaters for the boilers should be added by Messrs. Wright & Co., of Victoria-street, for 220*l.*

*Defects in the Park Hospital.*—The Committee of Park Hospital reported upon some defects and omissions in the buildings. It appeared that no eaves gutters had been provided to the corridor roofs, an omission likely to cause serious injury to the brickwork. The roofs and ceilings were in a very unsatisfactory condition, and the hospital roads were in a very bad state, and had never been properly made up. They recommended that the Works Committee should be instructed to supply the gutters, at an estimated cost of 1,211*l.*, and to put the roofs, ceilings, and roads into proper condition. The Works Committee, it appeared, had declined to do the work on loan account as part of the initial cost, and regarded the expenditure as chargeable to maintenance. Mr. J. H. Brass said the architect ought to be asked why these things had not been carried out before. The hospital ought to have been completed long ago. Captain Andrew (Chairman of the Parks Committee) : The eaves were not provided in the specification. Mr. Brass : Then they should have been. Mr. Scovell moved an amendment to the report, that the Works Committee should be directed to report on the reasons for the defects. Mr. Purchese, in seconding, said this was a most serious matter. Already other defects in the Park Hospital had been reported. They ought to know whether the architect passed the Hospital as complete, and whether the contractor had been paid in full, or whether the retention money was still in hand. The amendment was carried.

*South Western Hospital.*—It was resolved to employ the services of Mr. J. B. Norrington, A.M.Inst.C.E., to prepare a specification for remaking the roads of the South Western Hospital and for the provision of surface drainage where necessary, and to supervise the execution of the work.

## APPLICATIONS UNDER THE LONDON BUILDING ACT, 1894.

AT the meeting of the London County Council on Tuesday, the Building Act Committee brought up the following list of applications under the 1894 London Building Act. Those applications to which consent has been given are granted on certain conditions.[*]

### *Building at less than the Prescribed Distance from the Centre of Rotherhithe-street.*

*Rotherhithe.*—That the Council do accept the offer of the South Metropolitan Gas Company that, in the event of Rotherhithe-street being widened throughout its length, or from the church to the docks, to any width not exceeding 40 ft., within the next twenty years, the Gas Company will give up, free of charge, so much of a strip of land lying on the northern side of the said street, and opposite to the new coal-store recently erected by the company as may be required to make the street of a uniform width throughout the length then so widened.—Agreed.

### *Lines of Frontage.*

*Bermondsey.*—†Houses with shops on the site of Nos. 73 to 101 (odd numbers only) inclusive, Old Kent-road, Southwark (Mr. A. Murray for the Bridge House Estates Committee).—Consent.

*Hackney, Central.*—Two blocks of residential flats with shops on the west side of Lower Clapton-road, Hackney, between Holly-lodge and Maitland-house (Mr. W. Andrews).—Consent.

*Rotherhithe.*—A church with a one-story porch in front on the west side of Southwark Park-road, Bermondsey (Mr. J. C. T. Murray for the Building Committee of the Bermondsey Presbyterian Church).—Consent.

*Strand.*—Two iron and glass shelters at the Carlton Hotel, at the entrances in the Haymarket and Pall Mall respectively (Messrs. H. L. Florence and L. H. Isaacs for the Law Guarantee and Trust Society, Limited).—Consent.

*Norwood.*—Buildings on the west side of Norwood-road, West Norwood (Mr. F. A. Powell for Mr. C. E. Tranter Lamb, Mr. A. G. Rose, and others).—Refused.

### *Width of Way.*

*Whitechapel.*—A building, to be used as a dust destructor, on the east side of George Yard, High-street, Whitechapel (Mr. M. W. Jameson for the Board of Works for the Whitechapel District).—Consent.

*Limehouse.*—A dwelling house to be inhabited by persons of the working class, on the south side of Shadwell High-street, between Broad Bridge and Pope's Hill, abutting at the rear on Middle Shadwell (Messrs. Ashby & Horner for Mr. E. S. Horner and Mr. L. Horner).—Refused.

*Westminster.*—†Buildings with bay-windows on the site of Nos. 10, 11, 12, and 13, Little College-street, and No. 8, Cowley-street, Westminster (Mr. F. A. Smith).—Refused.

*Southwark, West.*—A temporary wood and iron addition to No. 17, Bankside, Southwark (Messrs. Fowler & Hall for Messrs. Beck & Pollitzer).—Refused.

### *Formation of Streets.*

*St. Pancras, North.*—That an order be issued to Messrs. Boehmer & Gibbs, sanctioning the formation or laying out of a new street, for carriage traffic, on the Cleveland Estate, to lead from Highgate-road to Gordon House-road, St. Pancras (for Mr. A. W. Armstrong). That the name Lissenden-gardens be approved for the new street.—Agreed.

*Deptford.*—That an order be issued to Mr. W. A. Keates, sanctioning the formation or laying out of two new streets for carriage traffic, on the Fairlawn Estate, to lead out of New Cross-road and Pepys-road, New Cross (for Mr. J. Edge). That the names Musgrove-road (in continuation) and Cattley-road be approved for the new streets.—Agreed.

*Fulham.*—That an order be issued to Mr. W. C. Poole sanctioning the formation or laying out of a new street for carriage traffic to lead from Townmead-road into Imperial-road, Fulham, and a deviation from the plan sanctioned on July 26, 1898, for the formation of Brill-street, on the Sands-end estate, Fulham (for the Imperial Gas Company and Mr. J. Wilson). That the name Townmead-road (in continuation) be approved for the new street.—Agreed.

*Wandsworth.*—That an order be issued to Mr. A. Wellings sanctioning the formation or laying out of eight new streets for carriage traffic upon the Wimbledon Park estate, on the west side of Merton-road, Wandsworth. That the names Elsenham-street (in continuation), Heythorp-street (in continuation), Clonmore-street (in continuation), Engadine-street (in continuation), Elborough-street (in continuation), Trentham-street (in continuation), Astonville-street (in continuation), and Lavenham-road be approved for the new streets.—Agreed.

*Wandsworth.*—A further variation from the plan sanctioned for the formation of new streets on St. Ann's Vicarage estate, to lead out of The Grove and St. Ann's Hill, Wandsworth, and the widening of portions of the two latter streets, so far as relates to the formation of Denton-street (Mr. G. E. Withers for Messrs. E. Withers & Sons).—Consent.

*Haggerston.*—That Mr. B. Crewe be informed that the Council is not prepared to accede to his request on behalf of Mr. J. Weibking, for a modification of the conditions upon which sanction was given, to the formation or laying out of a new street for foot traffic only, to connect Cotton's-gardens with Hudson's-court, Kingsland-road, Shoreditch.—Agreed.

*Kensington, South.*—That an order be issued to Messrs. Chesterton & Sons, refusing to sanction the formation or laying out of new streets for carriage traffic on the grounds of a house known as Moray Lodge, Campden Hill, Kensington (for the trustees of the late Captain W. B. Phillimore).—Agreed

*Lewisham.*—That an order be issued to Mr. H. Bignold, refusing to sanction the formation or laying out of a new street, 10 ft. wide, for carriage traffic, to lead out of the north side of Well's-road, Sydenham (for Mr. H. Adams).—Agreed.

### *Space at Rear.*

*St. George, Hanover-square.*—An additional story on part of the open space at the rear of the "Warwick Arms" public-house, No. 27, Gillingham-street, St. George, Hanover-square, at the corner of Hindon-street (Mr. T. H. Smith for Mr. S. Payne).—Consent.

*Clapham.*—A modification of the provisions of that section with regard to open spaces about buildings, so far as relates to the proposed erection of buildings on the site of Nos. 118, 120, and 122, High-street, Clapham, abutting, at the rear, upon a private foot-path (Mr. A. Stuart for Messrs. F. & W. Barratt).—Refused.

*Westminster.*—The extension above the diagonal line mentioned in Section 41 of the London Building Act, 1894, of a portion of a block of residential flats on the west side of Stafford-place, Buckingham-gate, Westminster, at the corner of Palace-street, and the erection of a portion of the rear of the building next Palace-street to a height of 18 ft. (Mr. E. J. Cave).—Refused.

### *Height of Buildings.*

*City of London.*—Three warehouses on the north-west side of Fishmonger's Hall-street, Upper Thames-street, City, to exceed in height the width of the street (Mr. H. Chatfeild Clarke for the Fishmongers' Company).—Consent.

### *Lines of Front and Width of Way.*

*St. George, Hanover-square.*—A bay window on the roof of the one-story entrance porch to No. 28

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[*] Names of applicants are given in brackets. Buildings are new erections unless otherwise stated.

Charles-street, Mayfair (Mr. J. Garlick, for Lord Granville Gordon).—Refused.

*St. George, Hanover-square.*—† That Messrs. Brown & Barrow be informed that their application (for Mr. F. S. Dickie) for consent to the erection of an iron and glass illuminated sign at the Allington-street entrance to the Royal Standard Music Hall, Victoria-street, Westminster, having been further considered, the Council sees no reason to depart from its decision of January 24 last not to grant the application.—Agreed.

*Strand.*†—The retention of an open iron and glass porch at the buffet entrance to the Adelphi Hotel, John-street, Strand (Mr. W. Emden).—Refused.

### *Lines of Front and Space at Rear.*

*Greenwich.*—The frontage of two houses on the south side of Azof-street, East Greenwich, to abut upon Bellot-street; two houses with shops on the north and south sides respectively of Azof-street, to abut upon Christ Church-street; two houses on the east side of Bellot-street, and two houses on the east side of Christ Church-street, and that the Council, under Section 41 of the London Building Act, 1894, do allow the erection of such houses with open spaces at the rear (Mr. E. Crosse for Mr. G. D. Edwards).—Consent.

### *Width of Way and Space at Rear.*

*Hoxton.*†—A dwelling-house, to be inhabited by persons of the working class, on the site of Nos. 72, 74, 76, and 78, Crondall-street, Hoxton, at the corner of Myrtle-street (Mr. H. Dyball for the trustees of the late Sir C. B. Locock, Bart.).—Refused.

### *Line of Front, Width of Way, and Space at Rear.*

*Lewisham.*—The frontage of seven houses with shops on the north side of Wells-road, Sydenham, with part of the forecourt fence or boundary in front thereof at less than the prescribed distance from the centre of the road, and the erection of such buildings with open spaces at the rear (Mr. H. Bignold for Mr. H. Adams).—Refused.

### *Width of Way and Temporary Buildings.*

*St. Pancras, North.*—A temporary wood and iron serving bar in front of the Vine Hotel, Highgate-road, St. Pancras (Messrs. Treasure & Son for Mr. E. Tabernacle).—Consent.

### *Conversion of Buildings.*

*Limehouse.*—That the Council, in the exercise of its powers under Section 211 of the London Building Act, 1894, do not allow the conversion into a dwelling-house of a building at the rear of No. 208, High-street, Shadwell, abutting upon Mercer-street (Messrs. H. E. Trafford & Carter for Mr. J. W. Abrahams).—Agreed.

*The recommendations marked † are contrary to the views of the Local Authorities.*

## THE BUILDING TRADE DISPUTE.

There is very little to report this week in connexion with the plasterers' dispute. There appeared to be some chance at the end of last week of a conference between the representatives of the masters and the Plasterers' Union, but there now seems to be little prospect of this.

It is stated that a meeting of the Lancashire and Cheshire Building Trades' Federation was held at Stockport on the 8th inst., for the purpose of discussing the lock-out and to pass resolutions to strengthen the hands of the master plasterers in Lancashire and Cheshire. Mr. C. W. Green (Liverpool) presided, and was supported by Mr. J. Storrs, of Stalybridge, and Mr. W. Meadows, of Stockport. There were also present about eighty representatives of the Federation from towns in Lancashire and Cheshire. It was resolved:—(a) That this meeting calls upon the master plasterers of Manchester and other towns who have not already locked out the National Association of Operative Plasterers, to insist upon all plasterers working on their jobs being locked out not later than Saturday next; and (b) that this meeting requests the Lancashire Federation to take steps to bring about an early lock out of the whole of the building trades in support of the master plasterers.

Further returns of the number of plasterers locked out in London and the provinces were made known on the 10th inst., and from these it appears that 2,154 members of the Union have been affected. Mr. Deller, the General Secretary, stated that 69 districts out of the 143 included in the Union had reported. Out of the 2,154 men who had been discharged, at least 400 had found work in other directions. The Secretary of the National Association of Master Builders has addressed the following letter to Mr. Deller:—

"Your letter of March 3 to hand. You seem to ignore my letters, although you acknowledge their receipt, to avoid any misunderstanding. Allow me to repeat—First, that since the presentation of the requirements of my Association on February 1 you have refused to give any assurances that all or any of the objectionable practices shall cease, with the exception of a partial assent to Clause 1; second, unless you intend to persist in these practices there is no reason why the required assurances should not have been given long ago; third, in response to your suggestion for a conference, my Association has expressed its willingness to meet you in conference, so soon as you adopt the usual course, and send your alternative proposals in writing; fourth, no existing local agreements sanction the objectionable practices, but if in any case it should appear necessary, these local agreements can be adjusted by mutual arrangements or terminated with due notice. In any future correspondence, please do not write as though these communications to you had never been made. With reference to the last paragraph in your letter, I may state that there is not the slightest foundation for your statements that my Association desire your annihilation, or that no reliance can be placed on any settlement being honourably carried out so far as my Association is concerned. Such remarks are not only unnecessary and offensive, but also absolutely untrue.—Signed, Hassall, Secretary."

A meeting of the Yorkshire Federation of the Building Trade was held at Hull on the 9th inst., Mr. John Spink, Sheffield, in the chair. Representatives were present from Leeds, Scarborough, Hull, and other towns. The Executive of the Federation expressed themselves highly satisfied with the master builders who had loyally carried out their orders in every district. The results of the lock-out which had come to hand were said to be eminently satisfactory. It was unanimously resolved to carry on the struggle to a successful issue, at any cost. If any masters were oppressed, this Federation decided to assist them to the utmost of their ability. It was stated that a levy had already been made on all members of the Federation with satisfactory results.

The returns received by the Master Builders' Association on the 9th inst. show that there are in Yorkshire nearly 1,000 operatives locked out in the county, the returns for the chief centres being—Leeds 240, Sheffield 150, Huddersfield and Bradford 120, Halifax 40, and Hull 250. In Scarborough and Harrogate, owing to the local dispute, none are locked out, but the Union men in Barnsley, York, and Dewsbury are locked out. In the latter districts there are numbers of non-society men, while in Halifax two-thirds are non-society men, the largest firm there refusing to employ Union men.

The Council of the Central Association of Master Builders of London held a meeting at their offices in Bedford-street on the 14th inst. to consider the situation and hear their secretary's report as to the progress of the dispute. The meeting commenced at three o'clock, and at six o'clock was adjourned. It was decided to issue no official statement to the Press until after the adjourned meeting. Mr. T. Costigan, the secretary, stated, however, that his Council were well satisfied with the progress made. Already a number of non-associated firms had fallen into line with the masters, and each day was adding to their number. These firms, as soon as they could give the legal notice, would lock out their Union workers.

On the same day, Mr. Deller issued a circular to the members of the Plasterers' Union, in which he stated that some fifty-six districts were more or less affected in which they had upwards of 10,000 members. Of that number only 2,415 had reported themselves locked out; nearly 500 of these had found work elsewhere, and the number of men unemployed was decreasing each day, and they hoped by the end of next week to be able to report that at least one-half had found employment.

On the 14th inst., the foreign workmen who arrived in London on Wednesday last returned to their native country, their fares home being paid by the Union. One of the firms who brought these operatives over stated, it is reported, that it was their intention to import another batch of men in the course of a few days.

The Standing Committee of the National Association of Master Builders met in London on Wednesday afternoon, Mr. Holdsworth presiding. The proceedings were conducted in private. It was ascertained, however, that resolutions were adopted pledging the employers to continue the contest until the Plasterers' Union give an undertaking to cease the unreasonable practices. The opinion was also unofficially expressed that at present there is little chance of a conference between the disputants.

The Plasterers' Union, it is stated, has resolved on a levy of 3s. per week per member in employment.

The first of a series of district meetings arranged by the London Master Builders' Association was held on Tuesday evening at Stanley's Restaurant, Lavender-hill, Battersea. The proceedings were private, Mr. Henry Holloway presiding. He is said to have stated that the masters have no wish whatever to interfere with the wages or hours of labour of the men, but objected to the various restrictions which the latter sought to enforce. The meeting adopted resolutions in support of the employers.

At a special general meeting of the members of the Leeds Builders' Exchange, held on the 13th inst., the following resolution was passed:—"That this association fully approves the action taken by the standing committee of the National Association of Federated Master Builders in locking out the plasterers, and asks the National Association to further consider the advisability of demanding the other allied trades to cease the same objectionable practices; and this association assures the National Association of its loyal and hearty support in any action they may take."

A number of the Leeds plasterers left the city on the 13th for Glasgow, Edinburgh, and other towns where they expect to find employment. Twenty workmen went to Glasgow, six to Edinburgh, and others to York and Ripon.

## *COMPETITIONS.*

The New Bradford Fire Station.—The Bradford Watch Committee decided on the 6th inst. to accept the plans of Messrs. Mawson & Hudson, architects, of Bradford, for the new Fire Brigade station. The Committee recommend the Council to approve of the plans, and to apply for powers to borrow 30,000*l*. to carry out the work.

Isolation Hospital, Basingstoke.—At a recent meeting of the Basingstoke Town Council the Health Committee reported that plans, specifications, and estimates for the new isolation hospital, sent in by "Microbe," "Pro Bono Publico," and "Tenax" had been submitted to the Committee, and, conditional on the Local Government Board's approval (if necessary to obtain same), and upon the builder's estimate being in accord with the architect's estimate, the Committee recommended that the plans and specifications of "Tenax" be accepted. The various plans were displayed in the Council Chamber. Alderman Powell, in moving the adoption of this recommendation, proceeded to give details respecting the various plans. "Microbe's" estimate was 4,565*l*. for fourteen beds, and 6,000*l*. for a joint hospital (to be used by both the urban and rural authorities). "Pro Bono Publico" had not given plans for a joint hospital, but the difference in cost could be easily arrived at. He had provided for a caretaker's lodge, which "Tenax" had not, but the Local Government Board did not require that. The others had made ample provision for the accommodation of a caretaker in the main building. "Pro Bono Publico's" estimate for a single hospital was 4,326*l*. 16s. (for fourteen beds). The estimate of "Tenax" for a single hospital (sixteen beds) was 4,100*l*., with 400*l*. extra for eight more beds, so as to make a joint hospital.—The Surveyor (Mr. Fitton) said he went to London and saw Mr. Gordon Smith, the architect to the Local Government Board, and asked if he would examine the plans, but he replied that he could on no account do so until there was some proposal before the Board. They could not act the part of assessors, but if the Council thought proper to send up the three plans to the Board, they might consider them and they might not. He could not say.—Mr. Kingdon said that after the statement made by the Surveyor, it seemed clear that the Local Government Board might be willing to inspect the plans and advise them. He therefore proposed as an amendment that the plans be sent up and the Board's opinion asked for. Mr. Edney seconded the amendment. The amendment was defeated, six voting for it and seven against. Mr. Kingdon moved a further amendment to the effect that the plans be referred to an expert for advice. Mr. Edney seconded, but this was also defeated. Mr. Buckland moved yet another amendment, viz., that "Microbe's" plan be accepted. Mr. Tigwell seconded, and on this the voting was just the same. The original resolution was then carried by a reversal of the voting.

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## BOOKS RECEIVED.

THE INTERNAL WIRING OF BUILDINGS. By H. M. Leaf, A.M.Inst.C.E. (Archibald Constable & Co.).

THE MANUFACTURE OF VARNISHES AND KINDRED INDUSTRIES. Translated from the French of A. Livache, by . Geddes McIntosh (Scott Greenwood & Co.).

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# Correspondence.

*To the Editor of* THE BUILDER.

## PUBLIC BATHS.

SIR,—You have published in your last issue a great deal of interesting matter regarding public swimming baths. Being both an architect and an ardent swimmer, may I be allowed to offer a few remarks on the subject? I wish to protest against the misuse of the larger (and too often of the smaller) swimming baths as dancing saloons or gymnasia during the winter months. Swimming is a most enjoyable and healthy exercise, which may well be practised *all the year round* if adequate provision is made by architects and engineers for warming both air and water more suitably for winter use.

At present bath commissioners have an erroneous but firmly-rooted idea that the best and only use of a swimming bath is to give the bather the sensation of what people call a "reaction" Swimming is not regarded by them as an exercise to be practised under similiar conditions to boxing or gymnastics, where this "reaction." is not at all an absolute necessity, but still very pleasurable *after the body has been warmed by the exercise.*

Bathers, on the contrary, are expected to unclothe themselves in chilly air, plunge shivering into chilly water, and experience much pleasure from the "reaction" they may experience therein. As a matter of fact, "chill" (caused by disturbance of the sympathetic nerves) rapidly supervenes on any "reaction" and much harm is done, particularly to young swimmers or beginners, who have not sufficient regard for their own bodily health to leave the water until they consider they have had their money's worth out of it. Consequently, swimming has earned a bad name as a producer of all sorts of ills.

I have no hesitation whatever in saying that in winter the temperature of water should not be allowed to fall below 78 deg. Fahr., nor that of the air (which must be kept quite fresh by proper ventilation) below 70 deg. Fahr. If, at the same time, a cooling-room were provided adjoining the bath, into which half or fully-clothed bathers might enter and even read or smoke awhile, and this room were kept at a temperature 20 deg. above the external air, there would be no responsibility on the part of the authorities in charge for swimmers, young and old, suffering for the consequences of their visit to the bath. The pleasant "reaction" must, of course, be obtainable by easy access to a "cold shower," but should not necessarily be provided by the swimming-bath itself. In this way swimming might be practised safely at all seasons, while dancing saloons and gymnasia might be built in addition, much to the advantage of architects, surely. All this *must* happen. Swimmers are now daring to make themselves heard, the Board Schools are clamouring for facilities for teaching thousands of young children a healthy physical and moral accomplishment, while it is becoming more difficult every day to provide for the youth (of both sexes) of this vast metropolis happy recreation ground on "dry land." It would appear from Mr. A. Saxon Snell's able paper that swimming baths and public wash-houses will have to suffer divorce sooner or later. They have been tied tightly together by the strongest red-tape, I am well aware, and will be very difficult to separate. They have always seemed to me to be a most incongruous couple.

Let any one pay a visit to the second-class bath at St. George's Baths, Buckingham Palace-road, of an evening or a Saturday afternoon at the present time. Owing to the temperature of air and water having been wisely raised during this and last winter, this bath may often be seen crowded to excess, while at other baths, such as Marylebone, where other opinions hold good, swimming is a complete "frost," surely to the loss of the ratepayers.

When once young London finds out that a well-lit, well-warmed, well-ventilated, and well-equipped swimming bath is the very place in which to amuse himself of an evening and escape from the cheerless London streets, there will be no more talk of bankruptcy in connexion with swimming baths than there is at present with football fields or cricket grounds, whose proprietors properly understand the "rules of the game."

As to minor details, a slate edging is excellent for diving from, while marble is most treacherous. Red tile paving is horribly dangerous. Glass mosaic is likely to make a good paving, and it is possible that India-rubber may prove best of all. Nearly all the present paving materials are too cold to the feet, though slate does not feel inordinately so. Easier access to the high diving-boards would be a boon to all but acrobats. The edges of diving-boards should not be square, and if rounded, of not too small a diameter. Some attempt should be made to quell the choppy waves generated in a bath, which are so disconcerting to beginners. I believe a wave-trap might easily be formed at the sides of the bath at the water level. Any woodwork with which the bather's body might come in contact, especially if he slipped, should have carefully rounded angles. Hot drink being the best remedy for "chill," it should be possible to obtain hot water, even if other beverages were denied. Lastly, the acoustic properties of swimming baths should be more carefully studied. It is almost impossible to make a person understand anything except by signs, as a general rule, in every bath I have ever been in. ERNEST M. S. PILKINGTON.

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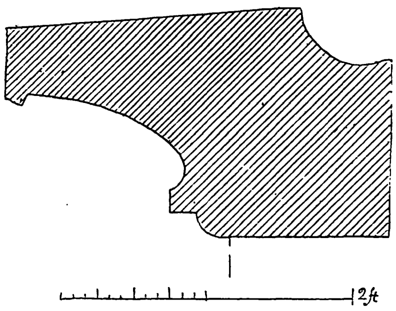
## ROOFS OF ROMAN TEMPLES.

SIR,—The paper in your last number on the lighting of classic temples is so interesting that it induces me to send a bit of fragmental information as to roof construction over Roman temples in Britain, seen in those fragments of the side cornices of the Bath Temple which came to light during the erection of the present Grand Pump Room Hotel in 1869.

The top stone from the side cornice still retained in it that hollow sinking wherein lay the lead gutter which received the rainwater descending from the sloping roof (probably also of lead). From the fragment of lion's head left, it seems certain that there had been to this gutter at various points grand metal gargoyle heads for discharge, either merely outwards or into down pipes. It seems not unlikely that if lighting was through the sloping lead roof, somewhere the stonework would show a trace of such result. It should also be here noted that up to that period, although a fragment of stone exists supposed to have been connected with the mouldings round the Temple door, none had been discovered that could be conjectured to have connexions with side-wall windows. JAS. THOS. IRVINE.



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## THE PLASTERERS' DISPUTE.

SIR,—I have read with no little surprise in the columns of your paper the denials of the Plasterers' Unions officials respecting certain practices with which they are accused, such as refusing to work with non-union men or boycotting certain firms, and I think the following instance of a recent case should be known generally by architects, that they ought by all means in their power to give what assistance they can to the master builders in the present struggle, if the men are to dictate to the public and architects alike as to from whom they shall obtain their goods.

The following occurred recently to my knowledge. The architect provided in the contract certain provisional sums for ornamental plaster work, which he ordered to be carried out by a certain firm whom he could trust to work out his ideas; the work was done and delivered on to the building, when the plasterers refused to fix it, saying it had come from a firm with whom the union had a dispute. Subsequently the men left the works, and when asked their reason said they were instructed to do so by the union, and also all other jobs going on under the same architect, and one of the demands they made before they were allowed to return to work on any jobs the said architect had in hand, was that he would give his word that he would not have this work fixed or order any more from the same firm without the union's consent. If architects are to be thus debarred from obtaining goods from those firms who suit them best, and to the best advantage to their clients, surely it is time that architects and the public generally support the master builders to have such absurd practices put to an end at once.

MIDLANDS.

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## COMPETITIONS.

SIR,—Is it not possible that some definite understanding could be arrived at to ensure to all competitors in architectural competitions unbiassed and quite independent judgment by the appointment of architects of standing, and who are altogether strangers to the place where the work is to be carried out, as assessors? At the present time assessors are often local men, and however just they may be there are obvious reasons for asserting that in many, if not a majority, of such cases they can identify the work of some of the competitors. In a recent competition the assessor was the Urban District Surveyor for the town where the work was to be done, and in his official capacity is known to have received one or more letters inquiring about the drainage system, and on the drawings of the winner of the competition notes were made referring to the fact that from information obtained from the Urban Surveyor a certain system of drainage would have to be adopted. This surely is not as it ought to be, and, in fairness both to the competitors and assessors, I think some universal rule should be adopted by means of which we could be sure that all competitive drawings should be judged on their merits alone without the possibility of the identity of any of the competitors being known. A COMPETITOR.

⁂ We do not think that assessors are "often" local men; certainly not in important competitions. But we quite agree with our correspondent that it is undesirable that a local man should be chosen as assessor.—ED.

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## BREWERY FLOORS.

SIR,—In reply to your correspondent's query of March 4 as to Brewery Floors, having had much experience in such matters, we advise him not to lay a brick floor in cement, as it will not stand. We use either Claridge's Patent Asphalte, or Granolithic Paving, and have never known either to fail.

BREWERY ARCHITECTS.

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## DRAWINGS FOR THE ROYAL ACADEMY.

As usual, we shall be glad to forward to the Royal Academy any drawings sent to the office of this journal in time to be photographed for publication (if considered suitable) before sending them in.

The last day for receiving drawings at the Royal Academy is Monday, March 27; and the latest time at which we can receive any to be delivered from this office is *11 a.m. on Saturday the 25th.* Any drawings sent here later than that we cannot take charge of.

The following are the requirements of the Royal Academy in regard to drawings:—

1. That every drawing should be in a gilt frame.
2. That there should be a label affixed to the back of it giving the title of the drawing and the artist's name and address, and the distinguishing number of the drawing (if more than one is sent).
3. That a similar label should be affixed to the frame by a string, so as to hang over in front.
4. That the drawing be accompanied by a letter to the secretary of the Royal Academy containing the same information as on the labels.

We can take charge of no drawings which do not comply with these regulations. *We cannot provide or affix labels where they have been omitted by the sender of the drawing.*

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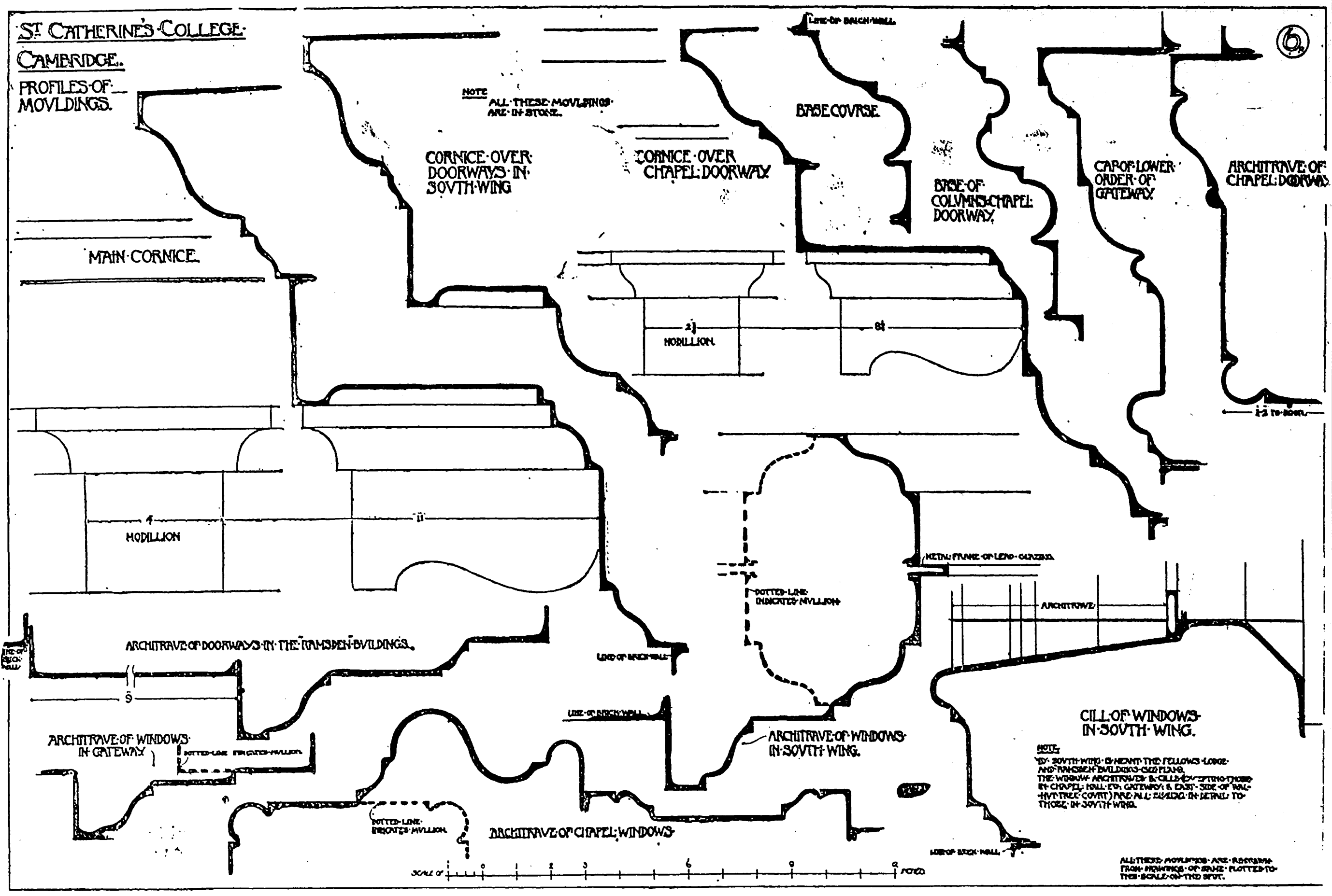
# Illustrations.

## FRIEZES: "EIRENE" AND "ARGONAUTAI."

THESE two water-colour friezes were exhibited in the Liverpool Autumn Exhibition last year. They illustrate Peace, "Eirene," and Adventure or Enterprise as exemplified by the Argonauts, "Argonautai." A few words may, perhaps, well explain the human interest which for their author essentially underlay the expression of his designs in the figures and groups treated. The first, "Eirene," shows the goddess Peace herself carrying the infant Ploutos (Wealth, moral and physical) in her arms, placed near the centre of the composition, with, right and left of her, groups typical of the benefits which she affords. Upon her right, the first group (man, woman, and two children) has 'Οικος against it, to imply the stock or family in its most comprehensive signification. The Healer, or Physician, walks next, and protects Childhood as it quits its hold upon the dress of its mother, who, placed behind, bears a distaff, and personifies Industry. After these the male figure, who rests


St. Catherine's College. Cambridge.
Profiles of Mouldings.
Note. All these mouldings are in stone.
Main Cornice.
Modillion
Cornice over doorways in South Wing
Cornice over Chapel Doorway
Modillion
Base Course
Line of brick wall
Base of Columns Chapel Doorway
Cap of Lower Order of Gateway
Architrave of Chapel Doorway
To door
6
Architrave of doorways in the Ramsden Buildings.
Line of brick wall
Metal frame of lead glazing
Dotted line indicates mullion
Architrave
Architrave of windows in Gateway
Dotted line indicates mullion
Architrave of windows in South Wing.
Dotted line indicates mullion
Architrave of Chapel Windows
Cill of Windows in South Wing.
Note. By South Wing is meant the Fellows Lodge and Ramsden Buildings (see plans). The window architraves & cills (excepting those in Chapel, Hall, etc., Gateway & East side of Walnut Tree Court) are all similar in detail to those in South Wing.
Line of brick wall
Scale of feet
All these mouldings are redrawn from drawings of same plotted to the scale on the spot.

*Mouldings, St. Catherine's College, Cambridge. Measured and Drawn by Mr. Heaton Comyn.*

his lyre upon the amphora, represents Music, associated by the action with the gifts of Dionysus (wine, song, drama). The last figure on this side is the Sculptor in his character of maker of images of the gods (ἀγαλματοποιός), a youth whose designation implies glory, delight, and honour, essentials of his task. On the left of the goddess, the warrior Courage, armed only with a helmet as defence, communes with Peace herself: a child clings to him. The group of three male figures which succeeds on this side has Philosophy (the aged man) between Intelligence (first) and Strength (behind). These join hands in unity of purpose. Two young lovers follow. They turn intuitively towards the goddess, who ensures their happiness, and to the blissful family group beyond her. After these a youthful shepherd looses the quiver from his shoulder, and having laid aside his bow resumes his crook, after being engaged in some brief chase. The figure which concludes the series on this side is the Poet, the maker of ideals, who beautifies life for mortals, and is another manifestation of the arts portrayed at the opposite end of the frieze—the outcome of Peace as expressed in gratitude for the nobility and joy of existence possible in the life here granted by the Immortals.

The second frieze, "Argonautai," which necessarily only shows a few of the volunteers for the expedition to Colchis to obtain the Golden Fleece, presents first to the left of the spectator Athene, as the divine builder of the vessel Argo, which is conventionally suggested by the prow behind her. She is the protecting guide of the adventurers, whom the young Heracles follows as he half-turns back to influence his friends, being himself voluntarily second to Jason, the chief hero in authority. The boy, Hylas, eager for the risks of the voyage, bears his bow beside him. Next Kalaïs and Zetes, the winged sons of Boreas, willingly respond to the summons—a summons fraught, in the sequel, with tragedy for themselves at the hands of this same Heracles. Here, as sometimes described, they have wings on their shoulders, instead of upon the ankles, as described by Apollonius Rhodius in his great poem. After these follows Meleager, the bold stripling from Kalydon, later the scene of his renown, with his brave uncle Iphiclus, son of Thestius, and brother of the ill-fated Althaia, the mother of the lad whom he accompanies. Kastor and Polydeukes, the mighty brothers, are next to offer their aid. And Telamon and Oïleus, royal warriors, here grouped together, do likewise. Immediately after these is placed Tiphys, the pilot of Argo, who was doomed not to reach Colchis though he carried his vessel safely through the Symplegades, Athene aiding, ere he died. He leans upon a steering oar, and holds converse with Asclepios, the youthful physician of the Argonauts, as they regard the snake, the symbol of knowledge and foresight. Then comes Orpheus, "with lyre and voice divine," who steps back before the famous leader of the Argonauts, Jason himself, and invokes blessings of strength and valour on the Quest. The figures of Jason and Hera complete the frieze. He, in the simple confidence of youth, is filled with the song of the bard, and cheered by the divine presence attending him.

Between the two great goddesses march the brave Argonauts, with devout courage, to fulfil their destinies, or good, or ill. "And as for toil, let none repine that limbs still in their youthful vigour have to toil" (Apollonius Rhodius, book iv., l. 1583. Trans. Mr. E. P. Coleridge, B.A.).

J. Staines Babb.

## ST. CATHERINE'S COLLEGE, CAMBRIDGE.

Of the colleges at Cambridge, St. Catherine's has the third oldest foundation. It was founded in the middle of the fifteenth century by Dr. Robert Wodelarke, Provost of King's College, Cambridge.

No part of the building erected by him exists at the present day. The oldest portion now standing was built early in the seventeenth century.

The plan of the college forms three sides of a square, each wing or block of different dates. This accounts partly for the irregularity and want of sympathy in the plan. In an old print the college is shown built in the form of a quadrangle; but this was never carried out, and a much more successful result was obtained as it is at present.

The only architect of any importance connected with the college was James Essex. He built the Ramsden Buildings.

The whole of the structure is in red brick with stone facings, with the exception of the gateways and chapel doorway, which are all of stone. The latter is very nicely proportioned, with good classic detail. It was in all probability designed by Robin Grumbold, a stonecutter, who also did work at Clare College.

The windows of the hall adjoining the chapel, with the combination-room and library over, were all taken out in 1868 and new ones with Gothic traceried heads inserted. The incongruity of these side by side with the classic detail around is better imagined than described.

The interior work is not particularly interesting. The panelling in the chapel, however, is good; that in the hall is modern and of the same date as the windows in it.

The college stands back from the street behind a forecourt where some very fine elms stand, and on a sunny day the warm red of the brickwork with the variegated tints of the tiles seen through the rich green foliage is very charming.

The illustrations are from the measured drawings made by Mr. Heaton Comyn, and submitted in competition for the Institute Silver Medal for measured drawings, when they obtained for the author the medal of merit and five guineas. This carefully executed set of drawings of an interesting building which has not been so much illustrated as some others of the Cambridge Colleges, will be of permanent value, and we are very glad to have them on record in our pages. We add also a reduced copy of the sheet of full-size mouldings which formed part of the set.

# The Student's Column.

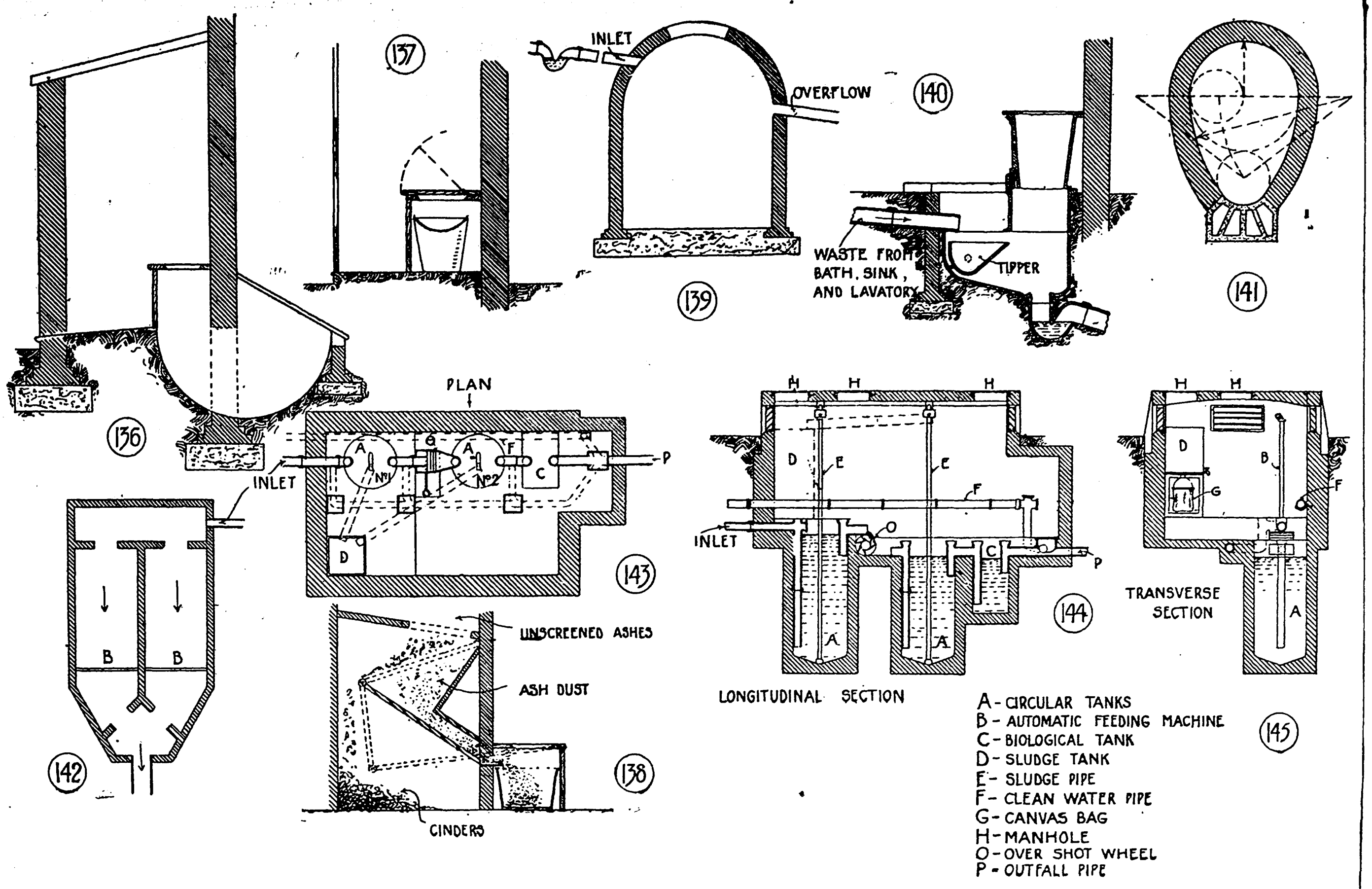
## ARCHITECTURAL HYGIENE:

### XI.—THE COLLECTION AND DISPOSAL OF REFUSE AND SEWAGE.

The collection and disposal of refuse as distinct from excreta:—

1. *Collection.*
2. *Disposal.*

1. The *Collection of Refuse* from buildings has undergone a considerable change for the better within recent years, and the establishment of daily removal in many districts is a distinct advance for many sanitary reasons. By this method the refuse collected during the day is placed in galvanised iron buckets, which are emptied into the removal van, and the buckets are disinfected and returned to the occupier. The old-fashioned method of a brick dustbin, which is emptied once every week or fortnight, is not to be encouraged, but in some



*Illustrations to Student's Column.*

instances it is unavoidable. In these cases the floor of the dustbin should never be below the surface of the ground, and both the floor and sides should be of impervious material. It should also be protected from the effects of sun and rain, and should be removed as far as possible from any dwelling, and more particularly from any source of water supply. It is important that as far as practicable everything should be burnt before being placed in the dustbin ; this refers more especially to all garbage and vegetable matter. Specially arranged kitcheners are now manufactured, which fulfil this purpose by means of a firebox under the grate.

2. The *Disposal of Refuse* has of late occupied an important place in the deliberations of Local Authorities, and dust and refuse destructors have increased to a larger extent within the last few years. In the City of London the refuse is picked over and a certain amount of money is made by selling the proceeds derived therefrom, such as string, bones, and cinders, &c. The remainder is then cremated. This system, however, is not so healthy as destroying the whole of the refuse by burning. Some Local Authorities sell some of the refuse to brickmakers, who use it in their kilns for firing. This, however, causes an almost intolerable smell to the adjoining owners. Some authorities endeavour to utilise the heat from the ignition of the refuse for the purpose of producing electric current. The low heating value, however, renders necessary the admixture of coal ; and in most cases it is probably more economical to use coal only for the purpose of producing electricity. The dust destructor should, moreover, be as isolated as possible, and in the future it will probably be found more advantageous in many respects to burn the refuse separately and not to attempt to use the heat derived therefrom for any such purpose as producing electricity.

### The Collection and Disposal of Sewage.

1. *Collection.*
2. *Disposal.*
3. *Treatment of Sewage.*

1. The *Collection of Sewage* is carried out either by (*a*) *the conservancy* or (*b*) *the water-carried system.*

(*a*) The *Conservancy System* consists in the use of privies and earth closets with fixed and movable receptacles. The earliest form of privy was a seat placed over the "midden" (a shallow pit). The latter was usually unlined, but sometimes a rough brick or stone interior was used. This method, of course, is very unsanitary, and is not now much in use. The later kinds may be classsed according to whether they have fixed or movable receptacles, but in either case the seats should be easily removable. The fixed receptacles have many disadvantages, but where they are used care should be taken that they are perfectly watertight and a smooth impervious surface should be provided. No angles to collect the excreta should be permitted, and the outlet should be easy of access. Fig. 136 shows a good form of this class of privy. Movable receptacles generally imply what is known as the "pail" system. These are provided by the Local Authority, and when removed by them in air-tight vans a clean and disinfected one is left in their place. A well-known authority has referred to this system as a "filthy, stinking abomination," and, though this system is still in vogue in some towns in the North of England, this description is not too emphatic. There are various forms of ash-pit privies in which the house refuse is used as a deödorant, but they are all to be condemned on sanitary grounds.

Where the conservancy system has perforce to be used the *earth closet* is, undoubtedly, the best method. Dry earth is used as a deodorant whether fixed or removable receptacles are used. This earth should be of as loamy a nature as possible, and it has the effect of turning the excreta into a kind of vegetable mold.

Fig. 137 shows a good form of earth closet with pail. The latter should be emptied early every morning and properly cleaned and disinfected. Fig. 138 illustrates Morrell's system of sifting ashes for use with pail closets, and this is to be recommended.

Where *cesspools* are used they should be made of brick or stonework in cement and should be rendered inside and out with an impervious material. They should be domed over at the top, as shown in fig. 139, and should conform with the regulations of the model by-laws explained in Chapter II.

(*b*) The *Water-carried System* is the one that should be used wherever possible in localities where several houses are in close proximity. A good form of closets for country houses is shown in fig. 140, and is known as Duckett's slop-water closet. By this means the waste water from the sinks and baths is used to automatically flush the drain. This form is very useful where the water supply is not found to be plentiful.

In *Main Drainage* it is generally considered to be advisable to carry away the bulk of the rainfall in separate sewers or storm overflows. Professor Henry Robinson estimates that 6 cubic feet of sewage per head of the population per day may be taken as a fair average, and this includes the rainfall from roofs and yards, &c., but not that from the streets, &c. This amount, of course, varies very considerably in different localities, and where the storm water is conveyed in the same sewers an addition should be made. One inch of rainfall an hour produces 14½ millions of gallons per square mile ; but, of course, a very large percentage of this is absorbed by the land, and is diffused by evaporation.

The *velocity* in sewers should be between 2 ft. and 3 ft. per second. Sewers should be *ventilated* at least every 100 yards of their length, and sufficient outlets should be provided at points as high as possible above the sewer. In some cases lamp-posts have been used for this purpose, and the upcast is assisted by the heat generated by the lighting medium ; and this is a good method if sufficiently distant from dwellings. Factory shafts have also been utilised for this purpose.

The *egg-shaped* form of sewer, as shown in fig. 141, is the best form, as a higher velocity is obtained with a dry-weather flow, owing to the smaller sectional area of the lower part of the sewer.

2. The *Disposal of Sewage* is a matter of vital interest to every community, and of recent years much ingenuity and thought has been monopolised by this subject. We may consider it under the following heads :—

(*a*) *Irrigation.*
(*b*) *Discharge into the Sea.*
(*c*) *Discharge into Rivers.*

(*a*) *Irrigation.*—For country houses a pair of small settling tanks are sometimes used (see fig. 142). These tanks are used alternately, so that one may be cleaned out while the other is in operation. The sewage in passing through the tank deposits a certain amount of the solid particles, and a screen BB further assists to arrest them. A cake of alumino-ferric is also sometimes used for the purpose of precipitating the solid particles to the bottom of the tank The deposit in the tank not in use should be removed and dug into the ground. From the outlet the effluent is conveyed along an open glazed pipe to a small irrigation field, and branches are taken over the ground in different directions. The effluent must be discharged intermittently over the same ground, as constant filtration is not successful. Subsurface irrigation is also sometimes resorted to.

The idea of the disposal of the sewage of towns and villages by irrigation led to some very erroneous figures and statements being put before the public some years ago. This was mostly due to the supposition that the full chemical value of sewage could be utilised by the ground on which it was placed. This has proved to be a great fallacy, and is to a large extent due to the fact that the sewage must be disposed of every day, while the land only requires it for manurial purposes at certain times. Clay lands are entirely unsuited for sewage irrigation, but they have in some cases been rendered more efficient by the ploughing in of ashes and other materials. Sandy soils are usually adaptable for this form of irrigation. Great care must be taken that the subsoil drains are put at the right levels to ensure that the effluent passing off the sewage farms should not be foul. The ground is usually prepared on the ridge and furrow system, and channels are formed in the ridges so that the sewage may flow over them into the furrow in an uniform stream. Italian rye grass is considered one of the best crops to raise on a sewage farm, though many other crops are produced with success in various localities.

The sewage from the City of Berlin, which has a population of over one million and a half, is treated on sewage farms which have an area of nearly 20,000 acres. Over thirty millions of gallons are treated daily, but this includes all storm water. Many towns in England dispose of their sewage on this principle, notably Norwich and Reading.

*(b) Discharge into the Sea.*—The Local Government Board permit of sewage being ejected into the sea below low water level. But this should not be allowed unless there is a well-defined current that will carry it away from the shore without any chance of its being washed back again. It is also most important that other communities should not receive these discharges, and no system should be inaugurated that is likely to cause the sewage to be a nuisance to any other place on the coast. The specific gravity of sewage being less than sea water, and the fact that it is discharged at a higher temperature than the sea, causes it to rise to the surface directly after it is discharged from the outfall sewer, and unless it is carried away to sea at once, it is liable to be a great nuisance and to foul the sea shore.

*(c) Discharge into Rivers.*—The Public Health Act of 1875 and the Rivers Pollution Act of 1876 were drafted for the purpose of preventing the fouling of rivers by the discharge of crude sewage and trade effluents. And the Local Government Act of 1888, which empowers the County Councils to enforce the Act of 1876, and gives powers to the Local Government Board to form and invest committees with powers under that Act, has done something to prevent our rivers from becoming merely open sewers. Manufacturers are only too prone to discharge their unpurified trade liquids into the nearest stream, and they should in all cases be compelled to treat their waste water before it leaves their works.

The actual effect of impure discharges into a stream on piscatorial life is difficult to define. Some eminent authorities are of the opinion that the fish are not destroyed by poisoning in the ordinary sense of the word, but by suffocation, the latter being brought about by the inability of the fish to contend with the sewage in their joint endeavour to absorb oxygen from the water.

Dr. Percy Frankland has shown the purifying action of running streams upon sewage, by taking samples of water from the River Dee into which sewage was discharged at various points. By the increase and decrease in the number of microbes he demonstrated that bacteriological purity was continually being restored. Dr. Frankland has also proved the value of storing water, in that pathogenic germs are reduced after subsidence of the suspended particles has taken place. Thus it will be seen that the river water itself may become fairly pure, while the bed of the river receives the filthy subsidence. Professor Henry Robinson maintains that the River Thames is becoming year by year less foul since the character of the effluent has improved, so that the day may come when fish, that have for long been absent from this historic river, may be seen again as in the long past centuries.

*Treatment of Sewage.*—Where the nature or cost of the land does not permit of filtration, some chemical system is usually employed for the purpose of precipitating the sewage to be dealt with.

*Lime* processes, at the present time, are mostly employed for this purpose. At the Barking and Crossness outfalls of the Metropolis one quarter of a ton of lime in solution, containing one grain per gallon of protosulphate of iron, is added to one million gallons of sewage. Permanganate of potassium is also added during the hot weather. The cost alone of treating the London sewage with chemicals is estimated at about 30s. per million gallons.

Copperas, ferric and alumina sulphate are also used in many systems for the treatment of sewage. The effluent resulting after the precipitation is sometimes discharged direct into a river or stream, and sometimes it is filtered through sand, coke, or other filters before being allowed to escape.

The *Native Guano* or *A.B.C.* process consists in treating the sewage with alum, blood, clay, and charcoal, mixed in about the relative proportions of 1, 2, 3, and 3 respectively. This system is now in operation at Kingston-on-Thames, and the effluent is considered so pure that it is permitted to be turned into the Thames without any filtration through land. The precipitated sludge is compressed into cakes and afterwards pulverised, and is said to be worth some 30s. per ton. It may be open to question whether the agriculturist is of this opinion.

The *Amines* process consists in adding lime and herring brine, the latter acting as an antiseptic and preventing the decomposition of the effluent.

The *Hermite* process consists in the electrolysis of sea water, or a solution of sodium and magnesium chlorides. The resulting antiseptic is then run into the sewers near their commencement, and it is claimed that the sewage thus treated may be safely discharged from the outfall into the sea or any adjacent stream. This system is now in operation at Ipswich, and the River Orwell takes the treated sewage.

By the *International Company's* system the solids in the sewage are precipitated by Ferrozone, which latter contains ferrous iron, magnesia, magnetic oxide of iron, and alum. The effluent is then passed through an aërated filter of sand, gravel, and polarite.

The *Scott-Moncrieff* system embodies the ingenious principle of harnessing the microbe and compelling it to liquefy the organic substance in the sewage, so that no sludge is produced as in the other methods referred to. The fresh sewage is brought into the bottom of a tank containing flints, and flows upwards through the latter, and by the agency of its own liquefying organisms the resultant liquid at the top of the tank is dark-coloured and offensive, and contains the original organic matter in the sewage in a condition susceptible to further changes. This effluent is then run through half-channel pipes filled with coke, with the object of obtaining nitrites and nitrates from the inorganic nitrogen. The success of these cultivation filters depends on the establishment of their nitrifying action, and the absence of oxygen is apparently fatal thereto; so that refuse from factories would probably stifle the filter altogether. Moreover, the mineral matter obtained in town sewage would apparently affect the liquefying properties of the organisms.

The *Septic Tank* system was designed for the purpose of increasing the micro-organisms. A large light and air-tight tank is constructed, and the sewage is delivered into it below the water line, the outlet being also submerged. The solids in the sewage, on entering the tank, sink to the bottom or rise to the surface, according to their specific gravity. The organisms multiply enormously in the absence of light and air, and by their aid the organic constituents are reduced to simpler compounds, which finally resolve themselves into water, ammonia, carbonic acid nitrogenous compounds, and gases. The effluent is generally filtered through clinker and coke breeze.

*The Bacteria Tank at Sutton* was constructed by Mr. C. Smith, C.E., acting on the suggestion of Mr. Dibdin. The tank is drained with pipes, and ballast (burnt from clay) is filled in on the top of them to the depth of 3 ft. 6 in. The crude sewage is conveyed into the tank, which remains charged for two hours. It is then emptied and the effluent filtered through another tank containing finer materials; the second effluent, being bright and pure, is discharged into a stream. The action of the filter is biological, the bacteria removing over fifty-seven grains of matter per gallon.

*Dibdin's Bacterial Filter* is the result of many and careful experiments. The filter is composed of coke breeze, and is alternately filled with effluent, and then emptied, and left to aërate itself. The standard of purification obtained is very high, and the contents of the filter are free from putrefying matter, and have the smell of fresh garden mould.

The *Oxygen Sewage Purification* system has been the subject of many favourable discussions before the Institution of Civil Engineers of Ireland, and amongst other places it is in operation at the Dundrum Asylum, at Halifax, and at Northallerton. Mr. Kaye Parry, M.A., B.E., and Professor Adeney first enunciated the guiding principles, and have ever since been improving the system and carrying out systematic experiments. The process is briefly as follows:—

After mechanical subsidence the sewage is treated (*a*) by powerful oxidising agents, namely, crude manganese compound; (*b*) the effluent is then treated with nitrate of soda, which furnishes the micro-organisms with the necessary supply of oxygen with which to perform their functions in reducing the effluent to simple and harmless matter.

(*a*) "Oxynite," which is the manganese compound supplied by the company at market rates, is one of the best deodorising precipitants known. It also has the property of preventing putrefactive fermentation of the organic matters contained in the sludge, and of converting the matters in the latter into the *humus* of ordinary soils. The sludge, therefore, becomes a valuable manure, and may be stored without offensive smell. If the process is not being carried out in an agricultural district the sludge may be simply treated and used again as a precipitant, or may be used to render inoffensive the first sludge obtained by mechanical subsidence.

(*b*) The nitrate of soda really assumes the place of the ordinary filter-bed, which is solely used as a means of supplying oxygen to all parts of the sewage during purification by organisms.

The arduous labours and careful experiments of Messrs. Parry & Adeney have at length produced a system in which no heavy machinery and no large buildings are required, and in the working of which skilled labour takes no part. Moreover, the system is one which is equally applicable to towns, barracks, factories, hospitals, and private houses. No large space is requisite, no fuel for machinery is required, and the only mechanism—namely, a water-wheel—is worked by the flow of the sewage itself. Figs. 143, 144, and 145 illustrate this process as now in operation at Blarney Castle. This installation was erected by Mr. Kaye Parry, and the drawings were obtained through his courtesy. The scheme is as follows:—

The crude sewage, as it enters the works, passes into the bottom of a deep, circular tank by means of a cast-iron pipe, and the liquid rises again to the surface. It passes out by a T-piece connexion, and before it enters tank No. 2, it passes over a small overshot wheel (O), by which a regulated quantity of oxynite is added to the liquid by means of a patent automatic feeding machine. The liquid, with the oxynite, passes into tank No. 2, which is similar in construction to No. 1.

The solids which are precipitated by the oxynite are retained in the second tank. The first tank merely intercepts the heavier solids, which are thrown down by sedimentation.

The clarified liquid, after leaving tank No. 2, passes into a small rectangular biological tank (C), and at this point a little nitrate of soda is added every day by hand. The liquid is conducted to a point near the botton of this tank by a cast-iron pipe (see fig. 144).

The bacterial action takes place in the tank, and the purified liquid passes out through the outfall pipe direct to the river.

The sludge collected in tanks Nos. 1 and 2 is pumped up by ordinary chain pumps. It is conducted by an open trough into a sludge tank (D) some 2 ft. square, which stands in the corner of the chamber. The sludge is drawn off from the bottom of the sludge tank by a sludge cock connected with a semi-spherical outlet (see fig. 145). An ordinary canvas bag is attached to the mouth of the outlet (G). The sewage therefore falls into this bag, the liquid runs off through the canvas and is drained back into No. 1 tank, and the sludge is carried away in the canvas bag to the garden.

The *Sludge* remaining from the various processes is dealt with in different ways, that produced from the Metropolitan works being shipped out to sea in vessels holding some 1,000 tons each. In some cases it is partially dried and ploughed into the land. At Burnley it is dealt with by Johnson's filter press, lime being added during the process. It is carted away by the neighbouring farmers, and has been estimated at a theoretical value of 20s. a ton, while farmyard manure is generally valued at about 15s. It may be observed, however, that the theoretical value of products derived from the treatment of sewage are generally greatly in excess of the value placed upon them by practical farmers, and if the value of such products is so high it is curious that they are seldom, if ever, realised.

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## *OBITUARY.*

SIR DOUGLAS GALTON.—We regret to have to record the death of Sir Douglas Galton, which took place on the 10th inst., at his house in Chester-street, S.W. Though Sir Douglas Galton was by profession a military engineer, his name has been largely connected with civil and especially sanitary engineering. At an early period, when he held the rank of lieutenant in the Royal Engineers, he took part in railway work as Secretary of the Royal Commission to inquire into the question of the application of iron to railway structures. Among architects, however, Sir Douglas Galton was best known as a sanitary expert; an authority on warming and ventilating especially, and as the inventor of an important form of ventilating stove. He commenced his sanitary experience and observation as a military engineer and in connexion with military hospitals; his report on the Herbert Hospital at Woolwich, made in 1865, is still worth attention, though some of the recommendations in it are superseded by later practice. His lectures on sanitary engineering to the students of the School of Military Engineering at Chatham were delivered in 1877, and contain an admirable *résumé* of the subject; but the book by which he is most widely known is his "Healthy Hospitals," published in 1893, which is one of the best and most comprehensive of sanitary treatises, though comprised within a comparatively small space. Sir Douglas Galton was, however, practically concerned in a great number of subjects, and probably sat on more technical committees than almost any man of his day. Among the subjects he reported on, or sat in committee about, were light railways, submarine cables, sanitary administration in the Army, railway rates, &c. For some time he was secretary to the British Association, and ultimately was elected president for one of the meetings, that of 1895. He took a special interest also in the Sanitary Institute, of which he was chairman of council and treasurer; and attended two meetings of the Institute on the day on which his last illness began. Sir Douglas Galton was born in 1823, and was therefore seventy-six years old at the time of his death.

MR. H. GODDARD.—Mr. Henry Goddard, architect, died at Lincoln recently in his eighty-fourth year. He was a native of Leicester, but went to Lincoln sixty years ago. He was Architect to the Great Northern Railway Company in respect to all their stations between Doncaster and London, including that at Doncaster. He was associated as contractor with the father of the present Lord Brassey, and also with the "Railway King," Hudson. —*Times*.

MR. JOHN JOWETT.—The death, at the age of sixty-one, has just occurred of Mr. John Jowett, contractor, of 29, Tithebarn-street, Southport. Mr. Jowett was a native of Yorkshire, and carried out many water and sewage schemes in the country, among them the Batley Main, over twenty-one miles in extent; the Wakefield Corporation Waterworks, which comprised forty miles of main; large service reservoir and main for Mottram and Hollingwood; while he contracted for many other public works, mainly in the West Riding. He practically laid out the whole of the streets of Ravensthorp and Brighouse. Mr. Jowett carried out a section (twenty-one miles of 42 in. main) of the Liverpool Corporation's great Vyrnwy scheme, and he had charge of extensive waterworks schemes in South Wales. Latterly he carried out the Lathom and Burscough and Tarleton water schemes, and had at the time of his death practically completed the Aughton sewage works. Altogether he had been in active work as a contractor for nearly forty years.—*Liverpool Courier*.

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MAIN SEWERAGE WORKS, CHESTER-LE-STREET DISTRICT.—The Chester-le-Street Rural District Council have approved of the scheme of main sewerage for Chow Dene, Allerdene, Team Colliery and Wrekenton, prepared by Messrs. D. Balfour & Son, of Newcastle-on-Tyne and London. It has been arranged to intercept the whole of the sewage as well as a portion of the borough sewage, at present discharging into the rural district sewer, and carry it into the western outfall sewer of the Gateshead Corporation.

## *GENERAL BUILDING NEWS.*

ST. MARY'S CHURCH, MADINGLEY.—Two petitions, in respect whereof judgment is reserved, have been heard by Mr. G. J. Talbot, Chancellor of the Diocese of Ely, concerning the parish church of Madingley, near Cambridge. By one petition the vicar asks for a faculty confirming certain alterations made in the church, and authorising some alterations and additions to be made hereafter, upon a report prepared by Mr. J. T. Micklethwaite, who designed the stone altar in place of the wooden communion table. By the other petition Mr. H. W. Hurrell, lord of the manor, seeks to obtain a faculty for removal of the stone altar. The church, standing within Madingley Park, has a chancel, a nave of five bays and with a clearstory, a north aisle, and an embattled west tower with spire. It is of the Early English and Decorated styles, and was restored about fifteen years ago. It contains a Norman font from St. Ethelreda's, in the neighbouring parish of Histon, and monuments to members of the Hinde and Cotton families. Madingley Hall, built of red brick, resembles its contemporary, Holland House, Kensington; it was the seat of Admiral Sir Charles Hinde-Cotton, Bart., commander of the Channel fleet in the first decade of this century, and lineal descendant of Sir Edward Hinde, of Madingley, whose daughter and sole heir, Jane, brought the property in marriage to Sir John Cotton, of Landwade, in the same county. Sir John espoused the King's cause in the civil war, and safely convoyed the plate of Cambridge University to Charles I. at Oxford, for which service he received a baronetcy in 1641.

NEW CHURCH OF ST. MARK, MITCHAM, SURREY. —This church, which was opened on Saturday, March 11, will consist, when completed, of a nave of six bays, north and south aisles, baptistry, north porch, crossing with flèche over, transepts and apse, and small bell turret. Only the portion west of the chancel arch has been erected. The total length when complete will be 128 ft. 6 in., the width of the nave and aisles is 46 ft., and the height from the floor to the apex of the roof is 45 ft. The church will seat when complete about 600 persons. The building is faced inside and out with red bricks, and has an open timbered roof of pitch pine covered externally with Broseley brindled tiles. The columns in the nave are of Bath stone, the floor is of wood blocks, and the seats of pitch pine. The church is heated by a high-pressure hot-water system by Bacon & Co. The first portion, including seating, fitting up temporary chancel, and the outside fencing, has been carried out by Messrs. D. Stewart & Sons, of Wallington, the amount of their contract being 4,176*l*. The architects are Messrs. R. M. Chart & Son, of Croydon.

NEW CHURCH AT FULHAM.—Plans and specifications have just been prepared for a new church, to be called the Church of St. Augustine, Lillie-road, Fulham, London, W. The Vestry at their last meeting resolved to offer no objection to the application of Messrs. Cutts, on behalf of the Rev. P. S. G. Propert, for the London County Council's consent for the erection of the church.

CHURCH, MURRAYFIELD, EDINBURGH. — The Church of the Good Shepherd, Murrayfield, was opened recently. Mr. R. S. Lorimer, of Edinburgh, was the architect.

WESLEYAN CHURCH, BRINSCALL, LANCASHIRE. —On the 4th inst. a new Wesleyan church, to accommodate about 400 people, and erected at a cost of 2,900*l*., was opened at Brinscall. Mr. Dinsley, of Chorley, was the architect, and Mr. Leigh was the contractor.

PROPOSED ENLARGEMENT OF NORTHFIELD CHURCH, WORCESTERSHIRE.—The Rev. Canon Hodgkinson (Rector) presided over a vestry meeting of Northfield parishioners recently, to consider plans prepared by Mr. G. F. Bodley, A.R.A., for the enlargement of the church by the addition of a north aisle. A resolution approving the plans was carried.

CHURCH, BALLYNAFEIGH, BELFAST.—St. Jude's Church, Ballynafeigh, was reopened on the 11th inst., after enlargement. The church now consists of a central nave and two aisles, each 23 ft. wide. The length has been extended by 14 ft. The work has been carried out by Messrs. Courtenay Bros., under the superintendence of Mr. Francis Drew, architect, Dublin.

INDEPENDENT CHURCH, BELFAST.—The Windsor Independent Church, which is situated at the corner of Edinburgh-street and Lorne-street, was opened on the 12th inst. The church was built by Mr. James Kidd, from the designs of Messrs. Frazer & Sons, of Belfast. The building will accommodate about 450 persons. The material principally used in the walls is perforated brick, with Dumfries red sandstone dressings, and the style is Gothic.

NEW CHANCEL, CLONTARF PARISH CHURCH.— On the 10th inst. the new chancel erected in Clontarf parish church was dedicated by the Archbishop of Dublin. The new chancel has been erected by Mr. Robert Lidwill, J.P., in accordance with the plans of the architect, Mr. Fuller. It is about 24 ft. in depth, and is floored in marble mosaics. About 130 additional sittings have been added to the church by the extension. A kerb stone of red Cork marble has been erected around the Communion table, and two stained lancet windows in the Gothic style have been introduced. There is also a new Bath stone entrance. Eight clergy stalls have been placed within the chancel, and seating accommodation for a choir of forty-two persons has also been provided. The entire work was carried out under the supervision of Mr. M. A. Partridge.

CATHOLIC CHURCH, KILCOO, CO. DOWN.—It is proposed to erect a new church at Kilcoo. Mr. J. J. M'Donnell will be the architect.

SCHOOL BUILDINGS, SOUTHAMPTON. — The new buildings in connexion with Taunton's Trade School in New-road, Southampton, were opened on the 10th inst. The buildings are of red brick, and consist of a dining-room, 20 ft. by 14 ft., capable of accommodating 30 or 40 boys, and technical instruction room, 26 ft. 10 in. by 26 ft., on the ground floor; an assembly-room, 44 ft. by 26 ft., on the first floor, and three class-rooms on the second floor. The builders were Messrs. Brinton & Bone, and the architect was Mr. A. F. Gutteridge.

CHURCH SCHOOLS, SLAITHWAITE, YORKS.—St. James's Church schools, which have been enlarged at a cost of about 1,500*l*., were reopened on the 11th inst. The schools have now been arranged on the central hall system. The additions include a parish-room, two class-rooms, a cloak-room, lavatory, and a covered playground. Mr. J. Berry, of Huddersfield, was the architect, and Mr. J. B. Eagland the builder.

PROPOSED COTTAGE HOMES, LIVERPOOL.—At the usual fortnightly meeting of the Liverpool Select Vestry, on the 7th inst., Mr. E. Horrigan proposed the following motion, of which he had given notice:—"That the Select Vestry consent (1) to the erection of cottage homes on the land which the Select Vestry have purchased at Olivemount, Wavertree, in pursuance of the order of the Local Government Board, dated August 24, 1897, in accordance with plans to which the Local Government Board have affixed their seal, subject nevertheless to such modifications thereof as that board may hereafter direct; (2) to the execution of works of drainage and water supply, and to the provision of fittings, fixtures, and furniture in connexion with the said cottage homes; (3) to the expenditure for the above purposes of a sum not exceeding 47,335*l*.; (4) to the borrowing of the said sum, or such part thereof as may be necessary for the purposes aforesaid, the repayment thereof, with interest, to be secured by a charge on the poor rates of the parish in the manner provided by the statutes in that behalf; and further, that of the sum so borrowed, the sum of 43,800*l*. be repaid within a period not exceeding thirty years, and the sum of 3,500*l*. within a period not exceeding fifteen years." The motion, after discussion, was carried.

HOSPITAL, CROYDON.—Viscount Midleton, Lord Lieutenant of Surrey, opened a new isolation hospital recently for the Croydon Rural District Council. The new hospital has been erected just outside the district, at Beddington-corner, in the parish of Carshalton. The hospital comprises eight separate buildings. The administrative block comprises a lobby entrance, with a waiting-room for visitors, hall, matron's sitting-room, nurses' day-room, servants' mess-room, matron's stores, doctors' sitting and bedrooms, and lavatory, a laboratory and dispensary. On the first floor are matron's bedroom and nine nurses' bedrooms, with bath-room, &c. On the second floor rooms are provided for eight servants, with bath-room. The scarlet fever block contains nurses' duty-room, male ward for four beds, and female ward for six beds. Similar accommodation is provided in the diphtheria block. There are an isolation block, discharging block, mortuary, stabling, and disinfecting and laundry block. All the buildings have been erected in stock bricks, and with the exception of the stables and laundry, are roofed with Broseley tiles. The hall and corridors of the administrative block, the entrance lobbies of the wards, the bath-rooms and water closets, and the mortuary and the stable are faced with glazed bricks. The building work has been carried out by Messrs. D. Stewart & Sons, for 15,878*l*. The plans have been prepared by and the work executed under the superintendence of Messrs. R. M. Chart & Son, of Croydon.

PROPOSED THEATRE, BROUGHTON, LANCASHIRE. —It is proposed to erect a new theatre, to be called the Victoria, in Lower Broughton. A site at the corner of Great Clowes-street and Elton-street, Lower Broughton, has been secured, and the plans for the new house have been prepared by Mr. Bertie Crewe, of London. The Victoria Theatre will have a main frontage of 74 ft. on Great Clowes-street side, and a depth of 180 ft. along Elton-street and Picton-place.

CO-OPERATIVE PREMISES, MIDDLESBROUGH.— Premises for the Middlesbrough Co-operative Society in Linthorpe-road have just been opened. The main frontage of 87½ ft. is in Linthorpe-road, and is divided into four large shops. At the rear of the shops is a carriage-way 14 ft. wide, with an entrance in Clifton-street, and an exit into the back passage leading into Pelham-street. From the first floor two staircases lead up to the second floor, where is situated a public hall with two entrances from the landing, and separate entrances to ladies' and gentlemen's retiring-rooms. The hall is 67½ ft. by 52 ft., and the retiring-rooms are 14 ft. by 13 ft., and 17½ ft. by 16½ ft. respectively, each room being provided with lavatory accommodation. The floor of the hall is of narrow pitch-pine boards. The buildings are faced with Accrington red pressed bricks, and the dressings are of stone and terra-cotta. The pilasters dividing the shops are of Bon Accord red polished granite, with fluted and carved stone brackets on top. The architect was Councillor W. G. Roberts, and the following contractors have carried out the various works:—Excavating, bricklaying, masonry, &c., Messrs. W. & H. Pounder, Middlesbrough; plastering and cement concrete work, Mr. J. R. Smiles, Middlesbrough; carpentry and joinery, Mr. W. Thompson, Middlesbrough; slating, Mr. J. Harrison, Middlesbrough; plumbing' glazing, and gas-fitting, Messrs. Baker Bros., Middlesbrough; and painting, Mr. J. H. Hill, Middlesbrough.

Council Offices, Levenshulme. — The new offices of the Levenshulme Urban District Council in Stockport-road, Levenshulme, were opened on the 3rd inst. The building has a frontage of 75 ft. to Stockport-road, the front being of Ruabon brick, with Derbyshire stone dressings. An entrance 10 ft. wide opens into an octagon hall 15 ft. across. The Council Chamber and all the offices—including accommodation for the clerk, the surveyor, overseers, and sanitary inspector—and also a committee-room, are reached from the hall, and behind are the caretaker's house, the stables, sheds, and a town's yard. A staircase leads to a public hall, 72 ft. by 40 ft., provided with two retiring-rooms. The electric light is installed throughout. The building was designed by the Council's Surveyor, Mr. James Jepson, of Stockport, and the total cost has been about 6,000*l.*

Capital and Counties Bank, Yeovil.—The new premises of the Capital and Counties Bank at Yeovil are being erected at the corner of High-street and Princes-street. The building has been designed by Mr. J. Nicholson Johnston, architect, of Yeovil. The style is freely-treated Renaissance, and the material used for the exterior is selected Hamstone, from the quarries of Messrs. Staple & Trask, at Stoke-under-Ham. The building has two stories above the actual banking premises, and above them again, recessed behind a balustraded parapet, is an upper floor. There is a good deal of stone carving upon the two fronts, which has been executed by Messrs. Harry Hems & Sons, of Exeter. Beneath the bank itself is the strong-room; occupying nearly the whole of the basement. The floors and partitions will be of fire-proof material, and the structure will be heated throughout by hot water. Messrs. E. R. Bartlett & Sons, of Yeovil, are the general contractors, and Mr. Loxton is their foreman of works.

Assurance Offices, Bristol.—On the 11th inst. the officials and staff of the Scottish Widows' Fund Life Assurance Society moved from their quarters at Lloyd's Bank to their offices in Baldwin-street. The architects of the new building are Messrs. Dunn & Watson, of London, and Mr. J. Bevan, of Bedminster, is the contractor.

New Flats, Rutland Gate.—The design of Mr. W. I. Chambers, architect, has been selected for a large block of residential flats to be erected on the site of Stratheden House, Rutland Gate. Each flat will consist of fourteen large rooms, with balconies, and large square hall, and will be fitted with the latest modern appliances. The arrangements for the escape of inmates in case of fire will be as complete as possible, on the American system.

## *SANITARY AND ENGINEERING NEWS.*

Sanitation in Leeds.—A special Sub-Committee of the Leeds Corporation was recently appointed to make inquiries and submit a report as to how the services of the Sanitary Inspectors could best be utilised. They have held four meetings, and have had before them a large number of the officials of the sanitary department. As a result of their investigations the Sub-Committee recommend the full Sanitary Committee to carry out the following suggestions:—1. That Mr. Swallow be relieved of some of his less important work in order that he may have more time to attend to more important duties, especially looking after unabated nuisances. 2. That each divisional inspector take instructions from the Chief Inspector, and shall visit the wards to check the work of the ward inspectors, and shall generally superintend and be responsible for the work of the ward inspectors, including the examination of their diaries to see if the entries are correct. 3. That an assistant be appointed to the Inspector of Foods and Drugs. 4. That, as the Sanitary Committee now require inspectors whom they may appoint to hold the certificate of the Sanitary Institute, this Sub-Committee recommend that the minimum salary be 33s. per week. 5. That it is desirable that house-to-house examination within the city should be carried out on more vigorous lines, especially as to the examination and testing of drains, and that for this purpose the ward inspectors be relieved from some of their work. 6. That four extra men be appointed, their duties to be to attend to and be entirely responsible to the Chief Inspector for closet and drain alterations. 7. That each of the ward inspectors devote four afternoons a week to house-to-house inspection, including drain-testing in every case; and that on the afternoons thus occupied these inspectors be not required to return to the sanitary office. 8. That in addition to the ward inspectors, two women inspectors be appointed; one for the inspection of workshops where women are employed, and the other for ordinary inspection duties. 9. That an inspector having a knowledge of Yiddish be appointed for the Jewish district, and for the inspection of Jewish workshops.

Aberdeen Harbour Improvements.—The offer of Messrs. Clark & Standfield, London, to construct an iron pontoon dock for 8,057*l.* has been accepted. Albert Quay is to be paved and the drains relaid, at a cost of 7,400*l.* Mr. R. G. Nicol, engineer, has been empowered to engage two additional draughtsmen at salaries of from 150*l.* to 180*l.* per annum.

Electric Light in Acton.—In reply to an inquiry of the Acton District Council (London), whether the Ealing District Board would be willing to supply Acton wtih electrical energy for lighting purposes for a period of five years, at a uniform rate per Board of Trade unit, the Clerk to the Acton District Board has just received a letter stating that, on receipt of a copy of the provisional order, the Ealing Council will give the question their careful consideration, with the view to some arrangement being made satisfactory to all concerned.

Sewage and Electric Light Scheme, Burton.—At the Burton Town Hall recently, Mr. H. P. Boulnois, M.Inst.C.E., held an enquiry concerning the application on the part of the Corporation to the Local Government Board for permission to borrow 19,590*l.* for purposes of sewerage and sewage disposal; 11,000*l.* for purposes of electric lighting, and 1,930 for the Newton-road depot and for the rebuilding of certain cottages. There were present Mr. Lynam (Borough Surveyor), Mr. Ramsden (manager of the gas and electric lighting works), Mr. Mason (Assistant Borough Surveyor), and others.

Main Drainage, Ponteland, Newcastle.—The Local Government Board have approved of the scheme of main sewerage and sewage disposal for Ponteland, prepared by Messrs. D. Balfour & Son, civil engineers, London and Newcastle-on-Tyne. The whole of the village is to be properly sewered with 6-in. and 9-in. pipes, converging into a common 12-in. outfall in the road to Eland Hall, where an underground well is to be constructed, from which the sewage will be pumped and forced through a cast-iron main to the site of the disposal works, where the sewage will be treated before being turned into the River Pont. The Board have disapproved of the formation of the proposed special drainage district.

## *FOREIGN.*

France.—M. Formigé, the architect, has been commissioned to make the plan for a new square in Paris, between the Sorbonne and the Cluny Museum, in which it is proposed to erect the statue of Puvis de Chavannes, originally intended for the Place Pereire.——A new church has been commenced at Paris to replace the parish church of St. Pierre at Montmartre, which is to be preserved as an archæological curiosity only, and classed among the "Monuments Historiques." The new church, from the designs of M. Baudot, is to be built in the Rue des Abbesses.——The Municipality of Bordeaux are about to construct a new hospital in the Quartier St. Jean, as well as new Lycée for girls and a new School of Medicine.——The death is announced, at the age of seventy-eight, of M. Antoinè Héret, honorary Architect to the Municipality of Paris, and "censeur" of the Société Centrale des Architectes. He was a pupil of Hippolyte Lebas, and built, in 1863-69, the fine church of Nôtre Dame de la Croix at Menilmontant.

Commercial Exhibition, Philadelphia.—The Department of Science and Art has received through the Foreign Office a communication from the Director of the Commercial Museum, Philadelphia, calling attention to a Universal Commercial Congress and Exposition to be held there, under its auspices, during the autumn of the present year. There is being erected for the purposes of the Exposition a series of buildings in which will be displayed such American manufactures as are most representative, and best adapted to foreign requirements, but it is intended also to accept as exhibits similar articles from European manufacturers, in order to afford an opportunity for a thorough and comparative study of the world's industries. The Congress will be presided over by the President of the United States at the opening session on October 10, and all nations will have an opportunity of being represented, and having a voice and vote in its deliberations, through duly accredited delegates sent by the various Governments and commercial organisations.

## *MISCELLANEOUS.*

Professional and Business Announcement.—Mr. C. Herbert Bedells, architect and surveyor, of 6, John-street, Bedford-row, has taken into partnership Mr. W. E. V. Crompton; the firm will be known as "Lander, Bedells, & Crompton."

Leeds Corporation and the Dwellings of the Poor.—The Corporation of Leeds have been so hard at work for the last year or two in obtaining powers to clear the portion of the city known as the insanitary area that one has almost wondered if they had time to think of what they were going to do for the people who under the scheme are to be evicted. It is satisfactory to know that this part of the problem has not been overlooked. In face of the Local Government Board's veto on the erection of back to back houses for the accommodation of tenants who will be displaced under the scheme the Corporation are obliged to look to other means of making the necessary provision. For the purpose of obtaining information as to the steps that have been taken by other large towns to grapple with the same difficulty, a deputation have been visiting Salford, Manchester, and Liverpool. At Salford the principal building visited was that known as the Municipal Lodging House. The property to be demolished in Leeds includes several lodging-houses, and in all probability a large building, somewhat on the lines of that at Salford, will have to be erected. What the committee considered a weakness in the Salford scheme was its lack of provision for women tramps. It is in the hands of the Corporation, and owing to the land value of the site, is said not to be a financial success. At Manchester the deputation visited a building that is being erected in the centre of the city. This is to be two stories high, providing tenements for a weekly rental of 4s. 6d., with two rooms, wash-house, and yard. At Liverpool a spacious building on the barrack plan was inspected. A square building, with a wide area in the centre, this building is five stories high, and let in tenements for sums varying from 5s. 6d. to 2s. 6d. a week—the latter being the amount payable for a single room on the top floor. It is said, however, that the barracks are not very popular. It is possible that before coming to a decision in the matter the deputation may visit London.—*Yorkshire Post.*

A Roman City Discovered near Falkirk.—Some interesting discoveries have recently been made at Camelon, near Falkirk, and it is believed that there will soon be uncovered for inspection the remains of the streets and buildings of the once flourishing city of Camelon, which eighteen centuries ago marked the western boundary of the Roman Empire. For some time past railway contractors have been engaged making sidings for two new foundries which are being erected, and in the course of the operations many relics of the Roman occupation of the district and of an ancient Roman city have been discovered. The relics include various pieces of Roman amphora, Samian ware, cooking utensils, two silver coins of the reigns of Nero and Hadrian, and a bronze coin, the inscription on which is not distinguishable. Some of the Samian ware displays considerable beauty of design and excellence of workmanship, and the colour is as perfect as when the articles left the potter's hands. Three stretches of stone buildings, each about 17 ft. in thickness and about 15 ft. apart, were also laid bare lately. The remains of the buildings which have since been partly uncovered appear to show that Camelon was a place of importance during the period of the Roman occupation, and that those who formed the colony were persons of rank and lived in luxury. The contractors have found on digging further that they are now on the site of a Roman building of considerable dimensions. This building seems to have been furnished with baths, and it is evident that the hypocaust arrangements for heating it must have been of the most complete description

Freemasons' Hall, Great Queen-street.—Mr. Henry L. Florence has been appointed architect, and Messrs. W. Cubitt & Co.'s tender of 12,077*l.* is accepted, for some additions which are to be made to Freemasons' Hall. The hall, which suffered considerably from a fire in the night of Thursday, May 3, 1883, and the adjoining tavern were built in 1866 from the designs of Professor Cockerell;* of the former building, 1775-6, by Thomas Sandby, first Professor of Architecture in the Royal Academy, there are illustrations in Britton and Pugin's "Public Buildings," 1825, and in the Crowle Pennant, two sectional views: a tontine of 5,000*l.* had been raised towards its cost. A print, after T. Stothard, R.A., of the procession of the Freemasons' orphans shows the interior of the Masonic Hall; the statue of the Duke of Sussex was executed for the Grand Lodge by E. H. Baily, R.A. The old Freemasons' Tavern, 1786, designed by William Tyler, *obiit* 1801, is also illustrated in Britton and Pugin's "Public Edifices," 80, 1828. The present Society of Free and Accepted Masons resulted from a Grand Lodge formed, for England, after a meeting held in London in 1717; similar lodges were formed for Scotland in 1736, and for Ireland in 1730.

"The Municipal Year Book."—The issue for 1899 of this Year Book (Edward Lloyd, Limited, Salisbury-square, E.C.) contains, like its predecessors, an admirable account of the constructive work carried out by municipalities. We have previously referred to the excellence of the work and to the mass of municipal information contained in it. We need only add that the present compares favourably in every way with previous issues.

Willings' British and Irish Press Guide.—The issue for 1899 of this useful and handy guide is the twenty-sixth annual issue of the work. It is a reliable and excellently arranged guide to the British and Irish Press.

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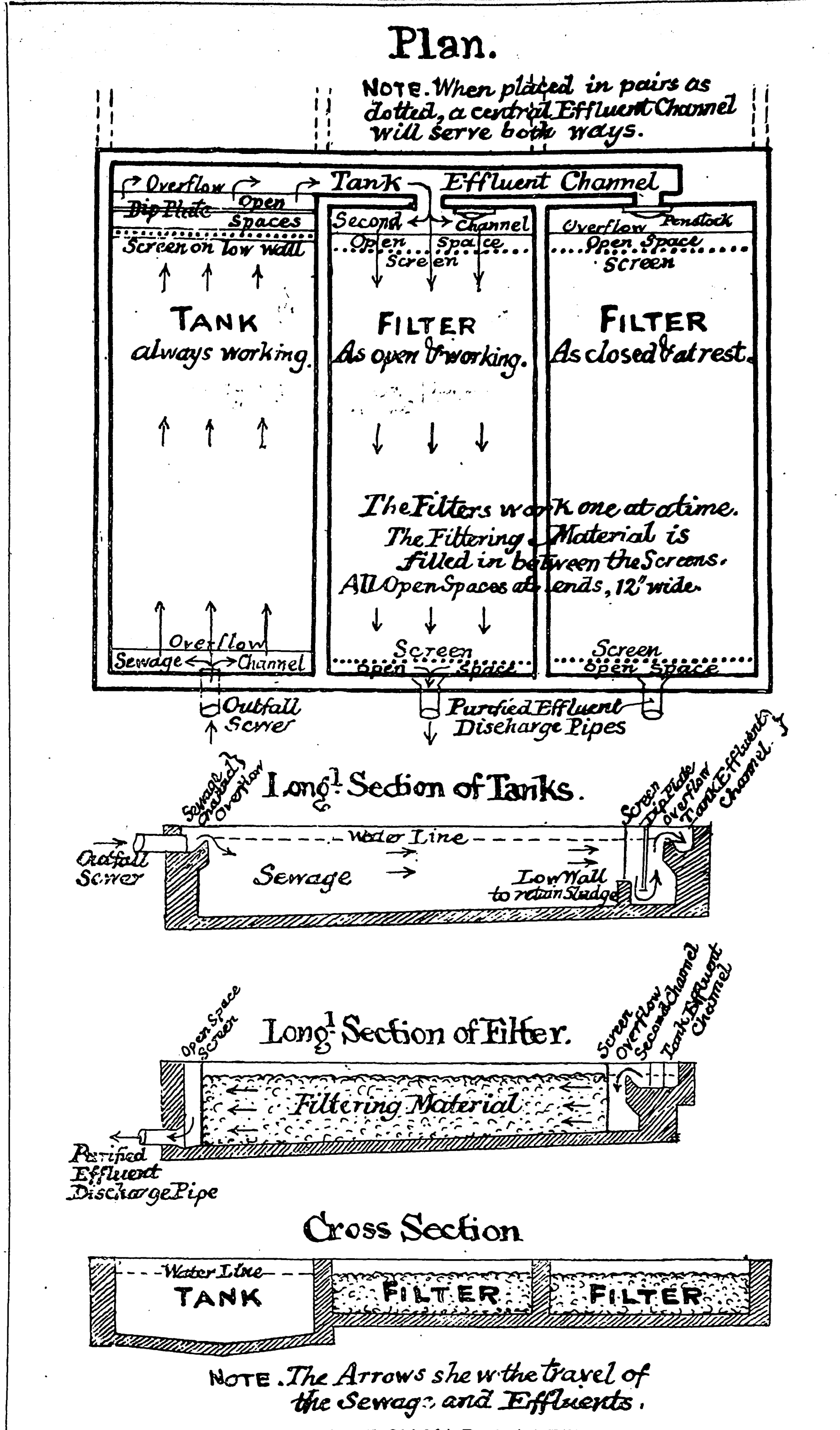
* See the *Builder*, 1866, pp. 611-3 (view and plan).


Plan.
Note. When placed in pairs as dotted, a central Effluent Channel will serve both ways.
Overflow
Tank Effluent Channel
Dip Plate
Open Spaces
Screen on low wall
Second Channel
Open Space
Screen
Overflow
Penstock
Open Space
Screen
TANK always working.
FILTER As open & working.
FILTER As closed & at rest.
The Filters work one at a time. The Filtering Material is filled in between the Screens. All Open Spaces at ends, 12" wide.
Overflow
Sewage Channel
Screen
Open Space
Screen
Open Space
Outfall Sewer
Purified Effluent Discharge Pipes
Long¹ Section of Tanks.
Sewage Channel Overflow
Screen Dip Plate Overflow Tank Effluent Channel
Water Line
Outfall Sewer
Sewage
Low Wall to retain Sludge
Long¹ Section of Filter.
Open Space Screen
Screen Overflow Second Channel Tank Effluent Channel
Filtering Material
Purified Effluent Discharge Pipe
Cross Section
Water Line
TANK
FILTER
FILTER
Note. The Arrows shew the travel of the Sewage and Effluents.

*Mr. Wentworth-Shields' Bacterial Filter.*

NEW SEWAGE-TANK AND FILTER.—We have received particulars of a new tank and filter designed by Mr. F. Wentworth-Shields for the bacterial purification of sewage. The tank appears to be the best part of the invention. The sewage enters a channel at one end, from which it overflows in a thin stream into the tank itself; at the opposite end of the tank is a low wall (to retain the sludge), surmounted by a screen which rises above the surface of the sewage and retains paper, scum, and other light matter. Beyond the screen is a narrow chamber divided by a dip-plate. After passing the screen, the sewage is forced under the dip-plate, and rises beyond it till it flows over the lip or weir into the tank-effluent channel. By this the clarified sewage is led to one of two filters placed alongside the tank. The peculiarity of these filters is that they are intended to filter the sewage horizontally and not vertically. A narrow space at each end of the filtering tank is left open, and the filtering material is separated from these spaces by screens. The outlet from each filter is the end opposite the tank-effluent channel, and is at the bottom of the filter. We fail to see any reason why the thin film of sewage entering the filter should not pass invariably along the lowest layer only of the filtering material; it certainly would not flow in a horizontal direction throughout the whole depth of that material as shown by the arrows in the diagrams sent us. The principle of the invention, as far as the filters are concerned, is apparently the same as that adopted some years ago by Mr. Scott Moncrieff in his nitrifying channels.

ELECTRIC LIGHT, CANTERBURY.—The Corporation electricity works were opened at Canterbury on the 10th inst. The scheme, including a dust-destructor, has cost 20,000*l*. A portion of the new work consists in laying mains in the cathedral precincts. The buildings were set out by the consulting engineer, Mr. Robert Hammond, the detail plans being prepared by Mr. A. H. Campbell, the City Surveyor. The building contractor was Mr. A. J. Brewster, of Canterbury.

NEW ELECTRICITY WORKS FOR BARNSLEY.—The foundation-stone in connexion with the new electricity works which are in course of erection by the Corporation of Barnsley was laid on the 9th inst. The electrical plant has been designed by Mr. Thomas L. Miller, of Liverpool, who will superintend the works. The buildings have been designed by Mr. J. H. Taylor, Borough Surveyor, and will be carried out under his supervision. The contracts for the erection of the buildings amount to 3,080*l*., and those for the plant to 18,931*l*.

THE RESTORATION OF EXETER GUILDHALL FRONT.—On the 8th inst., at a meeting of the Exeter City Council, Mr. Yeo said that 150*l*. had been inserted in the estimate for the renewal of the Guildhall front, but that he had been given to understand the cost was more likely to be 800*l*. or 1,000*l*. That being the case, he thought the work should have been thrown open to tradesmen of Exeter to tender, and that there should have been some kind of estimate of the probable cost. Mr. Alderman Wreford explained that 150*l*. was a half year's moiety of 900*l*., which it was proposed to spread over three years. Mr. Peters said 1,400*l*. had been named to him as the probable cost. It was decided by 15 to 14 that the work ordered at the previous meeting be suspended, and that in the interim the Society for the Preservation of Ancient Buildings be asked to give the Council an estimate of the cost.

THE IMPROVEMENT OF THE PUMP-ROOM, HARROGATE.—The monthly meeting of the Harrogate Town Council was held on the 13th inst. The Wells and Bath Committee having considered the erection of a new pump-room or the alteration of the present building, had resolved that the Borough Surveyor should submit one of the designs at present in his office for a glass and iron building, together with an estimate of the cost, to the next meeting of the Committee. Alderman Simpson took exception to the minute, and moved that it be sent back to the Committee. He said they all knew the importance of the pump-room to Harrogate, and the advantage they derived from having the sulphur water. They needed better facilities for serving the water, and he pressed the Corporation to make the building worthy of Harrogate. They advertised for competitive designs, and spent 150*l*. or 160*l*.; and now they proposed to throw over some fifty-six designs and go into the Surveyor's office and get a design from a pigeon-hole which half the Council had never seen. Such a course was not fair to the gentlemen who had competed. They had employed Mr. Corson, of Leeds, to assess the designs, and he objected to the resolution of the Committee. Councillor Milling seconded, and said the Committee were making themselves ridiculous. Alderman Ward supported the minutes, and spoke of the suitability of the plan which was in the Surveyor's office, although it had been there for years. If the Corporation spent 8,000*l*. or 10,000*l*. on the site it would be a mistake, and if they erected a new pump-room it would be only to provide increased accommodation for a brief period of the year. After further discussion the matter was voted upon, and the recommendation of the Committee was carried by 13 votes to 4.

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## *LEGAL.*

### WILKINS *v.* COLE.

AT the Exeter County Court, on the 8th inst., before his Honour Judge Woodfall, an action was heard in which the plaintiff was Mr. A. J. Wilkins, late clerk of works at the Devon and Exeter Hospital, now of Gordon House, Chester-road, Sunderland, and the defendant Mr. Charles Cole, architect and surveyor, of Exeter. Mr. A. E. Dunn (Messrs. Dunn & Baker) appeared for plaintiff, and Mr. G. Hardy Harris (Messrs. Ford, Harris, & Ford) represented defendant. The claim was for 68*l*. 6s.; 50*l*. had been paid into Court by Mr. Harris for defendant in settlement of the claim.

During the past few years, said Mr. Dunn, considerable alterations had been in progress at the hospital. The plaintiff was the clerk of works, and Mr. Cole was the architect. A scheme was considered by the Governors for extensions to the out-patients' department. Mr. Cole requested plaintiff to get out the bills of quantities, and it was arranged by Mr. Boyce, who was at that time secretary, and who sat as a kind of arbitrator, that defendant should receive 2½ per cent. on the lowest tender and the plaintiff 1½ per cent. Tenders were sent in, and the total of the lowest tender was 4,554*l*. This tender was accepted, and the plaintiff's commission agreed upon amounted to 68*l*. 6s., which was the amount of the claim in the present action. The tender was, however, annulled, and the scheme fell through. Mr. Cole had been paid his 2½ per cent. for the quantities which had been got out.

His Honour inquired if the agreement was made by Mr. Boyce in writing.

Mr. Dunn replied in the negative, and added that it was a verbal agreement. His client had also prepared specifications, but in regard to these they were not part of the original contract. The specifications were very simple matters; the bills of quantities were the important matter.

The plaintiff was called, and bore out what had been stated by his advocate.

By Mr. Harris: The preparation of the specifications formed no part of the plaintiff's contract in regard to the 1½ per cent. The scheme was abandoned owing to its involving too much expense. He took it that the work was the property of the Hospital Committee. By his Honour: He estimated the value of the specification at about two guineas.

Mr. A. E. Boyce, formerly secretary to the hospital, said he knew of the disputes which had arisen between the architect and Mr. Wilkins. He considered that it was in the interest of the hospital that these disputes should be settled. The work was being hindered and the committee was desirous that it should be got on with. It would have been a cause of delay if the estimates had not been got in on a certain date. It was agreed between Mr. Wilkins and himselt that he (witness) should be called in as a kind of umpire. Plaintiff and defendant met him to discuss the matter. The arrangement was that Mr. Wilkins should be paid 1½ per cent. commission on preparing the bills of quantities. The specifications were not mentioned in his presence.

By Mr. Harris: Witness did not know that Mr. Wilkins was preparing specifications. No mention of specifications was made at the interview at which he was present. He maintained that, to the best of his knowledge and belief, the word specification was not mentioned at the interview. The specifications would have been of considerable value to the hospital if any arrangements were come to in future that the work should be proceeded with. The bills of quantities were really the point in question, and the point on which he interested himself.

Mr. Harris, in addressing his Honour, said that if he held that Mr. Wilkins was entitled to this sum, then he imagined that the [hospital would be bound to repay Mr. Cole. But Mr. Cole felt strongly that this work was not done as it should have been done, and the hospital never had the worth of it, or would have any benefit from it. It was perfectly immaterial as to what Mr. Cole paid. The question was as to what was the agreement.

Mr. Cole, who was architect to the hospital works up to some date in November, having given evidence,

His Honour, in summing up, said he did not think that Mr. Boyce's memory was accurate as to the details of the conversation which took place between him and the plaintiff and defendant. But he had come to the conclusion that the plaintiff was entitled to be paid at the rate of 1¼ per cent., which would make his total claim 57*l*.

## ANCIENT LIGHT DISPUTE AT KNIGHTSBRIDGE.

THE case of Geeks *v.* Kellett came before Mr. Justice Byrne in the Chancery Division of the High Court of Justice on the 10th inst., on a motion by the plaintiff for an *interim* injunction till the trial or further order restraining the defendant from the alleged interference with the plaintiff's ancient lights at Nos. 33, 34, 35, and 36, Albert-gate, Knightsbridge, of which premises the plaintiff was the freeholder.

It appeared from the statement of Mr. Farwell, Q.C. (with him Mr. Rowden) who appeared in support of the motion, that the plaintiff was in occupation of No. 33, Albert-gate, the other three houses being let for terms of years. The defendant had bought Middle-row opposite. The old buildings there at their highest point were 38 ft. high, the distance across the road being about 60 ft. It was said that the defendant had already run up buildings to the height of 70 ft., and that, so far as the plaintiff could make out from the plans, the defendant proposed to go to 86 ft., and probably to 90 ft., in height. The plaintiff's tenants, the lessees, had brought actions against the defendants for injunctions, but the plaintiffs in those actions had been settled with for £1,300. Mr. Farwell said that, in these circumstances, he could not see how it could be said that there was not substantial injury to the plaintiff's lights, which were, he believed, admitted to be ancient.

Mr. Cripps, Q.C., for the defendant, said he was not in a position to answer the plaintiff's case at the present moment, as he had no affidavits, and therefore, if his learned friend insisted upon it, he should have to give an undertaking till the 17th inst.

Mr. Farwell said that he must insist upon an undertaking if the case had to stand over.

Mr. Cripps observed that it was a convenient time for building now, but he would give an undertaking that he would not carry the building any higher till the 17th inst. It was a very important building.

Mr. Farwell: Yes, it is a very enormous building.

Mr. Cripps said that the defendant had settled the dispute with the plaintiff's tenants, and he had no doubt it would be a matter of arrangement between the parties in the present action. The only question was whether his learned friend would desire to stop the work at the present time.

Mr. Farwell said that he must do so.

Accordingly Mr. Cripps said he would give an undertaking over the 17th inst., but he hoped the matter would be settled before then.

Order accordingly.

## POINT UNDER THE PUBLIC AUTHORITIES PROTECTION ACT, 1893.

THE case of Cree *v.* the St. Pancras Vestry came before Mr. Justice Bruce, sitting without a jury, in the Queen's Bench Division last week.

It appeared that in September, 1893, the Vestry served notices on the plaintiff's testator under Section 4 of the Public Health (London) Act, 1891, requesting work to be done to abate an alleged nuisance, and specified the work required to be done in connexion with a supposed drain. The plaintiff's testator complied with the notice, and executed the specified works at an expense of 70*l*. In the course of the execution of the works it was discovered that the supposed drain was a sewer, and that the defendants were liable to do the repairs which the plaintiff's testator had been called upon to do. The plaintiff brought the present action to recover the 70*l*. as money paid by the plaintiff's testator to the use and at the request of the defendants. The action was not commenced within six months after the completion of the work, and the sole question was whether the action was barred by Section 1 of the Public Authorities Protection Act, 1893, which requires the action to be commenced within six months after the act complained of, where the act is done in pursuance of any Act of Parliament.

At the conclusion of the arguments, Mr. Justice Bruce held that the action was barred, and gave judgment for the defendants.

Mr. Macmorran, Q.C., and Mr. Symmons appeared as counsel for the plaintiffs, and Mr. Corrie Grant for the defendants.

## ACTION FOR INJURIES AGAINST A BUILDER.

JUDGE EDGE was engaged at the Clerkenwell County Court on Wednesday in trying an action to recover 50*l*., damages for personal injuries, brought by Henry Mark Butler, slater's labourer, South Tottenham, against W. J. Collins, builder, Muswell Hill-road, Highgate.

On January 4 last the plaintiff was employed as a slater's labourer, the defendant being the sub-contractor for the work. While carrying certain materials the concrete of a wall on which he had to walk gave way, and he was precipitated to a passage beneath, sustaining severe injuries which necessitated attention at the Great Northern Hospital.

It was submitted for the defence that there was no evidence of any negligence on the part of the defendant, as the concrete floor had been in use for a considerable time, and the foreman had been over the very spot on the morning in question.

In answer to the Judge, counsel for the plaintiff contended that the negligence consisted of the failure to put a boarding over the place in question, as the concrete was not set.

The Judge said there was no evidence that the concrete was not properly set, and he was sorry to have to withdraw the case from the jury. There was no evidence of negligence which would justify the jury in giving a verdict. He therefore entered a nonsuit, without costs.

Defendant's counsel did not ask for costs, but said it would be different if the case should be taken any further.

## MEETINGS.

### FRIDAY, MARCH 17.

*Architectural Association.*—Mr. Reginald T. Blomfield on "Reflections on the English Renaissance." 7.30 p.m.

*Glasgow and West of Scotland Technical College* (*Architectural Craftsmen's Society*).—(1) Mr. W. G. Peddie on "Electric Lighting of Buildings." (2) Mr. G. Davidson on "Levelling." 8 p.m.

### SATURDAY, MARCH 18.

*Royal Institution.*—The Right Hon. Lord Rayleigh on "The Mechanical Properties of Bodies." VI. 3 p.m.

*Sanitary Institute (Demonstrations for Sanitary Officers).*—Inspection at Morden Hall Farm, Morden, Surrey. 3 p.m.

*Perth Architectural Association.*—Visit to Brahan House, near Tulloch.

### MONDAY, MARCH 20.

*Royal Institute of British Architects.*—Mr. John Bilson, F.S.A., on "The Beginnings of Gothic Architecture: Norman Vaulting in England." 8 p.m.

*Surveyors' Institution.*—Col. G. W. Raikes on "The Report (No. 2) of the Royal Commission on Local Taxation, especially dealing with Valuation and Rating in Respect of Tithe Rent Charge." 8 p.m.

*Sanitary Institute* (*Lectures for Sanitary Officers*).—Dr. Louis Parkes on "Water Supply, Drinking Water, Pollution of Water." 8 p.m.

*Liverpool Architectural Society.*—(1) Mr. H. Blomfield Bare on "American Architecture;" (2) Mr. J. H. Cook on "New York Office Buildings." 6 p.m.

*Leeds and Yorkshire Architectural Society.*—Election of Officers. Annual Report. 6.30 p.m.

### TUESDAY, MARCH 21.

*Society of Arts* (*Foreign and Colonial Section*).—Mr. C. Rozenraad on "The Commercial Development of Germany." 4.30 p.m.

*Society of Designers.*—Mr. F. J. Mayers on "Design for Carpets." 8 p.m.

*Institution of Civil Engineers.*—Further discussion on (1) "Water-tube Boilers for Marine Engines," by Mr. J. T. Milton; (2) "Recent Trials of the Machinery of War Ships," by Sir John Durston; (3 paper to be read, time permitting), "Alloys of Iron and Nickel," by Mr. Robert Abbott Hadfield. 8 p.m.

### WEDNESDAY, MARCH 22.

*Society of Arts.*—Mr. Philip Dawson on "Electric Traction." 8 p.m.

*St. Paul's Ecclesiological Society.*—(1) Mr. Leland L. Duncan, F.S.A., "On the Commemoration of John Potter at Westminster, in 1522;" (2) Mr. Cuthbert Atchley "On Two Manuscript Missals in the Bristol Public Library;" (3) The Rev. E. S. Dewick, F.S.A., will exhibit and describe a Manuscript Sarum Missal of unusually large size. 7.30 p.m.

*Sanitary Institute* (*Demonstrations for Sanitary Officers*).—Inspection at the East London Water Works, Lea Bridge, Clapton. 3 p.m.

*Liverpool Engineering Society.*—Mr. C. H. Darbishire on "Machinery in Use in First-class Roadstone Quarries." 8 p.m.

*Edinburgh Architectural Society.*—Special general meeting. Report on Conference with the Edinburgh Architectural Association, with a view to joint occupancy of rooms. Motion by Mr. P. E. Nobbs: "That a scheme of union with the Association be submitted to that body." 8 p.m.

### THURSDAY, MARCH 23.

*Society of Antiquaries.*—8.30 p.m.

*Royal Institution.*—Mr. William Poel on "English Playhouses in the Fifteenth, Sixteenth, and Seventeenth Centuries." III. 3 p.m.

*Institution of Electrical Engineers.*—Mrs. Ayrton on "The Hissing of the Electric Arc," illustrated by experiments. 8 p.m.

*Sanitary Institute.*—Demonstration, for Sanitary Officers, of Diseased Meat, by Dr. W. A. Bond. 8 p.m.

### FRIDAY, MARCH 24.

*Architectural Association* (*Discussion Section*).—Mr. L. Jacob on "Arbitration." 7 p.m.

### SATURDAY, MARCH 25.

*Institution of Junior Engineers.*—Visit to the Testing Station of the British Fire Prevention Committee at Hanover Gate, Regent's Park, London. 3 p.m.

*Royal Institution.*—The Right Hon. Lord Rayleigh on "The Mechanical Properties of Bodies." VII. 3 p.m.

*Sanitary Institute* (*Demonstrations for Sanitary Officers*).—Inspection at the Sutton Sewage Works. 3 p.m.

*Edinburgh Architectural Association.*—Visit to houses, Mortonhall-road and Grange House.

## RECENT PATENTS:

### ACCEPTED SPECIFICATIONS.

### *Open to Opposition until May 8.*

[1898] 5,341, Trier, Machinery for Dressing, Moulding, and Turning Stone, &c. 5,409, Harbord & Minchin; and [1899] 2,309, Niederhofheim, Oil Lamps. 5,508, Richmond, Gas Fires or Stoves. 6,145, Von Barby, Process for Hardening and Rendering Tenacious the Active Mass of Electrical Accumulators. 7,773, Hampson, Self-intensive Refrigeration of Gases by Expansion and Counter-Current Interchange. 7,856, Dunn, Dunn, & Conn, Spraying and Sprinkling Apparatus. 7,995, Baxter, Combined Shaping and Boring Machines. 7,996, Boardman, Reflectors for Lamps, &c. 8,072, Hahn, Automatical Gas Ignition and Extinction. 8,117, Brighton & Bate, Metal Soil and other Pipes. 8,140, Wright, and 9,339, Edmunds, Electrical Circuit Switches. 8,415, Teale, Ventilating Apparatus. 8,442, Marks, Electrical Meters. 8,565, Lacroix, Automatical Apparatus for Producing Acetylene Gas. 8,957, Crease, Mills for Pulverising, Crushing. and Grinding Ores, Hard Cements, &c. 9,126, Watson, Treatment of Sewage and other Effluent Waters. 9,256, Broussas, Manufacture of Parts of Buildings and other Structures. 9,341, Tait, Taps or Cocks. 9,555, Brown & Poulson, Moulding Machines. 9,607, Tschierst; 10,110, Oliver; and 22,887, Barnikolveit & Riebel, Electrical Arc Lamps. 9,686, Baxendale, Chimney Pots, Ventilators, &c. 9,784, Weston, Spanners or Wrenches. 9,800, Carter & Aynsley, Means of Pivotting Doors. 9,812, Groves & Groves, Piling or Stacking Timber. 9,844, Sturge, Adjustable Shade Supports for Electrical and similar Fittings. 10,096, Thomas & Atkinson, Pendants and Brackets for Incandescent Gas Burners, Especially Applicable to Gas Pendants and Brackets for Billiard Tables. 10,157, Schierholz, Automatical Apparatas for Purifying Water. 10,316, Gross, Pathway Curbs and Culvert Covers. 10,472, Yates & McQueen, Tanks, Cisterns, &c. 13,324, Ward & Toms, Street and Other Gulley Traps. 13,651, Yates & Prior, Atmospherical Burners for Gas Fires, &c. 14,313, Heron, Locks. 15,801 and 15,803, Leimer, Electrical Accumulators. 18,188, Mell, Asphalte Roofing. 18,955, Thomas, Chimney Pots, &c. 19,011, Kimman & Hurley, Portable Pneumatical Drills, &c. 22,302, Dibbles, Waste or Slop Water-closets. 23,961, Cohn, Means for Testing the Light in Working Places, Studios, Schools, and so forth. 24,722, Hamilton, Drain and Sewer Pipe Joints. 25,216, Laucks, Truing-up, Grinding, and Polishing Stones. 25,344, Edwards & Thomas, Fastening Tool Handles. 27,418, Cohn, Embossed Wall Hangings. 27,589, Stockstrom, Vaporising Oil, and Apparatus for Use in Burning It. [1899] 49, Wolff, Drying Bricks, Earthenware, Cement, Lumber, &c. 194, Schädlich, Stoves Used for Heating Rooms. 925, Deri, Rotary Converters for Single Phase Alternating Currents. 1,014, Hausmann, Window Sashes. 1,098, Honigbaum, Ventilators. 1,235, Himmel, Incandescent Gas Street Lamps, &c. 1,288, Taylor, Machines for Boring Rock and similar Hard Substances. 1,577, Durrant, Door Closers. 1,821, Thomson, Ladders. 1,957, Wikschstrem & Krutikow, Wire-Nail Making. 1,199, Doman, Hinges. 2,016, Wolf, Carpenters' Chisels. 2,060, Watson & Chadwell, Gas for Lighting and Other Purposes. 2,092, Barnard, Basket or Container for use in Transporting Coal, Stones, Earth, &c. 2,179, Bachmeyer, Incandescent Gas Burners. 2,299, Hathaway, Electrical Accumulators or Secondary Batteries. 2,557, Coari, Artificial Blocks for all kinds of Paving, &c.

### ABSTRACTS OF PATENTED INVENTIONS.

25,364.—ELECTRICAL SWITCHES: *V. G. Lironi.*—The ring for the handle is supported by raised parts upon the base, and the movable contact-arm, whose split ends engage with jaws of the fixed contacts, is pivotted on to one of the raised parts.

25,382.—WATER-WASTE PREVENTERS AND BASINS: *J. Shaw.*—Water is supplied into a vessel having a capacity which is equal to that of a flush, and the vessel is emptied by depression of the hinged seat, the return of the seat to its position closes a ball-valve mounted upon a spindle attached to a bracket beneath the underside of the seat and opens an upper ball-valve similarly mounted—thus the vessel is again filled; beneath the hinged seat is fitted a tubular extension whose lower end bears against the outer basin to form a water-tight joint when the seat is depressed, whereby the flush collects within the space so formed and passes to the outlet when the seat is raised again.

25,383.—Gulley Traps: *J. Shaw.*—A dished cover, standing upon legs, seals the outlet, which is formed to project within the trap. Above the cover is provided a vessel which also is trapped by means of a flange which hangs down from the grating.

25,406.—Pit Props and Girders: *W. Frith & E. Thompson.*—The inventors' object is to prevent the ends of iron or steel bars or props of I-section from cutting into the wood or other packing. They cut away the web and bend over the flanges, so as to form a flat bearing surface. By another mode, they cut away one flange and portions of the web, and bend over the other flange.

25,439.—Bevel Gauges: *L. Manning.*—The blade of the gauge is ⊢-shaped in cross section, and its flange is slotted in two places for the arms of the square. The square's longer arm is held in the required position by a clamp and bolt passing through a slot in the blade and fitted with a clamping nut, whilst the shorter arm is pivotted to the blade by a bolt that passes through both of them and a bracket as well, and can be fixed in position with a nut.

25,504.—Sash Fastenings: *W. Peel.*—The contrivance, applicable also to gates and doors, consists of two casings for the two sashes. In one casing slides a spring bolt with a hooked end, which engages a spring catch in the other casing. When the bolt is driven against a spring on the former casing, and so draws the sashes tightly together. A knob enables one to slide back the catch, when the spring forces out the bolt, and so the sashes are released.

25,536.—Materials for Valves and Cocks: *J. Watkinson.*—The wearing surfaces of stop-cocks and valves and washers are made of vegetable ivory which has been soaked for some hours in an oil or hydro carbon.

25,563.—Supports for Electrical Lamps, &c.: *W. H. Sturge.*—Reels enclosed in cases are adopted for adjusting hanging conductors and similar cords. A nut fixes the reel in the case when the required distance is reached. The reel has a screw, and a fixed knob which bears against a toothed part of the case when the nut is tightened against the other half of the case, the cord passing through a hole in the reel. One half of the case has insulating or other eyes for passage of the conducting cord.

25,632.—Formaldehyde Gas: *R. E. Parraga.*—For disinfecting purposes formaldehyde is made in the form of gas by an apparatus wherein a vessel is filled with the commercial solution which passes into a coil of copper piping heated by a lamp underneath and connected with a pipe that opens upon the area to be disinfected—the receiving vessel has a non-conducting bottom and a valve; thus the solution, exposed without pressure to a high temperature becomes vaporised, the vapours are at the same time superheated, whilst the present isomerical compounds become broken.

25,653.—Lamp Shades and Shade Holders: *S. Biheller.*—To obtain a coloured light, electrical incandescent lamps are enclosed in coloured covers of glass, celluloid, or other transparent material. The cover may be in two parts, secured to the lamp's neck by plates which are hinged together, and have curved springs to grip the lamp, or by wire. In another shape a ring closes on the neck by a screw, and has annular springs to engage with a groove in the cover; or the spring may be shaped to retain a flange that is turned outwards on the cover's edge, an upper piece resting thereon to enclose the neck.

25,734.—Moulding Bricks, Pipes, Tiles, Chimney-Tops, &c.: *E. S. Clark.*—The dies are composed of metal plates and felt sheets bolted together and placed within a water jacket, whose halves are joined together by a rubber washing or seating. The porous felt sheets are nailed on to wooden frames in recesses of the plates, between which metal washers are placed in order to prevent undue pressure of the felt when the bolt-nuts are tightened up; a tubular core is built up of metal and felt rings, water being supplied to the core's centre, if pipes or chimney-tops are to be made.

25,750.—Treatment of Calcium Carbide: *J. Zimmerman.*—Calcium carbide, or similar materials for making gas, is ground, mixed with a saturated solution of shellac in alcohol, pressed into various convenient shapes, and then heated for driving off the alcohol; it is claimed that the blocks, besides being more handy and portable than untreated carbide, will, when treated with water, generate gas more slowly.

25,780.—Flushing Apparatus: *J. W. Witter.*—In order to automatically regulate a flush when the interval between two successive flushes depends upon the extent to which the closet, urinal, &c., is used; the inventor contrives that the basin shall discharge into a tipping-tank that contains the float of the cock which delivers the flush, so that a flush occurs each time that the tank fills and tilts, and the flush may be started by means of a hand-pulled rod; whilst the closet is being used the tank is locked by the operation of a catch worked by the depression of the seat; the ball-cock may be fitted in a separate tank supplied from the tipping-tank through a hollow trunnion; for latrines the tipping tank can be linked to an over-head tank whence the flush is delivered.

25,861.—Fireproof Building Material: *D. H. Ferguson.*—The material, in imitation of marble, is made by separating asbestos, or a similar mineral fibrous material, into fibres, and then dividing them when dry into portions to be severally coloured with dry pigments. A grained effect is produced by mixing the fibres, which are next pressed in a mould and moistened with a weak solution of silicate of soda, and then dried and immersed in a solution of calcium chloride; the artificial stone can be sawn into veneers and backed with cement, slate, metal, asbestos, or wood boards. A wire fabric may be embedded in the backing of Portland cement.

25,934.—Paint, Distemper, and Other Brushes: *T. Murphy.*—End plates and another bent metal plate cover the handle's tapered end; the bristles abut against ribs on the bent metal plate, and the plate has lower ribs to abut against shoulders formed upon the tapered end and slotted underneath to receive the metal plate's end. The end plates are shouldered in order to secure the binding wire that passes through a slot in the tapered end and the metal plate when the brush is made of two tufts.

26,026.—Electrical Switch Covers: *R. G. Evered.*—The covers for use with glow-lamps, &c., are lined internally, to prevent short circuiting, with rubber or vulcanite, moulded to the cover's shape when in a plastic condition, by modifications; the surface may be coated with a rubber solution or with varnish or drying linseed oil.

26,064.—Incandescent Gas-Burners: *O. Kern.*—Conical or other tubes are placed around the burner tube specified in No. 294 of 1897; a serrated disc and a boss conduct heat to the perforated tube, whereby the air and gas currents are heated and mixed in their ascent.

## PRICES CURRENT OF MATERIALS.

### TIMBER.

| | | | | | | |
|---|---|---|---|---|---|---|
| Greenheart, B.G. ............ton | £8 | 0 | 0 | 0 | 0 | 0 |
| Teak, E.I. ..................load | 10 | 10 | 0 | 15 | 10 | 0 |
| Sequoia, U.S., ft. cu. ............ | 1 | 9 | 0 | 2 | 0 | 0 |
| Ash, Canada, load.................. | 3 | 17 | 6 | 5 | 5 | 0 |
| Birch, do .......................... | 3 | 0 | 0 | 5 | 0 | 0 |
| Elm, do ............................ | 4 | 12 | 6 | 5 | 15 | 0 |
| Fir, Dantsic, &c. .................. | 1 | 10 | 0 | 3 | 10 | 0 |
| Oak, do ............................ | 3 | 5 | 0 | 3 | 15 | 0 |
| Canada .......................... | 4 | 0 | 0 | 6 | 0 | 0 |
| Pine, Canada red .................. | 0 | 0 | 0 | 0 | 0 | 0 |
| Do, yellow ...................... | 4 | 7 | 6 | 6 | 5 | 0 |
| Lath, Dantsic, fath. ................ | 4 | 10 | 0 | 5 | 10 | 0 |
| St. Petersburg .................. | 4 | 0 | 0 | 6 | 10 | 0 |
| Wainscot, Riga, &c., log.......... | 3 | 15 | 0 | 6 | 5 | 0 |
| Odessa, crown ...................... | 3 | 15 | 0 | 6 | 5 | 0 |
| Deals, Finland, 2nd and 1st std. 100 | 9 | 15 | 0 | 10 | 5 | 0 |
| Do., 4th and 3rd .............. | 9 | 15 | 0 | 10 | 5 | 0 |
| Do., Riga........................ | 8 | 5 | 0 | 9 | 5 | 0 |
| St. Petersburg, 1st yellow ...... | 11 | 15 | 0 | 14 | 5 | 0 |
| Do., 2nd yellow .................. | 10 | 15 | 0 | 12 | 5 | 0 |
| Do., white ...................... | 9 | 15 | 0 | 11 | 15 | 0 |
| Swedish .......................... | 9 | 15 | 0 | 16 | 15 | 0 |
| White Sea ........................ | 10 | 15 | 0 | 18 | 0 | 0 |
| Canada Pine, 1st ................ | 18 | 15 | 0 | 25 | 5 | 0 |
| Do., do., 2nd .................. | 13 | 15 | 0 | 17 | 0 | 0 |
| Do., do., 3rd, &c. .............. | 6 | 15 | 0 | 10 | 0 | 0 |
| Do. Spruce, 1st.................. | 8 | 5 | 0 | 10 | 5 | 0 |
| Do., do., 3rd and 2nd .......... | 7 | 0 | 0 | 8 | 5 | 0 |
| New Brunswick .................. | 7 | 0 | 0 | 7 | 15 | 0 |
| Battens, all kinds .................. | 5 | 0 | 0 | 16 | 0 | 0 |
| Flooring boards, sq., 1 in., prep., 1st | 9 | 0 | 0 | 15 | 3 | 0 |
| Do., 2nd ........................ | 0 | 7 | 0 | 0 | 12 | 3 |
| Other qualities .................. | 0 | 5 | 3 | 0 | 6 | 6 |
| Cedar, Cuba, ft...................... | 0 | 0 | 4 | 0 | 0 | 4½ |
| Honduras, &c. .................. | 0 | 0 | 4 | 0 | 0 | 4½ |
| Mahogany, Cuba .................. | 0 | 0 | 5½ | 0 | 0 | 7½ |
| St. Domingo, cargo av. ........ | 0 | 0 | 5 | 0 | 1 | 3 |
| Mexican do., do. .............. | 0 | 0 | 3½ | 0 | 0 | 4 |
| Tabasco, do., do ................ | 0 | 0 | 4 | 0 | 0 | 6½ |
| Honduras, do...................... | 0 | 0 | 4½ | 0 | 0 | 6 |
| Box, Turkey, ton .............. | 6 | 0 | 0 | 15 | 0 | 0 |
| Satin, Porto Rico .............. | 0 | 0 | 9 | 0 | 2 | 0 |
| Walnut, Italian .................. | 0 | 0 | 3 | 0 | 0 | 7½ |

### METALS.

| | | | | | | |
|---|---|---|---|---|---|---|
| Iron—Pig, in Scotland ...... ton | 2 | 13 | 4½ | 0 | 0 | 0 |
| Bar, Welsh, in London ........ | 6 | 0 | 0 | 6 | 5 | 0 |
| Do. do. at works in Wales...... | 5 | 15 | 0 | 5 | 17 | 6 |
| Do. Staffordshire, in London.... | 6 | 5 | 0 | 7 | 10 | 0 |
| Copper—British cake and ingot .. | 72 | 0 | 0 | 72 | 10 | 0 |
| Best selected .................. | 73 | 0 | 0 | 73 | 10 | 0 |
| Sheets, strong.................. | 76 | 0 | 0 | 78 | 0 | 0 |
| Chili bars...................... | 66 | 10 | 0 | 0 | 0 | 0 |
| Yellow Metal ..............lb. | 7d. | | | 7½d. | | |
| Lead—Pig | | | | | | |
| Spanish ......................ton | 14 | 10 | 0 | 0 | 0 | 0 |
| English Com. Brands .......... | 14 | 15 | 0 | 0 | 0 | 0 |
| Sheet, English, 6 lbs. per sq. ft. and upwards .............. | 15 | 15 | 0 | 0 | 0 | 0 |
| Pipe .......................... | 16 | 5 | 0 | 0 | 0 | 0 |
| Zinc—English sheet ..........ton | 30 | 0 | 0 | 0 | 0 | 0 |
| Vieille Montagne .............. | 31 | 0 | 0 | 0 | 0 | 0 |
| Spelter ........................ | 27 | 1 | 3 | 27 | 5 | 0 |
| Tin—Straits ...................... | 107 | 2 | 6 | 0 | 0 | 0 |
| Australian ...................... | 107 | 5 | 0 | 107 | 15 | 0 |
| English Ingots .................. | 110 | 0 | 0 | 111 | 0 | 0 |
| Banca .......................... | 0 | 0 | 0 | 0 | 0 | 0 |
| Billiton ........................ | 0 | 0 | 0 | 0 | 0 | 0 |

### OILS.

| | | | | | | |
|---|---|---|---|---|---|---|
| Linseed ........................ton | 17 | 12 | 6 | 0 | 0 | 0 |
| Cocoanut, Cochin .................. | 27 | 15 | 0 | 0 | 0 | 0 |
| Do. Ceylon ........................ | 24 | 10 | 0 | 0 | 0 | 0 |
| Palm, Lagos ...................... | 21 | 15 | 0 | 0 | 0 | 0 |
| Rapeseed, English, pale .......... | 22 | 15 | 0 | 0 | 0 | 0 |
| Do. Brown ........................ | 21 | 5 | 0 | 0 | 0 | 0 |
| Cottonseed ref. .................. | 15 | 0 | 0 | 16 | 0 | 0 |
| Oleine ............................ | 17 | 0 | 0 | 18 | 0 | 0 |
| Lubricating U.S. .................. | 0 | 5 | 3 | 0 | 7 | 6 |
| Do. Black ........................ | 0 | 5 | 0 | 0 | 6 | 6 |
| Tar—Stockholm............barrel | 1 | 5 | 0 | 0 | 0 | 0 |
| Archangel...................... | 0 | 18 | 0 | 0 | 0 | 0 |
| Turpentine ........................ | 32 | 15 | 0 | 0 | 0 | 0 |

* * *

## SOME RECENT SALES OF PROPERTY:

### ESTATE EXCHANGE REPORT.

| | |
|---|---|
| March 1.—By Wainwright & Laver (at Yatton). | |
| Bourton, Somerset.—The Manor Farm, 49 a. 3 r. 38 p., f. | £4,000 |
| By Morris, Marshall, & Poole (at Bishop's Castle). | |
| Bishop's Castle, Salop.—Kerry-rd., &c., enclosures of pasture, 14 a. 2 r. 25 p. | 900 |
| Kerry-rd., Rose Cottage, f., r. 14*l.* | 340 |
| March 2.—By Castle, Son, & Booth (at Banbury). | |
| Alkerton, Oxon.—A freehold farm, together with The Cottage, 100 a., f. | 3,125 |
| Balscote, Oxon.—A freehold farmhouse and 28 a. 1 r. 0 p. | 750 |
| March 3.—By Thompson & Wood (at Great Grimsby). | |
| Scartho, Lincs.—A freehold accommodation farm, 108 a. 1 r. 1 p. | 4,310 |
| Waltham, Lincs.—Skinner's-lane, a freehold house | 232 |
| Ing's-lane, &c., two pieces of land, 4 a. 0 r. 9 p., f. | 318 |
| March 6.—By Chancellor & Sons. | |
| Richmond Hill, Surrey.—Queen's-rd., &c., i.g.r. 316*l.*, u.t. 52½ yrs., g r. 125*l.* | 3,820 |
| By Elliott, Son, & Boyton. | |
| Marylebone.—53, Harley-st., u.t. 17½ yrs., g.r. 27*l.*, r. 260*l.* | 2,300 |
| Kensington.—51, Warwick-gardens, u.t. 50 yrs., g.r. 6*l.*, r. 80*l.* | 1,140 |
| Kentish Town.—53, Patshull-rd., u.t. 62 yrs., g.r. 3*l.* 1s., e.r. 60*l.* | 755 |
| St. John's Wood.—6, Queen's-ter., u.t. 21 yrs., g.r. 10*l.*, r. 110*l.* | 950 |
| 50 and 52, Finchley-rd., u.t. 20¾ yrs., g.r. nil., r. 174*l.* | 1,680 |
| 17 and 19, Ordnance-rd., u.t. 36 yrs., g.r. 14*l.*, r. 82*l.* | 400 |
| Chelsea.—34, Christchurch-rd., u.t. 51 yrs., g.r. 4*l.*, r. 34*l.* | 430 |
| By Wm. Houghton. | |
| Walthamstow.—9 to 21 (odd), 15 a. and 23 a, Milton-rd., f., r. 160*l.* | £1,585 |
| Chingford-rd., Lime Cottage and Lime Tree Cottage, f. | 360 |
| 53, Hoe-st., f., r. 30*l.* | 600 |
| 2 to 9, Richard's-pl., f. | 1,365 |
| Leytonstone.—Argyle-st., a freehold building site. | 225 |
| Stoke Newington.—1 to 10, Suffolk-pl., u.t. 20½ yrs., g.r. 30*l.* | 920 |
| Bow.—31 and 33, Lefevre-rd., u.t. 66¾ yrs., g.r. 8*l.* | 415 |
| Chingford.—Main-rd., an improved rental of 45*l.*, for 18½ yrs. | 440 |
| By F. Warman. | |
| Highbury.—167, Highbury New Park, u.t. 50 yrs., g.r. 15*l.* | 1,300 |
| By Henry Hooper. | |
| Theydon Bois, Essex.—Main-rd., Braeside and 1 a. 3 r. 12 p., f. | 1,475 |
| Main-rd., Longworth, f., r. 37*l.* | 540 |
| Woodfield.—Cleveland-rd., Woodland View, f., r. 50*l.* | 700 |
| Putney.—Egliston-rd., Avondale and Foot's Cray, u.t. 89 yrs., g.r. 17*l.* 10s., r. 110*l.* | 1,100 |
| Tooting.—50 and 54, Vant-rd., u.t. 81 and 79 yrs., g.r. 10*l.*, r. 47*l.* | 405 |
| Camberwell.—52, Bengeworth-rd., u.t. 73 yrs., g.r. 5*l.*, e.r. 26*l.* | 295 |
| Walthamstow.—1 to 4, Shernhall-ter., u.t. 79 yrs., g.r. 48*l.*, r. 92*l.* | 320 |
| Dulwich.—21 and 23, Derwent-grove, u.t. 77 yrs., g.r. 10*l.* | 575 |
| By W. C. Warren & Son (at Chard). | |
| Buckland St. Mary, Somerset.—Westhay Farm, 95 a. 2 r. 19 p., f. | 900 |
| March 7.—By C. W. Davies. | |
| Finsbury Park.—26, Portland-rd., u.t. 59 yrs., g.r. 12*l.* 12s., r. 50*l.* | 525 |
| Holloway.—65, Tollington-Pk., u.t. 66 yrs., g.r. 10*l.*, r. 50*l.* | 460 |
| Highbury.—51, Avenell-rd., u.t. 77 yrs., g.r. 8*l.* 8s., r. 38*l.* | 395 |
| 28, Leigh-rd., u.t. 80 yrs., g.r. 9*l.*, e.r. 55*l.* | 610 |
| St. Pancras.—172 and 174, Seymour-st., u.t. 31 yrs., g.r. 28*l.*, r. 85*l.* | 425 |
| Islington.—66 and 67, Colebrooke-row, c., r. 80*l.* | 1,400 |
| Walworth.—85, Lorrimore-rd., u.t. 52 yrs., g.r. nil., r. 36*l.* | 435 |
| Clerkenwell.—52, Wharton-st., u.t. 55 yrs., g.r. 8*l.* | 300 |
| Holloway.—315, Camden-rd., u.t. 47 yrs., g.r. 7*l.*, e.r. 65*l.* | 600 |
| By Tyser, Greenwood, & Crier. | |
| Chiswick.—27 and 28, Avenue-ter., u.t. 80 yrs., g.r. 8*l.* | 470 |
| 3, Arlington Park-gardens North, u.t. 78 yrs., g.r. 7*l.* 7s., e.r. 40*l.* | 440 |
| Barnes.—8 and 10, Cleveland-gardens, f. | 700 |
| Acton.—48 and 50, Antrobus-rd., u.t. 77 yrs., g.r. 9*l.* 9s. | 475 |
| By Rushworth & Stevens. | |
| Maida Vale.—190, Portsdown-rd., u.t. 78 yrs., g.r. 10*l.* 10s. | 605 |
| By Prall & Prall. | |
| Camberwell.—37, Camberwell-green, area 5,050 ft., f., e.r. 60*l.* | 1,030 |
| By Percival Hodson. | |
| Hornsey.—174, Wightman-rd., f. | 750 |
| West Ham.—Lion-ter., l.g.r. of 18*l.*, u.t. 25 yrs. | 205 |
| By Hunter & Hunter. | |
| Marylebone.—Seymour-pl., f.g.r. of 40*l.*, reversion in 55 yrs. | 1,230 |
| Nunhead.—Nunhead-green, "The Pyrotechnic Arms" p.-h., f.g.r. of 15*l.*, reversion in 65 yrs. | 500 |
| Nunhead-green, f.g.r. of 20*l.*, reversion in 68 yrs. | 630 |
| By Woods & Snelling. | |
| Sidcup.—Elm-rd., Ferndale and Parkside, f., e.r. 72*l.* | 900 |
| By Weston & Son. | |
| Stockwell.—19, Chantry-rd., u.t. 73 yrs., g.r. 7*l.*, r. 38*l.* | 400 |
| Battersea.—32 and 34, Simpson-st., u.t. 57 yrs., g.r. 8*l.* | 435 |
| By Orgill, Marks, Orgill (at Masons' Hall Tavern). | |
| Chislehurst Common, Kent.—"The Crown" p.-h., u.t. 38 yrs., r. 100*l.*, with goodwill | 3,750 |
| By E. Holsworth (at Stratford). | |
| Forest Gate.—120, 122, 124, and 126, Shrewsbury-rd., u.t. 97 yrs., g.r. 20*l.* | 605 |
| By Humbert & Flint (at Watford). | |
| Stanmore, Middx.—Woodlands and 5 a. 2 r. 37 p., with a strip of land opposite, f. | 5,300 |
| Main-rd., Loscombe Lodge," f., r. 25*l.* | 710 |
| Main-rd., two freehold houses and shops, r. 45*l.* | 1,250 |
| Main-rd., two freehold cottages, r. 24*l.* | 360 |
| Watford, Herts.—67, High-st., area 9,700 ft., f. | 4,775 |
| 148 and 150, High-st., f., r. 87*l.* | 1,630 |
| 264, 266, and 268, High-st., f., r. 52*l.* | 650 |
| 2, 4, 6, and 8, Cardiff-rd., f., r. 57*l.* 4s. | 660 |
| 8 and 9, Stanley-st., f., e.r. 53*l.* | 820 |
| By J. M. Richardson & Garaway (at Lewes). | |
| Framfield, Sussex.—Mount Pleasant and Muddles Farm, 24 a. 3 r. 11 p., f. | 1,050 |
| March 8.—By Douglas Young & Co. | |
| Strand.—4, Lancaster-pl., u.t. 16 yrs., g.r. 30*l.*, r. 427*l.* | 2,325 |
| Hendon.—Sunningfields-rd., Rylands and Crofton Lodge, u.t. 80½ yrs., g.r. 21*l.*, r. 105*l.* | 950 |
| By Wriford & Dixons. | |
| Marylebone.—5, Carburton-st., u.t. 16 yrs., g.r. 12*l.* | 665 |
| Stratford.—29 to 37 (odd), 42 and 44, Cruikshank-rd., f. | 1,955 |
| Tottenham.—12 and 14, Hanover-rd., f. | 585 |
| 14 and 16, Lawrence-rd., u.t. 61 yrs., g.r. 5*l.* | 355 |
| By Joshua Baker & Sons. | |
| Drury-lane.—15, Neal's-yard, area 700 ft., f., r. 50*l.* | 850 |
| Penge.—47, 49, and 51, Hawthorne-grove, f., r. 78*l.* | 780 |
| By Harold Griffin. | |
| Battersea.—37 to 45, 49 to 53 (odd), Surrey-la, f. | 2,520 |
| 111, Bridge-rd. West, u.t. 67 yrs., g.r. 8*l.* 10s. | 250 |
| 50 and 52, Heaver-rd., u.t. 78 yrs., g.r. 10*l.* | 480 |
| 27, 33, and 65, Arthur-st., u.t. 64 yrs., g.r. 6*l.* 6s. | 405 |
| By George Ravenshear. | |
| Ealing.—71, The Grove, u.t. 94 yrs., g.r. 9*l.* e.r. 80*l.* | 970 |

# COMPETITIONS, CONTRACTS, AND PUBLIC APPOINTMENTS.

## COMPETITIONS.

| Nature of Work. | By whom Advertised. | Premiums. | Designs to be delivered. |
|---|---|---|---|
| Kursaal | Harrogate Corp. | 150*l.*; 100*l.*; and 75*l.* | June 3 |

## CONTRACTS.

| Nature of Work or Materials. | By whom Required. | Forms of Tender, &c. Supplied by | Tenders to be delivered. |
|---|---|---|---|
| *Heating of Swimming Baths, &c. | Beckenham U.D.C. | J. A. Angell, Council Offices | Mar. 20 |
| *Steel Girders, Joists, &c. | Belfast Corp. | A. Brumwell Thomas, 7, Queen Anne's Gate, S.W. | Mar. 21 |
| Cast Iron Water Mains, &c. | Dover T.C. | H. E. Stilgoe, C.E. Town Hall | do. |
| Retaining Wall, &c. M'Clure-street | Belfast Corp. | City Surv. Town Hall | do. |
| Schools, Waller-street, Luton | | J. R. Brown & Son, Archt. 17, Market-hill, Luton | do. |
| Road Metal, Britford, &c. | Salisbury R.D.C. | D. W. Morrice, Dist. Surv. Homington | do. |
| Sewers, near Preston | Croston U.D.C. | F. E. Dixon, C.E. 49, Lune-st. Preston | do. |
| Church and Schools, Brampton, Cumberland | ——— | T. Pattinson, Townley-pl. Brampton | do. |
| Sewerage Works | Knaresborough R.D.C. | Mr. Annakin, Surv. Council Offices | do. |
| Rails and Fishplates | Southampton Corp. | Kincaid & Co. Engr. 29, Gt. George-st. S.W. | do. |
| *Raising and Reinstating Part of Bank of Thames, Plumpstead | Plumpstead Vestry | W. C. Gow, Vestry Hall, Maxey-rd. Plumstead | Mar. 22 |
| Laying Cast Iron Water Mains (7 miles) | Huddersfield Corp. | T. & C. Hawksley, C.E. 30, Gt George-st S.W. | do. |
| Hotel, Aber, Caerphilly | ——— | I. Thomas, Archt. 17, Quay-st. Cardiff | do. |
| Paving, &c. Warrington-road, near Wigan | Abram U.D.C. | Heaton & Co. Archt King-st. Wigan | do. |
| Granite and Flint Road Metal, &c. | Sutton (Surrey) U.D.C. | C. C. Smith, Engr. Public Hall, Sutton | do. |
| School Chapel, Aspatria, Cumberland | ——— | J. S. Moffat, Archt. Whitehaven | Mar. 23 |
| Two Houses and Shop, Halifax-road Dewsbury | ——— | F. W. Ridgway, Archt. Dewsbury | do. |
| Flints | Deal Corp. | T. C. Golder, Boro Surv. 23, Queen-st. Deal | do. |
| *Thames Ballast and Sand | St Marylebone Vestry | Court House, St. Marylebone, W. | do. |
| Bridge Works, Victoria Park, Nelson, Lancs. | ——— | B. Ball, C.E. Town Hall | do. |
| Lattice Girder Bridge and Masonry, Ringstead | Thrapston R.D.C | Surveyor, Council Offices, Thrapston | Mar. 24 |
| Cast Iron Pipes, &c. | Newcastle-on-Tyne Union | J. W. Gibson, Union Offices, Pilgrim-st. | do. |
| Additions to Brewery, Bradford | W. Whitaker & Co. | T. C. Hope & Son, Archt. 23, Bank-st. Bradford | do. |
| Post Office, Dunmow, Essex | ——— | B. J. Capell, Archt. 70, Whitechapel-rd E. | do. |
| Flints | East Steyning (Sussex) R.D.C | E. Cripps, Council Offices, New Shoreham | do. |
| Road Materials | Burnley Corp. | G. H. Pickles, C.E. Town Hall | Mar. 25 |
| Additions to R. C. Church, Croom, Ireland | Rev. J. O'Shea | Mr. Moriarty, Main-street, Croom | do. |
| Pumping Engines, Boilers, &c. Blagdon | Bristol Waterworks Co | T. & C. Hawksley C.E. 30, Gt. George-st. S.W. | do. |
| Offices, Drainage Works, &c. near Macclesfield | Managers, Broken Cross National School | Whittaker & Bradburn, Archt. 19, King Edward-st Macclesfield | do. |
| Surveyor's Materials | Pontefract R.D.C. | W. A. Glover, Union Offices | do. |
| *Painting, Repairs, &c. at Infirmary | St. Marylebone Gdns. | The Steward, Infirmary, Rackham-st. Notting Hill, W. | Mar. 27 |
| Heating and Ventilation Works, Bowthorpe-rd. | Norwich Corp | A. E. Collins, C.E. Guildhall, Norwich | do. |
| Three Houses, Cambridge-st. Bridlington Quay | Hardwick & Sons | Brodrick & Co. Archts. Central-chmbrs. Bridlington Quay | do. |
| Cast-iron Pipes, &c. | Poole Gas Co. | W. Davis, Gas Offices, Poole | do. |
| *Dust Destructor | Beckenham U.D.C. | J. A. Angell, Council Offices, Beckenham | do. |
| *Receiving Wards and Porter's Lodge | Staines Union | J. A. Engall, Offices, Clarence-st. Staines | do. |

## CONTRACTS—*Continued.*

| Nature of Work or Materials. | By whom Required. | Forms of Tender, &c. Supplied by | Tenders to be delivered. |
|---|---|---|---|
| *Road Making | C. J. Hayter | Vigers & Co. 4, Frederick's-place, Old Jewry, E.C. | Mar. 27 |
| *Extension of Laundry at Infirmary | City of London Union | Pridmore, 2, Broad-street-buildings, E.C. | do. |
| *Coroner's Court, Mortuaries and Shelters | Poplar B. of W. | Lansdell & Harrison, 38, Bow-lane, E.C. | Mar. 28 |
| *Hot-water Heating at Schools | Walthamstow S.B. | W. A. Longmore, 7, Great Alie-st. E. | do. |
| *Drainage | Willesden D.C. | O. C. Robson, Public Offices, Dyne-road, Kilburn | do. |
| *Asphalting | Poplar and Stepney Sick Asylum Dis. | J. & S. F. Clarkson, 136, High-st. Poplar, E. | do. |
| *Painting and Pointing of Brickwork | do. | do | do. |
| *About 1,000,000 Jarrah Wood Blocks | St. Saviour's B. of W. | G. R. Norrish, Offices, Emerson-st. Bankside, S.E. | Mar. 29 |
| *Paving | Greenwich B. of W. | 141, Greenwich-rd, S.E. | do. |
| Granite (16,000 tons) | Bucks C.C. | R. J. Thomas, County Hall, Aylesbury | Mar. 31 |
| Enlarging Schools, Asphalting, &c. | Managers of Englefield Green Schools | W. Menzies, Archt. Englefield Green, Surrey | April 1 |
| Additions to Academy | Ardrossan (N.B.) Sch. Bd. | J. Armour, Jun. Archt. Irvine | April 3 |
| *Painting, Repairs, &c. at Schools | Bethnal Green Gdns. | Holman & Goodrham, 109, Bow-rd. E. | April 4 |
| Building Works, &c. at Gasworks | Bury (Lancs) Corp. | H. Simmonds, Engr. Gasworks, Elton, Bury | April 5 |
| *Glazed Stoneware Socket Pipes | Birmingham, Tame & Rea Dis. Drainage Board | J. Knight, Council House, Birmingham | do. |
| *Agricultural Drain Pipes | do | do. | do. |
| *Public Library Buildings | Hornsey U.D.C. | E. J. Lovegrove, Council Offices, Southwood-lane, Highgate, N. | April 10 |
| *Bath Turrets (2) at Infirmary | Chelsea Guardians | Lansdell & Harrison, 38, Bow-lane, E.C. | April 18 |
| *New Wing | Nottingham General Hospital | A. Waterhouse & Son, 20, New Cavendish-st. W. | No date |
| Stable, Loose-boxes, &c. Wolsty Hall, Silloth | ——— | P. & J. W. Hayton, Surv. Bank-st. Carlisle | do. |
| P. M. Chapel and School, Stapleford | ——— | H. Harper, Archt. Nottingham | do. |
| Road Materials | East Elloe R.D.C. | R. P. Mossop, Holbeach | do. |
| Two Houses, Ackworth, nr. Pontefract | ——— | W. E. Richardson, Archt. 28, Bond-st. Leeds | do. |
| Schools and Bath | Long Eaton Sch. Bd. | E. R. Ridgway, Archt. Long Eaton | do. |
| Rebuilding Fox Inn, Bulmer, near Sudbury | C. E. Mau'den | J. S. Corder, Archt. Wimbourne House, Ipswich | do. |
| Warehouse and Offices, Diss | Aldrich, Ltd. | do. | do. |
| Factory, Bermondsey | ——— | Wm. Freeman, Surv. 162, Kennington-rd, S.E. | do. |
| Alterations, 22, The Crescent, Morecambe | ——— | P. B. Rigg, Archt. Market-st. Morecambe | do. |
| Two Houses, Rossendale-avenue, Morecambe | C. & W. C. Keighley | Marshall Bros. Archt. Back-crescent, Morecambe | do. |
| Additions, &c. The Rectory, Nacton, Suffolk | ——— | J. S. Corder, Archt. Ipswich | do. |
| School, Seascale, nr. Ambleside | G. R. Burnett | W. Mason & Son, Archts Ambleside | do. |
| *School Buildings, St. Peter Port | States of Guernsey | Colson, Farrow & Nisbett, 45, Jewry-st. Winchester | do. |
| *Square Turning Oak Legs | North of England School Furnishing Co. Ltd. | Offices, Kinross-st. Darlington | do. |

## PUBLIC APPOINTMENTS.

| Nature of Appointment. | By whom Advertised. | Salary. | Application to be in. |
|---|---|---|---|
| *Two Foremen Carpenters and Two Foremen Bricklayers for Government Railway in West Africa | ——— | 25*l.* and 20*l.* per month respectively | At once |
| *Clerk of Works | Cirencester U.D.C. | ——— | Mar 21 |
| *Clerk of Works | Horsham Union | 3*l.* 3s. per week | do. |
| *Clerk of Works | Rathmines U.D.C. | 3*l.* 3s. per week | Mar. 24 |
| *Clerk of Works | Fulham Vestry | 4*l.* 4s. weekly | Mar. 25 |
| *Road Foreman | Matlock U.D.C. | ——— | do. |
| *Deputy Surveyor | Burton-on-Trent Corp. | 200*l.* per annum | April 13 |
| *Surveyor | Hackney Vestry | 600*l.* per an. to commence | April 18 |

*Those marked with an asterisk* (*) *are advertised in this Number.* *Competitions, p.* iv. *Contracts, pp.* iv. vi. viii. x. & xxii. *Public Appointments, pp.* xix. & xxii.

| | |
|---|---|
| By A. Robertson (at Camberwell). | |
| Camberwell.—61, 63, 65, and 67, Vestry-rd., u.t. 77 yrs., g.r. 24*l.*, r. 144*l.* | £1,240 |
| 234, Southampton-st., f., r. 30*l.* | 590 |
| 97 and 99, Ivanhoe-rd., u.t. 77 yrs., g.r. 12*l.*, r. 60*l.* | 610 |
| Walworth.—86, Faraday-st., u.t. 53 yrs., g.r. 5*l.* 5s. | 275 |
| Peckham.—111 and 113, Camden-gr. North, f. | 680 |
| By Driver & Co. (at Newport). | |
| Chepstow, Mon.—Bridge-st., "The Three Tuns" p.-h., f., r. 21*l.* | 2,240 |
| The Back, "The Chepstow Boat" and "Old Wye House" p.-hs., f., r. 34*l.* 10s. | 1,510 |
| Beaufort-sq., "The Beaufort Arms Hotel," area 2,600 yds., f., r. 155*l.* | 5,400 |
| High-st., "The White Lion" p.-h., f., r. 20*l.* | 1,000 |
| Moor-st., "The Greyhound Inn," f., r. 29*l.* | 2,020 |
| Wentwood, Mon.—"The Fox and Hounds" p.-h. and 1 a. 1 r. 12 p., f. | 460 |
| Trelleck, Mon.—"The Fountain Inn" and 0 a. 1 r. 30 p., f. | 400 |
| Chapel Hill, Mon.—"The Cherry Tree" p.-h. and 0 a. 0 r. 29 p., f. | 320 |
| Tintern, Mon.—"The Anchor Inn" and 0 a. 3 r. 3 p., f. | 920 |
| Llansoy, Mon.—"The Cross Keys" p.-h. and 1 a. 0 r. 33 p., f. | 620 |
| Dingestow, Mon.—"The Somerset Arms Inn" and 0 a. 2 r. 16 p., f. | 1,275 |
| Buckholt, Mon.—"The Plough Inn" and 0 a. 3 r. 0 p., f. | 650 |
| Monmouth.—Old Hereford-rd., "The Royal Oak Inn" and 5 a. 1 r. 18 p., f., r. 35*l.* | 1,090 |
| Cinderhill-st., "The Cherry Tree Inn" and 0 a. 2 r. 13 p., f., r. 20*l.* | 801 |
| Agincourt-sq., "The Beaufort Arms Hotel," area 3,284 yds., f., r. 100*l.* | 3,150 |
| Whitecross-st., "The Griffin Tavern," f., r. 24*l.* | 1,335 |
| 5 and 6, Wye Bridge-st., and "The White Hart" p.-h., area 763 yds., f., r. 34*l.* | 900 |
| Ditton Hadnock, Mon.—"The Traveller's Rest Inn" and three cottages, area 0 a. 1 r. 5 p., f. | 1,500 |
| "The Bush Inn" and 0 a. 1 r. 14 p., f., r. 19*l.* | 1,000 |
| By N. Easton & Son (at Hull). | |
| Ellerker, Yorks.—Three enclosures of arable, 48 a. 3 r. 31 p., f. | £1,900 |
| March 9.—By Farebrother, Ellis, & Co. | |
| Paddington.—344, 346, and 348, Harrow-rd., u.t. 64 yrs., g.r. 30*l.*, r. 325*l.* | 5,180 |
| By Jackson & Co. | |
| Barnsbury.—Hemingford-rd., f.g.r. 4*l.*, reversion in 44 yrs. | 125 |
| Holloway.—Queensland-rd., f.g.r. 8*l.*, reversion in 39 yrs. | 283 |
| Finsbury Pk.—45, Spencer-rd., u.t. 48 yrs., g.r. 9*l.* | 170 |
| Bethnal Green.—30 and 31, Tagg-st., f. | 365 |
| Homerton.—Marsh Hill, Marsh Dairy, f., r. 40*l.* | 700 |
| By Wiltshire & Thurgood. | |
| Lee.—1, Belmont Pk., u.t. 53½ yrs., g.r. 8*l.*, e.r. 65*l.* | 680 |
| By C. C. & T. Moore. | |
| Old Ford.—67 to 77 (odd), Libra-rd., f., r. 162*l.* 10s. | 1,870 |
| Bow.—7 and 9, Addington-rd., u.t. 48 yrs., g.r. 10*l.*, r. 73*l.* | 750 |
| Bethnal Green.—6 to 9, Manchester Buildings, f. | 575 |
| Commercial-rd. East.—51 and 52, Greenfield-st., f. | 1,500 |
| Mile End.—34 to 52 (even), Bradwell-st., u.t. 66 yrs., g.r. 45*l.* 17s. | 1,740 |
| Leyton.—Skelton-rd., &c., a plot of land, f. | 35 |
| By Stimson & Sons. | |
| Clapton.—43, Old Hill-st., f., r. 35*l.* | 915 |
| Hackney.—198, Mare-st., f., r. 28*l.* | 740 |
| Hoxton.—122 and 124, Wenlock-st., u.t. 43 yrs., g.r. 8*l.* 8s., r. 76*l.* | 790 |
| Brixton.—Loughborough-pk., i.g.r. 48*l.* 5s., u.t. 24 yrs., g.r. 1s. | 660 |
| Water-lane, Jersey Lodge and Frankfort Villa, u.t. 36 yrs., g.r. 23*l.*, e.r. 100*l.* | 770 |
| Lambeth.—2, Paris-st., u.t. 10 yrs., g.r. 7*l.*, r. 35*l.* | 165 |
| Finsbury-pk.—49, Campbell-rd., f., r. 50*l.* | 785 |
| Dulwich.—35 to 47 (odd), Darrell-rd., u.t. 66 yrs., g.r. 35*l.* | 1,550 |
| 30 and 32, Ulverscroft-rd., u.t. 66 yrs., g.r., 9*l.* | 450 |
| Maida Vale.—3, Lanark-pl., u.t. 81 yrs., g.r. 10*l.*, r. 52*l.* | £465 |
| By Muskett & Sons. | |
| New Southgate.—6, 7, and 8, Railway-ter., u.t. 82 yrs., g.r. 30*l.*, e.r. 132*l.* | 1,300 |
| Wood Green.—5 and 6, Alexandra-ter., f., r. 66*l.* | 860 |
| Crouch Hill.—52, 54, and 56, Sparsholt-rd., u.t. 47 yrs., g.r. 18*l.* 10s., r. 83*l.* | 715 |
| By Humbert & Flint. | |
| Clapham.—2, Chelsham-rd., u.t. 63 yrs., g.r. 3*l.*, r. 45*l.* | 450 |
| Woodford Green.—Snakes-la, Sunnyside, f., e.r. 25*l.* | 380 |
| Dartford, Kent.—Hythe-st., the Baltic Saw Mills, and 1 a. 1 r. 32 p., f., with goodwill | 5,000 |

*Contractions used in these lists.*—F.g.r. for freehold ground-rent; l.g.r. for leasehold ground-rent; i.g.r. for improved ground-rent; g.r. for ground-rent; r. for rent; f. for freehold; c. for copyhold; l. for leasehold; e.r. for estimated rental; u.t. for unexpired term; p.a. for per annum; yrs. for years; st. for street; rd. for road; sq. for square; pl. for place; ter. for terrace; cres. for crescent; yd. for yard, &c.

## TO CORRESPONDENTS.

J. T. P.—J. W. B.—J. C. (amounts should have been stated)

NOTE.—The responsibility of signed articles, letters, and papers read at public meetings, rests, of course, with the authors.

*We cannot undertake to return rejected communications.*

Letters or communications (beyond mere news items) which have been duplicated for other journals are NOT DESIRED.

We are compelled to decline pointing out books and giving addresses.

Any commission to a contributor to write an article is given subject to the approval of the article, when written, by the Editor, who retains the right to reject it if unsatisfactory. The receipt by the author of a proof of an article in type does not necessarily imply its acceptance.

All communications regarding literary and artistic matters should be addressed to THE EDITOR; those relating to advertisements and other exclusively business matters should be addressed to THE PUBLISHER, and *not* to the Editor.

## TENDERS.

[Communications for insertion under this heading should be addressed to "The Editor," and must reach us *not later than* 10 *a.m. on Thursdays.* N.B.—We cannot publish Tenders unless authenticated by the name and address of the sender; and we cannot publish announcements of Tenders accepted unless the amount of the Tender is given, nor any list in which the lowest Tender is under £100, unless in some exceptional cases and for special reasons.]

ABINGDON.—For the supply of 3,115 tons Hartshill stone, for the Rural District Council:—

| | per ton.<br>s. d. | |
|---|---|---|
| Jee's Hartshill, &c., Co., Hartshill, near Atherstone | 9 6 | unbroken. |
| | 11 0 | broken. |
| W. A. Judkins, Exors., Nuneaton | 9 6 | unbroken. |
| | 11 0 | broken. |
| Clee Hill Granite Co., Ludlow, Salop | 10 3 | unbroken. |
| | 12 10 | broken. |
| Hartshill Granite Co., Atherstone | 8 3 to 9 6 | unbroken. |
| | 10 0 to 11 3 | broken. |
| W. H. Boon & Sons, Nuneaton | 8 4 to 9 7 | unbroken. |
| | 10 1 to 11 3 | broken. |

BRIDLINGTON.—For the construction of sewers, St. John's-avenue East. Mr. S. Dyer, architect, Bridlington Quay:—

| | | | |
|---|---|---|---|
| B. Robinson | £610 0 0 | R. Musk, Bridington Quay | £417 0 0 |
| J. Rennard | 495 0 0 | | |

BRIDLINGTON QUAY.—For the erection of two houses, Lansdowne-road, for the trustees of R. Harrison. Mr. S. Dyer, architect, Bridlington Quay:—

| | |
|---|---|
| W. Barnes | £968 |
| John Rennard, North-street, Bridlington Quay* | 750 |

BURTON-ON-TRENT.—For the execution of sewerage works, for the Corporation. Mr. G. T. Lynam, Borough Engineer, Town Hall, Burton:—

Geo. F. Tomlinson, City-road, Derby.... £9,442

BURTON-ON-TRENT.—Accepted for the extension of electric light buildings, for the Corporation. Mr. F. L. Ramsden, engineer, Gas Works, Burton:—

L. T. Varlow, Burton ..............£3,324 18 5

CARSHALTON.—For building dwelling-house and shop at Carshalton, Surrey, for Mr. Arthur Gilham. Messrs. Morgan, Baines, & Clarke, architects, Sutton:—

| | | | |
|---|---|---|---|
| Burrage | £1,457 0 | Evans | £1,148 0 |
| Shopland | 1,417 0 | J. & H. Neale | 1,139 0 |
| Potter | 1,300 0 | Freeman | 1,010 0 |
| Blaxton | 1,269 17 | | |

CHIPPENHAM.—For the erection of technical schools, for the Education Committee. Mr. R. E. Brinkworth, architect, Chippenham, Wilts. Quantities by Messrs. Amor & Underwood, of Bath:—

| | | | |
|---|---|---|---|
| Hayward & Wooster | £7,599 10 0 | Downing & Rudman | £7,071 15 3 |
| Smith & Light | 7,330 0 0 | William Webb | 6,363 0 0 |
| J. Long & Sons | 7,290 0 0 | George Moore | 6,338 5 0 |

CORK.—For the supply of pipes and specials, to Corporation Waterworks:—

| | |
|---|---|
| Stanton Ironworks Company, Limited | £1,418 |
| McFarlane, Strang, & Co. | 1,379 |
| Thos. Spittle, Limited | 1,287 |
| Chas. Gordan & Co. | 1,218 |
| Henry R. Merton & Co., Ltd., London* | 1,260 |
| Robert McLaren | 1,421 |
| Biggs, Wall, & Co. | 1,307 |

DEWSBURY.—For the erection of two houses, Lees-road, Thornhill. Messrs. Holtom & Fox, architects, Westgate, Dewsbury:—

| | |
|---|---|
| *Masonry.*—G. Sheard, Thornhill Lees | £373 0 0 |
| *Joinery.*—F. Dixon, Thornhill Lees | 100 0 0 |
| *Plumbing.*—J. Shepley, Dewsbury | 16 10 0 |
| *Plastering.*—Parkinson Bros., Heckmondwike | 21 10 0 |
| *Slating.*—W. H. Thompson, Batley | 34 0 0 |
| *Painting.*—T. Taylor, Thornhill Lees | 5 15 6 |

EGHAM.—For erecting a block of six cottages in Albert-road, Englefield Green, Egham. Mr. James W. Oades, architect, Egham:—

| | | | |
|---|---|---|---|
| C. Buckeridge | £1,447 | W. Beauchamp | £1,257 |
| R. Rowland | 1,275 | G. Banks* | 1,147 |

EWELL.—For repairs at the "Spring" hotel for Nalder & Collyers, Limited. Messrs. R. M. Chart & Son, architects, Union Bank-chambers, Croydon:—

| | | | |
|---|---|---|---|
| Goulder | £385 4 10 | Burnand | £325 0 0 |
| Burges | 345 0 0 | Killick* | 303 0 0 |

GOSPORT.—For the erection of a grocer's shop with off-licence and private dwelling-house attached, at the junction of Sydney and Elmhurst roads, for Messrs. H. J. & W. A. Hobbs. Mr. W. H. Fry, architect and surveyor:—

| | | | |
|---|---|---|---|
| Lane & Son | £1,275 | Dash | £1,089 |
| John Croad | 1,150 | Lear | 1,065 |
| Johnson | 1,091 | Middleton & Co.* | 950 |

GOSPORT.—For the erection of two new houses situate in Shaftesbury-road, for Captain McCullum. Mr. R. Lowe, architect and surveyor:—

| | | | |
|---|---|---|---|
| T. C. Stanfield | £716 9 6 | C. M. Dash | £689 0 0 |
| R. M. Middleton & Co. | 692 0 0 | W. E. Lane & Son* | 645 5 0 |

ILFORD.—For erecting the "Seven Kings' Hotel," Ilford. Messrs. W. G. Bartleet & Son, architects:—

| | | | |
|---|---|---|---|
| Todd & Co. | £9,077 | Patman & Fotheringham | £7,951 |
| Parmenter | 8,430 | Smith & Sons | 7,924 |
| Killby & Gayford | 8,330 | Ashby Bros. | 7,682 |
| Bentley | 8,260 | Hammond & Sons | 7,675 |

* Accepted.

CARDIFF.—For the execution of roadworks, for the Corporation. Mr. W. Harpur, C.E., Town Hall, Cardiff:—

| — | James Rich. | Thomas Rees. | Frank Ashley. | William Ellis. | Chas. Davies. | Elizabeth Osmond. |
|---|---|---|---|---|---|---|
| Colum-place | £181 8 11* | £196 13 9 | £222 2 9 | £194 9 5 | £185 5 11 | £186 18 3 |
| Corbett-lane | 69 4 6 | 70 3 6 | 105 5 0 | 78 14 7 | 71 11 0 | 67 1 2* |
| Beacon-street | 137 13 10* | 149 14 6 | — | 140 10 6 | 140 14 1 | 144 11 9 |
| Meadow-street | 184 14 5* | 200 10 9 | — | 188 16 4 | 189 1 2 | 194 6 11 |
| Bloom-street | 160 17 8* | 174 13 0 | — | 167 11 4 | 164 15 6 | 168 19 3 |
| Romilly-lane | 125 12 1 | — | — | 127 8 8 | 125 17 6 | 115 18 4* |
| Singleton-road | 401 13 5 | — | — | 393 19 4 | 387 2 2* | 398 12 10 |
| Moorland-road | 457 8 1 | — | — | 445 2 4 | 439 19 1* | 452 19 8 |
| Pontypridd-street | 117 16 2 | — | — | 113 19 8 | 113 8 5* | 117 0 4 |

HASTINGS.—For alterations to No. 18, Wellington-square, for the Hastings United District School Board. Mr. A. Dray, architect, Town Hall-chambers, Hastings. Quantities by architect:—

| | | | |
|---|---|---|---|
| G. Davis | £329 0 | C. Harman | £267 0 |
| W. F. Vidler | 305 15 | Barton & Honeysett | 265 0 |
| Tapner & Woodman | 298 10 | H. Ditch, High-st., Hastings* | 250 0 |
| W. Coussens | 293 0 | | |

LOCKSBOTTOM.—For rebuilding the "White Lion" cottages for Nalder & Collyers, Limited, Messrs. R. M. Chart & Son, architects, Union Bank-chambers, Croydon:—

| | | | |
|---|---|---|---|
| W. Smith & Sons | £275 | W. Owen* | £264 |

LONDON.—For the erection of business premises in Denman-street, London Bridge, S.E. Mr. J. W. Brooker, architect, London Bridge Approach:—

| | | | |
|---|---|---|---|
| Batley, Son, & Holness | £9,497 | Downes | £8,741 |
| Kick | 9,340 | Shepherd | 8,668 |
| Burman & Son | 8,997 | Edwards & Medway* | 8,667 |

LONDON.—For an underground convenience, the Triangle, Rye-lane, Peckham, S.E., for the Camberwell Vestry. Mr. Wm. Oxtoby, engineer. Quantities by Mr. Jno. R. Hunt, Bridge House, 181, Queen Victoria-street, E.C.:—

| | | | |
|---|---|---|---|
| Dolman & Co. | £2,832 | T. G. Sharpington | £2,620 |
| The Water Carriage Engineering Co., Ltd. | 2,789 | G. Jennings | 2,350 |
| Doulton & Co. | 2,729 | Cooke & Co.* | 2,200 |
| The General Builders, Limited | 2,625 | G. B. Davis | 2,060 |
| | | Finch & Co. | 2,034 |

LONDON.—For re-building warehouse premises in Fountain-court, Aldermanbury, E.C. Mr. Howard Chatfeild-Clarke, architect, 63, Bishopsgate-street Within, E.C.:—

| | | | |
|---|---|---|---|
| Brown, Son, & Blomfield | £12,118 | C. Lawrance & Sons | £11,571 |
| Woodward & Co. | 11,901 | B. E. Nightingale | 11,535 |
| Hall, Beddall, & Co. | 11,875 | Clarke & Bracy* | 11,247 |

LONDON.—For work at Fire Brigade Station, Notting Hill, for the L.C.C.:—

| | | | |
|---|---|---|---|
| Minter | £570 0 | Melbourne | £404 0 |
| Lole & Lightfoot | 431 15 | Kearley* | 385 0 |
| Watts | 418 0 | | |

MALTON (Yorks).—For rebuilding stone bridge, Hovingham. Mr. Walker Stead, C.E., Northallerton:—

| | | | |
|---|---|---|---|
| Thos. Hodgson | £505 14 0 | Wm. Blackburn, Malton* | £230 13 0 |
| Whitaker Bros. | 430 4 0 | | |

MERTHYR TYDVIL.—For the construction of reservoir, &c., for the Urban District Council. Mr. T. F. Harvey, engineer, Town Hall, Merthyr Tydvil:—

| | | | |
|---|---|---|---|
| Holme & King | £4,240 15 0 | John Preece, Hereford* | £2,838 11 0 |
| Thos. Taylor | 3,108 7 5 | W. E. Willis | 2,102 8 8 |

MITCHAM.—For the erection of cottages at Bolstead, for Mr. E. Mizen. Messrs. R. M. Chart & Son, architects, Union Bank-chambers, Croydon:—

| | | | |
|---|---|---|---|
| Holiday & Pearson | £900 | Haydon | £690 |
| Bacon | 798 | Lawrence* | 659 |

MITCHAM.—For the erection of three cottages at Western-road, for Mr. R. A. Thrale. Messrs. R. M. Chart & Son, architects, Union Bank-chambers, Croydon:—

| | | | |
|---|---|---|---|
| Burges | £950 | Smith & Sons | £838 |
| Haydon | 930 | Bacon* | 742 |

NEW BROMPTON (Kent).—For alterations to stabling, Nile-road, for the New Brompton Economical, Industrial, and Provident Society, Limited. Mr. E. J. Hammond, architect, 111, High-street, New Brompton:—

| | | | |
|---|---|---|---|
| T. Cornelius | £300 | J. H. Harris, Chatham* | £258 |
| A. Langley | 285 | | |

NEW BROMPTON.—For erecting a villa residence in Balmoral-road, New Brompton, Kent, for Mr. W. J. T. Croft. Mr. E. J. Hammond, architect, New Brompton:—

| | | | |
|---|---|---|---|
| W. C. Snow | £1,156 | J. H. Harris, Chatham* | £980 |
| H. E. Phillips | 1,155 | | |
| T. Cornelius | 1,139 | | |

NORTHENDEN (Cheshire).—Accepted for the construction of sewers, Chapel-road, for the Bucklow Rural District Council. Mr. J. McKenzie, surveyor, 7, Market-street, Altrincham:—

Wm. Barton, Hale, Altrincham ............£203

PORTISHEAD (Somerset).—New stable and coach-house, for Mr. F. W. Sinnock. Mr. T. J. Moss Flower, engineer, Carlton-chambers, Bristol:—

| | | | |
|---|---|---|---|
| Small | £386 15 6 | G. Biss & Son, Portishead* | £377 10 0 |
| Heffer | 380 0 0 | | |

* Accepted.

RICHMOND.—For cleaning, painting, &c., at the Wesleyan Church, Kew-road, Richmond, Surrey:—

| | | | |
|---|---|---|---|
| Heasler | £327 | J. W. Brooking | £319 |
| Soole & Son | 320 | Speechley & Smith* | 315 |

[All of Richmond].

SANDBACH.—For the erection of workhouse infirmary, Arclid, for the Congleton Union Guardians. Mr. A. Price, architect, Elworth, Sandbach. Quantities by architect:—

| | | | |
|---|---|---|---|
| Cooke | £5,996 | Worrall | £4,946 |
| Bousfield | 5,800 | Stringer | 4,895 |
| Barratt & Gibson | 5,680 | Smith | 4,735 |
| Rylance & Son | 5,150 | Birchall Bros., Middlewich* | 4,650 |
| Stelfox & Son | 5,123 | | |
| Goodwin | 5,100 | | |

SOHAM.—For building new house and stables for Mr. C. Morbey. Mr. John Flatman, architect, Newmarket. Quantities by Mr. Wm. Wren, Cambridge:—

| | House. | Stables. | Total. |
|---|---|---|---|
| Shillitoe | £7,800 | £1,450 | £9,250 |
| Wm. Saint | 6 790 | 1,190 | 7,980 |
| H. J. Linzell | 6,180 | 976 | 7,157 |
| Kerridge & Shaw | 5,999 | 998 | 6,992 |
| J. G. Cowell | 5,965 | 958 | 6,923 |

SUTTON.—For erecting a house at Sutton, Surrey, for Captain T. W. Aylesbury. Mr. Cecil A. Sharp, architect, 59, Fenchurch-street, E.C.:—

| | | | |
|---|---|---|---|
| F. J. Shopland | £1,357 | Huntley Bros., Croydon* | £900 |
| E. J. Burnand | 1,029 | | |
| H. Clarke | 1,027 | | |

SUTTON.—For alterations and additions to school, Brighton-road, Sutton, Surrey, for Miss Blanche Tilt. Mr. Cecil A. Sharp, architect, 59, Fenchurch-street, E.C.:—

| | | | |
|---|---|---|---|
| H. Clarke | £419 | Huntley Bros., Croydon* | £335 |
| J. H. Greenwood | 369 | | |

SUTTON.—For building twelve houses, and dwelling-house and shop, at Sutton. Messrs. Morgan, Baines, & Clarke, architects, Sutton:—

| | | | |
|---|---|---|---|
| General Builders' Supply, Limited | £8,400 | W. Smith & Son | £5,990 |
| Potter | 6,936 | Blaxton | 5,510 |
| Shopland | 6,700 | Freeman | 5,410 |
| Wells | 6,697 | Burrage | 4,896 |
| J. & H. Neale | 5,999 | Gregory | 3,650 |

WALLINGTON.—For the erection of three cottages at Park Gate-road for Mrs. Chapman. Messrs. R. M. Chart & Son, architects, Union Bank-chambers, Croydon:—

| | | | |
|---|---|---|---|
| Evans, S. J. | £1,460 | Huntley Bros. | £1,229 |
| Burrage, G. | 1,450 | Card | 1,110 |
| Burnand, E. J. | 1,230 | Howe & White* | 1,100 |

WALTON-ON-THE-NAZE.—For the construction of a brick groyne, near "Pier Hotel," for the Coast Development Company, Limited. Mr. H. W. Gladwell, surveyor, 5, Crescent-road, Walton-on-the-Naze. Quantities by the surveyor:—

| | | | |
|---|---|---|---|
| G. Double | £2,030 | Mackenzie, Clacton-on-Sea* | £1,120 |
| Moron & Son | 1,140 | | |

[Surveyor's estimate, £1,050.]

WARLINGHAM.—For additions to the "Leather Bottle" Inn, for Nalder & Collyers, Ltd. Messrs. R. M. Chart & Son, architects, Union Bank-chambers, Croydon:

| | A | B |
|---|---|---|
| Bullock | £797 | £190 |
| Churchill | 783 | 189 |
| Quittenton | 770 | 177 |
| Goulder* | 485 | 110 |

A Alterations. B Bar fittings.

WILMSLOW.—For the execution of street works, for the Urban District Council. Mr. A. S. Cartwright, Surveyor, Council Offices, Wilmslow:—

| | | | |
|---|---|---|---|
| Thomas Rowland | £2,106 | Josiah Dole, Northwich* | £849 |
| G. G. Raynor | 918 | | |

YORK.—For the erection of a wall, gates, &c., Kent-street, for the Corporation. Mr. A. Creer, City Surveyor, Guildhall, York:—

Thomas Rawling, 42, St. Andrew-gate, York..£814 12

## LONDON SCHOOL BOARD TENDERS.

AT the last meeting of the London School Board, the Works Committee submitted the following lists of tenders:—

BERNER-STREET.—Painting interior:—

| | | | |
|---|---|---|---|
| Johnson & Co. | £453 10 | G. Barker | £309 0 |
| A. W. Derby | 425 0 | S. H. Corfield | 297 0 |
| J. T. Robey | 325 0 | J. Kybett | 293 0 |
| H. Wall & Co. | 318 10 | J. F. Holliday | 290 15 |
| T. Willson | 309 5 | W. Brown* | 273 0 |

* Accepted.

[*See also next page.*

BOWLING GREEN-LANE.—Painting interior :—

| | | | |
|---|---|---|---|
| McCormick & Sons | £369 0 0 | H. Wall & Co. | £306 10 0 |
| R. S. Buckeridge | 345 0 0 | Marchant & Hirst | 294 0 0 |
| Johnson & Co. | 319 0 0 | W. Hornett | 275 0 0 |
| E. Flood | 310 0 0 | G. Foxley | 249 0 0 |
| | | F. T. Chinchen* | 229 14 0 |

BROMLEY HALL-ROAD, J.M. (iron buildings).—Painting interior and exterior :—

| | | | |
|---|---|---|---|
| A. W. Derby | £125 10 | A. E. Symes | £105 0 |
| G. Wales | 112 0 | J. T. Robey* | 99 0 |

BUCKINGHAM-STREET.—Painting interior :—

| | | | |
|---|---|---|---|
| G. S. S. Williams & Son | £485 | McCormick & Sons | £449 |
| J. Grover & Son | 480 | F. Britton | 425 |
| R. S. Buckeridge | 478 | Stevens Bros. | 414 |
| Gardner & Hazell | 469 | Marchant & Hirst | 396 |
| | | G. Barker* | 259 |

CANTERBURY-ROAD (J. M. School).—Painting interior and exterior :—

| | | | |
|---|---|---|---|
| W. V. Goad | £240 | Jones & Groves | £169 |
| T. Freeman & Son | 236 | Holliday & Greenwood | 163 |
| Rice & Son | 199 | G. F. Morgan & Co.* | 105 |
| G. Brittain | 169 | | |

CENTRAL-STREET.—Painting interior :—

| | | | |
|---|---|---|---|
| McCormick & Sons | £397 0 | J. Kybett | £262 0 |
| H. Wall & Co. | 377 0 | W. Chappell | 230 0 |
| Johnson & Co. | 322 0 | B. E Nightingale* | 222 0 |
| W. Bunce | 272 5 | | |

CHURCH-STREET—Painting interior :—

| | | | |
|---|---|---|---|
| Holloway Bros. | £342 0 0 | T. Hooper & Son | £260 10 0 |
| J. F. Ford | 315 0 0 | Star & Son | 253 18 0 |
| F. R. Blaxton | 314 1 5 | B. E. Nightingale | 234 0 0 |
| W. Johnson & Co., Ltd. | 275 0 0 | E. Triggs | 230 0 0 |
| J. Garrett & Son | 270 0 0 | T. Gregory & Co.* | 225 0 0 |
| Rice & Son | 270 0 0 | | |
| H. Somerford & Son | 265 0 0 | | |

EDINBURGH-ROAD.—Painting interior :—

| | | | |
|---|---|---|---|
| Martin, Wells, & Co. | £673 0 0 | E. Flood | £342 7 6 |
| W. Bunce | 443 0 0 | H. Eady | 317 0 0 |
| R. S. Buckeridge | 410 0 0 | C. Gurling | 300 0 0 |
| W. Hornett | 370 0 0 | F. T. Chinchen | 293 14 0 |
| G. H. Sealey | 343 10 0 | Bristow & Eatwell* | 261 16 1 |
| | | F. Chidley | 198 0 0 |

FAIR-STREET.—Painting interior and exterior :—

| | | | |
|---|---|---|---|
| Johnson & Co. | £519 0 0 | E. Triggs | £456 10 0 |
| A. White & Co. | 485 0 0 | G. Barker | 408 0 0 |
| W. Banks | 474 18 6 | E. Proctor | 400 0 0 |
| Holliday & Greenwood | 469 0 0 | G. F. Morgan & Co.* | 347 0 0 |

FROGMORE.—Painting interior and exterior :—

| | | | |
|---|---|---|---|
| T. Gregory & Co. | £185 9 | E. B. Tucker | £148 0 |
| E. Triggs | 180 0 | Lathey Bros.* | 127 0 |
| R. S. Ronald | 164 9 | | |

GILL-STREET.—Painting interior :—

| | | | |
|---|---|---|---|
| Johnson & Co. | £331 0 | W. Brown | £222 0 |
| T. Willson | 295 0 | J. T. Robey | 220 13 |
| A. W. Derby | 252 0 | J. Kybett | 189 0 |
| C. S. Jones | 240 0 | S. H. Corfield* | 169 0 |

GRAFTON-ROAD.—Painting interior :—

| | | | |
|---|---|---|---|
| W. Bunce | £570 0 | F. Britton | £466 13 |
| J. Grover & Son | 517 0 | Marchant & Hirst. | 447 10 |
| C. & W. Hunnings. | 506 2 | Stevens Bros.* | 428 0 |
| McCormick & Sons. | 488 0 | | |

* Accepted.

HUGHES'-FIELDS.—Painting exterior (old and new portions); cleaning interior (old portion) and painting interior (new portion) :—

| | | | |
|---|---|---|---|
| A. White & Co. | £520 0 0 | Jones & Groves | £368 0 0 |
| Thomas & Edge | 421 0 0 | W. Banks | 359 17 6 |
| S. Musgrove | 386 18 0 | C. S. Jones | 335 0 0 |
| C. Foreman | 376 10 0 | E. Proctor* | 325 0 0 |
| W. Brown | 372 0 0 | | |

MANTLE-ROAD.—Painting interior and exterior (old and new portions) :—

| | | | |
|---|---|---|---|
| W. Akers & Co. | £738 0 0 | Jones & Groves | £560 10 0 |
| W. Banks | 641 12 6 | E. Proctor | 550 0 0 |
| G. Kemp | 570 0 0 | G. Barker | 514 0 0 |
| C. G. Jones | 568 3 0 | C. S. Jones* | 490 5 0 |

ORCHARD-STREET.—Painting interior :—

| | | | |
|---|---|---|---|
| J. Chessum & Sons | £335 | W. Shurmur | £270 |
| W. Silk & Son | 326 | Collis Willmott | 260 |
| A. W. Derby | 306 | J. Kybett | 234 |
| Snewin Bros. & Co. | 285 | S. H. Corfield * | 216 |

PECKHAM PARK.—Painting interior and exterior of all buildings on site :—

| | | | |
|---|---|---|---|
| T. Freeman & Son | £845 5 0 | Holliday & Greenwood | £675 0 0 |
| J. & C. Bowyer | 761 0 0 | C. Gurling* | 615 10 0 |
| W. Banks | 758 2 6 | C. S. Jones | 555 10 0 |
| Rice & Son | 729 0 0 | | |

PLUM-LANE (Iron Buildings).—Painting interior and exterior :—

| | | | |
|---|---|---|---|
| Thomas & Edge | £170 0 0 | C. Foreman | £130 0 0 |
| W. Banks | 139 13 6 | E. Proctor* | 96 0 0 |

ST. CLEMENT'S-ROAD.—Painting interior (boys', girls', and infants') and interior and exterior of special school :—

| | | | |
|---|---|---|---|
| G. H. Sealey | £643 0 | C. Gurling | £428 12 |
| H. C. Clifton | 560 0 | W. Chappell | 415 0 |
| H. Eady | 535 17 | W. Brown | 400 0 |
| T. Cruwys | 516 0 | W. R. & A. Hide * | 365 15 |
| W. Hornett | 496 0 | Bristow & Eatwell. | 329 7 |
| E. Flood | 438 0 | | |

* Accepted.

## TERMS OF SUBSCRIPTION.

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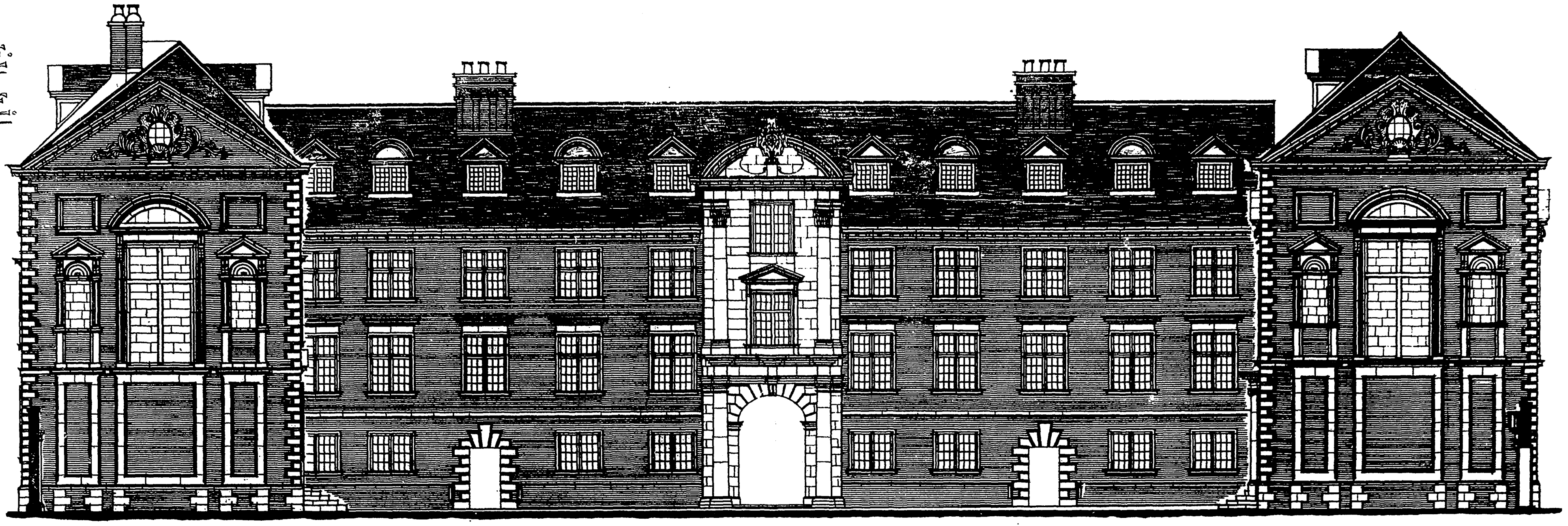

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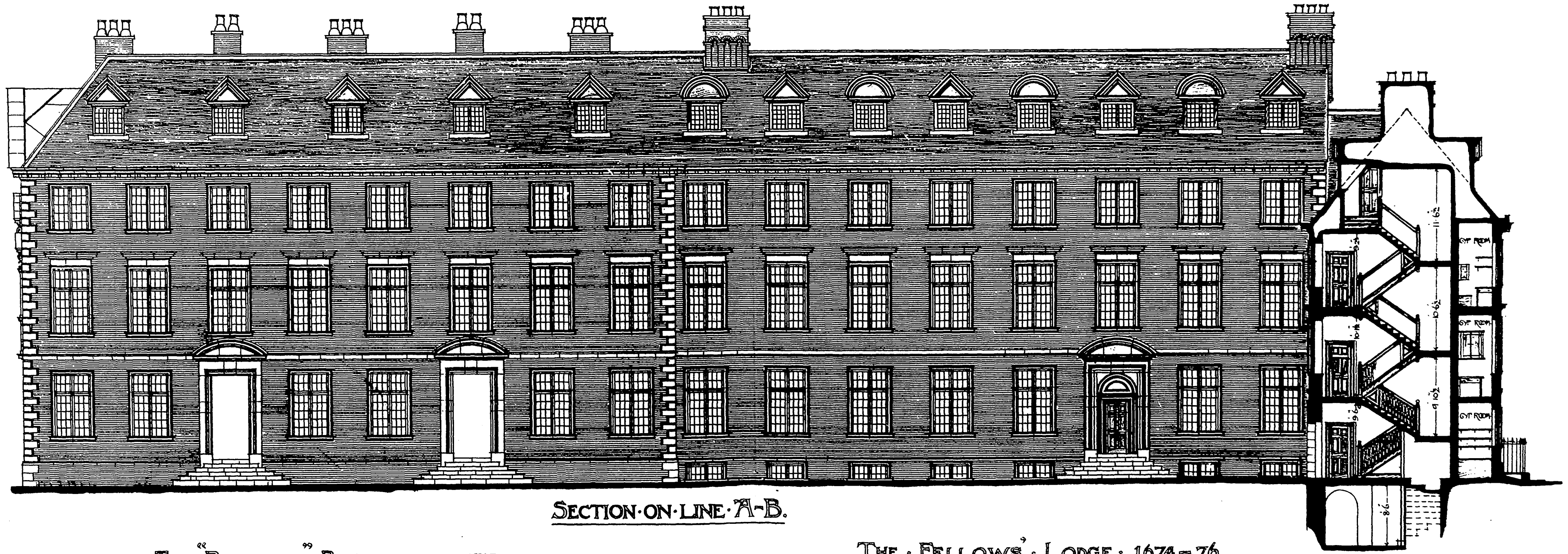

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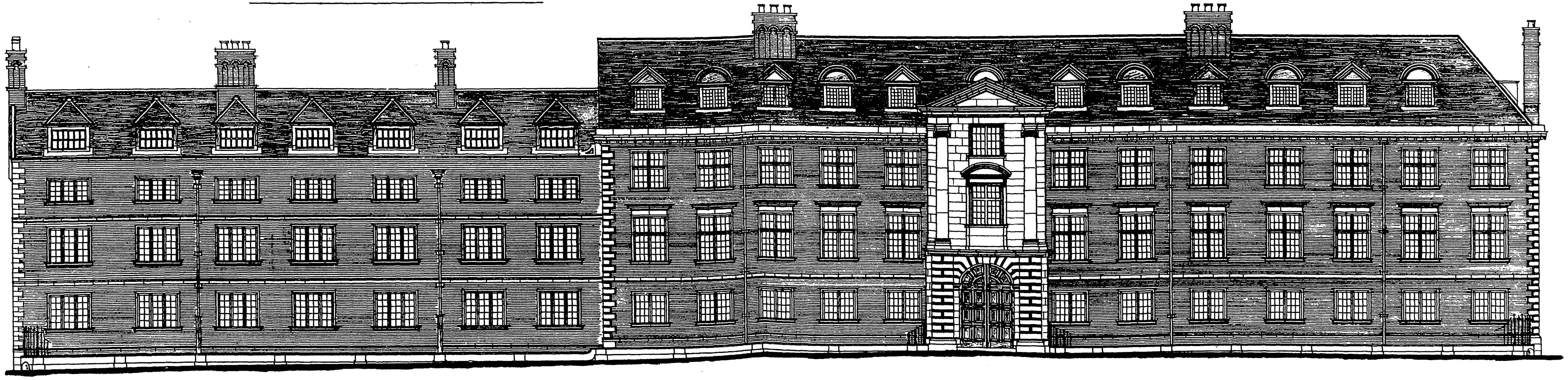

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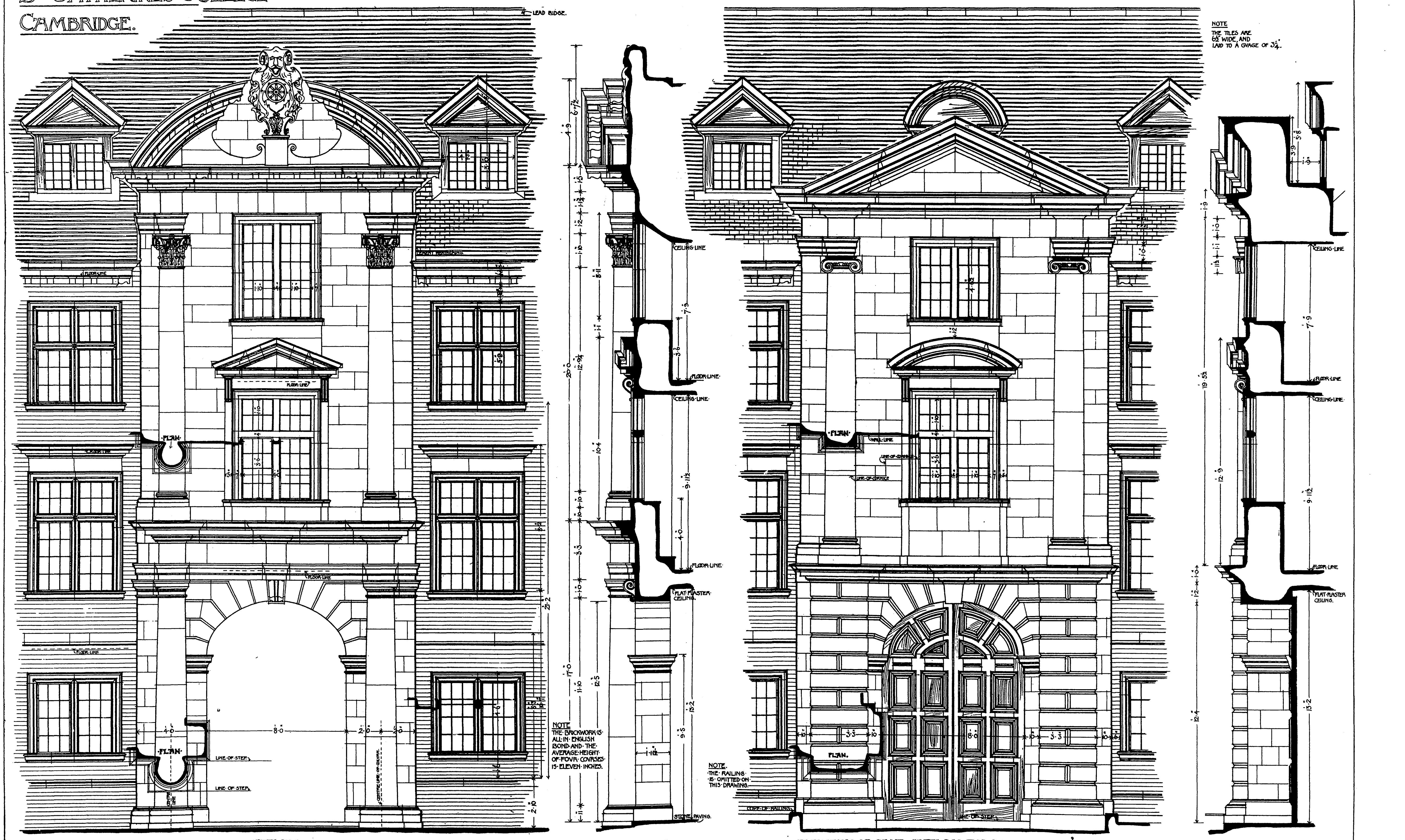
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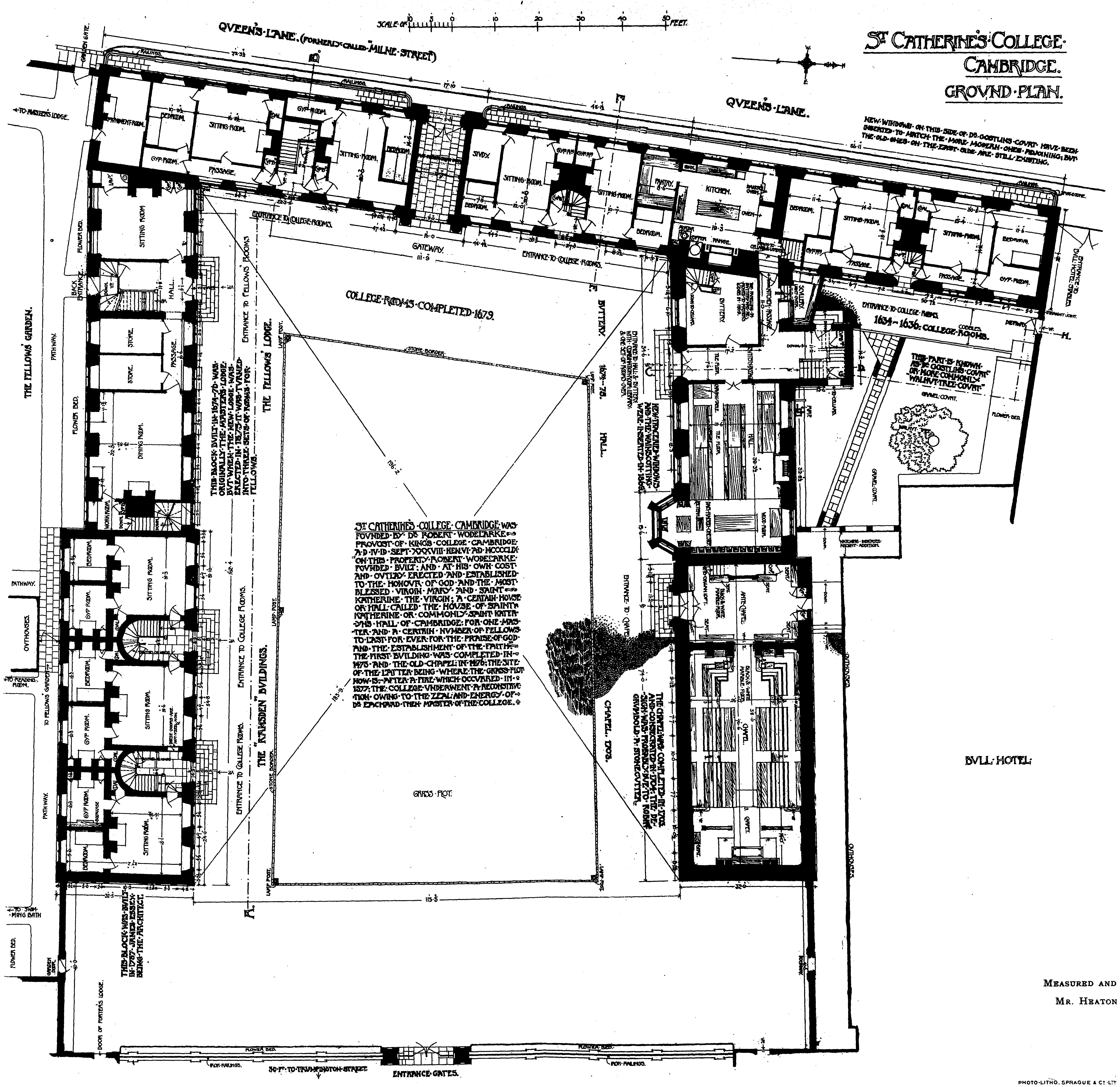
St Catherine's College
Cambridge.
Ground Plan.
Scale of 0 10 20 30 40 50 Feet.
Queen's Lane. (formerly called "Milne Street")
Queen's Lane.
New windows on this side of Dr Gostlins Court have been inserted to match the more modern ones adjoining; but the old ones on the East side are still existing.
College Rooms completed 1679.
Gateway.
Entrance to College Rooms.
Entrance to Fellows' Rooms
The Fellows' Lodge.
This block built in 1674–76 was originally the Master's Lodge, but when the new lodge was erected in 1875 it was turned into three sets of rooms for fellows.
The Fellows' Garden.
Pathway.
Flower Bed.
Back Entrance.
To Master's Lodge.
Sitting Room.
Hall.
Store.
Passage.
Dining Room.
Bedroom.
Gyp Room.
Outhouses.
To Reading Room.
To Fellows' Garden.
Entrance to College Rooms.
The Ramsden Buildings.
To Swimming Bath.
This block was built in 1757. James Essex being the architect.
Door of Porter's Lodge.
St Catherine's College Cambridge was founded by Dr Robert Wodelarke Provost of King's College Cambridge A.D. IV ID. Sept. XXXVIII Hen. VI. A.D. MCCCCLIX. "On this property Robert Wodelarke founded, built: and at his own cost and outlay erected and established to the honour of God and the most blessed Virgin Mary and Saint Katherine the Virgin; a certain house or hall called the House of Saint Katherine or commonly Saint Kateryns Hall of Cambridge: for one master and a certain number of fellows to last for ever for the praise of God and the establishment of the faith." The first building was completed in 1473 and the old chapel in 1476; the site of the latter being where the grass plot now is:– after a fire which occurred in 1577; the college underwent a reconstruction owing to the zeal and energy of Dr Eachard then Master of the College.
Grass Plot.
Stone Border.
Lamp Post.
Buttery.
Hall. 1674–75.
Entrance to Hall & Buttery with Combination Room, Library & one set of rooms over.
New traceried windows and the wainscotting were inserted in 1868.
Entrance to Chapel.
Chapel. 1703.
The chapel was completed in 1703 and consecrated in 1704; the design was probably due to Robert Grumbold a stonecutter.
Kitchen.
Pantry.
Scullery.
Study.
Entrance to Bull Hotel Stables.
Entrance to College Rooms.
1634–1636. College Rooms.
Cobbles.
Straight Joint.
This part is known as Dr Gostlins Court or more commonly "Walnut Tree Court."
Gravel Court.
Walnut Tree.
Flower Bed.
Bull Hotel.
Flower Bed.
Iron Railings.
Entrance Gates.
50 ft. to Trumpington Street.

Measured and Drawn by
Mr. Heaton Comyn.

PHOTO-LITHO. SPRAGUE & Co. LTD. 4 & 5, EAST HARDING STREET, FETTER LANE, E.C.

*Medal of Merit, R.I.B.A., 1899.*

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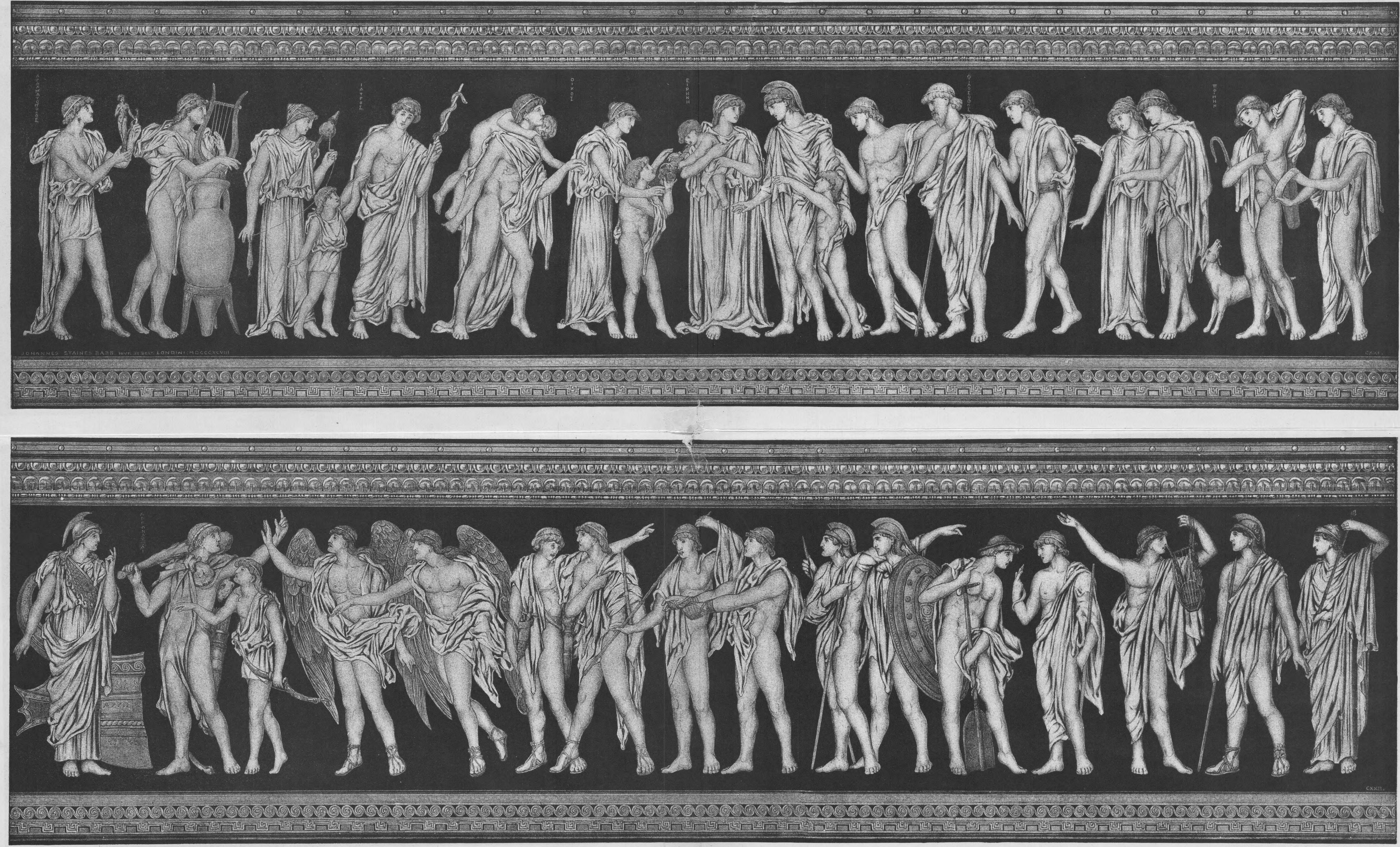
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FRIEZES: "EIRENE" AND "ARGONAUTAI."—BY MR. JOHN STAINES BABB.

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# The Builder.

VOL. LXXVI. No. 2929

MARCH 25, 1899.

## ILLUSTRATIONS.

Proposed New Government Offices :—
War Office : Front to Whitehall and Part of Front to Whitehall-place.—Mr. W. Young, F.R.I.B.A., Architect ............... *Double-Page Ink-Photo.*
Westminster Block : Front towards Parliament-street.—Mr. J. M. Brydon, F.R.I.B.A., Architect ............................ *Double-Page Ink-Photo.*
Plans of Government Offices .................................................................................. *Two Single-Page Photo-Lithos.*
The Royal Pavilion, Paris Exhibition, 1900.—Mr. E. L. Lutyens, Architect .......................................... *Double-Page Photo-Litho.*

### *Blocks in Text.*

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## *The Designs for the New Government Offices.*

THE general designs for the new War Office block and the new block of Government Offices in Great George-street (to be known as the Westminster block), together with the proposed ground plan of each, have been exhibited to members of the House of Commons this week; and by the courtesy of the First Commissioner of Works we have had a separate opportunity of examining them, and of publishing the perspective view and ground plan of each in our present issue. It should be understood that the drawings now exhibited are not to be regarded necessarily as final or as the complete development of the scheme, but they represent the general treatment of the two buildings which has been arrived at by Mr. Brydon and Mr. Young respectively, as the architectural expression of the requirements of the Office of Works.

The result so far is certainly satisfactory, not only in regard to the two designs considered in themselves, but in regard to the general spirit in which the whole scheme has been carried out. Unlike the London County Council, and unlike too many previous First Commissioners of Works, the present head of the Office of Works seems to have aimed at giving full weight to the criticisms that have been made. by architects in evidence before the Special Committee, and adopting them as far as possible.

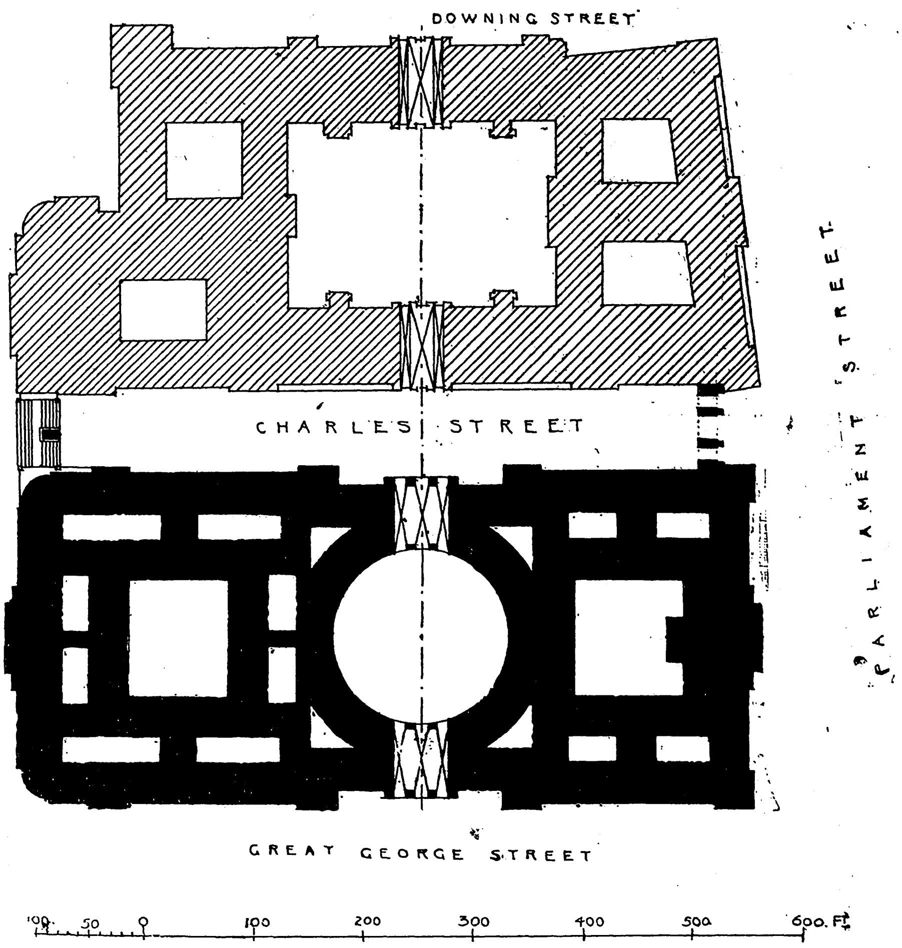
To deal with the question of plans and sites first, we are agreeably surprised to find that, in regard to the Westminster block, the Government have decided on the largest policy, and have asked Mr. Brydon to prepare a plan for covering the whole of the Great George-street site from Parliament-street to St. James's Park (including the Civil Engineers' building) with an immense block of building forming a complete whole in itself. It cannot all be carried out at present; neither the land nor the money can all be had at once; but the great point is that instead of laying down a complete design on the extent of land now available, and leaving the future to chance, the building to be now erected will be only a part of a great whole, the remainder of which will be completed when the rest of the site can be acquired. This is the true spirit in which to work; this is returning, so far as is still possible, to the principle, long ago proposed by Barry, of planning offices on a great uniform scheme, and carrying out each portion in turn as a stage towards the completion of the whole. The opportunity for so grand and complete a scheme as Barry devised is, unhappily, lost for ever; but it is something, at all events, to find the Government building department, though late in the day, returning to this broader and grander principle of carrying out public buildings.

In dealing with the front towards Parliament-street, it has been decided to set this back from the line of the Home Office front as far as the Treasury building sets back on the other side of the Home Office, so as to make the three fronts form a symmetrical group. As we have before observed, there is this disadvantage in the arrangement, that in coming down Whitehall southwards the front of the new building will be hidden behind the projection of the Home Office front, so that the line of street will appear to end at the angle of the latter building. This, however, will only be from a point rather high up Whitehall; and the arrangement has counterbalancing advantages. It will make a wider opening at the lower end of Parliament-street, and open up the view of the Abbey better; and the architectural treatment is such as to connect the three buildings into a very dignified and effective group. The large rounded angle at the south-east corner of the new building, which appeared in the original block plan, and which is a rather commonplace treatment with no practical advantage, has been abandoned, and the Parliament-street front of the new building will run down to a right angle at its junction with Great George-street, the front being parallel with the line of the east side of Parliament-street.

The general arrangement of the complete plan of the Westminster block, as it will ultimately be when entirely completed, and its architectural relation to the block of the Home and Foreign Offices, are shown in the small block plan appended (see next page). The great circular court in the centre of the new building is placed axially with the great court of the Home and Foreign Office block, with a vista right through the carriage entrances. This circular court is 160 ft. in diameter; not too much, certainly; and in order that it may not appear tank-like it is kept one story lower than the rest of the building. Until the block is entirely completed this will of course have to remain a semi-circular court only. The side courts are 100 ft. square. The smaller courts are only for lighting corridors and lavatories; the arrangement being adopted, which from henceforth we may take it will be generally accepted in all Government buildings, that all corridors are to have direct light, from an area or otherwise. High rooms, except for two or three rooms for exceptional purposes, are to be avoided, the average height of the office rooms being about 13 ft.

Mr. Brydon's design, without going beyond the generally accepted details of conventional classic design, is dignified and well proportioned. There are two stories of plain rusticated work with windows set in it, forming a lofty kind of podium supporting a Corinthian order above, with two stories of windows between the columns, the lower ones high windows with pediments over them, the upper ones square. In the centre, which projects slightly, the columns are coupled and carry a pediment with sculpture in the tympanum. The high attic behind the pediment looks to us rather heavy; there is a little too much of it, and the pavilions which rise above the cornice line at the angles might be susceptible of rather more graceful treatment. We should be inclined, also, to plead for something a little less hackneyed than the conventional terminals on these pavilions. As a whole, however, the front is a harmonious composition. There seems to be an idea at the Office of Works that the order and the main cornice would be better for being raised a little; but we do not see it; the upper and lower portions of the design are well proportioned as it is.

The manner in which the new building is connected with the Home Office and Treasury blocks is one of the best points in the design. It may be remembered that there was talk of connecting it with the Home Office by a bridge across the eastern end of Charles-street, and one or two witnesses before the Committee spoke strongly in favour of making this bridge a monumental erection, and not being content with a mere utilitarian flying-bridge. These recommendations have not only not been neglected, they have been bettered. The bridge is provided for by a great portico or arcade of three arches, on columns, crossing the end of Charles-street, with a deep sculptured frieze above the arcade, the whole being crowned by a quadriga group facing to Parliament-street. But what gives still more value, architecturally, to this device is that the narrower opening of Downing-street, between the Home Office and the Treasury, is connected by an arcade and bridge of similar type, differing in design in consequence of the difference between the width of the openings, but on the same lines. Thus the three buildings are architecturally connected together, and the connexion is a practical as well as an architectural one, as there will be direct internal route along the whole of the three buildings, which, as far as communication is concerned, will form practically one building. To conclude, the incomplete state of Scott's front to the Home Office, which has always been an injustice to him, is to be remedied by the erection of pavilions above the two angles. These will not be as lofty as those designed by Scott, but the design will be none the worse for that; Scott's pavilions, lofty and crowned with cupolas, were too high in proportion to the rest of the front, and the general effect will be better with those which are now designed, both in regard to the Home Office itself and to the grouped effect of the three buildings.



*Block Plan of the new Government Offices (Westminster Block), showing its relation to the Home and Foreign Office block.*

Coming now to the Whitehall site and the War Office, we may note first that the authorities have again given due weight to the evidence of the architects in favour of ultimately widening the upper portion of Whitehall. In view of this, they have declined to entertain any scheme for enlarging the Admiralty by acquiring Drummond's bank and the houses adjoining it on the west side of Whitehall. It is understood that the insurance life of the old Admiralty buildings is only about forty years; when that period has elapsed something will have to be done; and things are to be left in such a state that a new line of frontage may then be taken, so as to widen the street and centralise it to some extent with Trafalgar-square. We are also glad to learn that the idea of erecting any Government building on the inadequate triangular strip of land left between the proposed prolongation of the Mall and the north end of the new Admiralty may be considered to be definitely abandoned. Something will have to be done with the space, no doubt; and we may suggest that it would be a good site for a public monument of some kind, when there is anything to set up a monument to. Following the same principle of allowing for the improvement of the line of Whitehall, the west front of the War Office is to be set a little back from the former building line, bringing it in line with the front of the Banqueting House. The irregularly-shaped and inadequate site for the War Office is, we regret to say, retained unaltered, but we are given to understand that the question of extending the building further north, across Whitehall-place, as suggested in the paper read at the Institute of Architects, was not left unconsidered. There were difficulties, however, pecuniary and other, as to acquiring the land; and, moreover, the War Office authorities objected to the extension of the building, on the ground that it would place the different departments too far apart, and leave too much space to be traversed from one set of offices to another. This seems a rather odd piece of reasoning, for it is obvious that if a certain area is not allotted horizontally, it must be found vertically, and that it is only the difference between traversing an extra corridor or mounting an extra flight of stairs, and of the two the former is the easier task. However, the site is retained, and the best has to be, and we think has been, made of it. It is rather amusing to notice that, while we were repeatedly assured, after the reading of Mr. Statham's paper at the Institute, that the block plan of the War Office shown on the original Parliamentary plans meant nothing and was not intended as showing the way in which the site was to be covered, the complete plan as made out follows the same lines, with the only difference that the central court, formerly about 95 ft. square, has been lengthened to about 160 ft. one way, and one very small court done away with; but the objectionable triangular court, with its narrow end into which, on one side, offices look, is still there just in its old proportions; and of course the objection of the irregular shape of the building, which we described as more suitable for a hotel than a first-class public building, still exists in full; and this will go far to spoil what might have been a fine building. Mr. Young, in his design, has done the best he could do to mask and minimise this defect of the site by his treatment of the angles of the building. Each face terminates with a square projection normal to the main line of the front, and between these projections is fitted a circular pavilion which serves to connect them and to hide as far as possible the inequality of the angles. These circular pavilions are crowned with cupolas of very graceful design, and rather in the spirit of Wren. Like Mr. Brydon, Mr. Young treats his two lower stories as a mass of rusticated walling, and above these introduces an order, in this case Ionic, with the columns standing free, and giving a very bold effect. This was the one point on which Mr. Young encountered serious opposition from the authorities, on the ground that the free columns would interfere with the light; but this interference, considering the width between them, will not be material, and there can be no doubt that the reduction of the order to half-columns against the walls would be of the most serious injury to the architectural effect of the front; and it is fortunate for the building that the architect was able to persuade the authorities to accept his views on this point. In the side elevation, towards Whitehall-place, the order is used to emphasise the central portion only. In the centre of the Whitehall front is a boldly rusticated porch, which balances and contrasts with the graceful design of the cupolas. The perspective view is rather deceptive in appearance; there seems to have been an attempt to show the flank elevation rather too fully for perspective effect; it gives almost the idea of a single front of which the two sides are at an obtuse angle (like Sir John Soane's mode in the Soane Museum); the perspective of the flank ought to fall away more to give the true effect. The angle is not a right angle, it is true; but it is a smaller angle than would be supposed from this drawing.*

In order to give something like monumental effect to a building on this irregular site, a striking proposal is made; viz: that the new building should ultimately be architecturally connected with the Banqueting House, by a decorative screen across the end of the street facing the Horse Guards; and it is proposed that when at a future time some new offices may be required which can be built north of the War Office, these should take the shape of a "double" of the Banqueting House, connected with the War Office by a similar screen. This will no doubt produce a fine and dignified effect, and will be in keeping with the somewhat similar manner in which, as already described, the three buildings on the other side of Whitehall and Parliament-street are to be connected. It is gratifying to see that here again there is the attempt to look ahead in regard to architectural effect, and to plan a grand scheme, though the whole of it cannot be carried out at once.

On the whole, we must think that the result so far promises to be satisfactory—most completely so in regard to the Westminster block, since nothing can quite get over the unfavourable conditions of the War Office site, though, on the other hand, the architectural treatment of the façade towards Whitehall is a very fine piece of architectural design. But there has been the evident desire on the part of the Government to carry out something creditable to the country—a desire in which they have been ably seconded by the two architects; and certainly the buildings will be something very different from the unhappy fiasco of the new Admiralty buildings.

As already observed, the plans and designs as shown here are not to be regarded as quite final; the perspective views are rather studies for the buildings, to enable the public and the Legislature to form some opinion of what is going to be done; though probably they will not be materially altered in execution, nor do we indeed see any reason why they should be.

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## NOTES.

**The Architect to the L.C.C.**

THE London County Council, after all their large offers to obtain a first-class man as their architect, have appointed Mr. W. E. Riley, an Admiralty Surveyor; the choice being apparently determined in great measure by the fact that he has been accustomed to the control of a large staff. Administrative ability is no doubt an important element in such a case, but it is not everything; and we had hoped that the appointment would have fallen to some one who would have exercised a beneficial influence on municipal architecture and architectural policy in London, and who would also have been thoroughly familiar with London practice. The appointment is a somewhat curious anticlimax, after all the professions that have been made of a desire to obtain the services of an eminent architect.

**The Workman's Compensation Act Again.**

THE misfortune of the numerous decisions on the Workman's Compensation Act is that they do not settle any principle. There arises in these cases the question whether certain facts bring the matter within the Statute. No sooner is one case decided than another, different in its circumstances, turns up, each decision tending to show how unfair is the working of the Act. Last Saturday the question which came before the Court of Appeal was whether painting a house was "repairing" it within the meaning of the Statute, and whether the rung of a ladder was a "scaffold." The Court of Appeal reversed the decision of the County Court Judge, and held that the case did not fall within the Act. We confess that we cannot see why painting is not repairing. Woodwork requires paint for its preservation; a roof requires slates put in. Yet, apparently, if a workman loses his life while painting a building he is not within the Act; yet if he were putting a few slates in the roof, he would be entitled to compensation. Again, a carpenter who fastened a bit of wood to a window would be entitled to damages if injured—he was repairing the building. But if he painted it afterwards he would be excluded if injured at that particular time. The truth is, as we have over and over again pointed out, that the Act is most absurdly limited. There is no principle in it; there is an arbitrary limitation introduced simply and solely because the persons excluded had not sufficient electoral powers to make it worth while for the Government to include them within the provisions of the statute.

**London Water Supply.**

WHILE it was to be expected that the two Bills of the East London Water Company, brought forward on Tuesday last—one to raise a million and a half sterling for the construction of reservoirs, the other to provide for the temporary needs of the same district—should be passed, it was almost a foregone conclusion that the County Council's Welsh Reservoirs Bill should be strongly opposed. In the terms of Mr. Whitmore's amendment, "it is inexpedient that the Bill be read a second time before the Royal Commission on London Water Supply has presented its Report." As Mr. Whitmore pointed out, a Select Committee on such a Bill could not even know that the London County Council would be the water authority for London; and under any other supposition the Bill has no logical basis. The amendment was carried by 206 to 130; a majority not so large as we should have expected to find, though large enough to form a decisive expression of opinion. The Bill is entirely premature, and is obviously what may be called a political move.

**Gas Testing by the Portable Photometer.**

AT their last meeting the London County Council had under consideration the question of gas testing by means of the portable photometer. Over 80 per cent. of the tests made in various parts of London during 1894, 1895, 1896, and 1897 with this instrument show an illuminating value below what is technically known as 16 candles, which is the standard gas value for the City and the Metropolis as fixed by Parliament. During the same period, however, daily tests were also made by officers of the London County Council, but at official stations and in accordance with the provisions of the various Gas Acts, and these showed that the gas was above the standard illuminating power. These results may appear contradictory, but are not really so; for coal gas (especially when enriched) is an unstable body, and gas supplied through the same mains from works five miles distant may appear of different value in two adjoining houses. In small service pipes having frequent bends deposition of some of the light-giving hydrocarbons is more likely to occur than in large services having few bends or contractions. Moreover, the temperature of the testing-room and of the water in the testing meter has an important influence upon photometrical results, and we suspect that the unofficial tests were often made at low temperatures, whereas the official stations are seldom allowed to fall to a temperature below 60 deg. F. Pure coal gas as made in London has an illuminating power of from 14 to 15 candles, and this is enriched to the 16-candle standard by oil or carburetted water gas. To obtain 16-candle gas under any conditions likely to obtain when tested by the portable photometer the gas would have to be enriched to a greater extent than at present, and the game is not worth the candle. The expense of enriching, which has of course eventually to be borne by the consumer, is out of all proportion to the increased value of the gas. For heating purposes, or for use with incandescent burners or the albo-carbon light, the increase in efficiency of 20-candle gas over 15-candle gas is comparatively slight. We strongly advocate the supply of unenriched coal gas, at the cheapest rate possible, in preference to the supply of a richer gas at a considerably higher price.

**Improvements at the Law Courts.**

IT is satisfactory to find from the recently issued Civil Service Estimates that the Government has at length made up its mind to undertake some of the improvements which have long been urgent at the Law Courts. Two lifts are to be provided at a cost of 1,750*l.*—one, we presume, in each wing of the building. This is an improvement which it has been over and over again urged in this journal was a pressing necessity, and the sooner the addition is made the better. The sum of 1,500*l.* is to be spent on improving the ventilation of the courts. We can only hope that the money will not be thrown away and that the atmosphere of the courts may really be improved by the outlay. A very small sum would make the ventilation of the passages better. At present they help by their bad air to contaminate the atmosphere of the courts. We see no provision made for completing either the electric lighting of the building or the warming of it. Surely by the end of the century the necessary work at the Law Courts might be completed.

**Premises for the L.C.C.**

THE London County Council agreed at their meeting on Tuesday to purchase for 100,000*l.* the freehold interest in the premises Nos. 26 and 27, Cockspur-street, in order to provide additional office accommodation. That more and better accommodation is needed no one acquainted with the facts can doubt. The Architects' Department, for instance, is located in the main building; 17, Pall Mall East; 40, Craven-street; 13, Spring Gardens; and 15, Spring Gardens: the Engineers' Department being accommodated in the main building; 15, Spring Gardens; 31, Spring Gardens; and 42 and 43, Cranbourne-street—which is nearly half a mile from the main building! Not only do the officials of these and other Departments suffer great inconvenience, but, as is obvious, the work of the Council suffers too, and, seeing that the acquisition of the Cockspur-street premises will afford accommodation for 140 officials, there is much to be said in favour of the purchase. The cost is considerable, and it affords another illustration of the manner in which property in London is continuously increasing in value; but even if the Council acquire, within the next few years, another site for a new County Hall, the course now agreed to would prove to be an economical one. Some of the members of the Council appear to think that in view of the Holborn-Strand improvement, and the possibility of getting a more suitable site for a County Hall somewhere on the line of route, it is unwise to acquire new premises at Spring Gardens. In our opinion, it is unlikely that a more suitable site will be found anywhere else in London than the Council now possess at Spring Gardens.

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* Some further information as to the general idea of the plan and design will be found under the head of "Illustra-

**The New York Fire.**

SUCH catastrophes as the New York hotel fire are generally followed by what is termed panic legislation; or, in other words, hastily prepared enactments. If we are rightly informed by the daily Press, the American Legislature already has before it a measure to ensure better protection in large caravansaries such as the Windsor Hotel. Without wishing to impose upon the London innkeepers any onerous restrictions as to the safety of their premises, we hold that the opportunity might be taken to inquire into the risks attendant upon structures of this description, with the view of legislating for their better control. There is not the slightest doubt that the modern hotel is often a regular fire-trap, no matter how boldly it be advertised as a "fire-proof" building. The lifts, which form natural flues, are in themselves among the greatest hazards in a building of this description, whilst the decrease in staircase accommodation prevents facilities for ordinary exit in case of panic. Whatever precautions ought to be taken in our future hotel buildings, they should primarily relate to the possible division of the block into separate "risks," and the provision of ample exits. In other words, hotel protection becomes a question of good planning. To rely on so-called "fire-escapes," is simply ridiculous, for it generally requires an able-bodied man in best training, not to say an acrobat, to do justice to many of the life-saving appliances now in the market.

**The Sewage Problem in Manchester.**

THOSE members of the Manchester City Council who thought that the unanimous recommendation of the three experts in favour of the bacterial treatment of the city's sewage would at once settle the vexed question, had their happy dream dissipated at the last Council meeting. The advocates of the culvert scheme again brought it forward; and, although they were unsuccessful in their main contention, they succeeded in referring part of the Committee's Report back for further consideration. In his evidence at the Local Government Board Inquiry, Mr. Baldwin Latham, one of the three experts, said, "There cannot be any doubt . . . that the proposed works" (*i.e.*, the bacteria beds) "will be successful and relieve the Corporation of Manchester from all future embarrassment, so far as the purification of sewage is concerned," and the Committee thereupon recommended that he be appointed engineer for carrying out the works. This recommendation, however, failed to meet the Council's approval, and the Committee was asked to reconsider it, and also to prepare accurate estimates of the cost of the proposed works. How they are to prepare accurate estimates unless an engineer is appointed and a complete scheme prepared, we fail to see. Estimates based on guesswork or on incomplete designs are almost invariably characterised by gross error, and the Council will only have itself to thank if the history of the Ship Canal cost is repeated in the history of the cost of the sewage-disposal works.

**Automatic Couplings on Railways.**

WHATEVER may be the ultimate fate of Mr. Ritchie's Regulation of Railways Bill, there is no doubt that its introduction marks a step in the direction of the adoption of automatic couplings in this country. The opposition which the proposal has already encountered was inevitable, in view of the great expense involved. The cost, at the outset, would certainly be enormous, although it would probably come out much below the 10*l*. per wagon estimate. The fact that, in any case, several years are to elapse before the order is made, is all in favour of economy. It will be a great spur to inventive genius, and it may be confidently anticipated that many designs, of varying cost and adaptability, will be forthcoming to compete with the more costly systems already in use. We are glad to notice that the labelling of wagons on both sides is dealt with in the Bill, for shunters frequently incur great danger through being compelled to get round to the opposite side of a wagon in order to ascertain its destination. We do not like to see the Bill described as a measure "for the benefit of careless shunters." Their work is about the least desirable one can imagine in rough weather—particularly at night—and they ought at least to be protected from preventible accidents. Theirs will always be risky, hazardous work, even when this is done.

**London Government Bill.**

THE District Surveyors' Association have presented a petition against the London Government Bill, or rather against certain clauses in it, mainly in reference (naturally) to the interests of their own body, which are entirely overlooked in the Bill; but in this case the interests of the District Surveyors are also the interests of the public, and of those concerned in building more especially. As they say in their petition, "the transference of any of the provisions of the Building Act to the control of the Borough Councils would not be for the public benefit."

"The Building Act deals with matters common to the whole of London, and is therefore more efficiently and uniformly administered by the central authority and the District Surveyors. Were powers under the Act transferred to the Borough Councils, the District Surveyors would no longer be able to carry out the duties of their offices in the same just and fearless and impartial way as heretofore. The Borough Councils will frequently contain among their members builders and owners of property whose private interests will be at variance with the duties now discharged by the District Surveyors under the Building Act, and should the Powers under the Building Act relating to the appointment, control and dismissal of District Surveyors be transferred to the Borough Councils, it will manifestly be very difficult for a District Surveyor to enforce the provisions of the Building Act against a member of the Borough Council who may use his influence to procure such Surveyor's dismissal, or to prejudice him in his official capacity. The transference of the powers under the Building Act from the central authority to numerous local bodies will also militate against amendments of such Act being made as occasion may arise."

With all which we entirely concur.

**The Old Priory, Bedford.**

WHEN historic buildings are situated in business thoroughfares, where the speculator grasps at every available foot of ground, it is often a difficult matter to preserve them. But it would have been thought that the old Priory buildings at Bedford, which are so out of the way that it is no easy matter for a stranger to find them at all, would be more fortunate, especially as they are now the property of the Corporation. It appears, however, that some of the town councillors have sinister designs upon them, as the following extracts from a letter received by a member of the Corporation, and published by a local journal, serve to indicate:—

"What good will it do you to 'move that the Old Priory be pulled down forthwith?' You and a few more will not be elected again, I give you my word. Let us have as much of the antiquities of England left unmolested as possible. Remember poor old St. Alban's Abbey and weep for its present deplorable condition. A magnificent Norman specimen of architecture (the tower and parts even earlier) ruthlessly given over to a brother 'bounder' of yours to do as he liked with, and what has he done? Restored it! So that it now resembles a modern Wesleyan Methodist Chapel, or something worse. When you and such fossils as Lord 'Grim' can design and build anything approaching the Old Priory (which the saints preserve) then England and its men will be happy. Until then, my friend, confine your remarks to subjects that you understand, although these be few, as I know."

There are probably many others in Bedford and elsewhere who, though they would never dream of speaking or writing so impolitely as this, will feel, with a certain sense of indebtedness, that this outspoken individual has exactly expressed their own sentiments. May his reward be the compulsory retirement of the offending councillor at the next election, and the preservation of the remains of the old Priory.

**Institute of Painters in Water-Colours.**

THERE are very few important works at the exhibition of the Institute of Painters in Water-Colours; and there are a good many very bad ones. The best exhibits are mostly among the small landscapes; those of Mr. Joseph Knight, Mr. Cotman, Mr. Geo. Marks, and two or three others. Mr. Wimperis sends a gloomy and powerful study of Ben Nevis (242), and Mr. Weedon, in "Waste Ground near Lymington" (423) exhibits a work rather in Mr. Wimperis's manner. Mr. Gulich's "An Art School" (427), though rather foggy in style, is an ambitious and clever work. Among other figure subjects are Mr. Dollman's "Moses at the Fair" (41), in which the simplicity of the lad is well contrasted with the character of his two critics, one of whom must be Mr. Ephraim Jenkinson; Mr. Robert Fowler's "The Escaped Bird" (100) is a pretty poetic fancy; so, in a more serious way, is Mr. Henry Stock's "Heart-wound" (336), a half-length nude figure in a star-lit wood—a work of much feeling; and Mr. Gregory's little figure-painting, "Her lute string gave an echo to his name" (334), admirably painted, but totally destitute of feeling. Mr. Fulleylove sends a good many studies in the neighbourhood of Athens, of which the most important is the large and fine drawing of the Jupiter Olympius columns (297); he has also a very good smaller drawing of the Erechtheion (191). Among the smaller works which have definite quality, besides those alluded to above, may be named Miss Hagarty's "The Old Windmill" (167); Mr. Macquoid's "Place Van Eyck, Bruges" (203) a good architectural subject; Mr. Robert Carrick's "Girls among the Flowers" (236); Mr. Aumonier's "The Rising Moon" (274); Sir J. D. Linton's "The Sampler" (294), as an example of fine colour; Mr. John R. Reid's "Hay Cutters" (318) for the same quality in landscape; Mr. John White's "Fisherman's Cottage, Land's End" (332); Mr. Winter Shaw's "Grazing" (350); Mr. J. R. Reid's "The Wood-cutters" (365); Mr. Ottewell's "Clouds that Gather Round the Setting Sun" (468), a larger and a really fine landscape; Mr. Bernard Evans's two powerfully treated scenes in the South of France, and Mr. MacBride's night effect called "Ely Cathedral" (566), though there is little enough of the cathedral, and that not recognisable. We should also mention a good architectural subject by Count Seckendorff (Hon. Member), the "Arch of Titus" (243).

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Mr. Herbert Marshall's Exhibition.

MR. HERBERT MARSHALL, the special painter of London scenery, has been making a diversion into Holland, and a collection of small water-colour drawings of the "Cities and Rivers of Holland" fills a room at the Fine Art Society's Gallery. There is a certain sameness about these, and the artist has not so thoroughly entered into the spirit of them as he has into that of the London street scenery; nor are these drawings so carefully studied and finished as most of his London scenes. They may, however, form a very good basis for some more finished pictures; and in the meantime the sketches make a pretty collection, though they do not show the artist quite at his best.

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## NOTES FROM PARIS.

THE immense dome of the Church of the Sacré Cœur will be completed in time to receive its inauguration during the Paris Exhibition next year. The dome, which will be 280 ft. high when completed, is at the present moment about two-thirds terminated, the remaining portion will be finished towards the month of August of this year, and it is estimated that six months will be sufficient to complete the interior decoration and place on its summit the immense stone cross.

In the interesting competition between Parisian architects, in which prizes and medals will be awarded to the architects and owners of the six buildings erected at Paris during the past year considered by the jury to be of the best design, fifty-two new houses, comprised in twelve arrondissements of Paris, have been entered for prizes by their architects or owners. The jury is composed of nine members, having as president M. Bouvard and his official deputy-architect, two architects chosen by the competitors, and five members appointed by the Municipal Council. This jury has been visiting the various houses, and will shortly award the prizes, consisting of six gold medals of the value of fifty pounds each, to the architects, and to the owners the exoneration of half the street dues generally paid for new houses. The medals are engraved by M. Daniel Dupuis, the well-known engraver to the Government; on one side is an allegory of two figures representing the French Republic and the town of Paris; on the reverse side will be engraved the names of the prize-winners. The two architects designated by the competitors are MM. Guadet and Bonnier. The idea is an interesting one, and it is proposed to offer the same premiums each year. It is true that the inducement to both architects and owners is small as regards pecuniary reward, but it is believed that the honour, and the idea of entering for the competition, will prove incentives to sound endeavours towards the improvement of street architecture. An indication of this is given in the rapid improvement which has been made lately since the adoption by the Town Council of less stringent rules regarding the dimensions of projections and the heights of new buildings. Since the new rules have come into force there has been a sudden birth of new features in street architecture at Paris—boldly projecting balconies and bow windows, cornices, columns, cupolas and turrets, decorated gables and similar features have thoroughly changed the style of the Parisian street, and this is especially noticeable in the new quarters where whole streets have been raised under the new rules. It is true that in a number of cases licence and imagination have somewhat run away with good taste, but it is expected that a new reform in the rules will correct these faults in a large measure, and allow architects to search in a logical manner after new ideas for a modern style of street architecture.

The important work of enlarging the Bibliothèque Nationale is now rapidly proceeding. The scheme, which was proposed and prepared twenty-five years ago by M. Pascal, consists in the building of a large depository for books and journals arranged "en façade" on the Rue Colbert; an immense oval public reading-room, to contain seats for 350 readers, preceded by a vestibule on the Rue Vivienne; and an epigraphical museum and "cabinet de medailles."

The work now going on for the completion of the Metropolitan Railway at Paris has brought about the discovery, under the Place de la Bastille, of one of the towers of the celebrated State Prison. The portion which remains of this tower, once called "Tour de la Liberté," is in a perfect state of preservation, owing to the fact that Palloy, who undertook the pulling down of the Bastille, did not demolish the lower portion of this tower, but simply filled up the moat and brought the ground to a level. It is expected that the further excavations which are now being made will bring several interesting objects to light.

The work on the larger Fine Art Palace of the Champs Elysées is now rapidly advancing, the balustrade above the attic story is nearly completed, the sculptors have begun their work on the capitals, and the work of "ravalement" or moulding the building into form has been commenced.

M. Gout, President of the Committee for the organisation of the participation of the Union Syndicate des Architectes Français at the 1900 Exhibition, lately gave an interesting lecture on the influence of Labrouste and Viollet le Duc on the architecture of the nineteenth century, and in order to emphasise the immense influence of the doctrines professed by the above two architects, in the new attempts made by modern architects, he proposes to organise, during the Exhibition, a series of lectures, in which will be analysed, by means of drawings and projections of the buildings themselves, certain works of the architects who have, during the course of the century, shown in various degrees their adherence to these doctrines.

The various work now being carried out in view of the Exhibition of next year is proceeding with a certain rapidity in some portions, especially in private undertakings; the official portions are now apparently somewhat behindhand, and it is to be hoped that the threatening strike of all trades will not come about, or it will very seriously interfere with the work and the proper completion of the Exhibition in time for the opening in May, 1900. We will enter fully into particulars of some of the most interesting work and buildings shortly, as soon as the work is in a more advanced state. Great Britain will be well represented as regards buildings, for certain large surfaces of ground have been allotted for the purpose on the river side, in the grounds of the Trocadéro, and on the Esplanade des Invalides. The Royal Commission, which is presided over by the Prince of Wales, has for some little time been working quietly and unostentatiously at the arrangements to be made with the authorities at Paris, and the preparation of the entire scheme for the proper representation of Great Britain in 1900. Colonel Herbert Jekyll is the secretary and commissioner to the Royal Commission, and receives most flattering attention at Paris on the occasion of his visits to the capital. Mr. E. R. Spearman represents the interests of the Commission at Paris, where offices have been taken close to the Champ de Mars, and his task up to the present has been a very arduous one, so many and complicated are the formalities which have to be gone through with the Exhibition authorities at Paris. The Royal Pavilion will be erected on the Quai d'Orsay, in a central position amongst the pavilions of other nations. This building, an illustration of which is given in the present issue, will be a reproduction of Kingston House, near Bradford-on-Avon, by an English architect, Mr. Edwin L. Lutyens. The Prince of Wales will, it is proposed, hold his receptions in this building when visiting Paris, and it is intended to install therein a most valuable collection of works of painting, jewellery, arms, &c., to form a typical museum of old English art, and this museum will be open to the public at all times when the pavilion is unoccupied by royalty. A large pavilion will also be erected in the gardens of the Trocadéro, to represent the English Colonies. On the embankment, of which the Royal Pavilion will form the central building, will be raised the buildings of other nations. Most of these, those of Germany, Hungary, Belgium and Holland, and Switzerland will, according to the designs which have been submitted to the Exhibition authorities, be very picturesque in design and silhouette, and will contrast strongly with the quiet and severe appearance of the Royal Pavilion.

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## THE ROYAL INSTITUTE OF BRITISH ARCHITECTS:

### THE BEGINNINGS OF GOTHIC ARCHITECTURE: NORMAN VAULTING IN ENGLAND.

AN ordinary general meeting of the Royal Institute of British Architects was held on Monday evening at No. 9, Conduit-street, Professor Aitchison, R.A., President, in the chair.

The minutes of previous meetings having been taken as read, Mr. William Emerson, Hon. Secretary, announced with regret the decease of Mr. Frederick Mew, Associate, elected 1859, and Mr. William Reddall, Associate, elected 1874.

Mr. John Bilson, F.S.A., then read a paper on "The Beginnings of Gothic Architecture: Norman Vaulting in England." By way of preface to his subject, Mr. Bilson had contributed a paper to the Institute *Journal* reviewing recent investigations of French archæologists into the origin and development of Gothic architecture. The following were the principal works referred to:—"L'Architecture religieuse dans l'ancien diocèse de Soissons au XIe et au XIIe siècle," by E. Lefèvre-Pontalis; "L'Art Gothique," by Louis Gonse; "La Transition," by Anthyme Saint-Paul, in the *Revue de l'Art chrétien*; "Monumens religieux de l'Architecture romane et de transition dans la region picarde," by C. Enlart; and "Die Anfänge des gothischen Baustilo; zur Kritik des gegenwärtigen Standes der Frage," by G. Dehio, in the *Repertorium für Kunstwissenschaft*. The author commended these researches to the attention of English students still prone to accept as final the judgments of earlier writers such as Viollet-le-Duc, some of which have been found untenable in the light of more recent inquiry. Mr. Bilson stated that in his prefatory paper he had made free use of Herr Dehio's masterly treatise, the general conclusions of which must, in the main, eventually win acceptance even among the younger French school of inquirers.

In opening his paper on "Norman Vaulting in England" the author touched upon the development of Norman Romanesque resulting from the revival of architecture in Normandy early in the eleventh century, and noted some of the most striking characteristics. Available literary evidence tends to show that some of the Norman methods were already in use in England before the Conquest, but we are not justified in believing that the design of these English buildings was marked by the logical precision so characteristic of Norman work, or that the English had taken any step in the direction of vaulting over their churches.

In studying the development of vaulting as illustrated by English examples between the Norman Conquest and the middle of the twelfth century, the author dealt first with the vaults of the lower parts of churches, such as aisles and crypts, citing existing examples of the various forms described.

The ground vault in its simplest form results from the intersection of two semi-cylindrical vaults at right angles to one another—a survival, in fact, of the Roman groined vault. Generally, however, these groined vaults are banded by some circular transverse arches or "doubleaux," usually of simple square section, and forming a kind of permanent centring. The adoption of these doubleaux, however, involved considerable inconvenience in the construction of the springing of the groin. In the Roman groined vault and its imitations the groin springs from the external angle of the pier or pilaster. In many of the early Norman vaults the groin springs either from the internal angle formed by the junction of the transverse arch at its springing with the wall-face, or from the face of the wall or arch close to the angle. As the vaults were constructed of rubble masonry with thick joints, and covered with plaster, this method of springing the groin was obviously defective as a matter of construction. Consequently, we find the difficulty met at a very early date by a further development in the membering of the supporting pier; the pilaster which carries the transverse arch is flanked on each side by a secondary pilaster, which affords an independent support for the groin. In some crypts where the vaulting is supported by single cylindrical shafts, the springing of the vault is subdivided in a similar manner, so as to give a separate projection for the springing of the groin. A further advance consisted in the substitution of a shaft for the square pilaster which supported the groin. At Saint Etienne, Caen, and at Winchester Cathedral, an improvement is found in the construction of certain of the vaults. The haunches of the vault, for a short distance above the springing, are constructed of ashlar, above which the vault is of rubble, plastered.

Having described the modification the simple groined vault underwent when necessitated by the oblong or irregular plan of the bays to be vaulted, the author passed to his main subject, the ribbed vault. Wherever it originated, or whatever the circumstances under which it was evolved, the advantage gained by the introduction of the rib was obvious. It afforded a permanent centering for the groin, the weakness of which in vaults over wide spans must always have rendered them liable to failure. It completed the membering of the vault which had commenced when the transverse arch was added to the Roman groined vault. The new expedient was readily adopted and rapidly developed by the Normans in England as well as in Normandy.

The cathedral church of Durham is the most complete early example of the adoption of the ribbed vault in England. Contemporary chroniclers record that every part of the church was covered with ribbed vaulting between 1093 and 1133. The plan of the choir and east side of the transepts shows that it was the intention from the first to cover both the aisles and the main spans with the vaults which were actually constructed. The aisle vaults of choir and transepts (the various features of which were described in detail by the author), constructed under Bishop William between 1093 and 1096, are clearly part of the original work; masonry and mouldings correspond in character with those of the choir arcades, and, for constructional reasons, the aisle vaults must, as usual, have been erected along with the main walls. The vaults of the nave aisles, the characteristics of which were next discussed, are the work of Bishop Ralph Flambard (1099-1128), and, as he completed the nave as far as the high vault, the aisle vaults may safely be attributed to the first decade of the twelfth century. They correspond in character with the aisle vaults of choir and transepts, except in a few minor points.

The next dated example of ribbed vaulting is to be found in the reconstructed parts of the transepts of Winchester Cathedral. The original work in these transepts belongs to the church which Bishop Walkelin commenced in 1079, and which the monks entered in 1093. The works of reconstruction necessitated by the fall of the central tower in 1107 are easily distinguishable from the original work by the different thickness of the masonry joints. The date of these ribbed vaults may be put within two or three years after the tower fell.

Peterborough Cathedral presents examples of ribbed vaults, the date of which is proved by documentary evidence. The earlier church was destroyed by fire in 1116, and the present building was commenced in 1117 or 1118. In 1140 or 1143 the monks entered the new church. The parts then completed include the choir and east side of the transepts (except, perhaps, the clearstories). The aisles of choir and transepts throughout are covered with ribbed vaults, the distinctive features of which the author described.

The paper then went on to discuss M. Félix de Verneilh's conclusions with regard to the Peterborough vanlts, on which M. Lefèvre-Pontalis based his statement that the ribs were added afterwards in the second half of the twelfth century. M. de Verneilh's theory was that the supporting shafts were designed to receive the projecting groins of unribbed vaults, and that the actual ribs were added afterwards. In the recent taking down and rebuilding of the central tower, however, no evidence whatever was found to support this theory. It is clear that these Peterborough vaults are original from the fact that they do not stand alone, but are analogous in their method and construction to a large number of vaults, which cannot all be the result of such an alteration as M. de Verneilh suggested.

The author then passed to the consideration of examples of similar ribbed vaults to which, in default of documentary evidence, approximate dates only can be assigned from the character of the work. The following examples were discussed:—The vaulting over the north aisle of the nave of Gloucester Cathedral, which may be safely assigned to the first twenty years of the twelfth century; Avening Church, Gloucestershire, ribbed vaults, *c.* 1120-1130; Southwell Minster, the aisles of the nave of which are covered with ribbed vaults, *c.* 1120; the Priory Church of Lindisfarne, built by Ædward (who died probably near the end of Ralph Flambard's Episcopate, 1128)—this church throughout was covered with ribbed vaults, and its design is evidently inspired by Durham; the nave of the Abbey Church of Dunfermline, also inspired by Durham, probably erected soon after the accession of David I. 1124); Selby Abbey Church, whose eastern bays of the nave also afford marked indications of Durham influence; Romsey Abbey Church, vaults of choir aisles; and the church at Lessay, Normandy—examples interesting as showing how the idea of the ribbed vault was introduced, during the course of construction, in works originally planned only for unribbed vaults; the two churches at Devizes, Wiltshire, affording examples of aisleless chancels covered with ribbed vaults, and to be attributed with some probability to the architectural influence of Bishop Roger of Salisbury, and dated approximately *c.* 1125-1130, St. John's being slightly earlier than St. Mary's.

The difficulties which confronted the builders of these early ribbed vaults, so long as they employed only semi-circular or semi-elliptical curves for the ribs, were entirely surmounted by the adoption of the pointed arch for the doubleaux. The nave aisles of Malmesbury Abbey Church have been frequently quoted as the earliest example in England of this new method of construction, and have been attributed to Bishop Roger of Salisbury; it is scarcely probable, however, that the rebuilding of the church was commenced before the Bishop's death in 1139; it must, nevertheless have closely followed that event, and the existing nave cannot be assigned to a later date than the middle of the twelfth century. There is no evidence whatever to support Mr. C. H. Moore's assertion that the vaulting is an imitation of French work. The style of Malmesbury is purely Anglo-Norman, and shows no trace of the influence of such French work as the chapel of Bellefontaine and Saint Denis. At the same time the Malmesbury aisle vaults bring us to the threshold of the complete Gothic vaulting system, and almost to the time when French influence undoubtedly began to affect English work.

In treating of the vaults over the principal spans of churches, the author said that the Normans aimed at covering all parts with stone vaults. The plans of piers sufficiently indicate that the vaulting of the principal spans was intended to follow the vaulting of the aisles. The choir-piers of Saint-Nicolas, Caen, and Saint-Georges-de-Boscherville were cited as typical examples. Each shows a group of three shafts on each side of the pier to carry the arch orders of the main arcades, a single shaft which receives the transverse arch of the unribbed aisle vault, and a corresponding shaft towards the main span. It is not improbable that the failure which naturally attended the construction of the earliest vaults over wide spans may in some cases have rendered subsequent reconstruction a necessity. Very few early examples of vaults over wide spans have survived. The earliest instance in England of a ribbed vault over the principal span of a great church is the choir vault of Durham Cathedral, though here the original vault was replaced by the existing vaults in the thirteenth century. The vault over the north transept of Durham is probably the earliest of such vaults still existing. The evidence of the structure itself, the analogy of the other vaults of the church, and the documentary evidence, taken together, enable one to speak with some approach to certainty of the character and date of the original choir vault of Durham. The plan of the choir, consisting of two double bays, is a type usually associated with a sexpartite vault. But the date is much too early for this kind of vaulting. There can be no doubt that the original choir vault was a ribbed vault, and it may safely be concluded that the choir was originally covered with a double quadripartite vault over each double bay, closely resembling the vault of the north transept, erected almost immediately afterwards.

The vaults of transepts and nave at Durham next came under examination, and were discussed at length, the author showing that the character of the work indicated that the vaulting idea was present in the earlier parts of the structure, and that it was abandoned and again taken up while the work was still in progress. Touching the date of the nave vault of Durham, there is absolutely no authority for Billings' statement, repeated by later writers, that it was constructed between 1233 and 1244, in the Norman style. Symeon's continuator proves that the nave was vaulted between 1128 and 1133, and this is borne out by the character of the masonry of the vault itself.

Durham affords complete proof of the ability of Norman builders to construct ribbed vaults over the principal spans of a great church, and to abut the thrust of these vaults by arches across the triforium, of which the flying buttress is merely a development. Evidences quoted by the author indicate that the choir vault was constructed by 1104; the vault of the north transept may be assigned to a date within the first decade of the twelfth century, and that of the south transept within the first quarter of the century; while the nave vault, with its pointed transverse arches, was constructed between 1128 and 1133. Examples of vaults showing the influence of Durham were cited in the Priory Church of Lindisfarne, no part of which appears to be later than the middle of the twelfth century; and, on a small scale, Warkworth Church (Northumberland).

The nave of Lincoln was vaulted before the middle of the twelfth century. It was built by Remigius, and dedicated in 1092, was injured by fire in 1141, and Giraldus Cambrensis states that it was vaulted by Bishop Alexander. Henry of Huntingdon places the date of this work at 1146. What this vault was like may be gathered from the chancel of Stow Church, Lincolnshire, the detail of which so closely resembles Alexander's work at Lincoln, as to prove that it was executed by the same school of masons. The evidence here indicates that Alexander's nave vault at Lincoln must have been ribbed.

The following early examples of ribbed vaults to apses were referred to, and their characteristics described:—The small apsidal chapel on the east side of the south transept of Christchurch, Hants, appearing to date from early in the twelfth century; the apsidal chapel on the east side of the south transept of Tewkesbury Abbey Church, which may be assigned to the first twenty years of the twelfth century; Birkin Church, Yorkshire, middle of twelfth century; the octopartite vault of the Treasury of Canterbury Cathedral; the apse vault of the Chapter-house of Durham Cathedral, a larger and more advanced example, finished by Bishop Geoffrey Rufus, 1113-1140.

The last-named was partly destroyed by fire in 1796, but Carter's drawings have preserved an accurate record of it.

The author concluded his paper with some observations on the bearing of the English evidence on the general question discussed in the prefatory paper above referred to. Before the introduction of the rib, the Normans were already developing the articulation of their construction to an extent quite unknown in the Ile-de-France. The earliest ribbed vaults exhibit a system which is slightly less advanced than even the primitive vaults over the aisles of Saint-Etienne, Beauvais. The large number of ribbed vaults still remaining proves the existence of an active school, which had already accomplished much before the introduction of the pointed arch. It is remarkable that all these English vaults are quadripartite. No example is met with either of the sexpartite vault or of the intermediate form—quadripartite cut by a secondary transverse rib—both of which occur in the group of churches in and around Caen. Obviously the quadripartite vault was the earliest form, and varieties could not have been developed if the quadripartite vault had not previously been known. The evidence of the rib sections points in the same direction. As in their system, so also in the profiles of the rib mouldings; the earlier ribbed vaults in England come into line with the quadripartite vaults at Lessay, and represent an earlier stage than the vaults of the Caen group. These latter, whether sexpartite or of the intermediate form, show one easily-recognised type of rib section—a more refined and clearly later type not found in England until the octopartite vault over the Treasury at Canterbury Cathedral, probably erected soon after 1130. The approximate date of 1130 suggested for the earliest vaults of the Caen group seems probable enough, and the experiments which the builders of these vaults tried in setting out the curves of the ribs indicate that they were not adopting ready-made a system already worked out elsewhere. Apart from the English evidence, the authenticated dates of the earliest ribbed vaults prove that influence from the Ile-de-France is quite impossible, and show the complete independence of the Norman school up to, at any rate, the end of the first third of the twelfth century.

Mr. Phené Spiers, in proposing a vote of thanks, remarked that the principle that Mr. Bilson had set forth was that Norman vaulting in England had been of an independent character; that it was not necessarily copied or imitated from architectural work of Normandy. So far from the Normandy architecture being in advance of that of the rest of Europe in the early years of the eleventh century it was behind, compared with the rest of France. M. Ruprich-Robert, the chief authority on Normandy—and he seemed to be fairly reliable—was not himself very sanguine as to the early dates of Normandy work. He instanced and gave illustrations of some early churches, of which the earliest was the very singular Church of Querqueville, a triapsal church, the masonry of which consisted of very small stones, with zigzag work, and indicated a church before the tenth century. There was another small church, St. Saturnin, near St. Wandrille. From the character of the masonry he should think that church went back, at the earliest, to 1030. Then there was the Church of Bernay, which might have been built by Richard II., although he could not get exact references. He gathered that it was commenced after his death, and in a drawing given by Robert there was what he supposed to be the early part of the work, which was somewhat of the same type as the Basse Œuvre at Beauvais. The date was given as about 1030. The nature of the carving in the caps, and the character of the vault distinctly showed a later date, and he (the speaker) thought it was somewhere about 1050. It seemed to indicate the influence of an entirely different school, and he thought of a Burgundian origin, and in a few words he had had with Mr. Bilson, that gentleman suggested, quite independently, the same source. If the date 1050 was correct, then it showed that the Normans were not so far advanced at that period in their architectural development. It was not until one came to the work of William the Conqueror that one began to find the very rapid strides in which all the forms were articulated, all the orders being carried on separate columns—a very marked difference from what one found in the earlier parts of the century. There was a general impression that the Normans were warriors and conquerors and were no architects. We know that they took Sicily and employed the workmen of that island, and the work they produced was distinctly Saracenic. Coming to the question of vaulting wide spaces, an important paper was read before the Institute by Mr. Parker in 1863. After a careful examination of St. Stephen, Caen, Mr. Parker arrived at the conclusion that the whole of the vaulting of this great church was subsequent to the original structure. He was not quite sure of the date, but he thought it was not until 1150. That was from twenty to forty years later than the date given by Mr. Bilson for the vaults at Durham. One would be glad to know where Mr. Bilson found his examples of early vaults in France, except at Lessay.

Mr. Francis Bond seconded, and remarked upon the large amount of labour that had been spent in the preparation of the paper. If Mr. Bilson was right in his conclusions as to the chronology of the high vaults at Durham, then they must come to the conclusion that the architect of the choir vault, alleged to have been completed in 1104, deserved a higher pedestal than the builders of St. Denis, Vezelay, or any other church in Northern Europe; having been the very first to solve the great problem of western Mediæval architecture—how to construct a ribbed vault, divided into oblong compartments, over a high nave set between low aisles and lighted by clearstory windows. The problem had been attacked in an imperfect manner in St. Ambrogio, Milan; in such Cluniac churches as Paray-le-Monial, and at Vezelay; but had been rather evaded than solved. In Durham choir the solution was complete and perfect. But if so, how was it that no English architect availed himself of the Durham solution—with the exception of Lindisfarne, which was an appanage of Durham—till the closing years of the twelfth century? The weak point of Mr. Bilson's case was that it rested on a translation, which might be a mistranslation. The nave was stated to have been finished *ad sui usque testudinem* in the year 1128. If this meant "up to its vault," then the subsequent statement that the nave was completed by the monks in 1133 might be taken to mean that the vault of the nave was constructed between 1128 and 1133. But *testudo* is used of wooden roofs also, and not of stone vaults exclusively; which seems to invalidate the whole hypothesis.

Mr. St. John Hope said the technical character of Mr. Bilson's paper was rather out of his line, but it had a historical side that was very interesting. He would like to ask him whether he had considered the case of Norwich Cathedral, a great church of the Norman period, complete in all its parts, so far as planning went. It was true that the nave and transepts were not vaulted until the fifteenth century, but they did not know whether the presbytery had not been vaulted, because whatever roof it had was crushed in by the falling of the steeple in the fourteenth century and rebuilt. The architectural evidence made it perfectly clear that it was originally intended to vault the church from end to end. The aisles still retained the unribbed vaults, which had wall ribs built by Bishop Herbert between 1096 and 1119, and his successor, Everard, who resigned in 1145. But the division of the presbytery and nave into double bays showed that they were planned to be vaulted like Durham, and the section of the vaulting shafts seemed to prove that the vault was to be a ribbed one. This evidence was corroborated by the existence in the triforium of the responds for the half-arches which were to form the abutments, like those remaining above the nave aisles at Durham.

Mr. E. W. Hudson said he could not help thinking that they had in the cities of London and Westminster some examples of vaulting which illustrated very well its advancement towards the use of the diagonal rib. One he wished to draw attention to was that in the crypt of the Priory of St. John's, Clerkenwell, with bold diagonal ribs, which he should be inclined to put twenty-five years earlier than Rahere's ribless work at St. Bartholomew's of 1123. It was worth close inspection.

The vote of thanks having been heartily agreed to,

Mr. Bilson, in reply, remarked that Mr. Spiers quite misunderstood him if he drew the conclusion that he desired to make England independent of Normandy. When Mr. Bond stated that his (the speaker's) conclusions involved the supposition that a Durham architect was the first to solve the great problem of Gothic architecture—how to construct a stone vault over a three-aisled basilican church with clearstory—was he not considerably overstating his point? To mention only one example in Normandy, the problem, as Mr. Bond had put it, was solved with unribbed vaults in the choir of Saint Nicolas, Caen, which was completed c. 1083, ten years before Durham was commenced. He admitted that his views as to the dates of the high vaults at Durham were opposed to preconceived ideas, but careful study of the building and the evidence had convinced him that the conclusions he had put forward must in the main be accepted. The vaults were obviously of various dates, and it was quite impossible to attribute them, with the chapter-house vault and the high vaults of Lindisfarne, to Bishop Pudsey, as Mr. Bond had suggested in his recent book. They were entirely different in character, and palpably earlier than Pudsey's works, of which we had several notable examples. Mr. Hope's comparison of the arrangement of shafts in the Norwich nave with those in the Durham choir was new to him, and most interesting. He hoped that a result of directing attention to the subject would be the more careful investigation of other examples.

The Chairman announced that the next meeting will be held on April 10, when a paper, arranged by the Art Standing Committee, will be read on "The Application of Colour to Interior Ornament in Relief."

The meeting then terminated.

## THE ARCHITECTURAL ASSOCIATION:

### CERTAIN REFLECTIONS ON THE ENGLISH RENAISSANCE.

AN ordinary fortnightly meeting of the Architectural Association was held on Friday last week in the Meeting Room of the Royal Institute of British Architects, No. 9, Conduit-street, Regent-street, Mr. G. H. Fellowes Prynne, President, occupying the chair.

The minutes of the last meeting having been read and confirmed,

Mr. G. B. Carvill, jun. hon. sec., proposed a vote of thanks to Colonel Edis for conducting members over the Great Central Railway Hotel, Marylebone,* on the 11th inst., and to Mr. E. Wragge, the resident engineer, for conducting members over the Great Central Railway Station.

This having been agreed to, Mr. Carvill also announced that the next visit will take place on the 25th inst. to the Fire Testing Station of the British Fire Prevention Committee, at North Bank, Regent's Park, at 3 p.m.

The Chairman announced that the new Common Room would be opened on Monday, March 20, at 5 p.m. He added that he hoped that that would be the first step towards new premises for the Association. The new Common Room was a great improvement upon what they had previously, and he hoped that it would lead to further social intercourse between members.

Mr. Sim, senior hon. sec., said that the Chairman had presented a clock for use in the Common Room.

The Chairman having been thanked for his gift, it was announced that the following classes were about to commence:—On March 22, Quantity Surveying, Mr. H. J. Leaning, lecturer; and on April 12, Land Surveying, Professor H. Adams, lecturer.

Mr. Reginald T. Blomfield then read the following paper, entitled, "Certain Reflections on the English Renaissance":—

I have been invited to address you this evening on the subject of the English Renaissance; a subject which, historically treated, would be quite beyond the scope of a single lecture. I propose, therefore, to call your attention to certain aspects of this chapter in history, and to endeavour by this means to disentangle some clue to guide us through the perplexities of modern architecture.

Any conclusions which I may offer you, however I may express them, I offer with great diffidence. The present condition of architecture is so unsatisfactory, and so beset with difficulties, both in theory and in practice, that the most one can hope to attain to is some firm foothold on the facts of history—a foothold from which we can start again with at least a glimmering of an idea of the goal at which we aim. For in architecture, the oldest of the arts, we can only consider ourselves on safe ground so long as we keep in touch with what has actually been. You may recollect the words that Viollet-le-Duc used nearly forty years ago, "If Art has lost its way, let us not impel it the right or to the left under pretence of conducting it into the true path. . . . The study and love of art—not of one form of art—are the only means to which the wise will recur when art seems to decline." It is only by patient and critical study that we can hope to retrace our path to the highway of architecture.

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* See our last issue for a description of the building.

A comparison has been made between the Renaissance of the sixteenth and seventeenth centuries in England and that of the nineteenth (assuming, of course, that the latter exists). In order to test the worth of any such comparisons it is necessary to consider for an instant what that great Renaissance was of which our own sixteenth and early seventeenth century architecture was but a distant echo.

There are two points about this movement which differentiate it from any others in the history of art. The architecture of the ancient world was one long continuous progression from its dim beginnings in the East till its disappearance with the downfall of the Roman Empire. There was no break in the Hieratic Art of Egypt and Assyria. This, again, only developed into a freer and more perfect expression in the hands of the Greek, to be adopted by the Romans and wrought into the full expression of their own magnificent genius. Architecture might flourish in one place more than another, but throughout its long history there was no break in its continuity. Its historical development went straight ahead, with no throw-back to earlier art, till its vitality dwindled, and it died out with the decaying forces of Roman civilisation. There was a curious objectivity about the ancient world which prevented any intense reflection of its life and thought on its visible art. That art was settled for it. It was accepted as part of the established order of the State, and so it ran its course without regret and without ambition.

Now, the Renaissance was a conscious return to the art of the past, to the art, that is, of the Roman Empire. It was not a mere revival It was a deliberate and successful attempt to enter into the spirit of the great Roman architects. What makes it the more remarkable, and indeed without parallel in history, is that there already existed another method of architecture in full and complete maturity, for Gothic architecture had reached the very limit of technical skill—witness King's College Chapel alone. Yet men were prepared to turn their back on this traditional art, they were learning to welcome the new method, to repudiate their familiar language, as no longer adequate to their needs. For the first time we strike the characteristic note of modern art, its intense subjectivity, its deliberate consciousness. This momentous change in architecture did not result from the craftsman's instinctive habit of refining on the past, but from a change in the direction of intelligence, from a certain revulsion in ideas, not from the action and re-action of craftsmanship.

For changes in architecture come about in one of two ways. When a method (or style, to use a doubtful term) is fairly established as traditional, the actual manipulation of materials by workmen and the introduction of new materials, lead to the extension and modification of the style itself, as, for instance, the growth of Perpendicular Gothic out of Decorated. The development comes from within and proceeds more or less unconsciously.

But there is another source of change in architecture. In the course of ages the seeds of change are slowly at work, till there results some great upheaval of ideas which dislodges mankind from its mental anchorage. The old idioms seem meaningless, the familiar formula barren, and then comes that tentative effort after a new expression, which will gradually expand and consolidate into a permanent art. A new factor will have taken its place in human intelligence, which has to be recognised, however much our sympathies may lie with the art it has replaced. Such a change occurred at the Renaissance.

Since the fighting days of the dark ages, civilisation had steadily advanced. Men were rich, intelligent, learned, and the keener and more active minds had long since shown impatience of mediæval standards and idioms. There was but one direction in which this enterprise could find its natural outlet, and this was scholarship. Latin was the familiar language, scholars naturally turned to the country of its birth, and so from the study of the literature of Rome they came to the study of its art, and that art was adopted with enthusiasm as the only fit expression of Humanism, that new motive in thought and morals which the Renaissance won back for mankind. In this regard Alberti is typical of the Earlier Renaissance, a man of noble family and brilliant personal qualities; he can have found little to attract him in the professional side of architecture. His reward lay in his keen enjoyment of the art, in the occasion that it gave him for the exercise of his own fastidious scholarship. Thus, the peculiarity of the art of the Renaissance is that it was much more than a mere change of technique. It was the result and the expression of a new order of ideas which had been slowly growing for generations until it became articulate in art; something altogether greater than the small ephemeral fashions which are all that the nineteenth century has to show by way of a Renaissance.

Now, how did the English builders regard this far-reaching movement? I think it is quite plain that in the first instance, and, indeed, for several generations, they did not in the least understand it. In the first place, they themselves were engrained in the Gothic tradition, trained exclusively in its method of construction, and unfamiliar with any architecture but that of their own country, one might almost say of their own county. And, in the second place, they were introduced to this new art by amateurs. Merchants and scholars travelled in Italy and brought back astounding stories of its magnificent palaces. Soldiers and ambassadors, such as Lord Henry Marney, Lord Sandys of the Vyne, or Sir Richard Weston of Sutton Place, able and observant men, saw and appreciated the wide significance of the new movement abroad; and the king himself and Wolsey set the fashion by importing Italian artists for the decoration of their palaces. All the inspiration came from the court, and the wealthier upper classes; and the English builder, probably somewhat against his will, had to set to work to master the strange new fashion.

The only acquaintance with it, as amongst Englishmen, was possessed by amateurs, and the workmen at first had to follow their instructions with such help as they could get from the work actually executed by Italian craftsmen in this country, and it is to be borne in mind that, in actual fact, not many Italians were over here, and that the majority of them with the exception of such men as Torregiano, Rovezzano, and the Majani, were quite inferior men. The results were the most ridiculous blunders in grammar, for the Englishmen endeavoured to make some rudimentary acquaintance with the orders by way of ornament, but planned and constructed their houses according to their own tradition. As the sixteenth century went on, and the first Italian influence disappeared, their workmanship fell off, but their knowledge of the orders grew. Students, such as John Shute, with some architectural training, were sent out by noble patrons to make systematic study of Italian architecture; and the German and Flemish workmen who succeeded the Italians brought with them an abundance of pattern books; so that the business of decorating houses with fatuous ornament proceeded apace. I have mentioned elsewhere that singular instance at Shaw House, near Newbury, a building which I think characteristic of the state of mind of the Englishman in the time of Elizabeth. Here the owner had himself built a good house of brick and stone on the ordinary Elizabethan plan. but he then adorned it with inscriptions in Greek and Latin, I cannot help thinking, from their wording, with some little vanity in his own superior scholarship and knowledge of Italian art. Yet, in fact, the man was barely within the fringe of his subject. Correct details and Latin and Greek inscriptions were not of the essence of the Italian Renaissance, and it required a finer brain and closer training than was possessed by either amateur or builder of the sixteenth century to see the meaning of the great change that had taken place in Italian, and through Italian, in European, art.

Yet even in far-away England, the air, if one may say so, was instinct with its influence. The horizontality of Elizabethan architecture was itself a dim reflection of the great recovery of the Italian Renaissance; and the day was fast approaching when an Englishman of genius would see his way through all these troubled efforts, and grasp the principle, the basis of idea, that underlay this fundamental change in architecture.

Let us consider for a moment what that principle was.

In spite of the researches of such men as De Geymuller, our younger students are rather apt to consider the architecture of the Italian Renaissance as an affair of detail. Their attention is arrested by its exquisite carving, its arabesques and other details, which form such a tempting subject for illustration. Yet all this detail might go, and the value of the work of the great Italian architects remain untouched. For the basis of their work, and it is this which gives it permanent value, lay in construction: their real accomplishment lay, not in ornament, but in their avoidance of it, and in their past-mastership of proportion and of the intellectual problems of architecture. They studied to some purpose the remains of the stupendous architecture of Rome. Not only did they extend, to a point as yet undreamt of since the days of the Empire, the use of domes and simple vaulting, but they recovered the use of the lintel in combination with the arch. They threw off the unreasonable intricacy of detail with which later mediævalism had encumbered architecture, and brought back the art to its abstract basis in construction, that is to say, to the simplest and most direct methods of building, the lintel for crossing narrow spaces and the arch for wide ones (I speak, of course, without regard to steel and iron construction, at that time practically undreamt of), flat ceilings, domes, or the simplest forms of vaulting, for covering in their areas.

The great recovery that the Italians made from the remains of Roman architecture was this use of the lintel, and the arch in construction, and the use of domes and simple vaulting. A dull man might have recovered its detail, but only the genius of Brunelleschi or Peruzzi could have disentangled these constructional ideas, simple as they seem to us now, and showed how they could be applied easily and naturally to every case, as an elastic method of construction, not merely as an exercise in scholastic canons of design. Given, then, a certain method of construction, in good architecture, the design in all its multifarious parts must follow it. To the arch the Renaissance added the lintel; and it is in the play upon these abstract motives that the real significance of Renaissance architecture lies.

Now, the first Englishman who really grasped this fact was Inigo Jones; and it is for this reason that his work is so profoundly interesting to us, and so completely differentiated from the work of his predecessors. At length there had appeared a man who understood architecture as the Italians understood it; who brushed on one side all the detail and ornament which had seemed to the Elizabethan and Jacobean designers the whole essence of the art, and had gone straight for the heart of the matter; realising that, after all, architecture is simple construction, ennobled and idealised by the working upon it of a powerful brain and highly-trained imagination; and that its strength lies in its own abstract qualities, fine proportion, bold distribution of masses, extreme reticence and simplicity of ornament. He saw (and few had seen it in England since the days of early Gothic) that architecture is not ornament, that ornament, indeed, is only one, perhaps a subordinate one, of the many weapons which architecture has in her armoury. For the first time after a hundred years of blind experiment, this country possessed a real architecture, a complete and flexible language. Instead of a set of quotations from a foreign tongue, it possessed at length an organic style.

I need not dwell at any length on the brilliant ability with which Inigo Jones used this style. His exact and fastidious refinement is familiar to all students.

Perhaps we are not all so familiar with the masterful freedom of his designs. It has been customary to insist on the greater versatility of Wren as compared with Inigo Jones, and a writer in the *Times* once attempted to make some absurd distinction between Jones and Wren, treating Jones as an Italian, and Wren as the first English architect proper. The writer in the *Times* had the usual knowledge of amateur critics; but those who have studied the work of Inigo Jones and Wren know, in the first place, that Wren could never have started where he did if Inigo Jones had not preceded him; and, in the second place, that it is a complete mistake to identify the work of Jones with that pedantic version of Palladianism which the eighteenth-century architects set up as his particular manner. That Jones did adopt Palladio's architecture as the last word of the Italian Renaissance is, of course, undeniable; the point to be realised is that, whatever his imitators may have done, Inigo Jones himself worked with all the freedom of genius, a freedom founded on the most intimate mastery of the actual technique of his art. In this regard I think the distinction between Jones and Wren has been very much exaggerated, and Wren followed the lines laid down by Jones far more closely than has been generally supposed. The decadence began with the eighteenth century, with the men who succeeded Wren. Where Wren designed, these men copied, and they copied the least attractive features of Inigo Jones and Palladio. The pedantic conception of this man of genius which exists in the amateur mind is really derived from Kent's publications and eighteenth century copies of his work.

I do not propose to follow further the course of English Renaissance architecture. The eighteenth century architects allowed their art to be collared—if I may be permitted the phrase—first by amateurs and afterwards by men of letters. The strength of the old tradition kept them within some reasonable limit—at least, as late as the early part of this century. But that romantic element of literature, which had made its first incursion in the days of Horace Walpole, has encroached on architecture with disastrous rapidity and power in this century; so much so that, a generation back, it almost seemed as if the last trace of our fine traditional Classic would disappear under the preachments of men with no exact knowledge of architecture, who approached the subject from a standpoint entirely out of relation to the art itself. It would have been a curious result if that great development of architecture which owed its first origin to scholarship should have suffered its final extinction at the hands of the literary amateur.

To put together the results of this very general survey, I would suggest the following conclusions as the teaching of history: (1) that the Italian Renaissance itself was the necessary result of far-reaching causes; (2) that our English Renaissance in its kind and degree was a part of this movement, and is not therefore to be dismissed as a mere change of expression in architecture, but must be accepted as part of an inevitable development, precluding a return to the motives and ideas that lay at the back of mediæval art; (3) that in architecture the real work of the great Italian masters was to rediscover, almost to recreate, new methods of construction and proportion; (4) that the fact was not realised by the Elizabethan builders, who could not see the wood for the trees, and that actually it took about 100 years of experiment to produce the man who could see beyond this detail, and establish order and logic in the tangled maze of English architecture; (5) lastly, and as a corollary to this, that the mere fact of his having done so, and the circumstances of the case, have brought about a permanent change in the work and position of the modern architect, to which I will call your attention later.

Now, how do we stand at this moment in regard to the theory of architecture? I do not mean abstract theory as to its philosophical basis, but our own attitude to the art. What are the sources to which we look for inspiration? What are the ideals at which we aim in actual design? I fear that the answer to this question can hardly be satisfactory.

We are, here at the end of the nineteenth century, in a condition of greater uncertainty, and more complete absence of conviction than, I should say, at any previous period of history. You have merely to look back upon the last 100 years. We began the century with the remains of the classical tradition, but Adam had already "improved" it, as he thought: Stuart and Revett had done their work, and the Greek fashion was well in the ascendant. Then came Pugin, ardent, fanatical, full of energy and narrow ideas, a very iconoclast in regard to the old tradition; and after him Ruskin, who thought he had found the key to architecture in his personal preferences, and the morality of Exeter Hall. Then came the rush for Gothic, Early English, Early French, Early Italian, with a vehemence that threatened to sweep the board clear of everything but a heterogeneous collection of details from every country. Every man has been for himself, and meantime architecture has gone to the wall.

The serious study of architecture, not only as an art, but also as an expression of the intelligence which is not arbitrary, but determined by certain inevitable causes, has almost dropped out of sight, and I suppose that, in practice, the very worst work that has ever been done in England has been done in the last fifty years. I need hardly add that a few men of powerful and original mind have done admirable work, but the average of architecture has been left untouched, and it is by the average level that the state of architecture has to be gauged. I do not think that we can look back with pride on the artistic attainments of the nineteenth century, judged from any standpoint, and it appears likely that we shall enter on the twentieth century without having hit upon any certain way through this quagmire of modern architecture.

It is here that the study of the past must help us. I have elsewhere endeavoured to trace the stages through which the function of the modern architect has developed. The days of the craftsman working independently, yet in unconscious unison, ceased, when the choice of styles arose. He tasted of the tree of knowledge, and henceforth to his knowledge of his craft had to be added the responsibility of conscious judgment, if he was to undertake, I will not say architecture, as it might be thought to beg the question, but building of any sort. Because, in any building nowadays, a man has to use one method of expression in preference to another, and implicitly in this there is raised the whole question of selection. Now, this responsibility proved too much for the simple craftsman, as you may see from the blunders in design which abound in more ambitious Jacobean works; and it was only a question of time how soon there should arise the man who had sufficient training and intellectual capacity to enable him to discriminate between good and bad, to enable him to grasp the logical coherence in expression which is an essential element of architecture. As soon as such a man arose, the matter was settled for good or bad. The architect ceased to be a craftsman in the technical sense, and what might be lost in craftsmanship was assuredly gained in architecture. I think, therefore, that this critical function of an architect, this detachment from the actual details of craftsmanship, which chafes the enthusiasm of some of by no means the least gifted of our younger men, is of the very essence of his work. The more of craftsmanship he has the better; but a man may be a very good architect without being a very good craftsman—I mean a good craftsman in the sense of being able to carve his own woodwork and model his own ceilings.

*His* craftsmanship must be of a wider range. It must embrace full knowledge of the past; it it must rest on a constant habit of analysis of the best methods of expression in building, and a keenly critical insight into the abstract qualities of architecture, mass, balance, rhythm, and proportion. An architect, to my mind, should be like a fastidious man of letters, he should not be content to express his purpose anyhow, he should be anxious to find the exact inevitable phrase. It is in this sense, I think, that an architect should be an artist of the highest order, and this is the position that has, in fact, been forced upon him since the days of the Renaissance. Perhaps this reflection may be some consolation to those who would reluctantly abandon the idea that in craftsmanship lies the future of architecture.

Nor, again, is this ideal less exacting than the other. To attain to this faculty of reasonable judgment it is clear that a man must possess knowledge of what has actually been done in architecture—the more the better, provided he is not over-burdened by it; and this knowledge is not mere student's learning, but means a practical knowledge of buildings gained by careful analysis and measurements and by exact observations of materials and local circumstance. A lifetime of constant study is not too much for such a task.

I would suggest to you, therefore, to those of you, that is, who are now beginning your career, that there is no short cut to architecture through pattern books, or even through the pleasant paths of detail craftsmanship; but that, nowadays at any rate, you must have knowledge, and that now, as always in the history of architecture, you must seek that knowledge not only in books, but also in the builder's yard and on the scaffolding of buildings.

I have still one more point to bring before you. Perhaps in this paper I may seem to you to have insisted too much on knowledge, too little on imagination, and the criticism has been made on some remarks of mine elsewhere. In the first place, I would point out that we seem to be face to face with some dangerous developments of originality, or rather eccentricity. To judge by the majority of our buildings, it appears to be thought that "knowledge hampers imagination," as it was put by the eminent Capability Brown. Certainly the results are a very nightmare of architecture. Now there is only one antidote to this sort of originality, and it is knowledge. I fancy that some of the more accomplished of our original designers would be rather surprised to find that the flattest of their ogees, the boldest of their amazing proportions have been anticipated, not only in Italy, but even in England. Even a cursory knowledge of the work of such a man as Baldassare Peruzzi would show them that profound knowledge is not incompatible with the most complete freedom in design; and further, that the most daring imagination can co-exist with the most trivial detail. You may recollect the indignation of the old Sieur de Chambray at the pretensions of the men of his time, who thought that by turning a capital upside down, or something of the sort, they had invented a new architecture, "as if the Pantheon" (I quote the Sieur de Chambray) "that same stupendous and incomparable structure, were not the invention of the architect who built it, because he has vary'd nothing from the Corinthian ordnance, of which it is entirely composed."

In the second place, and this is the gist of all that I have said, this knowledge is not an end, but a means. For an architect does not study in order to reproduce what other men have said once and for all, but to perfect his own mastery of expression; and just as a poet does not invent a jargon of his own or write in the language of Chaucer, but takes the current language of his time, and compels it to his purpose, so an architect would not waste his time in a vain ambition of a new style, or a futile copy of an old one, but would master the best in all the architecture of his country, and find thereby an ample language for his own individuality. It is not styles, therefore, that we are concerned with, but style, that indefinite quality of all good architecture, whether Greek or Roman, Gothic or Renaissance; indefinable, and ever varying, because it varies with the individuality of the artist, because it depends on the faculty that the man possesses of giving the simplest and yet the most complete expression of all his purpose.

It is here that knowledge must come in, as the groundwork of good architecture. We want to know, as part of our training in our art, how other men in the past have solved the difficulties that confront us now; and it is only by this long laborious study that we can learn to discriminate between good and bad, and to free our own method of expression from what is trivial and irrelevant. It is this way, I think, and not along the pleasant paths of the amateur, that there lies the best chance of the architecture of the future.

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The Chairman, in opening the discussion, said they had heard an able and interesting paper, from a gentleman who had made the subject specially his own. Many of them knew Mr. Blomfield's book on the Renaissance as a very useful and interesting one. The keynote of the address that evening seemed to be that a true, allround knowledge of architecture should be at the bottom of all their studies, as against the idea of mere style architecture, or mere craftsmanship that some gentlemen wanted architects to study almost alone. The paper ought to be discussed freely, and there were many points in it which would no doubt be taken up.

Mr. Leonard Stokes, in proposing a vote of thanks to Mr. Blomfield, said that he agreed with "all Mr. Blomfield had said, especially—most things." As the lecturer had said, without knowledge they would do nothing worth doing, and the men who seemed to think that without knowledge they would be original were a curse to our architectural generation; they floundered about in their work, and did all sorts of things that were very novel, but generally very ugly. If these men knew a little more they would do less, and it would be a great deal better. Mr. Blomfield had not altogether condemned the idea of learning the crafts, but he had pointed out that craftsmanship was not everything. The architect's first craft is his own craft, and there were certain subsidiary crafts which were very useful to an architect if he had time to master them. An architect, however, could get a general knowledge of these crafts if there was anything in him without being a craftsman pure and simple, and he really ought to get to know more about joinery and ironmongery, for instance, than even the joiner and smith could, for he was able to grasp the principle of their work, as Inigo Jones did, and to observe and reflect; whereas the joiner and smith frequently did things in a mechanical and onesided way. An architect ought not to confine himself simply to merely directing matters; he should have, as Mr. Blomfield said, a much wider scope. As to Mr. Blomfield's remarks to the effect that architecture was not merely ornament, they might think that was obvious; but it was not. So many architects—outside that room—seemed to think that if they knew a little about detail they need not bother themselves about the general principles of a design. They sketched little bits of detail here and there, and waited for an opportunity to ram them in somewhere; but if they could but grasp a few principles, as Mr. Blomfield had said, they would save themselves many mistakes. It was the same with architecture generally. If they were to write out Mr. Blomfield's paragraph about ornament *v.* architecture and hang it in their bedrooms they would not forget it, and then they would not be so likely to use ornament as architecture. He had made these remarks as a mere Goth, who did an occasional Renaissance building, but he had been greatly interested in, and instructed by, Mr. Blomfield's very able paper.

Mr. L. A. Shuffrey having seconded the vote of thanks,

Mr. A. T. Bolton said that their thanks were due to Mr. Blomfield not only for his interesting paper, but also for the drawings he had exhibited. With all their picturesqueness they had an architectural character showing the points of the construction. The most valuable part of the paper to present-day students was that dealing with craftsmanship, and it would be especially fortunate if it could reach some of those who devoting their whole energies to architecture in the highest sense of the term, were yet, in the opinion of a good many architects, in danger of getting on to the wrong track. There was rather a good illustration of the lecturer's remarks in the case of Inigo Jones' church, St. Paul's, Covent Garden. He felt that the more that building was seen the more one was impressed by the wonderful power of the design. That could not be due to craftsmanship, because, unfortunately, the building had been burnt and rebuilt so often that little or none of Inigo Jones' actual work in brick and mortar was left; but for all that the power of the design and the interest of the building remained—made it stand out from other buildings, and made it worth studying. Students of architecture could be too much given to pessimism at the present time; they spoke of "this age of machinery," and contrasted it with the days when, as they thought, every mason loved the particular stone he worked upon, and marked it with his own individuality. That was not exactly the case, though even Viollet-le-Duc, in his "Habitations" imagined that the Greek workman knew his own capital in a completed building, and thus was led to do excellent workmanship. It was rather a revelation in that connexion to know that the buildings on the Acropolis at Athens were polished down by slave labour, as could be seen on the Propylæa, for instance, in the parts left incomplete, a one-sixteenth remaining to be rubbed off. Facts such as these went a long way to diminish the importance of the craftsmanship idea. Mr. Aston Webb had pointed out the same thing in regard to the Banqueting Hall, Whitehall. That unrivalled piece of Renaissance architecture had been very much pulled about, particularly by Soane, and it was doubtful if very much of the surface of the building, as now existing, was of Jones' work at all; but, for all that, it remained one of the finest designs we have. It did not follow that an age of machinery was altogether fatal to architectural design, though naturally we all wanted individual work. If there were the right idea in a building it made it architecture, and machinery would have to be directed towards producing that idea. In the design of a machine-made door, for instance, there could be an idea at the back of the thing, some arrangement of the panels, some relation of style and panel, &c., that constituted the design—just as there was an idea in the Pantheon, which, though there were critics who said it was nothing but a huge cockpit, was, in the opinion of architects, worth going to Rome to see. In that case a circular-domed room of its own width in height, and provided with a single source of light, produces a wonderful effect, the surface treatment of the interior is a secondary consideration. It would seem that even stock sizes were not fatal to architecture, because it is asserted that in Byzantine times the quarries supplied stock columns and these form so important a feature in their interiors that they must have influenced the general design. Mr. Blomfield had not referred to one defect of the Anglo-Classic school, which had not been very successful in developing the ordinary common house—either the small country house or the town villa; before, therefore, we completely condemn the architecture at the very end of the eighteenth together with that of the nineteenth century, credit must be given for the wonderful development at the present time of the smaller houses. The Anglo-Classic school could produce a fine thing in the way of a large house, but it was not much help in a small one. All "Vitruvius Britannicus," from the first volume to the seventh, would be found to throw very little light on that subject. We could now afford to smile at the porticoed country house or the rustic Italian, Gothic, Elizabethan, Palladian, or other villa which had been the outcome of their early efforts, because we are looking back on the subject through the eyes of Mr. Nesfield and Mr. Norman Shaw, who had turned our attention to a class of work which had hardly been attempted since Wren's time. Something of the same kind had happened in church architecture. Pugin was not wholly wrong. Admirable as some of the Classic churches of Wren's school were, they would not, it would be agreed, fit in with the ideas of the present day, and those ideas, held by the clergy and by the people who used the churches, must in reasonable architecture be taken into consideration. Their ideals were to some extent historical and were illustrated in past architecture, some of which was of so glorious a character as to have finally entered into the consciousness of the nation, moulding their ideas and sentiments as to the religious characteristics of a building. This was a point to be carefully taken into consideration. He did not know if, supposing they reverted to the work of the Anglo-Classic school, they would get far in church architecture. As a final point, he did not think that the progressive character of the architecture of the Renaissance had ever been sufficiently dwelt upon. People were inclined to say, "Architecture fell into a state of decadence," but he did not think that was really true. If they were to discard the abominable detail of the last periods, rococco, barocco, or whatever they liked to call them, they would find that the general idea of some of the buildings was exceedingly good, and most of them would be found interesting. Such a continuous progress could be traced, as in the attempted development of the circular and oval planning of interiors. In Italian churches, to take another line of thought, the dome had been largely employed; even the village church had a dome. That was a style of architecture which had not been carried out in England. We had not taken kindly to the dome, though we have two or three splendid examples of its use. In Italy, however, they would see the whole development worked out whether in use of the dome by itself, or in the combination of the dome with the traditional aisle and nave plan; or, again, in the form best described as the 5-dome plan.

Mr. A. H. Hart said he was glad that Mr. Blomfield had specially referred to the study of old work. None of them would regret, he felt sure, time given to the study of old work, and he was certain that that study would not hamper them in their designs. The architect most familiar with old work was most likely to be original in his own. Old work had to be studied in the right way, of course, and as to that there were a great many different views. It was not sufficient to study little bits; the whole work must be studied, and one must try and grasp the principles on which the old masters worked.

Mr. G. J. T. Reavell said that the paper was one of the few he had heard in that room which contained original thought. As to general principles, he felt he had got a few from Mr. Blomfield. It was very hard to get hold of general principles, and most students had to find them out for themselves; an architectural teaching did not appear to include that.

Mr. C. H. Brodie said it was interesting to reflect that while such a paper was being read at a more or less important meeting in the Metropolis, there were several curious works going on in London. First, take the case of St. Paul's, which was acknowledged to be a masterpiece of architecture as architecture, and which a set of craftsmen were practically spoiling. What he wanted to know was, by what right did any portion of the British people call in an artist, however eminent (and no one wished to say a word against any man of genius as such), to spoil a magnificent work of architecture? Then take the case of Waterloo Bridge—a beautiful bridge which was under the control of a certain authority. On that bridge used to be a fine set of lamp standards, which were eminently suitable in the position in which they were placed. Some of them had been removed and no doubt put in a lumber-yard, and in their place were now to be seen little sticks of iron which were not at all suitable. Then there was another bridge, which was shortly to be built. A bridge crossing such a river as the Thames, in such a city as London, should, above and beyond most things, be a work of architecture—not only a means of crossing from one side to another. But where was the architect of the proposed bridge, and what was his name? It seemed extraordinary that the design of such a work should be left entirely to an engineer, and it was remarkable that a body of architects and artists, most of whom knew what they were talking about, should protest in vain against the work being left entirely in the hands of a craftsman—for that was what, after all, an engineer was. In this case the engineer had to design a bridge to safely carry certain loads; he went beyond that, and had put on certain ornament which was mis-called architecture. He (the speaker) wished that some of Mr. Blomfield's principles could be driven into those people who have the control of public buildings, &c.

Mr. H. P. G. Maule said that the people who wanted general architectural principles driven into them were the public, who, because they paid, thought they should have just what they wanted. The general public who went to St. Paul's admired what was being done and thought it charming, and that section of the public who knew better had no power at all.

Mr. Matt Garbutt said he had been rather amused with the talk about principles. He had never seen much in the way of principles set forth clearly; and, perhaps, somebody might publish a sixpenny book showing what those general principles are. As to the work at St. Paul's, he was afraid that there were very few architects who, had they been invited, would have been able to carry out the work, for very few architects had had sufficient training to make good colourists of them. People had a not altogether groundless idea that the architect confined himself, almost, to designs in black and white and, consequently, they went to some one who had had a training in colour. As to the unsatisfactory design for Vauxhall Bridge, he had not yet heard that the architects had sent in a sketch of a bridge which would be possible. It was always easy to criticise. The engineer of the bridge had designed what would be a satisfactory bridge in its structural aspect. Would it not be well for architects to design a bridge of their own and put it in competition with the design of the engineer?

The Chairman, in putting the vote of thanks to the meeting, said that he felt there would have been discussion on the hopeless state in which Mr. Blomfield seemed to think the architecture of the present day is. He was hoping to hear some one say that there was a glimmer of hope somewhere, but no one had done so. And yet, one had a hope that amidst all the architectural chaos of to-day, in an enlightened period when there was so much thought and energy in the nation similar in some respects to the great energy of mind shown in the fourteenth, fifteenth, and early sixteenth centuries, order would result. When Brunelleschi arose and brought order out of chaos, he achieved that order by going back to the fountain head—the pure Greek and Roman work—and made that the basis—with great success, judging from the wonderful churches he designed. To-day one might hope for good results by going back to the same source and by building upon the experience of past ages, even on the much-belied Gothic. Surely originality was to be got in the end by the study of the best works of the past. As to St. Paul's, he hoped that the work of destruction now going on would be put an end to. It was quite true that the bulk of the public admired what was being done in the Cathedral, but recently he heard much unanimity of educated opinion as to the waste —not of money alone, but of good material misused because much of the work could not be seen, and much that could be seen was destructive to the main architectural effect. When the artist could tell any one that the object of decorating a corbel "is to suppress those hideous things as much as possible,"* there could be but little sympathy with the architecture on the part of that artist. There were one or two sentences in Mr. Blomfield's paper which ought to be specially considered. One that particularly struck him was: "Nowadays, at any rate, you must have knowledge, and that now, as always in the history of architecture, you must seek that knowledge not only in books, but also in the builder's yard and on the scaffolding of buildings." Again: "It is not styles that we are concerned with, but style," &c. Those two sentences seemed to him to be the keynote of the whole matter.

The vote of thanks having been put to the meeting and carried unanimously,

Mr. Blomfield, in reply, said that Mr. Stokes had put in a nut-shell what he (the speaker) had said, viz.: that the architect's craft is his own craft. It was very well for an architect to be able to carve a frieze, &c., but that was not the essence of his business. The essence of the business was that an architect's mind should be at the back of everything, and that he should bring together and control all the subsidiary parts of the whole. His was the master mind of the whole matter; and it was the work of a lifetime to become master of the crafts in this way—master of the relation of the crafts to each other. Mr. Stokes had referred to himself as a Gothic architect, but he had also done some very good Renaissance work. What Mr. Brodie had said as to the deplorable state of public opinion on architectural matters was perfectly true, but he (the speaker) did not know how to deal with the British public. What we had to do was to deal with ourselves and try and get some reasonable conception of a standard of good work and some kind of uniformity in our ideal. He and they could mention a dozen men whose work was eminently interesting, and whose designs were on very different lines; and yet at bottom there was the same intention. Each of those men tried to get the same quality, though they expressed themselves in different ways. That was where the question of principle came in. He quite agreed with Mr. Garbutt as to principles. It was rubbish to talk about principles in the abstract. What he meant by principles was, for instance, that when one had to design a house, he should not set to work at one little corner of it, and endeavour to evade the difficulty by recourse to his sketch-book; but should face the whole problem squarely—should try to get some idea of the general drift of the thing, and should set to work with a general conception of the whole. What one meant by working on a principle was beginning with a general intellectual grasp of what one had to do. He did not mean that there was a set of principles. Any given problem of design had its own principle in it, and that was what had to be found out. With most that Mr. Bolton had said, in his interesting remarks, he agreed. Mr. Bolton misunderstood him a little, however, as to Anglo-Classic work. A great many things which looked poor in the "Vitruvius Britannicus" were, when one came to see them, dignified and masculine architecture. But, apart from that, there was a great deal of fine eighteenth-century work which was quite small in scale, such as architects have to do to-day—work of from 500*l*. to 5,000*l*. There were Groombridge and the house at Chichester, and a great number of others all over England. Those were the models to master—not to reproduce them, but to get them into one's inner consciousness; then we should design good buildings. As to the churches, that raised a large question. His impression was that a really satisfactory modern church ought to be designed on very much larger lines than the eighteenth-century churches. Some of them were exceedingly fine, but he did not think they would be at all adequate to modern sentiment and thought. He quite agreed with what Mr. Bolton had said as to the proportion of the Italian churches. The same thought had occurred to him when he was in Rome studying some late sixteenth and seventeenth century churches. They were full of trumpery ornaments—meretricious stuff—but divested of that the proportion was fine and the design of the construction exceedingly able. As Mr. Bolton had said, there was a great deal to be learnt in what it had been the fashion to call "decadent" architecture. These buildings were not decadent; on the contrary, they were very vigorous. Some were more vulgar than others, but it was begging the question to label them decadent. We had in all these things to get rid of a lot of romanticism and false sentiment, and consider architecture on its merits. What Mr. Bolton had said about St. Paul's, Covent Garden, and the buildings on the Acropolis, showed that a very fine effect could be got in a building quite apart from conditions of craftsmanship, and proved that architecture is an intellectual affair—that was to say, that it is imagination and originality directed by the intellect. If they got that into their minds, they would realise what a large and serious problem they had undertaken in becoming architects. They should strive to find the intellectual solution of the problems of architecture, and if their solution was satisfactory, it would stand any amount of bad decoration, injuries wrought by time, &c. As to originality, a man either had it or not; he could not make his mind original any more than he could create himself an imagination; but what he could do was to train himself in knowledge between good and bad, and educate himself to use his mind—in a word, to think. His object that evening had been to put before them this essential function of an architect; and he thought they would be going on the wrong line if they hoped to arrive at architecture through simple craftsmanship. The only way was to study and observe incessantly, and always with the idea of mastering for themselves a method of expression of their own.

The Chairman announced that the next meeting will be held on April 14, when Mr. F. W. Pomeroy will give a lecture on "Modelling as Applied to Architecture," with practical demonstrations.

He also announced that the Soirée will be held on April 21 at St. George's Hall, Langham-place. A ladies' night will be given on April 19. A play has been specially written for the occasion by Messrs. G. B. Carvill and Gervase Bailey; music by Mr. Leonard Butler.

The meeting then terminated.

## THE SURVEYORS' INSTITUTION.

An ordinary fortnightly meeting of this Institution was held on Monday, in the temporary premises of the Institution, Savoy-street, Victoria Embankment, Mr. Robert Vigers, President, in the chair.

The minutes of the last meeting having been read and confirmed, Colonel G. W. Raikes read a paper entitled "Valuation and Rating in respect of Tithe Rent-charge." As to the origin of tithes, he said that tithes or tenths existed in England so long ago as the times of the Anglo-Saxons, Edgar being the first king to enforce their payment. "They were devoted to the maintenance of the church's fabric, the use of the bishop and of the incumbent, and also to some extent to the feeding of the poor and the entertainment of strangers. The monasteries and other spiritual corporations acquired many advowsons from patrons of churches, and with the licence of the king and the consent of the bishop 'appropriated' the benefices to themselves, and applied the endowments to their own purposes. They undertook the repair of the church's fabric, dispensed charity, and deputed one of their own body to perform the services of the Church in the parishes of which they had become rectors or parsons. This deputy was called a vicarius or vicar; hence the distinction between rectorial or vicarial tithes." The abbots or heads of these monastic houses are said to have frequently lived in princely magnificence, while the vicars upon whom the duties of the Church devolved only received a share of the tithe and a portion of the glebe, denoting that a custom existed in these early times, which is still pretty general, and by no means confined to matters ecclesiastical. The other clauses under this section explain how when Henry VIII. dissolved these monastic or religious houses the "appropriations" were vested in the Crown, and afterwards granted partly to religious foundations and partly to lay rectors or "impropriators."

The author then dealt with the statutory liability of the incumbent to be assessed for poor-rate; the assessment of tithes from 1601 to 1840; the object of the Tithe Act, 1836, and its effect upon incumbents; the effect of the Parochial Assessments Act, 1836, upon incumbents; the practice and method of assessing tithe rent-charge from 1840 to 1858; the Poor Rate Exemption Act; the practice and method of assessing tithe rent-charge after 1858; imposition of new rates since the Tithe Act, 1836; effect of Agricultural Rates Act on tithe-owners; the claims put forward on behalf of incumbents; and the pressure of the present law upon incumbents. In speaking of the claims put forward on behalf of incumbents, the author said that "the tithe-owners do not base their claims for relief in rating on the ground that their commuted tithe has fallen over 30 per cent. in value. They steer clear of any questions of Free Trade and Protection, and doubtless they are most wise to do so. They rely on the palpable injustice of their present assessments entirely on the following grounds:—1. On the practice, which gradually became general, of rating their tithes instead of themselves as inhabitants, as distinctly laid down by the Act 43 of Elizabeth. 2. Because the Tithe Commutation Act, 1836, having fixed the commuted tithe at its gross annual value, it was immediately assessed under the Parochial Assessment Act at very nearly its gross value instead of at one-half or two-thirds as formerly, whereas land was assessed on the rent, which only represented two-thirds or half its value. 3. By the Poor Rate Exemption Act, 1840, which exempts all profits on trade, to the deadly injustice of ratepayers on all descriptions of real property. 4. By the various decisions of the courts disallowing deductions for—(i.) Repairs to chancel; (ii.) Curate's stipends; (iii.) District churches; and (iv.) Personal services or tenants' profits.' 5. By the imposition of new rates. 6. By the Agricultural Rates Act, 1896, since the passing of which, tithe rent-charge (though much reduced in value, but still the parson's share of the land) is left out of the benefit of the Act to bear the full pressure of ever-increasing rates, together with parks, woodlands, and pleasure grounds and gardens attached to houses or cottages."

In the discussion which followed, the following gentlemen took part:—Messrs. E. P. Squarey, A. Buck, J. H. Sabin, H. M. Grellier, E. W. Peterson, and the Rev. Lamplugh.

A vote of thanks having been passed to Colonel Raikes, the meeting terminated.

## INSTITUTE OF SANITARY ENGINEERS

The annual dinner of the Institute of Sanitary Engineers was held on Thursday evening last week, at the Holborn Restaurant. Mr. R. Reynolds Rowe, the President, was in the chair, and among those present were Dr. Wilkinson, Messrs. J. W. Townsend, W. G. Wells, H. M. Dove, and S. Minty (vice-Presidents); Mr. Jas. Farley (Chairman of Council); and J. Kemsley (Secretary).

Mr. G. Reveirs proposed "The Institute of Sanitary Engineers." He congratulated the members on the success to which the society had attained. They had got rid of their difficulties and were now prospering. There were over 2,000 registered master plumbers and each one ought to avail himself of the advantages of a society like this.

Mr. Reynolds Rowe, in responding, suggested that for the present the examinations should not be too stiff, so as to debar those who were not fully prepared, but they should be progressive. Another suggestion he desired to make was that ladies should be present at the future dinners.

Dr. Wilkinson, in proposing "The Chairman and Members of the Council," said that sanitation was the newest science, but it embraced almost every science under the sun, and in discussions at the meetings of the society they could all learn something.

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* See the *Builder* for February 25, page 196.

Mr. Jas. Farley, in reply, said the present Council had no sympathy whatever with the actions of the promoters. They intended to have all that was good and to take out all that was bad. Their membership was daily increasing. They now numbered 700 members, and their rate of progress was very satisfactory. One of the reforms they proposed would be that the certificate of membership should not solely depend upon subscriptions. They were determined that their members should be men of ability and honesty, and they could not arrive at this result merely by examination, because it frequently happened that those who possessed the most book knowledge were commercial failures. They were also determined that members should do good and honest work.

The dinner was preceded by the ordinary sessional meeting, when Dr. Wilkinson, the Medical Officer of Health for Oldham, read a paper on "The Sewage Treatment at Oldham." He minutely described the plan of the sewage works, and indicated that the method of the sewage treatment was, first, by sedimentation or precipitation in the tanks, and secondly, by the agency of acrobic bacteria in the filters. He was convinced that the key to the proper management of bacteria beds, where there was a large amount of sewage, was a regular and systematic chemical analysis. Long before any indication could be perceived by smell or appearance that the beds are not doing their work properly, a chemical analysis would give the sign that a few days' rest was required, at the expiration of which the bed would return to its normal condition. The problem, and the very expensive problem, of the most efficient, and at the same time most economical, method of the treatment of the sewage of our large and still increasing manufacturing towns was not yet solved. They could consider as proved that the purification of the sewage could be encompassed by chaining the bacilli and keeping them judiciously employed, but whether in septic tanks, in land, or filter-beds, or by some new method not yet discovered, was a matter which only experience, both in failure and success, could teach. Nature has yielded some of her secrets to man, but she has many more undiscovered, one of which was the resolution of the foul and filthy effluent from the congregated dwellings of man into food for man, and flowers which beautify our surroundings.

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## DRAWINGS FOR THE ROYAL ACADEMY.

As usual, we shall be glad to forward to the Royal Academy any drawings sent to the office of this journal in time to be photographed for publication (if considered suitable) before sending them in.

The last day for receiving drawings at the Royal Academy is Monday, March 27; and the latest time at which we can receive any to be delivered from this office is *11 a.m. on Saturday the 25th*. Any drawings sent here later than that we cannot take charge of.

The following are the requirements of the Royal Academy in regard to drawings:—

1. That every drawing should be in a gilt frame.

2. That there should be a label affixed to the back of it giving the title of the drawing and the artist's name and address, and the distinguishing number of the drawing (if more than one is sent).

3. That a similar label should be affixed to the frame by a string, so as to hang over in front.

4. That the drawing be accompanied by a letter to the secretary of the Royal Academy containing the same information as on the labels.

We can take charge of no drawings which do not comply with these regulations. *We cannot provide or affix labels where they have been omitted by the sender of the drawing.*

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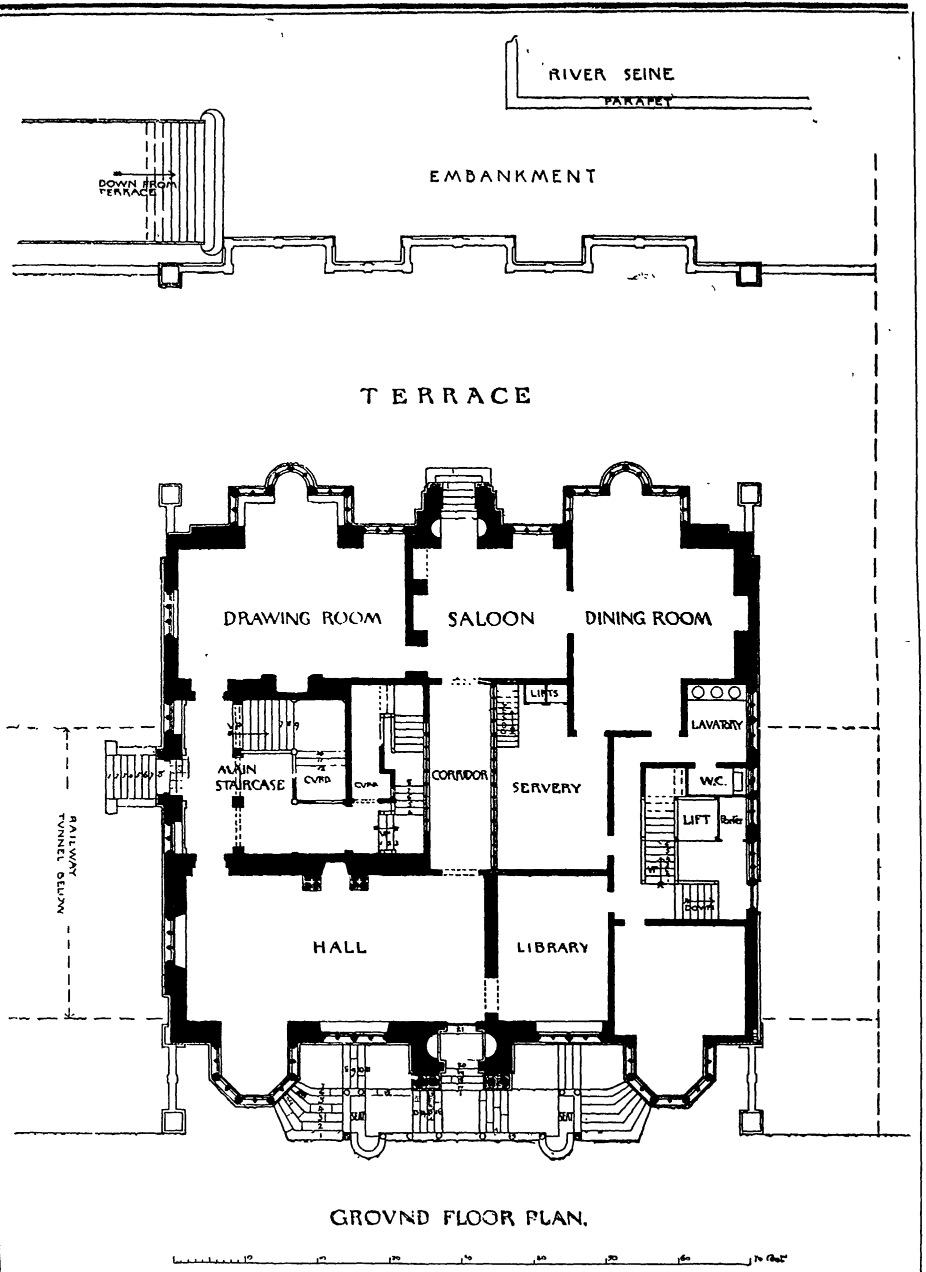
## *COMPETITIONS.*

The Leeds New Market Hall Competition.—The Markets Committee have resolved to apply to the President of the Royal Institute of British Architects, requesting him to nominate three gentlemen, any one of whom the committee might invite to act as assessor.



*English Royal Pavilion for the Paris Exhibition. Plan.*

# Illustrations.

## DESIGNS FOR THE NEW GOVERNMENT OFFICES.

We give this week the perspective design and ground plan of the two great blocks of proposed Government Offices —that for the War Office, by Mr. W. Young; and that for the Westminster block of offices, by Mr. J. M. Brydon.

Some comments on the designs are made in our first article, but we may add one or two practical particulars here. In regard to the plan of the Westminster block, this, as explained in our leading article, is a plan for the ultimate scheme when the whole of the land between Parliament-street and St. James's Park has been acquired. What it is contemplated to build at present is the right-hand block, which will form additional offices for the Local Government Board; and the upper or northern portion of the remainder of the plan, including half the circular court. This portion will belong to the Education Department.

In the War Office the idea has been to give the Secretary of State for War the central front rooms on the main story (the columned story) of the front, with the Under-Secretary and private secretaries and other higher officials on each side, the secretarial department extending along the front and along part of the Whitehall-place return. The clerks of the same department will be in the rooms below these (the upper rooms of the rusticated portion of the front), and above the main suite of rooms will be the repositories for documents. The Commander-in-Chief is accommodated with the centre portion of the principal front to Whitehall-place, the portion decorated by the order representing his levee-room; above that is the library of the department, and above that the drawing-offices, lighted from the top. The plans of the different floors are at present only in the rough, but this is the main idea.

Special means will be taken for isolating the Intelligence Department, which will occupy the upper portion of the rear block around the triangular court. The corridor here will be shut off by gates at the angles where it joins the cross corridor; and the staircase in the corner of the triangle will be a special staircase for the Intelligence Department, also gated and guarded by an official.

In regard to the design, in addition to the points mentioned in our leading article, we may mention that the architect made a good many sketches for a central feature for the Whitehall façade, but eventually abandoned the idea from a conviction that the façade was not long enough to admit of it, along with the special treatment of the angles which was required in order to mask the irregularity of the site. Mr. Young thinks of modifying the smaller cupolas on the Whitehall-place front, and treating them as square features, in order to give more emphasis to the angle cupolas; and this we think on the whole will be an improvement. The omission of the central feature was decidedly a wise determination; the façade looks much better as it is.

## THE ENGLISH ROYAL PAVILION FOR THE PARIS 1900 EXHIBITION.

The scheme which has been adopted for the Exhibition of 1900, of arranging all exhibits by classes and not by countries, although possessing certain advantages, is not favourable to distinct national displays. This consideration has induced the British Royal Commission to devote special attention to the construction and decoration of our Royal Pavilion, which is to stand in the row of National Palaces on the Quai d'Orsay. The work has been placed in the hands of a committee consisting of Major-General Sir Arthur Ellis, K.C.V.O. (Chairman), Sir William Agnew, Sir John Murray Scott, Bart., the President of the Royal Institute of British Architects (Professor G. Aitchison), the Director of the South Kensington Museum (Mr. Purdon Clarke, C.I.E.), Sir Charles Tennant, Mr. Montague Guest, and Colonel Herbert Jekyll, C.M.G. The plan decided on is to reproduce an old English manor house, furnished and fitted throughout with all the requisites and appliances which would be found in a country house of the present day.

The north side of the pavilion is adapted from Kingston House, Bradford-on-Avon, about six miles from Bath. It was built in the time of James I., and is one of the most characteristic examples of the period.

We give a plan and perspective drawing from the designs which have been prepared by the architect, Mr. Edwin L. Lutyens (London).

The building will be constructed with a framework of steel (designed by Sir Benjamin Baker, C.E.) covered with cement, and its erection has been undertaken by Messrs. John Aird & Co. The various rooms will be placed at the disposal of different firms to decorate and furnish, and, from the offers already received, the whole will certainly form a striking display of English taste and manufacture.

Among the firms who have expressed their desire to participate in the decoration and fitting are :—Messrs. J. Thompson & Co., of Peterborough, who have undertaken the great staircase; Messrs. Warings, Gillows, Collinson & Lock, Bertram & Sons, the Tynecastle Company, Johnston & Appleyard, &c.

The City of Bath has also undertaken the decoration of a room. Sanitary appliances will be provided by Messrs. Doultons, Jennings, and Twyford & Co. Stained glass windows will be executed by Messrs. W. Smith, of London, and Guthrie, Wells, & Co., of Glasgow.

Among those furnishing metal work and fittings are Messrs. Starkie Gardner & Co., Chubb & Sons, Singer & Sons, Needs & Co., and Ames, Lyde, Elsum, & Co.

Messrs. Crossley & Sons provide the carpets, and Messrs. Broadwood are engaged on the construction of a specially decorated piano. The electric passenger and service lifts are to be erected by Messrs. Waygood & Co.

The rooms have been so arranged as to permit the public to circulate through the house in a continuous stream, and make their exit by a second door. The main entrance is by the porch on the south side. This leads into the main hall, about 40 ft. by 20 ft., in which will be placed the magnificent panels of tapestry belonging to Mr. George McCulloch, which were designed by the late Sir E. Burne-Jones and executed by Messrs. Morris & Co. Messrs. Morris & Co. are also to do the stained glass windows of this apartment. Visitors then pass through the dining and reception rooms on the ground floor, ascend the great staircase and, after inspecting the bedrooms, find themselves in the great gallery, 81 ft. by 18 ft. This is to be an adaptation from the Cartoon Gallery at Knole House, Sevenoaks, and it is hoped that it will be possible to exhibit here a loan collection of the finest examples of the eighteenth-century English painters—a school for which at the present moment the Continental nations are most enthusiastic. A china room opens out from the gallery, on the shelves of which will be displayed specimens of the best known English wares. Through this room visitors will pass to the second staircase, which leads to the door of exit.

The pavilion will be accessible at all times to the public, except when in use by the Prince of Wales, the President of the Royal Commission.

The Secretary of the Royal Pavilion Committee is Mr. H. Thomson Lyon, St. Stephen's House, Westminster, to whom all communications should be addressed.

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THE GLASGOW ARCHITECTURAL ASSOCIATION AND GREYFRIARS.—The Architectural Association of Glasgow has sent a communication to the Aberdeen Town Council against the proposed removal of Greyfriars' Church, and urging the retention and restoration of the building.

## PHŒNIX FIRE-RESISTING PLATES.

A NUMBER of architects and others interested in the construction of fireproof buildings met at Willesden on Wednesday last to witness the behaviour of "Phœnix plates" when subjected to a practical fire test.

These plates have not hitherto been used in this country, but it is stated that they have gained considerable popularity in Holland, where they are used for the construction of ceilings, the walls of corridors, and other interior parts of buildings.

At Willesden a three-roomed building was erected, the two lower rooms being constructed of Phœnix plates covered with plaster, which was said to be of the same composition as the plates, while the third and upper room was mainly of wood. There was nothing between the lower rooms and the upper one except the wooden joists and the plaster-covered ceiling plates.

In one of the lower rooms a fierce fire vomiting tongues of flame of considerable magnitude was obtained by means of sticks of wood dipped in tar, and was maintained for almost exactly fifteen minutes. The fire was then extinguished by means of a hose.

Throughout the test the upper room remained perfectly cool, and several persons, including our representative, who went into this room while the fire directly beneath it was raging most fiercely, remarked the fact that not even the floor betrayed the slightest rise of temperature. The room situated upon one side of the furnace-room also remained cool, but a crack developed in its plaster coat soon after the fire was lighted, and cracks subsequently appeared in other exterior parts of the furnace-room. The walls of this room were double and had an air space between them. It was suggested that the expansive force of this enclosed air under the influence of heat was the cause of the cracking of the exterior plates and plaster, which throughout the test did not become appreciably heated.

When, however, the interior of the furnace-room was examined, after the fire had been extinguished and some of the plaster stripped off the walls, it was found that one or two cracks were visible in the interior plates themselves, even though some laths of wood buried in the plaster and employed to hold the plaster to the walls had not even been scorched.

It is evident from this and other tests that Phœnix plates are non-combustible and extremely bad conductors of heat, and that they may therefore be of great utility for certain purposes in building, if they adapt themselves in other respects to the requirements of the builder; but we do not consider that it has yet been satisfactorily demonstrated that they would not crack and fall to pieces under the conditions to which they would be subjected in the course of an ordinary house conflagration.

The plates are light in weight, and are said to form as cheap a material for ceiling construction as ordinary lath-and-plaster. It is claimed that two men can fix 1,000 square feet of ceiling-plates in a day. The composition of which the plates are made is, our representative was informed, that mentioned in the English patent, dated November, 1898, of Messrs. Van der Vijgh, which is made by mixing 20 parts of pumice, 10 parts of slag sand, 18 parts of lime, 12 parts of tan, 20 parts of plaster of Paris, and 20 parts of water. This composition is said to be superior to that claimed in the 1896 English patent of the same inventors.

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## *ENGINEERING SOCIETIES.*

CIVIL AND MECHANICAL ENGINEERS' SOCIETY. —At the meeting on March 16, a paper on the "Purification of Public Water Supplies" was read by Mr. W. N. Twelvetrees, illustrated by a large number of diagrams. Before proceeding to describe in detail the construction of mechanical and other filters, and of plant in which physical and chemical agencies are employed for water purification, Mr. Twelvetrees directed attention to the physical characteristics of water derived from various sources, and mentioned the problems always presented when river water is used for the supply of waterworks. Filtering media of various kinds were next considered, and the conclusions arrived at after exhaustive tests by Dr. Sims-Woodhead, Dr. Cartwright Wood, Dr. Netter, of Paris, and others, were quoted. The result of the investigations in question bears out the statement that in a general way the public safety depends largely upon the watchful care of water engineers and of other scientific officials, and in a lesser degree upon the intrinsic merits of any given filtering medium. After dealing with the question of natural and artificial purification, by percolation and by deposition, the author demonstrated, by the aid of sectional drawings, the actual nature of the process taking place in sand filtration beds. Sand in itself presents no special recommendation as a filtrant; the efficiency of a sand filter does not become established until a gelatinous layer, formed of mud, algæ, and micro-organisms has been formed upon the surface. Incidental reference was made to Hunter's sand-washer, the construction and working of which was made clear by a series of diagrams, illustrating the application of the apparatus in the Leicester Corporation Waterworks, at Swithland. Another type of sand washer, invented by Mr. A. T. Walker, Water Engineer to the Reading Corporation Waterworks, was also described. Leaving ordinary sand filtration, Mr. Twelvetrees proceeded to discuss some modified methods which have been adopted with great success. One of these is known as the Morison-Jewell process, of which the distinctive feature consists in the substitution of a clean film of gelatinous aluminium hydrate for the casually accumulated layer, constituting the chief purifying medium in ordinary filter beds. Another modified mode of sand filtration is one in which polarite, alone or mixed with sand, takes the place of one of the strata of sand. Polarite is the name given to a specially prepared and porous form of magnetic oxide of iron. Water passes freely through as well as around the granules of this substance, within the pores of which polarised oxygen is contained, and which, upon contact with suspended or dissolved substances, produces oxidation. This action is not carried on at the expense of the material itself; and, further, as polarite, being absolutely rustless, is practically everlasting. Fresh supplies of oxygen are, of course, necessary, and periodical washing is also required. Some diagrams were shown of polarite filters as used at the Hastings Corporation Waterworks, the Reading Corporation Waterworks, and an arrangement of a polarite filter for purifying rain water was exhibited by permission of Mr. Ernest Turner. Methods of purification for hot and cold climates, where sand filtration is often impracticable, were next discussed and illustrated. Amongst filters of this kind may be specially mentioned the "Riddell," the "Torrent," the "Howatson," and the "Wilson" filters. These have all been applied for public purposes, and in installations capable of dealing with from 1,500,000 to 2,600,000 gallons of water per twenty-four hours. Various ingenious contrivances for cleansing are generally used in addition to reverse currents of water. The "Riddell" filter has an arrangement of radial arms, which are moved up and down as well as in a rotary manner, by hydraulic power. In the "Torrent" filter compressed air is employed, and in the "Wilson" apparatus a very ingenious automatic flushing system is adopted. Mr. Twelvetrees next drew attention to the example of waterworks filtration by the Pasteur method, as used at Darjiling. The output is about 250,000 gallons daily, and as the Pasteur filtration employs the only known absolutely germ-proof medium, the installation in question may be regarded as unique. Another mode of water purification is that patented by Anderson in 1889, where water is agitated in revolving drums containing fragments of metallic iron. Some of the iron is dissolved, and as the water passes from the apparatus to settling tanks it is ærated. Oxide of iron thus formed carried down impurities by deposition. Sterilisation by heat at a temperature of 240 deg. Fahr. affords perfect immunity from pathogenic bacteria, and an apparatus known as the Vaillard-Desmaroux Heat Steriliser was described and illustrated. This form of appliance has been adopted for the water supplies of towns in Russia and in Brazil. It should always be borne in mind, however, that the extinction of germs and spores is one matter, and that the removal or oxidation of poison in solution is another and not unimportant problem. Water softening employed for the purification of public water supplies was illustrated by a set of drawings and photographs of the Ashby-de-la-Zouch Waterworks, where the Archbutt-Deeley process is used with great success. Mr. Twelvetrees in conclusion emphasised the desirability of regarding efficiency as the first consideration in every case, and expressed the hope that the line of defence established by water engineers in the interests of public safety might always be furnished with weapons of the most modern and scientific kind.

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## ARCHÆOLOGICAL SOCIETIES.

British Archæological Association.—A meeting of this Association was held on the 15th inst., Mr. C. H. Compton, V.P., in the chair. Dr. Brushfield brought for exhibition a curious pipe, from the collection of the late Rev. S. M. Mayhew, having a portrait bowl with the face turned inwards towards the smoker, the stem being very much ornamented. The pipe is of the time of Elizabeth or James I. and was found in London in 1872. Mr. W. A. Donnelly read a paper upon his recent discoveries of prehistoric remains in the Clyde Valley; the vitrified fort, with cup and ring, rock and boulder sculpturings, an ancient hill fort, or brock, and the crannog at Dumbuck, which altogether form a group of archæological discoveries in the Dumbartonshire district of the Clyde Valley, perhaps unequalled in recent times. When the discovery of the vitrified fort was first made known, experts considered the evidence insufficient to establish positively the formation and extent of the structure, but subsequent careful examination by Mr. Donnelly in company with Mr. John Bruce, F.S.A., established the fact that the structure had an inner and outer formation, that on the apex of the hill being 48 ft. in circumference, while the outer vitrified rampart measures 232 ft. in circumference. The Helensburgh Naturalists and Antiquarian Society, at the request of the Society of Antiquaries of Scotland, conducted excavations which have fully revealed the interesting nature of the discovery. This examination, however, only extended so far as to verify the structure but, the Society of Antiquaries of Scotland hope, with the permission and sympathetic co-operation of Mr. Buchanan, the owner of the property, to thoroughly excavate and examine the refuse bed. The form of the fort on the hill of Dumbuie is slightly elliptical, the major axis of the interior measuring 32 ft., and the minor axis 30 ft. The walls are 13 ft. 6 in. thick, dry built of local sandstone. On the inside at the highest they did not measure more than 6 ft. No traces of windows were met with, the only opening being the doorway, which faced the east, and had on each side a small guard chamber sufficiently large to accommodate one person. Several hearths were discovered, and cooking stones, and stone pounders, polished pebbles, whetstones, and oyster shells with signs of ornamentation, one of which contained in the cavities of the design traces of a red pigment. Stone spear heads and one bone arrow-head were found. Amongst the hundreds of tons of material removed and most carefully sifted no trace of metal of any kind, nor of pottery, was discovered. Passing on Mr. Donnelly told the story of his discovery, on July 31, 1898, of the now famous crannog at Dumbuck, which has attracted so much scientific notice of late. The canoe and the ladder which were found at the crannog were the two most important finds in wood, but a quantity of wooden objects have been met with. A striking peculiarity of all the wood used in the construction of the crannog is the fact that, although it possesses its original form and retains even the slightest tool mark, the wood itself is in a condition of pulp. The paper was abundantly illustrated by diagrams and drawings, together with a large collection of objects discovered in the course of the excavations. Dr. Brushfield, in thanking Mr. Donnelly for his valuable paper, said the subject was almost an unknown one to English people. There could be little doubt that the structures and remains belonged to the Neolithic Age, the absence of metal in the discoveries indicated that fact—split bones were found in all examples of this period, and all split bones were done by human agency. Cooking stones similar to those found were met with on Dartmoor, but no bones were found on Dartmoor owing to the action of the peat. The Rev. H. J. D. Astley (hon. secretary), in continuing the discussion, said that, owing to the controversy which had arisen on the subject of the crannog at Dumbuck, he had been led to renew his acquaintance with Dr. Munro's writings, and especially that on the "Lake Dwellings of Europe." On doing so he saw at once two very plain reasons for the learned doctor's recently-assumed attitude on this question—viz., that supposing the Clyde Crannog should be proved to be as Mr. Donnelly and others infer, and Dr. Brushfield admits, to be most probably of the Neolithic Age, it would disprove two of Dr. Munro's most cherished theories (1) that there was an upheaval of the West Coast of Scotland forming what is known as the 25 ft. break corresponding to a depression of the western and southern coasts of England, at some time subsequent to the Roman occupation, and (2) that the idea of pile dwellings, or crannogs, was a later importation of the Celtic peoples into the British Islands. For himself, whilst most heartily congratulating Mr. Donnelly on his ability and energy, he desired at present to preserve an open mind on the subject; the objects found would certainly appear to point to the Neolithic Age, though some of them, especially the so-called "totems" (which Dr. Munro prefers to call "amulets") would, if genuine, revolutionise our ideas of the life and progress of men in that age. The Chairman, Mr. Gould, and others took part in the discussion.

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## THE LONDON COUNTY COUNCIL.

The usual weekly meeting of the London County Council was held on Tuesday in the County Hall, Spring Gardens, Lord Welby, Chairman, presiding.

*Loans.*—On the recommendation of the Finance Committee, it was agreed to lend the Clerkenwell Vestry 220*l.* for paving works; the Guardians of Fulham Union 4,050*l.* for purchase of property; the St. Pancras Guardians 5,000*l.* for the erection of chapels; and the Woolwich Local Board 1,000*l.* for paving works.

*Appointment of a Superintending Architect.*—The General Purposes Committee reported as follows:—

"On January 31 last the Council gave authority for an advertisement to be issued inviting applications for the appointment of a Superintending Architect, at a salary of 2,000*l.* a year. We have now to report that in response to the advertisement forty-three applications were received. These applications were in the first instance considered by a sub-committee, who, after having an interview with nine of the candidates, have submitted to us the names of four. We have ourselves seen these four candidates, and having carefully considered their respective qualifications, we now submit to the Council the names of the following—Mr. W. E. Riley and Mr. F. R. Farrow. . . . We are strongly of opinion that Mr. Riley is the best qualified for the appointment. We accordingly recommend—(*a*) That Mr. William Edward Riley be appointed Superintending Architect of metropolitan buildings and Architect to the Council, at a salary of 2,000*l.* a year, upon the following conditions—That his appointment be held during the pleasure of the Council, that he be required to give his whole time to the duties of his office, and be not allowed to take any private business; and any fees received by him, either as a witness or in any other capacity, be paid to the Council, and, further, that on retirement he shall not be entitled and shall not make any claim to any retiring allowance under the Superannuations Act, 1866, and that he will submit to the Council's regulations in respect of the Superannuation and Provident Fund. (*b*) That Mr. William Edward Riley be authorised to take all such steps as have hitherto been taken by the Council's Architect to carry into execution the provisions of Part IX. of the London Building Act, 1894, relating to dangerous structures. (*c*) That the solicitor be instructed to prepare the necessary form of appointment, and that the seal of the Council be affixed thereto when ready."

Mr. Goddard Clarke moved that the recommendation be referred back for further consideration. He did not think that the Committee were justified in making the recommendation.

Mr. Taylor seconded.

Mr. E. White said that the Council ought to have the services of a gentleman who had an intimate knowledge of the Building Act, and who should know how to deal with a highly-qualified class of men, viz., the district surveyors.

Mr. Burns said that if the Council could possibly get a Sir Christopher Wren and a good district surveyor in one person, he would vote for the amendment, but that was not possible in these degenerate days. That being so, it was well to select a man who had general qualifications, and who should be, pre-eminently, a good organiser. There was no doubt that the Architects' Department had drifted to some extent into a state of disorganisation; and a good organiser, more than a district surveyor, was and would be required. Some time ago he thought that the duties of the office ought to be divided, but it was now too late to do so.

Mr. Strong (Vice-Chairman of the Council) said Mr. Riley had had large experience in carrying out architectural work, by the direct employment of labour and by contract. He felt sure that Mr. Riley would be competent to deal with any of the Council's work.

The recommendation of the Committee was adopted, and Mr. Riley, having been called in, returned thanks for his appointment.

*Office Accommodation.*—It was recommended by the Establishment Committee that an estimate of 100,800*l.*, submitted by the Finance Committee for purchasing the freehold of two houses in Cockspur-street for the extension of the Council's office accommodation, should be agreed to.

Sir Arthur Arnold thought that, in connexion with this proposed purchase, there should be some distinct understanding with the Government, who were erecting buildings so close to the present County Hall. In a comparatively short time a thoroughfare was to be cut from Charing-cross to the Mall, and it was very desirable that either the Government should obtain the site of the County Hall or that the Council should do so. Several Government Departments were at present housed a long way from the central buildings, and he suggested that Somerset House would make an ideal place for the County Council. He thought it would be desirable that the representatives of the Council should approach the Government with that object in view, and suggested that they should grant the Council a long lease of Somerset House. The Council at the present time was paying 9,000*l.* a year rent for offices.

Mr. Shaw-Lefevre thought Sir A. Arnold's proposal was quite out of the question, and that it would not be entertained by the Government.

Mr. H. Lawson believed that they could be quite independent of the Government, and select a site on the new street from Holborn to the Strand.

The recommendation of the Committee was agreed to.

*Spitalfields Market.*—The proposal to purchase the freehold and other interests in Spitalfields Market for the sum of 170,000*l.* was held over, in accordance with the Standing Orders, for a week, as the amount exceeded 5,000*l.*

*Rotherhithe Tunnel.*—The proposal to construct a tunnel under the Thames at Rotherhithe at an estimated cost of 2,198,250*l.*, was also postponed for the same reason.

*Tar Paving, &c.*—The Parks and Open Spaces Committee recommended, and it was agreed, that the tender of Messrs. Burt, Boulton, & Haywood, Limited, be accepted for the supply of deal edging at 7s. 6d. per 100 ft., and deal stakes at 9s. 7d. per 100, for use at Clapham Common.

That the tender of Messrs. W. E. Constable & Co., Limited, be accepted for the supply of the following tar-paving materials for use at Clapham Common, viz., bottoming, 18s. 10d. per ton; topping, 20s. 10d. per ton; dust, 12s. 6d. per ton; quartz, 30s. per ton.

That the tender of Messrs. E. J. Raybould & Co., Limited, to supply and fix wrought-iron boundary fencing at the land at Wells-road, Sydendam, for a sum of 525*l.* be accepted.

*Competitive Designs for Dust Carts.*—The Public Health Committee reported as follows:—

"On December 13 last the Council, on our recommendation, decided to offer a premium of 25*l.* for the best design for a dust cart and cover, and to submit the designs received to Sir Douglas Galton, K.C.B., F.R.S., the Chairman of the Council of the Sanitary Institute, who had kindly expressed his willingness to arbitrate upon them. Advertisements were accordingly issued and the competition aroused great interest throughout the country, a large number of designs being sent in. The competition closed on Feb. 28, but no further steps have been possible in the matter owing to the illness and death of Sir Douglas Galton, of which we have heard with deep regret. The Secretary to the Sanitary Institute has written, with the approval of Lady Galton, to say that no doubt Sir Douglas Galton's successor in office, who will shortly be appointed, would undertake the arbitration upon the designs, or that the Council of the Sanitary Institute would, if desired, appoint a special committee to do so. We have accordingly thought it well to adjourn the further consideration of the matter pending the appointment of Sir

Douglas Galton's successor, and have so informed the Secretary to the Sanitary Institute, at the same time desiring him to express to Lady Galton our sincere sympathy in her bereavement."

*Camberwell (late Oriental) Palace of Varieties*—The Theatres and Music Halls Committee reported that the Council on July 27, 1897, approved five drawings of the Oriental Palace of Varieties, which it was proposed to erect at Denmark-hill, Camberwell. The building has not yet been commenced, and the Committee have now received seven further drawings, showing a totally different planning to that already approved. The hall, which it is intended to call the Camberwell Palace of Varieties, will have seating accommodation for 1,242 persons. The arrangements appeared to the Committee to be generally satisfactory, and they recommended, and it was agreed, that the drawings be approved subject to certain conditions.

*Greenwich Tunnel. Appointment of Resident Engineer.*—The Bridges Committee recommended, and it was agreed, that Mr. W. C. Copperthwaite be appointed, during the pleasure of the Council, resident engineer, to supervise, under the chief engineer of the Council, the works in connexion with the construction of the Greenwich Tunnel, at a salary of 600*l.* a year.

*Proceedings Under the London Building Act* 1894, *in Respect of the Proposed Erection of Buildings in Pentonville-road, in Advance of the General Line of Buildings.*—The Building Act Committee reported as follows, the recommendation being agreed to:—

> A question has arisen under the London Building Act, 1894, in connexion with the proposed re-erection of the "Lord Vernon Arms" public-house and a shop at Nos. 180 and 182, Pentonville-road, in advance of the general line of buildings. Both of the buildings in question have one-story additions, 50 ft. deep, extending over land which originally comprised their forecourts, and the owner, Mr. Scott, claims that he is entitled in rebuilding to cover the whole of the land occupied, including the land occupied by the one-story additions, with buildings of the full height allowed by the Act, and that he is not restricted to building one-story front additions only where the present one-story additions now are, in spite of the fact that the additions are in advance of the general line of buildings. This claim he bases upon sub-section 2 of section 22 of the Act, which exempts from the "general line" provisions land which was at the commencement of the Act, or within seven years previously, *lawfully occupied* by a building or structure. It appears, however, that so far as the "Lord Vernon Arms" is concerned, the forecourt was covered over about 1850 *without any consent*, whilst as regards No. 182, Pentonville-road, the forecourt was covered over under two consents of the late Metropolitan Board of Works in 1876 and 1877 respectively, both of which contained conditions prohibiting the raising or altering of the structure. By our direction a notice was therefore served by the District Surveyor upon the builder, objecting to the proposed rebuilding on the ground that the building as proposed to be erected would infringe the general line, which had been defined by the superintending architect as the main fronts of the buildings. Mr. Scott, the owner, appealed against this notice, and the matter came before the magistrate at the Clerkenwell Police-court, when it was contended for the District Surveyor that as regards the "Lord Vernon Arms," the forecourt was not "lawfully occupied" by the one-story front addition, inasmuch as that addition had been illegally erected, either contrary to the old statutes under which the road was made, which contained prohibitions against building within 50 ft. of the road, or contrary to Section 75 of the Management Act of 1862, as having no consent, and that as regards No. 182, Pentonville-road, the conditions against raising or altering, contained in the consents, prevented the site of the one-story addition being rebuilt on to a greater height than at present, or possibly even being rebuilt on at all. This contention was upheld by the magistrate, who affirmed the District Surveyor's objection, but expressed his willingness to state a case for the opinion of the High Court if the building owner desired to appeal against the decision. We are informed that an appeal will probably be made, and, as the principle involved is one of very great importance, we recommend—"That the solicitor do take all necessary steps for upholding before the High Court the decision of the magistrate with regard to the proposed re-erection of the 'Lord Vernon Arms' public-house and a shop adjoining, being Nos. 180 and 182, Pentonville-road, in advance of the general line of buildings in that street."

*The Ground Plan of London.*—After a short discussion the Council authorised the further expenditure of 700*l.* for the year ending March, 1900, in connexion with the preparation of the ground plan of London.

*Millbank Estate Approaches.*—The Housing of the Working Classes Committee recommended, and it was agreed, that the work of forming the approaches to the Millbank estate from Earl-street and Causton-street be carried out by the Council without the intervention of a contractor, and that the plans, specification, quantities, and estimate of 712*l.*, in respect of the work, be referred to the manager for that purpose.

The Council, having transacted other business, adjourned.

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## APPLICATIONS UNDER THE LONDON BUILDING ACT, 1894.

AT the meeting of the London County Council on Tuesday, the Building Act Committee brought up the following list of applications under the 1894 London Building Act. Those applications to which consent has been given are granted on certain conditions.*

### *Lines of Frontage.*

*Hampstead.*—Houses with shops on the west side of South-end-road, Hampstead, and also the erection of houses with bay-windows on the south side of John-street (Mr. F. T. Binnington).—Consent.

*Greenwich.*—Pent-roofs to the entrances to Nos. 13, 14, 16, 17, and 18, Spencer Villas, Little Heath, Charlton, and the construction of timber framing to the barge boards to the gable of No. 15, Spencer Villas (Mr. J. Bull).—Consent.

*Brixton.*†—A detached greenhouse erected on the forecourt of a house know as Rathcole, Ferndale-road, Brixton, to abut upon Bedford-road (Mr. W. A. Pite for Dr. C. Fenwick).—Consent.

*Fulham.*—A portion of a church in Lillie-road, Fulham, at the corner of Moylan-road (Messrs. J. E. K. and J. P. Cutts, for the Rev. P. S. G. Propert).—Consent.

*Hammersmith.*—A brick, wood, and glass porch at the entrance to No. 414, Uxbridge-road, Shepherd's-bush (Mr. S. A. Fox, for Mr. C. R. Cross).—Consent.

*Lewisham.*—A greenhouse erected in the garden at the rear of No. 59, Perry-hill, Catford, to abut upon Rutland-road (Mr. A. Miles).—Consent.

*Lewisham.*—A greenhouse erected in the garden at the rear of No. 70, Burnt Ash-road, Lee, to abut upon Handen-road (Mr. H. Roberts for Mr. C. Wood).—Consent.

*Lewisham.*†—That the consent of the Council of February 21 to the rebuilding of the "Two Brewers" public-house on the west side of Perry Hill, Catford, at the corner of Clarens-road, and the erection of four houses with shops on the west side of Perry Hill, adjoining the public-house (Mr. Cruwys for Mr. E. J. Janes) be modified by the omission of the words "sign post and" from such consent)—Agreed.

*St. Pancras, North.*—One-story shops upon part of the forecourts of Nos. 114 and 116, Fortress-road, St. Pancras (Mr. C. Wall for the Misses A. and E. Wall).—Consent.

*Lewisham.*—An hotel, with stables at the rear, on the east side of Laleham-road, Catford, at the corner of a proposed road in continuation of Ringstead-road (Mr. H. Roberts for Messrs. H. Hawkes and R. Howell).—Refused.

*Kensington, South.*—The rebuilding of part of No. 12, Sumner-place, to an advanced line in Old Brompton-road, and the partial enclosure of an open portico at those premises next Sumner-place (Mr. W. H. Collbran).—Refused.

*Fulham.*†—A one-story building in the yard at the rear of the "White Horse" public-house, Parson's-green, Fulham, to abut upon Ackmar-road (Mr. D. Matthews).—Refused.

*Lewisham.*—Four houses with shops on the west side of High-street, Lewisham, on part of the site of a house and grounds known as "The Priory" (Messrs. Phillips, Norfolk, & Prior for Mr. H. T. Harrington).—Refused.

*Lewisham.*—Houses with bay-windows on the western side of a proposed extension of Manor Park, Lee, between No. 54, Manor Park and Staplehurst-road (Mr. A. W. Osborn for Messrs. Johnson & Aldridge).—Refused.

*Lewisham.*†—A one-story shop upon part of the forecourt of No. 155, Stanstead-road, Forest Hill (Mr. A. W. Sheppard for Mr. E. H. Bray).—Refused.

*Norwood.*†—Buildings on the west side of Norwood-road, West Norwood (Mr. F. A. Powell for Mr. C. E. Tranter Lamb, Mr. A. G. Rose, and others).—Refused.

*Norwood.*†—A one-story entrance lobby to the King's Head public-house, No. 82, High-street, West Norwood (Messrs. Witherington and Hogwood for the New Phœnix Brewery Company, Limited).—Refused.

*Strand.*†—Six wood and glass show-cases on the faces of the pilasters in front of Nos. 171 and 173, Regent-street, St. James's (Mr. G. Walton for Kodak, Limited).—Refused.

*Wandsworth.*—A one-story shop upon part of the forecourt of a house on the west side of Garratt-lane, Wandsworth, at the corner of Thorndean-street (Mr. E. Bowering for Mr. F. J. Liddington).—Refused.

### *Width of Way.*

*Bow and Bromley.*—An electric lighting station proposed to be erected at Glaucus-street, Bromley, at less than the prescribed distance from the centre of Yeo-street (the Board of Works for the Poplar District).—Consent.

*Clapham.*—A one-story building at the rear of No. 81, Altenburg-gardens, Lavender-hill, Battersea, at less than the prescribed distance from the centre of Green-lanes (Mr. H. Bignold for Mr. H. Hubbard)—Consent.

• *Hampstead.*—A dwelling-house on the site of No. 4, Murray-place, Flask-walk, Hampstead (Mr. H. E. Haggard for Messrs. H. & W. Grey).—Consent.

*St. George-in-the-East.*—A one-story lavatory upon part of the forecourt of the workhouse on the east side of Raine-street, St. George-in-the-East (Mr. G. A. Wilson for the Guardians of the Poor of St. George-in-the-East).—Consent.

*Finsbury, Central.*—That the request of Messrs. Dunk & Bousfield on behalf of Mr. J. R. Hickman, for permission to retain a warehouse on the site of Nos. 8 and 9, Clerkenwell-close, Clerkenwell, at less than the prescribed distance from the centre of Warden-place be not acceded to.—Agreed.

*Woolwich.*—That the request of Mr. E. J. W. Hider, on behalf of Mr. H. Laws, for permission to retain the forecourt boundary or fence in front of an addition erected at the Castle Inn, High-street, Eltham, such boundary or fence being at less than the prescribed distance from the centre of the street, be not acceded to.—Agreed.

### *Space at Rear.*

*Limehouse.*—A modification of the provisions of Section 41 (1) (vi.) of the London Building Act, 1894, with regard to open spaces about buildings, so far as relates to the proposed erection of two blocks of residential flats, with a shop on the ground floor, on the site of Nos. 19, 21, 23, and 25, Butchers-row, Ratcliff, with an irregular space at the rear (Mr. J. E. Lamerton).—Consent.

*Dulwich.*—A modification of the provisions of Section 41 of the London Building Act, 1894, with regard to open spaces about buildings, so far as relates to the proposed erection of two two-story dwelling-houses on the east side of Solway-street, East Dulwich-road, Peckham Rye, with an irregular space at the rear (Mr. A. Keen, for Mr. C. Pennack).—Refused.

### *Deviation from Certified Plan.*

*Lambeth, North.*—Certain deviations from the plan certified by the District Surveyor under Section 43 of the London Building Act, 1894, so far as relates to the proposed rebuilding of a stable on the west side of Morton-place, Kennington-road, Lambeth (Mr. W. E. F. Crook for Mr. P. Green).—Refused.

### *Lines of Fronts and Width of Way.*

*Strand.*—An addition to Drury Lane Theatre, and a block of residential flats, with shops on the ground floor, on the south-west side of Drury-lane, St. Martin-in-the-Fields, between Russell-street and a proposed diversion of Marquis-court (Mr. P. E. Pilditch for the Theatre Royal, Drury-lane, Limited).—Consent.

*Strand.*†—An angle turret and two oriel windows to a building on the site of Nos. 66 and 67, St. James's-street, and No. 1, St. James's-place (Mr. R. J. Worley).—Consent.

*St. George, Hanover-square.*†—A projecting oriel window to abut upon Grafton-street, and a porch to abut upon Hay Hill, to a proposed building upon the site of Nos. 1 and 2, Grafton-street, St. George, Hanover-square, at the corner of Hay Hill (Messrs. Boehmer & Gibbs).—Refused.

### *Formation of Streets.*

*Wandsworth.*—That an order be issued to Mr. P. Meredith, sanctioning the formation or laying out of a new street for carriage traffic, to lead from Balham Hill to Westlands-road, Clapham. That the name Hazelbourne-road be approved for the new street.—Agreed.

*Wandsworth.*—That an order be issued to Mr. W. C. Poole sanctioning the formation or laying out of three new streets for carriage traffic to lead from Merton-road to Mellison-road, Tooting (Messrs. Swain & Selley). That the names Selling-court-road (in continuation), Nutwell-street, and Woodbury-street be approved for the new streets.—Agreed.

*Whitechapel.*—That an order be issued to Mr. F. Matcham sanctioning the formation or laying out of a new street, 20 ft. wide, for foot traffic only, to lead from Whitechapel-road to Charlotte-street, Whitechapel (Mr. W. M. Tilson). That the name Tasmania-place be approved for the new street.—Agreed.

### *Cubical Extent.*

*Woolwich.*—That, subject to the provisions of Section 76 of the London Building Act, 1894, the consent of the Council be given to the erection at W. T. Henley's Telegraph Company's Works, Henley-road, North Woolwich, of a building to

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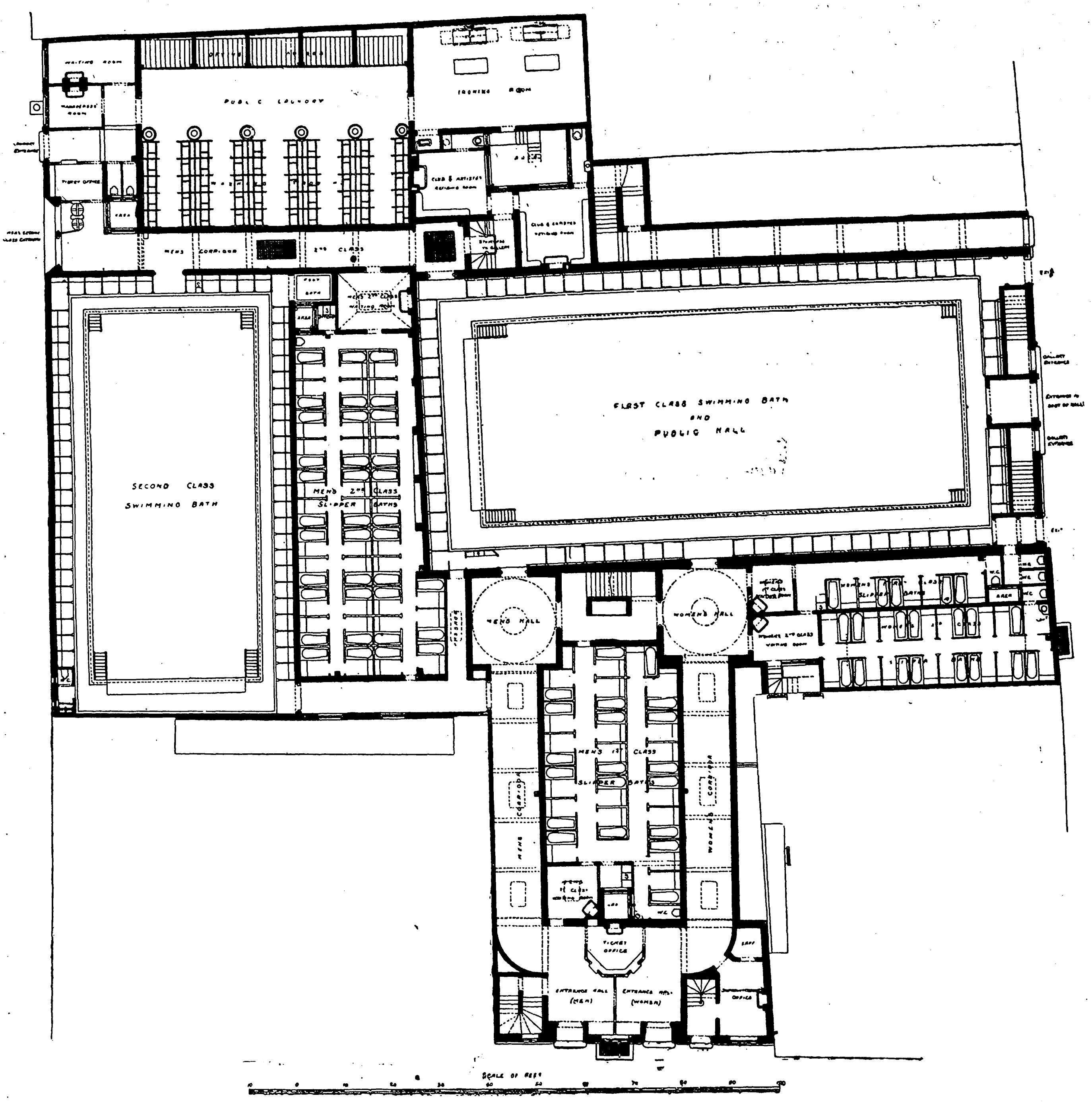
* Names of applicants are given in brackets. Buildings are new erections unless otherwise stated.


Public Laundry
Ironing Room
Second Class Swimming Bath
Men's 2nd Class Slipper Baths
First Class Swimming Bath and Public Hall
Men's Hall
Women's Hall
Men's 1st Class Slipper Baths
Ticket Office
Entrance Hall (Men)
Entrance Hall (Women)
Scale of Feet

New Baths, Shoreditch. Plan.

exceed in extent 250,000, but not 450,000 cubic feet, and to be used only for the purposes of the manufacture of electric cables (Mr. A. E. Salmon for the company).—Agreed.

### *Height of Buildings.*

*Dulwich.*—A portion of the south wall of the Camberwell Palace of Varieties at the rear of the "Golden Lion" public-house, No. 23, Denmark Hill, Camberwell, to abut on a proposed street to be named Orpheus-street (Mr. E. A. E. Woodrow for Mr. Venner).—Consent.

*The recommendations marked † are contrary to the views of the Local Authorities.*

◆

FOUNTAIN AND MERCAT CROSS, ERROL, N.B.—A fountain and Mercat Cross has been presented to Errol by Sir William and Lady Ogilvy Dalgleish. It is executed from a design by Messrs. Johnston & Baxter, architects, Dundee, and is sculptured out of red stone from Dumfriesshire, with basins of polished Peterhead granite. Rising from the basin level, the pedestal takes a circular form. On one side a lion's head is carved, from which the water issues to supply the basins, with the overflow running into small troughs below for dogs. The pedestal is capped by a moulded and carved cornice and base, on which rest the column and carved capital, with scrolls and thistle ornament. On the top of the capital is placed the unicorn in bronze, with the Scottish shield in front. On the pedestal are placed two bronze panels—one with the crown and letters V.R., and dates 1837-1897 modelled in relief. The work has been executed by Mr. Alexander Neilson, sculptor, Dundee.

## NEW SHOREDITCH BATHS.

WE give the ground plan of the new baths for Shoreditch which have just been completed from the designs of Messrs. Spalding & Cross and H. T. Hare. The plan explains itself. The accommodation provided is as follows:—*Men's First-class.* — Twenty private baths, one public swimming-bath 100 ft. long and 40 ft. wide. There are sixty-nine dressing-boxes around this bath, and these are made to fold back against the wall, so that the space they occupy is then added to the area of the hall. *Men's Second-class.*—Thirty-seven private baths, one public swimming-bath 75 ft. long and 35 ft. wide. There are fifty-six dressing-boxes around this bath, and a foot-bath is also provided. *Ladies' First-class.*—Five private baths. *Ladies' Second-class.* — Sixteen private baths. All the above departments, with their separate waiting-rooms attached, are placed on the ground floor level, and each department has a separate entrance from the public streets. The large swimming bath has been licensed by the London County Council as a public hall for entertainments, and ample and direct ingress and egress has been provided by the three separate entrances in Pitfield-street, Coronet-street, and Bowling Green-walk. The necessary cloak and retiring rooms and other accommodation is afforded by the utilisation of the club and waiting-rooms. The public hall, when floored over, will accommodate about 1,200 persons on the ground floor and 530 seats are provided in the gallery. Residential accommodation is provided for the Superintendent in the upper part of the Pitfield-street building, and is approached by a separate staircase. The board-room and office is on the first floor and is approached by a separate staircase from the entrance-hall. The public laundry is also on the ground-floor level, and contains fifty washing compartments and fifty steam-drying horses, and other necessary fittings for ironing and mangling. The public entrance to this department is from Bowling Green-walk, and it is practically completely separated from the baths portion of the establishment. Ample accommodation is provided in the basement for the storage of the movable floors and platforms, when these are not required during the bathing season. The buildings have frontages to three separate streets, viz., Pitfield-street, Coronet-street, and Bowling Green-walk, the first-named being the main front, which has been designed to group with the adjoining free library. The whole of the elevations are faced with best red facing bricks with buff terra-cotta dressings supplied by the Burmantofts Company, and the roofs are covered with red tiles. In the interior of the building glazed bricks and tiles have been very largely used, and the woodwork in the main corridors and large swimming bath is of teak. The whole of the floors and flat roofs are of fireproof construction, and the roofs over the swimming-baths, laundry, &c., are constructed with wrought-iron principals.

◆

PROPOSED HOTEL, KILLALOE.—A new hotel in connexion with the tourist traffic, promoted by the Shannon Development Company, is about to be erected at Killaloe. The estimate of the building is 5,000*l*., the architect being Mr. Holmes, C.E., Dublin, and the contractor Mr. John Hayes, of Limerick. It will contain twenty-five bedrooms and the usual hotel accessories, and is expected to be finished within four months.

## THE BUILDING TRADE DISPUTE.

There is very little to report this week in reference to the Plasterers' dispute. There is no indication that the dispute is likely to end soon.

At a meeting of the Leeds Branch of the Yorkshire Federation of Master Builders, which was held on the 14th inst. in the Albert Hall, and attended by about 150 representatives of local firms, the present position and possible developments of the Plasterers' lock-out were fully considered, and the following resolution was unanimously passed :—"That this federation fully approves of the action taken by the Standing Committee of the National Association of Federated Master Builders in locking out the Plasterers, and urges the National Association to further consider the advisability of demanding that the allied trades shall also cease objectionable practices, as contained in the operatives' circular, and this branch of the federation assures the National Association of its loyal and hearty support in any action it may take." It was mentioned during the meeting that the action of the master builders met with the full sympathy and approval of the council of the Leeds and Yorkshire Architectural Society.

A similar resolution to that passed at the above gathering was adopted at a meeting of the Leeds Master Builders' Association, which was held on the 14th.

On the 17th inst. a special meeting of the Executive Council of the Central Association of Master Builders was held at the offices, in Bedford-street, Strand. At the conclusion of the meeting Mr. Costigan, the Secretary, stated that he was unable to afford information in regard to the policy which the employers intended to pursue, nor could he say how many firms had complied with the lock-out order. It was, however, certain that the masters would not withdraw from the position they had taken up until the union gave an undertaking that the "objectionable practices" should be stopped.

A number of fresh firms in London and the country on Saturday last paid off their union plasterers, and the employers are confident of being able to induce all those masters who at present remain outside the Federation to put into force the lock-out order. According to the latest returns issued by the Union on Saturday, close upon 3,000 men had been locked out. Of this number about 1,800 signed on for strike pay, the others having found employment with firms not connected with the Master Builders' Association.

Meetings were held at all the branches of the Union in London and the country on Saturday evening, when each member paid in the special levy of 3s., ordered by the Union last week. It is expected that the levy will realise 1,500*l.* every week, and the Union officials state that this sum will be sufficient to provide for all the men who are likely to be thrown out of work.

## BOOKS RECEIVED.

Cardiff Records: Materials for a history of the County Borough. Edited by J. Hobson Matthews. (Elliot Stock).

The Story of Rouen. By Theodore Andrea Cook. (J. M. Dent & Co.)

City of London Directory, 1899. (*City Press* Offices).

An Illustrated Record of National Competition Designs; 1896-97. Compiled by John Fisher. (Chapman & Hall).

Middlesex Hospital: New Building. — The work recently completed at this hospital comprised remodelling existing lecture theatre and forming research laboratory at back of seating; taking down and rebuilding of old school buildings on west side of garden, building an entirely new wing on ground leased of Berner's Estate in Union-street. the Union-street block comprises :—Dissecting-room, physiological lecture-room, balance-room, class-rooms for operative and practical surgery, demonstration and lecturer's rooms. The block facing the garden contains Dean's room, entrance-hall, staircase, &c., chemical lecturer's room and practical class-room, pathological lecture-room and private laboratory for lecturers on pathology and bacteriology. The building work generally has been carried out by Messrs. L. H. & R. Roberts, the plumbing by Messrs. Dent & Hellyer, hot-water engineering by Messrs. Haden & Son, electric lift by the Otis Elevator Company, fittings by Messrs. Hammer & Co. and Messrs. Baird & Tatlock, terrazzo floors by Messrs. De Grelle Houdret. Mr. Keith D. Young is the architect.

## Correspondence.

*To the Editor of* The Builder.

### LOCAL GOVERNMENT BILL.

Sir,—In your issue of March 11 there is a leading article on this subject, calling attention to the provisions of Clause 6, which you evidently thought pointed to an alteration of the building law in London. By the use of italics you make the clause appear to support this contention, as follows :—

> "6. The Committee of the Privy Council hereinafter mentioned shall make a Provisional Order determining which of the powers under the London Building Act, 1894, or any amending Act, other than the powers mentioned in Part One of the Second Schedule to this Act, are to be exercised by the London County Council and the Borough Councils respectively, and the conditions under which they are to be exercised, *and may embody in the Order such modifications of the London Building Act, 1894*, and such provisions for the protection of existing interests, *as may appear expedient* for giving effect to the determination."

If you had italicised the last six words—"*for giving effect to the determination*" a totally different complexion would have been given to the clause.

When the Bill was first placed in my hands I read the clause carefully and came to the conclusion that the alterations contemplated were merely such as might be required to carry into effect the contemplated transfer of powers. The L.C.C. has taken counsel's opinion upon the matter, which opinion entirely confirms my view.

I quite concur with you that it would not be right to make any alteration as regards the restrictive provisions of the Building Act in this Bill, which is one dealing with administrative machinery.

G. B. Longstaff.

⁂ The clause may only have primarily the intention ascribed to it by Dr. Longstaff, but it must be obvious that it opens the door to a much wider interpretation.—Ed.

### BACTERIAL PURIFICATION OF SEWAGE.

Sir,—I thank you for the able criticism of my Patent System in your issue of March 18 instant. But, with regard to the remark that the sewage would "pass invariably along the lowest layer only of the filtering material," may I explain that the filter does not work continuously as the tank does (in which case the remark would be correct). Each filter is filled and allowed to stand full for a short time, and then discharged and left at rest while the other filters are being filled in succession. Under these conditions it is clear that the discharge would be drawn uniformly through the entire length and depth of the filtering material, and not through the bottom layer only.

I fear my imperfect description has been at fault.

F. Wentworth-Sheilds, M.Inst.C.E.

### ARCHITECTS AND SECRET COMMISSIONS.

Sir,—I read with special interest your article on the Report of the London Chamber of Commerce and secret commissions, and especially your remarks dealing with trade discounts, which, in the building trade, are approaching a disgraceful pitch. For this state of things, architects, if not to blame, are to a certain extent responsible, and the remedy is partially in their hands; and it is their duty to see to their clients' interests in this as in other respects, even at the expense of a little extra trouble and annoyance from some contractors who risk ignoring a special clause in a contract that all provisional sums will be paid direct by the building owner and are exclusive of trade discounts or allowances. I had a catalogue of hardware sent me the other day, the prices of which were subject to from 30 to 66 per cent., and at present I have one before me for lead lights subject to 20 per cent., and another for clay ware at 40 per cent. Take, for instance, lead lights, an item which is invariably a provisional sum, which architects too often omit to deal with direct. A case was recently brought to my notice where 3s. 6d. per ft. was allowed for this work; the maker happening to call on the architect obtained information, but was referred to the builder. On doing so, he was asked to send designs to the architect for what he could do at 2s. 6d. per ft. subject to the usual terms, upon which the maker bid him good day, but, unfortunately, did not carry the matter further, and inform the architect.

Another item which often means a large sum to the contractor and consequent loss to the building owner is, as you mentioned in your article, grates and ranges. At the present time I have a contract on amounting to something like 13,000*l.* or 14,000*l.*, for which I provide for grates the sum of between 400*l.* and 500*l.* The contractor is paid for setting and fixing these, and all he has to do is to receive them and return the cases. I called and selected these at one of the show-rooms and asked the trade discounts allowed for the "builder," but was put off with "Oh, we rely upon our business with the architects selecting, and consequently can afford to allow the builders only a very small discount!" I would not, however, give the order till this was known, which I eventually found out was 20 per cent. plus 2½ per cent for cash; thus my clients are saved from 90*l.* to 110*l.* on this one item alone. It is, however, known that so many architects do not trouble with these matters, that those who do are often met with unpleasantness from contractors who risk these clauses, and, instead of adding to their contract whatever profit they want on such goods, trust to being allowed to order and pay for them, and so claim these exorbitant allowances. Is it not time that manufacturers combine to abolish this state of things, and openly acknowledge that they allow "builders," say, a uniform 5 or 10 per cent. for their trouble of receiving and what little responsibility they have in the matter, which is in many cases more than ample? Can we not ask those architects who hitherto have not troubled themselves in this matter, both for their clients' interest and to assist in checking these abuses, to combine in having a special clause in all contracts disallowing any trades or other discounts, and see that the same is strictly fulfilled?

An Architect.

## *GENERAL BUILDING NEWS.*

Proposed Baptist Chapel, Manningham.—It is proposed to erect a new Baptist chapel in Carlisle-road, Manningham. The architect is Mr. James Ledingham, of Bradford.

Sunday School, Derby.—On the 15th inst. Sir Henry Bemrose, M.P., laid the foundation stone of the new Sunday school connected with the Primitive Methodist Chapel, Keddleston-street, Derby. The architect is Mr. John Wills, of Derby, and the builder Mr. H. J. Robinson, of Derby. The cost of the building, including heating and lighting, will be about 2,025*l.*

Masonic Hall, Lurgan.—Plans for the erection of a new Masonic Hall in Lurgan have been prepared by Mr. Ferguson, architect, Belfast, and finally approved of by the building committee. It will occupy a position in Windsor-avenue.

Aberdeen Parish Council Offices. — This block is now practically finished. The building, which is of white granite, consists of four stories and attics. The east or main front extends 64 ft. along Union-terrace, and the height from the footway to the top of the parapet is 58 ft. The south elevation extends along East Diamond-street for 36 ft. The illustration in our issue of May 14, 1898, shows the main doorway, which is approached by a flight of stone steps. On the basement floor are heating apparatus, fireproof charter-room, furniture store, coal cellars, &c. On the ground floor are situated rooms for officials, &c. On the first floor are rooms for various inspectors and others. On the second floor are the council chamber or hall, large committee-room, chairman's room, and smaller committee-room. The council hall, which measures 38 ft. by 30 ft., is 20 ft. high. The large committee-room, which opens on the hall, has a floor space of 30 ft. by 22 ft. The smaller committee-room measures 25 ft. by 18 ft., and the chairman's room communicates both with it and the hall. There are lavatories on each flat, and on the second floor there is also separate accommodation for lady members of the Council. In the attic floor are four dwelling-rooms for the caretaker. The whole building is lighted by electricity, and all the corridors and staircases are warmed by hot-water radiators. The vestibule and collecting-room have mosaic flooring, and the waiting-room is floored with wood blocks. The architect is Mr. A. Marshall Mackenzie, A.R.S.A., Aberdeen, and Mr. William King has acted as clerk of works. The total cost (including price of old buildings on site) will be about 15,000*l.* The various contractors have been as follows :—Mason work, Watt & Fordyce; carpenter, Hendry & Keith; plasterer, Stephen & Gibb; plumber, P. Stewart; painter and decorator work, Mason & Sons; heating, R. Tindal; slater work, G. Farquhar; fittings, J. & J. Ogilvie; electric light, P. C. Middleton & Co.; electric bells, and telephones and grates, Shirras, Laing, & Co.; lift, (Pickering's patent), Abel & Garden—all of Aberdeen.

Hospital Accommodation, Liverpool. — Mr. Theodore Thomon, M.D., barrister-at-law, held an inquiry recently on behalf of the Local Government Board at the Municipal-buildings, Dale-street, with respect to the application of the Liverpool Corporation for sanction to borrow three sums of money amounting in all to 63,500*l.* for hospital purposes. Mr. E. R. Pickmere, Deputy Town Clerk, stated that it was proposed to borrow 3,500*l.* for the purchase of additional land at Fazakerly. The site consisted of 30,669 square yards. The next part of the application was to borrow 20,000*l.* to erect a smallpox hospital at Fazakerly, this being only a portion of the scheme the Corporation had in contemplation. Plans were submitted showing the two ward pavilions it was proposed to erect, each ward to contain twenty beds and a separation ward of two beds. The details showed that the addition of a new wing to the present house to be used as an administrative block was estimated to cost 3,500*l.*; two pavilions 4,000*l.* each; laundry and disinfecting block 3,000*l.*; drainage, roads, and fences 2,070*l.*; lodge and waiting-room 1,000*l.*; discharge block 530*l.*; and mortuary 400*l.* Mr. T. Shelmerdine, Surveyor, said that there would be 100 ft. between each pavilion, and from the boundary of the fence to the nearest building about 50 ft. In regard to the drainage it was proposed to take a drain down the main road to the Corporation's sewage farm. —The third part of the inquiry had reference to the Corporation application for sanction to borrow 40,000*l.* for the extension of the City Hospital east, Mill-lane, Old Swan, the Surveyor explaining that the present block contained thirty-two beds, and they proposed to add eighty-eight. The details were two buildings of an administrative block, 10,800*l.*; large discharging block, 1,700*l.*; laundry building and fittings, 6,100*l.*; east pavilion, 8,400*l.*; west pavilion, 8,300*l.*; mortuary and post-mortem room, 550*l.*; laboratory, 250*l.*; boundary walls and railings, 1,250*l.*; and boilers, heating machinery, hot-water supply, roads, and laying-out of grounds, 5,000*l.* The total came to 42,350*l.*, and the extra amount, it was stated, had been added as a consequence of the Local Government Board requiring the two buildings to be separated. The Board had also suggested that there should be a lift, but the Surveyor remarked that a lift would take up considerable space, and it had been almost like a Chinese puzzle for the accommodation now proposed to be designed out of the room at their disposal.

Building in Birmingham.—According to the returns prepared by Mr. Henry Price, the City Building Surveyor, 1898 was a busy year for the Birmingham builders. Not only is the city rapidly developing in all directions where development is at all possible, but rebuilding and structural alterations have been extensively carried out in the midst of the city. In the matter of the number of houses and shops erected the past year has shown a notable increase, the total being 2,308, compared with 1,806 in 1895, and 1,852 in 1897. Yet, despite the increasing rate at which this class of property is being erected, there is still a dearth of houses. Though the number of shops erected during the past year show a marked increase, a decrease in the number of business premises put up during the past twelve months is to be noticed, for whilst thirty-seven of such establishments were erected in 1897, only thirty were constructed in 1898. But even this shows a great advance compared with the year 1895, when only thirteen of such premises were built. During the past four years there has been a remarkable fluctuation in the number of warehouses and shops erected. In 1895 the number erected was 197, in the following year there were 247, and in 1897 only 170, whereas last year the number increased to 229. In the matter of churches the returns for 1898 show that only one such edifice was erected, compared with three in 1897, two in 1896, and two in 1895. A diminution is also noticed with regard to the chapels, for while none were erected last year, two such buildings were constructed in 1897, two in 1896, and one in 1895. Compared with 1897, the past year appears to have been a bad one in the matter of schools, for whereas five schools were added to the educational resources of the city in 1897, there were only two last year. The miscellaneous buildings for 1897 only total up to 142, which number compares rather unfavourably from a building point of view with 326 in 1897 and 314 in 1896. The alterations and additions to existing buildings for the past year also show a diminution. —*Birmingham Mail.*

Extension of Skibo Castle.—Skibo Castle, the Highland residence of Mr. Andrew Carnegie, is about to be extended. The plans have been prepared by Messrs. Ross & Macbeth, architects, Inverness. The work, which is to cost a sum of 25,000*l.*, has been begun. The present main part of the Castle forms the east elevation. The new additions will form the south and west elevations, which are situated on high terraces overlooking the Dornoch Firth, the Kyle of Sutherland, and the glens and ranges of hills to the west.

New Public Hall, Bearsden, Dumbarton.—The new hall which has just been erected at Bearsden occupies a site at the corner of the Drymen-road and a newly-opened street adjacent to the Free Church. The hall, which measures 70 ft. long by 43 ft. broad, accommodates 600 persons, inclusive of a small gallery which is placed over the entrance lobby at the east end of the hall. The architect is Mr. Alex. Petrie, Glasgow.

Malting, Sawbridgeworth.—A new malting at Sawbridgeworth was opened recently. It has been built for Messrs. H. A. & D. Taylor, of Bishop Stortford and Ware, by Mr. J. A. Hunt, of Hoddesdon, at a cost of 15,000*l.* It is a 180-quarter malting, and contains six working floors, 120 ft. by 50 ft.; fourteen storage bins, and four drying kilns 37 ft. square. Messrs. Spencer & Co., of Melksham, and Messrs. Boby & Co., of Bury St. Edmunds, supplied the machinery. The architects and engineers were Messrs. Inskipp & Mackenzie, of London, and clerk of the works Mr. E. Chinnock, of Bishop Stortford.

New Almshouses, &c., at Charnock Richard near Chorley.—The Bishop of Manchester recently dedicated four new almshouses, a parochial room, and a caretaker's house, which have been erected at Charnock Richard, near Chorley. Mr. Tansley was the architect.

Working Men's Club, Bridgeton, Lanark.—The new premises for the Bridgeton Working Men's Club were opened on the 21st inst. The buildings are situated in Landressy-street, the frontage being built of red sandstone. A vestibule with mosaic floor and tiled walls leads to the principal hall. A library and chess and reading rooms are also provided. Mr. John Gordon, of Glasgow, was the architect, and the following were the contractors: mason work, Mr. Murdock; joinery, Messrs. George Laird & Sons; plastering, Mr. Hamilton; tiling, Mr. Mann; and plumbing, Mr. Leggat.

Victoria Hall, Aston. — The Victoria Hall Company, Aston, have decided to increase the accommodation at the hall by building upon the land in the rear, adjoining Witton-road. Plans have been drawn by Mr. A. Edwards, of Bennett's Hill, for the erection of a block of buildings. The additions will consist of a large hall, 47 ft. by 46 ft., cloak-rooms, refreshment-room, small dining-hall, and suite of Masonic rooms. The new large hall will accommodate about 100 dancers, or an audience of about 400. The total cost of the buildings and furnishings now proposed is estimated at about 3,000*l.*

## *SANITARY AND ENGINEERING NEWS.*

Hornsea Waterworks, East Yorkshire.—The extension which has just been completed provides for the water from the existing shaft, which is a little over 70 ft. deep, being lifted by the present pump. The water is then carried through an 8-in. pipe, and delivered through a perforated spreader, which stands 22 ft. from the ground. Through this spreader, made of copper and somewhat resembling in appearance a huge holder for flowers, the water is sprayed on perforated ledges of the aëration table, which break up the water, a high wall being erected round the spreader to prevent the water from splashing out. From the aëration table the water flows down the weir (consisting of a succession of glazed brick steps), and, with this second process of the aëration, is precipitated in the settling-tanks. Provision is made for the conveyance of the water direct from the air-chamber to the settling-tanks when the weather is too severe to admit of the aëration table and the weir being brought into use. After the water has been well oxidised by the aëration, any sediment is precipitated to the bottom of the settling-tanks. There are two settling-tanks, each of which has a capacapacity of 10,000 gallons, and can be used either separately or jointly. Each are fitted with two large floating valves, which convey the water from that altitude, where it is clearest. The water is then conveyed through iron pipes along the bottom of the filtering chambers through bell-mouthed pipes into circular sumps in the centre of these chambers. The water is steadily distributed from these sumps on to the filtering materials, which are sand, gravel, and coarse gravel. After the water has filtered down to the bottom of these chambers, it is conveyed along several sanitary pipes, and then through the distributing mains of the reservoir. The three filtering chambers each have a superficial area of 720 square feet. Each chamber is 36 ft. in length, 20 ft. wide, and 4 ft. deep. Gun-metal faced valves are placed to each sump, filter, and settling-tank, so that any part of the plant can be cut off for repairs or cleaning out. The reservoir is 135 ft. long and 51 ft. wide over all. It is divided into two compartments, each having a carrying capacity of 200,000 gallons. The construction is on the retaining-wall system and puddled on the outside with 12 in. of tempered clay. The reservoir is provided throughout with sumps, valves, and manholes. The whole of the reservoir, settling-tanks, and aëration buildings are constructed of Portland cement concrete, and faced up in cement. There are proper inclines introduced into all the chambers, and the water is pumped from the reservoir by a simplex positive action feed-pump, which will be fed by steam from the present boiler. This pump forces the water into the main under pressure and also delivers the water to the storage tank at the top of the existing tower. There will therefore be the option of a supply of water by either or both of these systems, including the means of gravitation as it is now employed. These systems will permit a constant supply of water to the town, and allow for any contingencies that may arise from breakdowns or fire. The extra force of water will be of great service to the Local Authorities in the flushing of the drains. It was intended to use polarite as one of the filtering materials. This would, no doubt, have been of great advantage in purifying the water, but it had to be omitted from the scheme at present on account of the additional expense involved. The erection of this plant will almost entirely occupy the area of about an acre adjoining the tower, which is the property of the Council. The aëration and settling tanks are erected on the south side of the tower and the reservoir on the eastern boundary. The cost has been about 2,000*l.* Mr. P. Gaskell, C.E., designed and supervised the works.

Generating Station for Fulham.—At the last meeting of the Fulham Vestry the solicitor reported that Messrs. Wilkinson Bros. were not disposed to proceed upon the tender which had already been accepted by the Vestry, unless the Vestry were willing to vary it by extending the time for the execution of the work to twelve months, and the rate of payment to 90 per cent., and not 80 per cent., as mentioned in the conditions upon which the tender was based. Mr. Minter also was prepared to enter upon his contract only upon condition that the Vestry acceded him ten months for the execution of his work, instead of six, as mentioned in the conditions of contract. The Vestry decided to alter the terms of the contract as desired by the builders. Mr. F. G. Minter's contract for the new generating station amounts to 22,970*l.* The chimney shaft is to be put up by Mr. Cammack Dennis, of Bury.

## *FOREIGN.*

France.—At the Service des Eaux of Paris M. Bechmann, engineer, has been appointed as successor to M. Humblot, under the title "Chef du Service Technique des Eaux d'Assainissement," with M. Launay as his second in command.——The Directors of the Louvre have organised a curious collection of sketches of animals, studies of flowers, &c., by Vittore Pisano, known as "Le Pisanelló."——The Fine Arts Department has presented to the Luxembourg Museum the four unfinished cartoons by Puvis de Chavannes which were temporarily placed with his other works in the Panthéon.——A large hippodrome is being built in the Boulevard de Clichy, Paris, at the angle of Rue Caulaincourt and Rue Forest, from the designs of MM. Cambon, Duray, and Galeron. It is expected to be completed by December.——There is a vigorous effort being made to obtain the consent of the French Parliament to a canal from the Marne to the Seine, at an estimated cost of 32,000,000 francs.——M. Ponsin, an eminent artist in stained glass, is just dead. He contributed very much to the revival of the art in France.——The death is announced, at the age of eighty-two, of M. Jean Baptiste Krantz, formerly Inspecteur-Général of Ponts et Chaussées. He directed the works of the Exhibition of 1867, and was Commissaire-General for that of 1878. He had for many years also been Director of the navigation of the Seine, in which he made a great many improvements. In 1870-71 he took, as engineer, an important part in the defence of Paris. His nephew, M. Camille Krantz, is at present Minister of Public Works.

## *MISCELLANEOUS.*

Good Friday Week.—In consequence of the Easter holidays, next week we go to press a day earlier than usual. All communications for the Editor must reach him by the *first post on Wednesday* morning, except lists of tenders, which will be received up to 10 a.m. of the same day.

Professional and Business Announcements.—Mr. Sydney Perks, architect, has removed his offices from 13, Waterloo-place to 5, Crown-court, Cheapside, E.C.——The two businesses of Hendry & Pattisson, of 4, Marlborough-mews, heating and ventilating engineers, and E. Farrar & Co., late of 69, Berners-street, W., casement makers and art metal workers, have been amalgamated and incorporated under the Companies Acts, and will henceforth be carried on jointly under the style of Hendry & Pattisson, Limited. The works and offices of the company will be at 4, Marlborough-mews, W.——Messrs. C. A. Zadig & Co., portable railway manufacturers, have removed from No. 444 at 11, Queen Victoria-street, City, to more commodious offices, Nos. 11, 11A, and 11B, in the same building. ——Messrs. F. Beesley & Son, civil engineers, of 11, Victoria-street, Westminster, have taken into partnership Mr. H. Bertram Nichols, A.M.Inst.C.E., of Birmingham; their respective practices being amalgamated under the style of Messrs. Beesley, Son, & Nichols.

London County Tramways.—The London County Council will introduce a Bill in the course of the current Session for reconstructing and altering any tramways acquired by them under the Tramways Act, 1870, in so far as may be necessary in order to adapt the lines for electrical traction under either the "conduit" or "trolley" or "surface-contact" system. Generating stations will be established at Streatham Hill, near the St. Pancras Workhouse (St. Anne's Home), at their Camberwell tramway depot, and at Greenwich (on the west side of Trinity Hospital Almshouses).

Electric Lighting, &c., Middlesbrough.—A Local Government Board inquiry into an application of the Middlesbrough Corporation to borrow 36,000*l.* for purposes of electric lighting, and 4,000*l.* for sewerage and drainage purposes, was held in the committee-room, Municipal Buildings, Middlesbrough, on the 15th inst., before Mr. W. O. E. Meade-King, M.Inst.C.E., of London. Mr. A. Sockett, Deputy Town Clerk, and Mr. F. Baker, Borough Engineer, attended on behalf of the Corporation, and in the inquiry respecting the electric lighting, the consulting electrical engineer to the Corporation (Mr. Hammond) and Mr. Robert France, of Bradford, architect for the buildings, were present.

Noiseless Pavement.—We have taken an opportunity of examining the pavement of the forecourt of the new Claridge's Hotel, which has been laid with the North British Rubber Company's slabs, and appears an exceedingly satisfactory form of pavement for deadening the noise of carriages. It is made of a special quality of hard rubber, about 1 in. thick, and though the first outlay is expensive, it is claimed by the makers that it is so lasting as to be economical in the long run. It is at all events very effective for its purpose.

THE CITY OF LONDON DIRECTORY.—The twenty-ninth annual edition of this well-known directory, published by the proprietors, Messrs. W. H. & L. Collingridge, Aldersgate-street, is accompanied as usual by a large folding map, and the complete work forms an excellent guide to the City. The Directory, which appears to have been brought well up to date, contains a streets guide, a commercial directory, trades guide, Corporation directory, public companies directory, biographical directory, &c. Several new features have been added to this edition, comprising, amongst others, lists of the metropolitan hospitals; also additional information relating to the Stock Exchange. The section relating to the public buildings of the City has been enlarged, and now contains fuller details as to the history and structure of the bridges, the better known of the City churches, and a brief account of some of the halls of the livery companies. The buildings in the streets which were affected by the Cripplegate fire of November, 1897, viz., Hamsell-street, Jewin-crescent, Jewin-street, and Well-street, have, to a great extent, been rebuilt, and many of the original occupiers have returned to their holdings, some of the premises are let to new tenants, while others are still unfinished or unlet. Beyond the rebuilding of the above-named streets, improvements in the streets and bye-ways of the City during the past twelve months, have been carefully noted upon the map. Ducksfoot-lane no longer retains that name, but has become part of Lawrence Pountney Hill. Redgate-court, Minories, has disappeared, the site being taken over by the London and Blackwall Railway Company. The new street, to be known as "Lloyd's-avenue," connecting Fenchurch-street and Crutched Friars, is shown on the map, on which is also indicated the route of the City and South London Railway, showing the two City stations, Moorgate-street (entrance from Finsbury Pavement) and King William-street.

THE NEW BRIGHTON TOWER.—Mr. W. F. Taylor, Q.C., the arbitrator appointed under the order of Mr. Justice Bigham to investigate the matters in dispute in an action brought by Mr. F. W. Maxwell, architect, of Manchester, against the New Brighton Tower and Recreation Company in respect of fees and commission due to him as architect of the Tower and other works at New Brighton, held his first sitting at the Manchester Assize Courts recently. Mr. Overend Evans, instructed by Messrs. Hockin, Raby, & Beckton, of Manchester, appears for the plaintiff, and Mr. Horridge and Mr. Keogh, instructed by Messrs. Simpson, North, Harley, and Birkett, of Liverpool, for the defendant company. At the rising of the court the proceedings were adjourned to the 27th, 28th, and 29th inst. at Liverpool.

WIMBLEDON HOUSE.—The materials of Wimbledon House will be sold at auction on Monday next. The house, built *circa* 1750, and with grounds originally laid out by Bushell, was sold by John Bond Hopkins to M. de Calonne, Comptroller-General of Finance at the French Revolution of 1789, from whom Lord Gower bought the property for 15,000*l.* a few years afterwards. It was for some time occupied by Joseph Marryat, M.P. for Sandwich, father of the novelist, and until 1854, by his widow. The beautiful grounds, renowned for their specimens of American trees, beeches, and cedars, and for a flower garden of three acres, are fully described in Loudoun's "Suburban Gardener."

TELEPHONES ENABLING BILL.—Tunbridge Wells Town Council has already made application for a local license to establish a service of its own in the telephone area of Tunbridge Wells, and this by an unanimous vote. The Council further strongly expressed its opinion that Mr. Hanbury's proposed limitation in favour of County Boroughs, which would exclude all towns under 50,000 population, should be altogether withdrawn.

LECTURE ON "MOSAICS": SCHOOL OF ARTS AND CRAFTS.—Mr. H. J. Powell lectured on Friday last week at the Central School of Arts and Crafts, on "Mosaics." A subject of so much interest at the present time ought to have attracted a larger attendance. As it was the lecturer addressed a few students and teachers of the School. Mr. Powell said that his official position was that of colour-mixer to Sir William Richmond on the mosaics at St. Paul's; therefore his remarks were of a technical rather than of a critical nature, addressed to fellow-craftsmen rather than to the public, and relating to matters of history and methods used for obtaining results. Sir William Richmond, whatever may be thought of some of his work at St. Paul's in regard to the treatment of Wren's architecture, must have the credit of having been the first modern artist who has used mosaic with any success in this country, and of having practically revived what was a lost art. There were experiments made in the sixties, when the pendentives in the dome were decorated with mosaics. These designs were executed in Venice, and sent over here to be put up in sections. In 1890 Sir William Richmond undertook the decoration of the choir of St. Paul's, and he determined it should be done by English craftsmen with English materials. Mr. Powell gave some interesting information on the methods employed, the difficulty of educating men, and the experiments made. Nearly all the fragments of ancient mural mosaic found are in glass, though marble, bone, ivory, and mother-of-pearl were also used. The mosaics at St. Paul's are in glass. At first a very large number of colours were used, but it has been found that a restricted palette produces a better harmony; the effect of atmosphere and distance blending contrasting colours better than any system of half-tone or stippling. The decline of the art of mosaic is to be traced to this very misunderstanding, overcome by Sir William Richmond. Craftsmen who understood the extent and limit of their materials were supplanted by great artists like Titian, because the public wished their great masterpieces inscribed on their public buildings, and mosaic was the method chosen. The mosaics at St. Peter's are an example of how the meaning and effect were lost by copyists endeavouring to produce the exact effect of an artist's oil picture. The whole surface was carefully rubbed over, smoothed down, and the joints coloured or made invisible, producing a hard surface in place of the rich texture proper to mosaic.

APPOINTMENT OF SANITARY INSPECTOR.—The Local Government Board have sanctioned the re-appointment of Mr. G. T. Billing as a Sanitary Inspector in Holborn.

THE PRICE OF GAS IN LONDON.—The Select Committee recently appointed to inquire into the powers of charge conferred by Parliament on the Metropolitan gas companies is composed of the same members as was the Committee appointed last year for the same purpose, save that Sir James Rankin and Mr. Pirie have taken the places of Sir John Dorington and Mr. Brigg. We understand that the Committee has power to compel the attendance of any person, or the production of any papers or books that may be necessary for the purposes of the inquiry.

LONDON SKY SIGNS ACT, 1891.—The Building Act Committee of the London County Council reported as follows at Tuesday's meeting of the Council:—"By Section 129 of the London Building Act, 1894, it is provided that licences granted under the provisions of the London Sky Signs Act, 1891, and renewed under the same Act may, on the expiration of the period for which such renewals were granted, be renewed for one further period of two years, but not longer. As the signs which were licensed under the Sky Signs Act, 1891, have now all been removed, we present a report as to the general working of the Act. It may be remembered that the Act, the object of which was the removal of sky-signs as being both unsightly and dangerous, contained provision for sky-signs to be inspected, and when found to be securely constructed, to be licensed for a limited period. The opportunity thus offered by the Act was generally taken advantage of by the owners of large signs, but where the signs consisted of only a single row of open letters, the owners in most cases removed them rather than pay the fee of two guineas for inspection every two years. The fees received by the Council for these licences amounted in all to 111*l.* 10s., the number of licences issued being as follows—For the first period (1891-93), 177 licences; for the second period (1893-1895), 148 licences; and for the third and last period (1895-97), 127 licences. During the first period one licensed sign was blown down, and during the second period two licensed signs were partially blown down. The total number of cases dealt with during the whole period was 813. The amount of litigation which has occurred in connexion with these signs has been comparatively small. In only fifteen cases has it been found necessary to take out summonses in order to enforce removal of the signs, and in only one case has it been necessary for the Council to exercise its power of removing a sky-sign. In one case the High Court, on appeal, quashed the conviction of the police-magistrate on the ground that there was no evidence that the sign was a sky-sign within the meaning of the Act. In another case, before the hearing of the summons, the owner backed up his sign with zinc sheeting, and then successfully contended that it was not visible against the sky. The immediate result of this action was that a similar course was resorted to in fifty-three other cases, and this, as will be remembered, brought about the further provisions as to sky-signs contained in the London County Council General Powers Act of 1893, dealing with close advertisements."

ELEPHANT AND CASTLE IMPROVEMENT. — A claim for compensation arising out of the improvement of the "Elephant and Castle" was heard before Mr. Loveland and a jury at the London County Sessions (Newington Sessions) on the 17th inst. Mr. Meakin, the lessee of the "Elephant and Castle" Headway, claimed to be compensated by the London County Council for the loss of 1,046 ft. of frontage which had been appropriated by the Council for the widening of Walworth-road and Short-street. The land is vested in trustees for the benefit of the poor of Newington. The leases fell out about a year ago, and the land was re-leased to Mr. Meakin. It was decided to rebuild the "Elephant and Castle" public-house and the shops upon the headway. The local authorities suggested that this was a convenient opportunity to effect the widening of Walworth-road, and eventually the plans were amended, and the area of the headway was reduced. The freeholders—the trustees—had been compensated, and the question for the Court to decide was as to the extent to which the interests of the lessee should be recognised. The jury awarded the claimant 7,912*l.*, compensation and expenses.—*Daily Chronicle.*

MEMORIAL TO SIR H. DOULTON.—For more than twenty years the late Sir Henry Doulton was a Governor and Almoner of St. Thomas's Hospital. On Tuesday a memorial to him, erected by Mr. Henry Lewis Doulton and Sir Henry's other children, was unveiled by the Bishop of Rochester—the memorial taking the form of three panels in the reredos of the Hospital Chapel. The panels are in terra-cotta, and the designer was Mr. G. Tinworth.

"THE STUDENTS' COLUMN."—Our Students' Column article (Architectural Hygiene) is, for want of space, held over until next week.

## *CAPITAL AND LABOUR.*

HULL JOINERS.—The Hull Master Builders Association has under consideration an application from the joiners for an increase in their pay from 8½d. per hour to 9d. Although no definite decision has been come to it is stated that the masters are opposed to granting the demand on the ground that the present rate at Hull is higher than the pay in many of the Yorkshire towns.

SUNDERLAND BRICKLAYERS' LABOURERS.—The Sunderland District Building Trades Association, after considering the application of the bricklayers' labourers for an advance of wages from 6½d. to 7d. an hour, and alterations to the working rules, have decided that at present no concessions can be made, as the rate of wages paid to the labourers in Sunderland, they maintain, is considerably higher than many of the surrounding towns. They also do not see any necessity to depart from the working rules as already signed.

JOINERS AND CARPENTERS' STRIKE AT GRIMSBY.—The Grimsby joiners and carpenters, at a mass meeting on Tuesday, decided to strike for an increase of pay from 6½d. to 8d. per hour from April. This will affect 200 men.

## *LEGAL.*

### ACTION BY BUILDERS REFERRED TO OFFICIAL REFEREE.

THE case of Mowlem & Co. *v.* the Army and Navy Auxiliary Supply, Limited, came before Mr. Justice Mathew, sitting without a jury, in the Queen's Bench Division on the 17th inst. This was an action brought by Messrs. Mowlem & Co., the well-known contractors and builders, against the Army and Navy Auxiliary Supply, Limited, to recover 720*l.* for extra work done in connexion with a building contract. The defence was a denial of liability, and a plea that the plaintiffs were liable to pay the defendants certain penalties in consequence of the work not having been executed within the specified time.

Mr. English Harrison, Q.C., and Mr. Hudson were counsel for the plaintiffs; while Mr. Joseph Walton, Q.C., and Mr. MacIntyre represented the defendant company.

Mr. Harrison, in opening the case, stated that his clients entered into a contract for 25,800*l.* for the erection of a large building, which was an addition to the existing buildings of the defendants. The contract, which was dated June 10, 1895, limited the time within which the work was to be completed. What happened was that during the time of the execution of the work possession was not given to the plaintiffs of various parts of the buildings for the purpose of executing the work and large additions were made after the time limited for the performance of the contract. The plaintiffs therefore said that having by the direct action of the defendants been prevented from completing within the specified time the latter were not entitled to have their penalties. The defendants claimed to deduct from the amount due to the plaintiffs the sum of 720*l.* being penalties at the rate of 10*l.* a day for each day beyond the period specified for the completion of the contract, and it was this amount which was in dispute between the parties.

Mr. Joseph Walton, at this stage of the case, interposed by saying that, in his opinion, the case could only be tried by going into great detail, and it would be much better to try it before the Official Referee, Mr. Pollock, than attempt to deal with it in Court.

Mr. Harrison assenting with this view, it was agreed, with his lordship's sanction, that the case should be referred for trial before Mr. Pollock.

Order accordingly.

### CLAIM UNDER THE WORKMEN'S COMPENSATION ACT:

#### IMPORTANT DECISION IN THE COURT OF APPEAL.

THE case of Wood *v.* W. Walsh & Sons came before the Court of Appeal, composed of Lords Justices A. L. Smith, Collins, and Romer, on the 18th inst., the case raising an important question under the Workmen's Compensation Act, 1897, as applying to painters and builders engaged outside of a house by means of ladders, viz., whether the employment is on, in, or about a building which is being "repaired" by means of a "scaffolding" within the meaning of Section 7, Sub-section 1 of the

Act. The appeal came before the court from the decision of the judge at the Leeds County Court upon a case stated by an arbitrator appointed to settle a claim for compensation under the Workmen's Compensation Act, 1897. The claim was made by the widow of a deceased workman who was killed while in the employment of the appellants, Messrs. Walsh & Sons, painters and decorators, at Leeds. The workman at the time of the accident was employed with several other men in cleaning and painting the outside of a house, over 30 ft. in height, at Leeds. The work was being done by means of five or six long ladders, and consisted of removing the dirt and blisters, making good the woodwork with putty and the stonework with hall-plaster or cement, and afterwards painting the surface. Nothing was being done to the building except preparation for painting and the actual painting. The deceased man was standing upon the rung of one of the ladders which was resting against the wall, engaged in puttying and painting, when the rung of the ladder broke and he fell to the ground and was killed. It appeared that one of the men at work had placed a plank with one end resting upon and tied to the rung of one of the ladders, and with the other end resting upon a window-sill, and stood upon this plank to work, but the deceased man had not used this plank. The arbitrator held that the building was not being "repaired" within the meaning of Section 7, Sub-section 1 of the Act, and that neither the ladders nor the arrangement of the plank resting on the ladder and the window-sill were "scaffolding" within the meaning of that Section. He held, therefore, that the deceased man was not killed while engaged in any employment within the Act, and made his award in favour of the employers, but submitted the following two questions of law for the decision of the County Court judge:—(1) Whether the building was being "repaired" within the meaning of the Act; and (2) if so, whether it was being repaired by means of a "scaffolding" within the meaning of the Act. The County Court judge reversed the decision of the arbitrator on both points, and awarded the claimant an agreed sum of 237*l.* 18s. Hence the present appeal by the employers.

Mr. C. A. Russell, Q.C., and Mr. Clarke Hall, appeared for the appellants; and Mr. Robert Wallace, Q.C., and Mr. Horace Marshall, for the claimant.

Their Lordships, at the conclusion of the arguments, held that the deceased man was not employed on, in, or about a building which was being constructed or repaired by means of a scaffolding within the meaning of Section 7, Sub-section 1 of the Act, and that therefore the claimant was not entitled to compensation under the Act.

The appeal was therefore allowed.

## OBSTRUCTION OF ANCIENT LIGHTS IN LEEDS.

AWARDS have been given in the arbitration cases, recently heard, with respect to the obstruction of ancient lights by the directors of the Metropole Hotel Company, Limited, in erecting their hotel in King-street, Leeds. There were two cases. In the one, it was alleged that the premises of Mr. F. C. Kitchin, and in the other those of Mr. C. S. Rooke, had been injuriously affected. Mr. Richard Horsfall, architect, of Halifax, has awarded 425*l.* and costs to Mr. Kitchin, and Mr. Eli Milnes, architect, Bradford, has awarded 400*l.* and costs to Mr. Rooke. Both claimants were represented by Mr. Thomas Winn, architect, whilst Mr. J. W. Connon, architect, appeared for the defendant company. It was arranged that no legal gentleman should take part in the inquiries, but Messrs. Simpson & Simpson prepared the case for Mr. Kitchin, and Messrs. Rooke and Midgley acted in a similar capacity for Mr. Rooke.—*Leeds Mercury.*

## DANGEROUS STRUCTURE CASE.

IN the Queen's Bench Division on Saturday last, before Mr. Justice Wills, Crisp *v.* the London County Council was an action brought by Mrs. Martha Crisp, a married woman, against the London County Council to recover damages for personal injuries alleged to have been sustained through the negligence of the defendants' servants. Defendants denied liability.

Mr. Holloway appeared for the plaintiff, while Mr. Dickens, Q.C., and Mr. Daldy represented the defendants.

It appeared that in the latter part of 1896 it was discovered by the officials of the London County Council that a house in Mansion House-street, Kennington Park-road, was in a dilapidated state. They condemned it as a dangerous structure, and a notice was served upon the owner calling upon him to repair the premises. He neglected to do the work, and a magistrate made an order directing him to take down so much of the building as was dangerous. The owner also failed to comply with this order, and the County Council, under their statutory powers, proceeded to do the necessary work. They erected a hoarding in front of the house and shored up the building, for which purpose they removed some of the paving stones inside the hoarding. When the premises had been restored to a habitable condition the owner was charged by the County Council not only for the work done, but also for the hoarding. Subsequently, somebody, presumably the owner, removed the hoarding, but failed to replace the paving stones. On the evening of August 7, 1897, plaintiff was walking with her husband along Mansion House-street when her foot caught in a hole caused by the removal of one of the paving stones. She was thrown on the ground, receiving a severe injury to her hip. The case was tried before his lordship and a special jury a short time since, when the jury assessed the damages at 40*l.* It was now contended by the County Council that they were entitled to judgment, as they had been guilty of no negligence. They said that they had power to erect a hoarding without the licence of the Vestry, that the hoarding was in a safe condition when it was transferred by them to the owner of the house, and that they could not be held liable for the act of a person who was not their agent. For the plaintiff, it was argued that the County Council were guilty of negligence both in erecting the hoarding without the licence of the Vestry, and in omitting to replace the paving stones when the hoarding was removed.

Mr. Justice Wills, in delivering judgment, said he was satisfied that it was the intention of Parliament that the London County Council should have power to deal with dangerous structures by a special code of legislation, to which the general legislation as to giving notice to the Vestry and so on was not intended to be applicable. When the work of removing the dangerous structure had been done the responsibility of the County Council ceased, and the owner of the property had to perform his ordinary duties. If he did not take down the hoarding and replace the paving stones he was liable, and nobody else, for any damage that might ensue. He therefore gave judgment for the defendants, with costs. —*Daily News.*

## THE ABBEY MANSIONS.

THE builder of Abbey Mansions, Orchard-street, Westminster, William Rose-Rickard, appeared before Mr. Marsham at Westminster Police-court on the 20th inst. to summonses with respect to alleged breaches of the Building and Dangerous Structures Acts. Mr. Dolby appeared for the London County Council; Mr. Horace Avory for the defendant; and Mr. Marshall Hall, Q.C., for the mortgagees. The proceedings really had reference to the condition of the building at the early part of last year. It will be remembered that Mr. Marsham dismissed summonses supported by the District Surveyor, holding that the buildings, as Crown property, were exempt from proceedings. A special case was stated, and the entire matter was now remitted to the magistrate, his view of the matter as to Crown property not being upheld by the Superior Court. Pending the decision of the High Court there were further proceedings before Mr. Marsham, and the matter was referred to arbitration. The Arbitrator decided in favour of the views of the District Surveyor, and the County Council now asked for the costs of these proceedings, it having cost 49*l.* to take up the arbitrator's award. A mass of evidence having been taken as to the condition of the premises last year, and as to the alleged excessive height, Mr. Marsham said he should not give judgment that day as he proposed to go and see the buildings in question. He would give his decision in a week's time.—*Morning Post.*

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## MEETINGS.

### FRIDAY, MARCH 24.

*Architectural Association (Discussion Section).*—Mr. L. Jacob on "Arbitration." 7 p.m.

### SATURDAY, MARCH 25.

*Architectural Association.*—Visit to the Fire-testing Station of the British Fire Prevention Committee. North Bank, Regent's Park (St. John's Wood Station). 3 p.m.

*Institution of Junior Engineers.*—Visit to the Testing Station of the British Fire Prevention Committee at North Bank, Regent's Park. 3 p.m.

*Royal Institution.*—The Right Hon. Lord Rayleigh on "The Mechanical Properties of Bodies." VII. 3 p.m.

*Sanitary Institute (Demonstrations for Sanitary Officers).* — Inspection at the Sutton Sewage Works. 3 p.m.

*Edinburgh Architectural Association.*—Visit to houses, Mortonhall-road and Grange House.

### MONDAY, MARCH 27.

*Sanitary Institute (Demonstrations for Sanitary Officers).*—Inspection at the Metropolitan Cattle Market, York-road, N. 3 p.m.

### TUESDAY, MARCH 28.

*Institution of Civil Engineers.*—Mr. Robert Abbott Hadfield on "Alloys of Iron and Nickel." 8 p.m.

*Architectural Association of Ireland.*—Mr. Walter G. Doolin, M.A., B.E., on "Two A.A. Excursions," being a description of the Architectural Association of Ireland Excursion for 1898 to Glendalough, and the recent Tour of the London Architectural Association in Warwickshire. The lecture will be illustrated by a large number of lime-light views, from photographs specially taken by the lecturer. 8 p.m.

### WEDNESDAY, MARCH 29.

*Sanitary Institute (Lectures for Sanitary Officers).*—Demonstration of book-keeping as carried out in a Sanitary Inspector's office. By Mr. Albert Taylor. 8 p.m.

*Builders' Foremen and Clerks of Works' Institution.*—Quarterly meeting of the Directors. 8 p.m.

### FRIDAY, MARCH 31.

*Glasgow and West of Scotland Technical College (Architectural Craftsman's Society).*—(1) Mr. James Lochhead on "Architect *v.* Contractor." (2) Mr. Charles E. Monro on "The Public and Architecture." 8 p.m.

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## RECENT PATENTS:

### ACCEPTED SPECIFICATIONS.

*Open to Opposition until May 15.*

[1898].—735, Taffs & Hill; and [1899] 2,654, Joseph, Switches for Electrical Light Installations. 5,423, Goddard, Automatical Electrical Switch for Hoists and Cranes. 5,671, Cameron, Commen, & Martin, Treatment of Sewage, &c., and Control of the Flow of Gas therefrom. 5,703-4, Pieper; 8,988, Alker & Mennessier; and 16,464, Henneton; Electrodes for Secondary Batteries or Accumulators. 6,098, Cattanach, Machine for boring Rock, Dressing and Breaking Stone, &c. 6,171, Beldam, Manhole, Inspection, and Similar Coverings. 7,353, Bastow, Pivotted Windows. 7,519, Nordquists, Door Closer and Holder. 7,889, "Francis, Fraction, Area, and Geometry Apparatus." 7,945, Wolfers & Hannemann, Artificial Asphalte. 8,786, Youlten, Stay for Casement Doors and Windows. 9,123, Brown, Testing Road Surfaces. 9,601, MacCoy, Workmen's Time-Recorders. 9,912, Altman, Chimney for Incandescent Gas, Electrical, and Oil Lights. 9,954, Taylor, Gas-producing Apparatus. 10,036, Goldenfarb, Window-cleaning Guard. 10,141, Vözös; and [1899] 1,796, Hilberg, Generation of Acetylene Gas. 10,427, Ducat, Filters for Sewage Purification by Bacterial Action, 10,463, Crosthwaite; and [1899] 2,648, Cæsar, Heating Stoves. 10,515, Epstein, Dust and Mud Collecting Vans. 10,521, Cutler, Indicating or Recording the Level of Water and other Liquids. 10,610, Benson, Walls. Floors, &c. 10,688, Kuphal, Chimney Cowls. 10,768, Faulds, Stone-planing Machines. 10,833, Oates, Waste Water-closets. 11,036, Richter & von Herz, Device for Extinguishing the Fire on Lack of Water in the Boiler. 12,333, Zeinwoldt, Adjustment of Axles for Band-saw Pulleys. 12,807, Watson, Gow, & Co. and Robertson, Stove and Range Construction. 12,285, Snyder, Generating and Burning Gas from Liquid Hydro-carbons. 18,150, Evens, Window Sashes for Ventilation. 20,180, Cains and Grant-Morris, Machines for Facing or Planing Wood, &c. 20,586, Hamilton, Framework and Packing of Doors, Windows, Hatches, Ports, &c. 23,385, Möller & Schaefer; 27,618, Schmidt; and [1899] 707, Electro-Lamp Co., Acetylene Lamps. 27,164, Hanf, Water-Gauge. [1899] 950, Wundrack, Kilns. 1,091 Seeberger; and [1899] 1,656, Smith & Cruikshank, Lifts and Elevators. 1,336, Marshall, Road Scarifiers. 1,478, Fischer, Jointing Stove Pipes to Chimneys. 1,511, Hassenpflug, Levels and Clinometers. 1,784, Widdershoven, "Tunnel." 2,223, Keyes, Apparatus for Lining Pipes. 2,297, Jonet, Raising Water from Wells, &c. 2,400, Perry & Weir, Cocks or Faucets. 2,613, Davis, Ventilation of Water-closets, Urinals, &c. 2,703, Dinkey, Resistance Panels or Grids. 2,745, Callaway, Conduits for Electrical Wires and Cables. 2,814, Richter & Bopp, Non-return Valve for Air and Gases. 2,825, Claremont & Royce, Signals to Indicate the Approaching Exhaustion of Carbons in Electrical Arc Lamps. 2,994, Rzepka, Electrical Arc Lamps. 2,987, White, Drums and other Liquid Containers. 3,029, Hovell, Portable Furniture.

### ABSTRACTS OF PATENTED INVENTIONS.

26,081.—PIPE COUPLINGS: *F. J. Bernhardt & M. B. Rosenberry.*—For disconnectible couplings, spring catches, carried upon the female end, engage with the rear face of a (preferably) phosphor bronze ring screwed upon the male end. The catches are made of levers with dogs pivotted on them, so as to relieve the lever pivots from strain. The ring is tapered and fits over a cup-leather, to which the fluid has access through holes, and which is let into the female end. For hose pipes the shank of the coupling receives the hose pipe, which is there secured by soft metal washers expanded into corrugations on the shank's interior.

26,093.—GRATES, FUEL HOLDERS, AND ECONOMISERS: *F. M. Hamilton & C. Gilbert.*—Plates bolted together, and having rods bolted to them which abut against one side of the grate, form a partition for limiting the effective space of the grate; the plates are serrated below, to admit air, and the rods and teeth are notched so that they may be broken off to fit the grate. The plates—one of which has converging side edges—have slots and bolt-holes, by means whereof they can be adjusted to one another within the grate.

26,124.—DRESSING AND WORKING STONE: *G. Anderson.*— In this contrivance, which is devised for use in machines wherein a reciprocating table carries the stone, the crosshead which carries the tools is counterbalanced, weights working upon slightly inclined guides are connected to the cross-slide by chains that pass over pulleys in brackets above.

26,168.—SPIGOT AND SOCKET JOINTS: *J. H. Sutton.*— The inventor's object is to obtain the true axial alignment of the pipes; he forms on the pipe's spigot end some projections whose height is equal to one-half of the difference between the external diameter of the spigot and the internal diameter of the socket, and whose width is less than the socket's; the joint is filled in the ordinary manner, the socket being kept in position upon its bed by external projections fashioned upon it.

26,202.—INCANDESCENT GAS AND OTHER LAMPS: *A. Martini.*—In order to strengthen the mantles, and minimise fusion and chemical change, is devised a solution of compounds of potassium, sodium, lithium, rubidium, cœsuim, or tin, in combination with the rare earths, or with platinum or uranium, and the impregnated mantle is incinerated and again impregnated.

26,278.—ROOFING TILES: *F. Latham.*—At each tile's bottom edge is a weather flange, which overhangs a flange at the upper edge of the tile next below, and a roll on the tile's one side fits over a hooked rib of the next tile in the same row, the rib being cut away at an angle at both ends, and the roll being similarly cut away at its upper end, in order that the courses may overlap. Hanging nibs under the upper edges engage with the laths. The tiles' lower edges are bevelled for carrying off water, and the weather flanges protect from rain the nails driven through holes in the other flanges.

26,282.—LOCKS AND LATCHES: *W. B. Bust*—When the door has by any means become separated from the striking-plate, the projection of the latch bolt from the case is made adjustable to let the bolt engage with the plate, a toothed quadrant and a rack operate the bolt, which also has a lug to engage a stop adjusted by means of a screw. The stop's bent end engages behind the bolt spring, whereby when the bolt is adjusted uniform pressure is maintained. To render the bolt and lock reversible, the lug and rack are duplicated, the locking-bolt is guided by a pin or otherwise, and a spring controls a pivoted tumbler which locks the bolt.

26,306.—SWITCHES FOR TRANSFORMERS, RESISTANCES, STORAGE BATTERIES, &c.: *British Thomson-Houston Co. & H. M. Hobart.*—The invention is intended to provide a fine adjustment; the turns of a transformer or resistance coil are alternately connected with contacts arranged in two rows between which are set conducting-bars connected by a resistance from whose middle point a wire leads to the main, bridge-pieces slide along the bars and connect alternately with the contacts in either of the rows.

26,354.—CLIPS FOR ROPES: *J. Gill.*—Of the two jaws which grip the rope one is moved under an incline by a lever to which it is connected by a pin and slot, the haulage hook is attached to the lever which, together with the incline, is mounted upon the plate that carries the other jaw, and the lever is held down by a pawl.

26,369.—COIN-FREED GAS METERS: *J. Anderson.*—After the insertion of a coin, the hollow slotted spindle is turned together with the rotation of the handle, and by means of a projection upon the spindle another spindle is rotated so as to screw itself through the boss of a bevel wheel and to carry with it a rod which is in connexion with the gas valve. Upon the passage of gas the spindle and valve are screwed back again by means of suitable gearing, the coin is kept in position by a weighted lever at the bottom of the receiver; for registering, the gas-valve rod has a projection into a helical groove upon a spindle with a pointer, and when the maximum number of coins is inserted a projection on that spindle rocks a lever into the coin-shoot. The inventor has patented a somewhat similar machine under No. 26,370.

26,386.—TELEMETERS: *J. T. Brown.*—A three-armed frame carries a slotted quadrant, which is graduated in distances and degrees, and to one angle of the frame is pivotted a pointer fitted with two index figures that traverse the quadrant, a steadying-lip being provided; to determine a distance, the pointer and arm are directed towards the object.

26,450.—JOINTING FOR PIPES: *J. Hall.*—The pipes (iron or earthenware) are laid end to end, and over the joint (covered with wrapping) are placed two sleeves that fit one another, and are slotted so that two holes are left for the filling; if the sleeves are made of paper, or a similar substance, wire netting can be inserted to give support to the cement.

26,596.—STONE SAWING: *F. Knobel.*—In a machine that has an endless cutting cable, the latter runs upon guide-sheaves on the frame, whereof the lower pair are adjustably mounted on brackets lifted by pinions and racks at the beginning of the cut, and then dropped. A truck, running upon rails whose inclination can be altered, carries the driving-pulley and its motor; at the machine's other end may be put a second tension carriage. The carriages are lifted up their inclines by the engagement of spur gearing, worked by hand, with a rack between the rails, whilst a pawl and ratchet prevent them from being pulled forwards suddenly.

26,740.—VALVE DISCHARGE WATER-WASTE PREVENTERS: *A. E. Parnacott.*—A closed tank, wherein air is compressed during the process of filling, delivers the flush, and the elbow of the outlet is bolted into a socket at the bottom of the tank, a flange and washer being disposed so as to make a seating for a thimble-shaped valve, which slides by means of its hollow stem on the tube up which passes a rod for raising the valve.

26,800.—PAINTS: *C. J. Grist.*—After having been immersed in a drying oil, partially oxidised by being boiled with litharge, the jute or other fibre is dried in a hydro-extractor by hot air, then it is ground and mixed with pigment, boiled with ketone, and mixed with a liquid obtained by heating shellac, gum, and resin with barytes or other dryer and spirit; for an anti-corrosive paint an arsenical or similar salt is added instead of colouring matter.

## SOME RECENT SALES OF PROPERTY:

### ESTATE EXCHANGE REPORT.

| | |
|---|---|
| March 8.—By WYATT & SON (at Chichester). | |
| Stoughton, Sussex.—A cottage and nearly half an acre, u.t. 140 yrs., g.r. nil | £100 |
| March 9.—By HUMBERT & FLINT. | |
| Dartford, Kent.—2, High-st., f. r. 60*l.* | 1,360 |
| 1 to 9, 21 to 27 (odd), Hythe-st., f., r. 326*l.* | 7,625 |
| 45 to 59 odd), Albion-ter., f. | 780 |
| 56 to 66 (even), St. Alban's-rd., f. | 1,400 |
| Miskin-rd., Hazlehurst, f., r. 50*l.* | 1,170 |
| Stone, Kent.—Main-rd., Commerce House f., r. 30*l.* | 610 |
| 1, Elm-rd., u.t. 88 yrs., g.r. 2*l.* 10s. | 170 |
| March 10.—By F. J. BISLEY & SONS. | |
| Old Kent-rd.—13 and 14, The Triangle, f., r. 46*l.* 16s. | 600 |
| Rotherhithe.—2, Aspinden-st., u.t. 55 yrs., g.r. 4*l.* | 480 |
| 33, Union-rd., u.t. 61 yrs., g.r. 4*l.* | 400 |
| By FURBER, PRICE, & FURBER. | |
| Holborn.—34 and 35, Great Queen-st., area 2,211 ft., f., r. 172*l.* | 4,490 |
| Poplar.—243, High-st., f., r. 32*l.* | 460 |
| Brighton, Sussex.—19, Devonshire-pl., f., r. 30*l.* | 460 |
| By MONTAGU & ROBINSON. | |
| Clapham.—King's-rd., f.g.r. 45*l.*, reversion in 25½ yrs. | 2,080 |
| Camberwell.—27, Brymer-rd., u.t. 82 yrs., g.r. 8*l.* | 300 |
| By MILLAR, SON & CO. | |
| St. John's Wood.—33, St. John's Wood-rd., area 10,000 ft., f. | 5,000 |
| By RIDER & SONS. | |
| Notting Hill.—Portobello-rd., St. Michael's Club, f., r. 100*l.* | 1,750 |
| Bayswater.—9, Lonsdale-rd., u.t. 44 yrs., g.r. 6*l.* | 500 |
| By A. DOWELL (at Edinburgh). | |
| Morven, Argyllshire.—The Estate of Glenmorven, area 9,354 a. | 15,700 |
| March 11.—By PICKERING & NIGHTINGALE (at Chester). | |
| Whitby, Cheshire.—Heath Farm, 52 a. 1 r. 22 p., f. | 3,000 |
| By TALBOT & WHITE (at Southend). | |
| Southend-on-Sea, Essex.—Alexandra-rd., Melrose and Westcliff, f., r. 107*l.* | 1,900 |
| March 13.—By MIDDLETON & CRACKNELL. | |
| Hampstead Heath.—South Hill-pk., &c., f.g.r. 76*l.*, reversion in 85¾ yrs. | 2,270 |
| Hampstead.—19, Lawn-rd., u.t. 52 yrs., g.r. 11*l.* 11s. | 685 |
| By WEATHERELL & GREEN. | |
| Strand.—13, Drury Court, f., r. 45*l* | £900 |
| Brixton.—17, Lothian-rd., f., r. 41*l.* 12s. | 500 |
| By E. FERGUSSON TAYLOR (at New Barnet). | |
| New Barnet, Herts.—Bulmer-rd., Warwick House and 2 r. 8 p., f. | 1,525 |
| Station-rd., a freehold building site | 425 |
| Barnet, Herts.—Woodville-rd., &c., ten plots of building land, f. | 700 |
| By J. H. BRADWELL & SON (at Mansfield). | |
| Farnsfield, Notts.—Enclosures of land, 144 a., f. (in lots) | 8,099 |
| By R. & J. R. MITCHELL (at Cockermouth). | |
| Aspatria, Cumberland.—The Arkleby Mill and Farm Estate, 82 a. 3 r. 12 p., f. | 6,000 |
| By CUMBERLAND & SONS (at Long Eaton). | |
| Long Eaton, Derby.—Enclosures of land, 36 a. 1 r. 15 p., f. | 2,215 |
| Two plots of building land, area 22,932 yds., f. | 1,910 |
| Two enclosures of land, 26 a. 2 r. 4 p., f. | 2,600 |
| March 14.—By HARDS & BRADLY. | |
| Rotherhithe.—51 and 53, Verney-rd., u.t. 78 yrs., g.r. 10*l.* | 400 |
| Greenwich.—13, 15, and 15a, South-st., u.t. 80 yrs., g.r. 100*l.*, r. 165*l.* | 350 |
| By F. MILLER & REID. | |
| Pimlico.—116, Tachbrook-st., u.t. 39¾ yrs., g.r. 8*l.*, r. 55*l.* | 525 |
| By ROGERS, CHAPMAN, & THOMAS. | |
| Pimlico.—62, Hugh-st., f., r. 50*l.* | 930 |
| 13, Claverton-st., u.t. 32½ yrs., g.r. 10*l.* 10s. | 650 |
| By RUTLEY, SON, & VINE. | |
| Holloway.—Anson-rd., i.g.r. 75*l.*, u.t. 83 yrs., g.r. 25*l.* | 1,165 |
| Haverstock Hill.—17, Maitland Park-rd., u.t. 53 yrs., g.r. 5*l.*, r. 45*l.* | 490 |
| By DEBENHAM, TEWSON, & CO. | |
| Upper East Smithfield.—Nos. 3 and 4, f., r. 100*l.* | 1,550 |
| Hackney Marshes.—Temple Mills-lane, freehold allotment gardens, 3 r. 32 p. | 300 |
| Silvertown.—Drew-rd., &c., a block of building land, area 14,600 ft., f. | 350 |
| By HUMBERT & FLINT (at Watford). | |
| Watford.—Holywell-road, 16 plots of building land, f. | 482 |
| Ridge-st., &c., eight plots of building land, f. | 231 |
| Leavesden-rd., &c., 22 plots of building land, f. | 1,115 |
| Sussex-rd., a plot of land, 0 a. 3 r. 14 p., f. | 300 |
| Yarmouth-rd., 13 plots of building land, f. | 436 |
| 35, 37, and 39, Salisbury-rd., f. | 500 |
| 17, 19, and 23, Denmark-st., f. | 800 |
| By WILKINSON, SON, & WELCH (at Brighton). | |
| Hove, Sussex.—80, Goldstone villas, f., r. 55*l.* | 910 |
| By R. W. SCOBELL (at Masons' Hall Tavern). | |
| City of London.—Ludgate-hill, "The Ludgate Restaurant," u.t. 8 yrs., r. 400*l.* till Lady-day 1901, and 475*l.* thereafter, with goodwill | 1,060 |
| By FLEURET, SON, & ADAMS (at Masons' Hall Tavern). | |
| Dulwich.—Oglander-rd., "The Oglander Tavern," u.t. 37 yrs., r. 140*l.*, with goodwill | 11,400 |
| By WHETHERLY & HASLETT (at Masons' Hall Tavern). | |
| Lewisham.—High-rd., "The Clarendon" p.-h., u.t. 36 yrs., r. 100*l.*, with goodwill | 13,900 |
| By WYER, ADAMS, & GLOVER (at Masons' Hall Tavern). | |
| Plumstead, Kent. — Raglan-rd., "The Prince Alfred" p.-h., u.t. 32 yrs., g.r. 15*l.*, r. 60*l.* | 2,560 |
| March 15.—By GLASIER & SONS. | |
| Ramsgate, Kent.—Hollicondane-rd., &c., f.g.r.'s 129*l.*, reversion in 78 yrs. | 3,300 |
| By H. C. BIGDEN. | |
| Battersea.—3, 5, and 7, Wye-st., f., r. 78*l.* | 920 |
| By E. W. HARRIS. | |
| Beckenham.—22, Ravenscroft-rd., u.t. 73 yrs., g.r. 5*l.* 5s. | 150 |
| By PHIBBS GIBSON & CO. | |
| Dulwich. — 96, Alleyn-rd., u.t. 44 yrs., g.r. 4*l.* 1s. 4d. | 615 |
| By BAXTER, PAYNE, & LEPPER. | |
| Orpington, Kent.—A freehold building site of 2¼ a., with a partly-finished chateau thereon | 1,320 |
| Bromley, Kent.—Cumberland-rd., &c., a corner building site, f. | 300 |
| St. Mary Cray, Kent.—1, North Bank, f., r. 32*l.* | 500 |
| By GEORGE BRINSLEY. | |
| Streatham.—Ellora-rd., &c., f.g.r.'s 49*l.* 10s., reversion in 71 yrs. (in lots). | 1,350 |
| Bethnal Green.—21 to 31 (odd), Gardner's-rd., u.t. 58 yrs., g.r. 12*l.* 9s. | 1,460 |
| Walworth.—69 to 79 (odd), Farmer's-rd., u.t. 49 yrs., g.r. 18*l.* | 1,040 |
| By FOSTER & CRANFIELD. | |
| Neasden.—Neasden-lane, The Model Farm, f. | 3,400 |
| By THURGOOD & MARTIN. | |
| Wandsworth.—1 to 6, Elizabeth-pl., f. | 1,355 |
| 8 to 13, Prospect Cottages, f. | 1,780 |
| By SELFE, BALL, SMITH & CO. | |
| Surbiton, Surrey.—Maple-rd., Tudor Villa, f. r. 47*l.* | 665 |
| By J. H. HIBBARD. | |
| Lee.—113, High-rd., u.t. 53 yrs., g.r. 3*l.*, r. 50*l.* | 470 |
| 50, Blessington-rd., u.t. 53 yrs., g.r. 3*l.*, r. 45*l.* | 450 |
| Winchmore Hill.—Green-lanes, a block of land, f. | 1,060 |
| Hornsey.—38, Coleraine-rd., u.t. 86 yrs., g.r. 6*l.* | 375 |
| By DRAWBRIDGE & ANSELL (at Burgess Hill) | |
| Burgess Hill, Sussex.—Freek-lane, &c., a freehold building estate, 24 a. 1 r. 36 p. | 1,300 |
| By Messrs. SAUL (at Boston). | |
| New York, Lincs.—Enclosures of land, 14 a. 2 r. 5 p., f. | 470 |
| Ancaster House and plot of land adjoining, 1 r. 38 p., f. | 193 |
| Castledyke Farm, 21 a. 1 r. 28 p., f. | 750 |
| March 16.—By H. J. BLISS & SONS. | |
| Old Ford.—Lefevre-rd., f.g.r. 60*l.* 5s., reversions in 67 and 66 yrs. | 1,555 |
| 72 to 82 (even), Milton-rd., u.t. 63 yrs., g.r. 12*l.* | 910 |
| Poplar.—6 to 10, Chrisp-st., u.t. 53 yrs., g.r. 15*l.* | 345 |
| Plaistow.—5 to 15 (odd), New Barn-st., c. | 505 |
| By JENKINS & SONS. | |
| Honor Oak.—3, Mundania-rd., u.t. 83½ yrs., g.r. 8*l.*, r. 50*l.* | 530 |
| Lewisham.—29, Breakspear-rd., u.t. 74½ yrs., g.r. 12*l.*, r. 65*l.* | 750 |
| By EVES & SONS. | |
| Islington.—58, Canonbury-rd., u.t. 19½ yrs., g.r. 5*l.* 10s., r. 40*l.* | 165 |
| Chingford. — Chingford-rd., a plot of building land, f. | £170 |
| By NEWBON, EDWARDS, & SHEPHARD. | |
| City-rd.—No. 337, f., r. 63*l.* | 1,020 |
| Barnsbury.—41 and 42, Cumberland-st., a freehold rental of 40*l.*, reversion in 62¾ yrs. | 810 |
| 27, Albion-gr., u.t. 46 yrs., g.r. 4*l.*, r. 42*l.* | 455 |
| 132, Hemingford-rd., u.t. 44 yrs., g.r. 8*l.*, e.r. 55*l.* | 610 |
| Holloway.—9, 11, and 13, Orpingley-rd., u.t. 78 yrs., g.r. 10*l.* | 550 |
| 8, Medina-rd., u.t. 62 yrs., g.r. 4*l.* 10s., r. 32*l.* | 370 |
| Walworth.—164, Lorrimore-rd., u.t. 50 yrs., g.r. 3*l.* 10s., r. 30*l.* | 325 |

*Contractions used in these lists.*—F.g.r. for freehold ground-rent; l.g.r. for leasehold ground-rent; i.g.r. for improved ground-rent; g.r. for ground-rent; r. for rent; f. for freehold; c. for copyhold; l. for leasehold; e.r. for estimated rental; u.t. for unexpired term; p.a. for per annum; yrs. for years; st. for street; rd. for road; sq. for square; pl. for place; ter. for terrace; cres. for crescent; yd. for yard, &c.

## PRICES CURRENT OF MATERIALS.

### TIMBER.

| | | | | | | |
|---|---|---|---|---|---|---|
| Greenheart, B.G. ton | £8 | 0 | 0 | 0 | 0 | 0 |
| Teak, E.I. load | 10 | 10 | 0 | 15 | 10 | 0 |
| Sequoia, U.S., ft. cu. | 1 | 9 | 0 | 2 | 0 | 0 |
| Ash, Canada, load | 3 | 17 | 6 | 5 | 5 | 0 |
| Birch, do | 3 | 0 | 0 | 5 | 0 | 0 |
| Elm, do | 4 | 12 | 6 | 5 | 15 | 0 |
| Fir, Dantsic, &c. | 1 | 10 | 0 | 3 | 10 | 0 |
| Oak, do | 3 | 5 | 0 | 3 | 15 | 0 |
| Canada | 4 | 0 | 0 | 6 | 0 | 0 |
| Pine, Canada red | 0 | 0 | 0 | 0 | 0 | 0 |
| Do, yellow | 4 | 7 | 6 | 6 | 5 | 0 |
| Lath, Dantsic, fath. | 4 | 10 | 0 | 5 | 10 | 0 |
| St. Petersburg | 4 | 0 | 0 | 6 | 10 | 0 |
| Wainscot, Riga, &c., log | 3 | 15 | 0 | 6 | 5 | 0 |
| Odessa, crown | 3 | 15 | 0 | 6 | 5 | 0 |
| Deals, Finland, 2nd and 1st std. 100 | 9 | 15 | 0 | 10 | 5 | 0 |
| Do., 4th and 3rd | 9 | 15 | 0 | 10 | 5 | 0 |
| Do., Riga | 8 | 5 | 0 | 9 | 5 | 0 |
| St. Petersburg, 1st yellow | 11 | 15 | 0 | 14 | 5 | 0 |
| Do., 2nd yellow | 10 | 15 | 0 | 12 | 5 | 0 |
| Do., white | 9 | 15 | 0 | 11 | 15 | 0 |
| Swedish | 9 | 15 | 0 | 16 | 15 | 0 |
| White Sea | 10 | 15 | 0 | 18 | 0 | 0 |
| Canada Pine, 1st | 18 | 15 | 0 | 25 | 5 | 0 |
| Do., do., 2nd | 13 | 15 | 0 | 17 | 0 | 0 |
| Do., do., 3rd, &c. | 6 | 15 | 0 | 10 | 0 | 0 |
| Do. Spruce, 1st | 8 | 5 | 0 | 10 | 5 | 0 |
| Do., do., 3rd and 2nd | 7 | 0 | 0 | 8 | 5 | 0 |
| New Brunswick | 7 | 0 | 0 | 7 | 15 | 0 |
| Battens, all kinds | 5 | 0 | 0 | 16 | 0 | 0 |
| Flooring boards, sq., 1 in., prep., 1st | 9 | 0 | 0 | 15 | 3 | 0 |
| Do., 2nd | 0 | 7 | 0 | 0 | 12 | 3 |
| Other qualities | 0 | 5 | 3 | 0 | 6 | 6 |
| Cedar, Cuba, ft. | 0 | 0 | 4 | 0 | 0 | 4½ |
| Honduras, &c. | 0 | 0 | 4 | 0 | 0 | 4½ |
| Mahogany, Cuba | 0 | 0 | 5½ | 0 | 0 | 7½ |
| St. Domingo, cargo av. | 0 | 0 | 5 | 0 | 1 | 3 |
| Mexican do., do. | 0 | 0 | 3½ | 0 | 0 | 4 |
| Tabasco, do., do | 0 | 0 | 4 | 0 | 0 | 6½ |
| Honduras, do. | 0 | 0 | 4½ | 0 | 0 | 6 |
| Box, Turkey, ton | 6 | 0 | 0 | 15 | 0 | 0 |
| Satin, Porto Rico | 0 | 0 | 9 | 0 | 2 | 0 |
| Walnut, Italian | 0 | 0 | 3 | 0 | 0 | 7½ |

### METALS.

| | | | | | | |
|---|---|---|---|---|---|---|
| IRON—Pig, in Scotland ton | 2 | 14 | 7½ | 0 | 0 | 0 |
| Bar, Welsh, in London | 6 | 0 | 0 | 6 | 5 | 0 |
| Do. do. at works in Wales | 5 | 15 | 0 | 5 | 17 | 6 |
| Do. Staffordshire, in London | 6 | 5 | 0 | 7 | 10 | 0 |
| COPPER—British cake and ingot | 72 | 5 | 0 | 72 | 15 | 0 |
| Best selected | 73 | 0 | 0 | 73 | 15 | 0 |
| Sheets, strong | 77 | 0 | 0 | 80 | 0 | 0 |
| Chili bars | 67 | 5 | 0 | 0 | 0 | 0 |
| YELLOW METAL lb. | 6½d. | | | 7d. | | |
| LEAD—Pig | | | | | | |
| Spanish ton | 14 | 16 | 3 | 0 | 0 | 0 |
| English Com. Brands | 15 | 0 | 0 | 0 | 0 | 0 |
| Sheet, English, 6 lbs. per sq. ft. and upwards | 16 | 1 | 3 | 0 | 0 | 0 |
| Pipe | 16 | 11 | 3 | 0 | 0 | 0 |
| ZINC—English sheet ton | 30 | 0 | 0 | 0 | 0 | 0 |
| Vieille Montagne | 31 | 0 | 0 | 0 | 0 | 0 |
| Spelter | 27 | 5 | 0 | 27 | 10 | 0 |
| TIN—Straits | 107 | 7 | 6 | 0 | 0 | 0 |
| Australian | 107 | 10 | 0 | 108 | 0 | 0 |
| English Ingots | 110 | 10 | 0 | 111 | 10 | 0 |
| Banca | 0 | 0 | 0 | 0 | 0 | 0 |
| Billiton | 0 | 0 | 0 | 0 | 0 | 0 |

### OILS.

| | | | | | | |
|---|---|---|---|---|---|---|
| Linseed ton | 18 | 0 | 0 | 0 | 0 | 0 |
| Cocoanut, Cochin | 27 | 15 | 0 | 0 | 0 | 0 |
| Do. Ceylon | 24 | 10 | 0 | 0 | 0 | 0 |
| Palm, Lagos | 21 | 15 | 0 | 0 | 0 | 0 |
| Rapeseed, English, pale | 22 | 15 | 0 | 0 | 0 | 0 |
| Do. Brown | 21 | 5 | 0 | 0 | 0 | 0 |
| Cottonseed ref. | 15 | 0 | 0 | 16 | 0 | 0 |
| Oleine | 17 | 0 | 0 | 18 | 0 | 0 |
| Lubricating U.S. | 0 | 5 | 3 | 0 | 7 | 6 |
| Do. Black | 0 | 5 | 0 | 0 | 6 | 6 |
| TAR—Stockholm barrel | 1 | 5 | 0 | 0 | 0 | 0 |
| Archangel | 0 | 18 | 0 | 0 | 0 | 0 |
| Turpentine | 34 | 0 | 0 | 0 | 0 | 0 |

## TO CORRESPONDENTS.

R. M.—J. B. (amounts should have been stated).

NOTE.—The responsibility of signed articles, letters, and papers read at public meetings, rests, of course, with the authors.

*We cannot undertake to return rejected communications.*

Letters or communications (beyond mere news items) which have been duplicated for other journals are NOT DESIRED.

We are compelled to decline pointing out books and giving addresses.

Any commission to a contributor to write an article is given subject to the approval of the article, when written, by the Editor, who retains the right to reject it if unsatisfactory. The receipt by the author of a proof of an article in type does not necessarily imply its acceptance.

All communications regarding literary and artistic matters should be addressed to THE EDITOR; those relating to advertisements and other exclusively business matters should be addressed to THE PUBLISHER, and *not* to the Editor.

# COMPETITIONS, CONTRACTS, AND PUBLIC APPOINTMENTS.

## COMPETITIONS.

| Nature of Work. | By whom Advertised. | Premiums. | Designs to be delivered. |
|---|---|---|---|
| School Buildings | Fleetwood U.D.C. | 0l. 10s. | April 18 |
| Market Hall | Stockton - on - Tees Corp | 25l.; 15l.; 10l. | May 1 |
| Kursaal | Harrogate Corp. | 150l.; 100l.; and 75l. | June 3 |
| Boys School | St. Thomas Sch. Bd. Exeter | ........ | No date |

## CONTRACTS.

| Nature of Work or Materials. | By whom Required. | Forms of Tender, &c. Supplied by | Tenders to be delivered. |
|---|---|---|---|
| *Dust Destructor | Beckenham U.D.C. | J. A. Angell, Council Offices, Beckenham | Mar. 27 |
| *Extension of Laundry at Infirmary | City of London Union | Pridmore, 2, Broad-street-buildings, E.C. | do. |
| *Drainage | Willesden D.C. | O. C. Robson, Public Offices, Dyne-road, Kilburn | Mar. 28 |
| *Repairs, and Covering with Zinc and Copper Dome at Offices | Poplar B. of W. | Surv. 1 7, High-street, Poplar, E. | do. |
| Stone and Slag | Pocklington R.D.C. | T Robson, Pocklington | do. |
| Electrical Plant, &c. | Doncaster Corp. | J. N. Schoolbred, C.E. 47, Victoria-st. E.C. | do. |
| Granite (3,500 tons) | Uppingham R.D.C. | J. E. Willford, Council Offices, Uppingham | do. |
| Road Materials | Sowerby Bridge U.D.C. | Rhodes & Evans, Commercial Bank-chmbrs. Halifax | do. |
| Water Supply Works, St. Stephens-by-Saltash | St. German's R.D.C. | F W. Cleverton, 4, Buckland-terrace, Plymouth | do. |
| Alterations to Parish Church, Glencolumbkille, co. Donegal | Select Vestry | S. P. Close, Archt. Donegal | do. |
| Sewerage Works, &c. | Stanley (Durham) U.D.C. | J. Routledge, Surv. Council Offices, Stanley | do. |
| *Road Material | Lewisham B. of W. | Surveyor, Town Hall, Catford, S.E. | do. |
| *English Portland Cement | St. Saviour's B. of W. | G. R. Norrish, Offices, Emerson-st. Bankside, S.E. | Mar. 29 |
| *Removal of Dust | Chiswick U.D.C. | A. Ramsden, Vestry Hall, Chiswick | do. |
| Slag, &c. | Clown R.D.C. | H J. Gower, Surv. PostOffice, Whitwell, Chesterfield | do. |
| Stone (1,000 tons) | East Kerrier R.D.C. | G. A. Jenkins, Penryn | do. |
| Road Works, Cliffe | Strood (Kent) R.D.C. | G. W. Prall, Workhouse, Strood | do. |
| Paving Works | Saffron Walden T.C. | A. H. Forbes, C.E. Saffron Walden | do. |
| Sewers, &c. Erdington | Birmingham Corp. | H. H. Humphries, Surv. Public Hall, Erdington | do. |
| Street Works, Tranmere | Birkenhead Corp. | C. Brownridge, C.E. Town Hall Birkenhead | do. |
| Electrical Plant, &c. | Aberdeen Corp. | J. A. Bell, City Engr. Town House, Aberdeen | do. |
| Surveyor's Materials | Gateshead Corp. | J. Bower, C.E. Town Hall, Gateshead | Mar. 30 |
| Surveyor's Materials | Clayton - le - Moors U.D.C. | A Dodgeon, Surv. Clayton-le-Moors | do. |
| Surveyor's Materials | Withington (Lancs.) U.D.C. | A. H. Mountain, Surv. Town Hall, Withington | do. |
| Stone, &c. | Barton Regis R.D.C. | J. A. Henderson, Surv. Winterbourne | Mar. 31 |
| Granite Road Metal and Drain Pipes, Congleton | Town Council | R. Burslan, Boro Surv. Market-place, Congleton | do. |
| Granite (16,000 tons) | Bucks C.C. | R. J. Thomas, CountyHall, Aylesbury | do. |
| Additions to School | Managers of Englefield Green Schools | W. Menzies, Archt. Englefield Green, Surrey | April 1 |
| *Road Materials | Bromley U.D.C. | Council Offices | April 4 |
| *Construction and Sinking of Well | Rochford R.D.C. | J. Mansergh, 5, Victoria-street, S.W. | do. |
| Reservoir | Ledbury U.D.C. | R. E. W. Berrington, Engr. Wolverhampton | do. |
| Road Works, Oban | Argyll C.C. | K. Macrae, Dist. Surv. 5, Argyll-st. Oban | do. |
| Surveyor's Materials | Newburn - on - Tyne R.D.C | T. Gregory, Surv. Newburn-on-Tyne | do. |
| Sewers, Purfleet | King's Lynn Corp. | E. J. Silcock, C.E. King-st. King's Lynn | do. |
| Public Baths | Leyton (Essex) U.D.C. | Harrap & Duffield, C.E. 34, Queen-st. E.C. | do. |
| Tar Paving Works, &c. | West Bridgford U.D.C. | W. Pare, C.E. George-rd. West Bridgford | do. |
| Services and Materials (various) | Southgate U.D.C. | E. G. Lawson, Council Offices, Palmer's Green, N. | do. |
| *Wrought Iron Fencing | Watford U.D.C. | D. Waterhouse, 14, High-st. Watford, Herts. | April 5 |
| Asphalt Paving Works | Westminster Vestry | G. R. W. Wheeler, Town Hall, Caxton-st. Westminster | do. |

## CONTRACTS—*Continued.*

| Nature of Work or Materials. | By whom Required. | Forms of Tender, &c. Supplied by | Tenders to be delivered. |
|---|---|---|---|
| *Stoneware Drain Pipes, Traps, &c. | Hove Corp. | H. H. Scott, Town Hall, Hove | April |
| *Street Watering Vans and Tumbler Carts | Twickenham U.D.C. | F. W. Pearce, Town Hall, Twickenham | do. |
| Gas Works (Contracts 1, 2) | Bury (Lancs.) Corp. | H. Simmonds, Engr. Elton, Bury | do. |
| *Glazed Stoneware Socket Pipes | Birmingham, Tame & Rea Dis. Drainage Board | J. Knight, Council House, Birmingham | do. |
| *Agricultural Drain Pipes | do. | do. | do. |
| *Drain Pipes | Bethnal Green Vestry | F. W. Barratt, Vestry Hall, Church - row, Bethnal Green, E. | April |
| Road Materials | Monks Kirby R.D.C. | J. C. Coates, Surv. Bitteswell, Lutterworth | do. |
| Schools, Ocker Hill | Tipton Sch. Bd. | A. Long, Archt. 21, High-st. West Bromwich | do. |
| *Underground Conveniences | St. Pancras Vestry | W. N. Blair, Vestry Hall, Pancras-rd. N.W. | April |
| *Wood Paving, &c. | Camberwell Vestry | Surveyor, Vestry Hall | do. |
| *Paving (Granite Setts) | Islington Vestry | J. P. Barber, Vestry Hall, Upper-st. N. | April |
| *Four Pairs Wrought Iron Gates | Hull Corp. | City Engineer | do. |
| *Providing and Laying Cast-iron Pipes, &c. | Leigh-on-Sea U.D.C. | J. Mansergh, 5, Victoria-st. S.W. | April |
| *Sinking a Well | Greenwich Union | T. Dinwiddy, 12, Croom's Hill, Greenwich, S.E. | do. |
| *Buoy Store, &c. at Trinity Store, Penzance | Trinity House Corp. | Trinity House, London, E.C. | April |
| Road Materials | Gloucester Corp. | —Weaver, Surv. Denmark-rd. Gloucester | April |
| Sewerage Works | Bexhill U.D.C. | G. Ball, C.E. Town Hall, Bexhill | April |
| *Alterations and Repairs at Pumping Station | L.C.C. | Engr.'s Dept. County Hall, Spring Gardens, S.W. | April 25 |
| *Engines, Pumps, &c. for Water Works | Gravesend & Milton Water Works Co. | J. Mansergh, 5, Victoria-st. S.W. | April 27 |
| *Church, Elland, Yorks. | ........ | G H. Fellows-Prynne, 6, Queen Anne's Gate, S.W. | No date |
| Street Works | Stapleford Co-op. Soc. Ltd. | E. R. Ridgway, Surv. Long Eaton | do. |
| Additions to Business Premises, Broadmead, Bristol | Pragnell & Co. | J. Hart, Liverpool-chmbrs. Corn-st. Bristol | do. |
| Two Shops and Three Houses, Belfast | J. Campbell | W. J. Moore, Archt. Whitehall-buildings, Belfast | do. |
| Five Houses, Somerset-rd. Pudsey | ........ | G. D. Goforth, Richardshaw-lane, Pudsey | do. |
| House, Beach-road, Southend | G. Ford | W Y. Hobbies, Archt. 57, High-st. Southend | do. |
| Combing Shed, Shipley | ........ | J. Jackson, Archt. Barry-st. Bradford | do. |
| Additions to Schools | South Uist (N.B.) Sch. Bd. | J. Wedderspoon, C.E. Inverness | do. |
| Store Premises, Littlemoss | Waterloo (Lancs.) Indus. Prov. Co-op. Soc. Ltd. | A. J. Howcroft, Archt. 12, Clegg-st. Oldham | do. |
| Schools, Gates-st. Wolverhampton | Managers | F. H. Lynes, Archt. Lichfield-st. Wolverhampton | do. |
| Store Premises, Bridge-st. Wrexham | ........ | Morison & Son, Archt. King-st. Wrexham | do |
| Slaughter House, &c. Bow-st. Rugeley | Indus. Co-op. Soc. Ltd. | W. Price, Albion-street, Rugeley | do. |
| Eight Cottages, King's-road | Halstead (Essex) Co-op. Soc. Ltd. | Goodey & Cressall, Archt. 2, Victoria-chambers, Colchester | do. |
| Shop, Keeling's-lane, Northwood, Hanley | E. Woodward | A. P. Miller, Archt. Frederick-st. Hanley | do. |
| Shop Front and Alterations, Westgate-st. Ipswich | ........ | T. W. Cotman, Archt. Northgate-st. Ipswich | do. |
| Fifty Cottages | Port Talbot Development Co. Ltd. | D. C. Salmond, Archt. 7, Windsor-place, Cardiff | do. |
| *School Buildings, St. Peter Port | States of Guernsey | Colson, Farrow & Nisbett, 45, Jewry-st. Winchester | do. |

## PUBLIC APPOINTMENTS.

| Nature of Appointment. | By whom Advertised. | Salary. | Application to be in. |
|---|---|---|---|
| *Road Foreman | Clerkenwell Vestry | 2l. 10s. per week | Mar. 27 |
| *Architectural Draughtsman | L.C.C. | 3l. 3s. per week | Mar. 28 |
| *Borough Surveyor and Inspector of Nuisances | Hythe Corp. | 200l. rising to 250l. | Mar. 31 |
| *Surveyor and Inspector of Nuisances | Kendal Corp. | 175l. per annum | April 5 |
| *General Engineering Assistant | Birkenhead Corp. | 110l. rising to 150l. | April 7 |
| *Surveyor's Chief Clerk | Twickenham U.D.C. | 80l. rising to 120l. per an. | April 8 |
| *Surveyor | Hackney Vestry | 600l. per an. to commence | April 18 |

*Those marked with an asterisk* (*) *are advertised in this Number. Competitions, p.* iv. *Contracts, pp.* iv. vi. viii. x. & xxiii. *Public Appointments, pp.* xx. xxi. & xxiii.

## TENDERS.

*.* Next week communications for insertion under this heading must reach us *not later than 10 a.m.* on Wednesday, as, owing to the Easter holidays, we go to press a day earlier than usual.

* Denotes *accepted.* † Denotes *provisionally accepted.*

ALVASTON (near Derby).—For the erection of a villa residence and outbuildings, for Mr. Frank Hatton. Mr. Geo. Yates Mills, architect, Irongate, Derby. Quantities by the architect :—

| | | | |
|---|---|---|---|
| Chas. Brown | £1,726 0 6½ | H. Chattle | £1,570 0 0 |
| W. Walkerdine | 1,618 10 0 | A. Smith | 1,503 0 0 |
| Arthur Brown | 1,578 16 0 | G. Durant* | 1,491 0 0 |

[All of Derby.]

BOURNEMOUTH.—For painting the Promenade Pier. Mr. F. W. Lacey, M.Inst.C.E., Borough Engineer and Surveyor :—

| | Genuine White Lead Paint. | Calley's Torbay Oxide Paint. | Ferrodor Paint. |
|---|---|---|---|
| Shears & Sons | £350 0 | £365 0 | £365 0 |
| Jenkins & Sons | 329 0 | 346 0 | 363 0 |
| Wm. A. Clapcott | 255 10 | 270 10 | 270 0* |

[All of Bournemouth.]

BRENTFORD.—For redecorations, &c., to "The Griffin" public-house, for Messrs. Fuller & Co., Griffin Brewery, Chiswick. Mr. J. Hume, surveyor, Chiswick :—

| | | | |
|---|---|---|---|
| Dorey & Son | £133 | Robinson | £128 |
| Adamson & Son | 129 | Speechley & Smith | 117 |

BURTON-ON-TRENT.—For the erection of business premises, High-street, Burton-on-Trent, for Mr. James Campbell. Mr. Geo. Yates Mills, architect, Irongate, Derby. Quantities by the architect :—

| | | | |
|---|---|---|---|
| J. Hunter | £1,688 | G. Hodges | £1,580 |
| W. A. Stevenson | 1,660 | G. Kennard | 1,535 |
| H. Edwards | 1,620 | A. Kershaw | 1,498 |
| Lowe & Sons | 1,620 | J. T. Varlow* | 1,469 |

[All of Burton-on-Trent.]

CARLTON.—For new stores at Carlton, Notts, for The Netherfield and Carlton Co-operative Society, Ltd. Mr. R. Whitbread, architect, Carlton, near Nottingham :—

| | | | |
|---|---|---|---|
| Hodson & Son | £1,140 0 0 | J. Lewin | £1,054 0 0 |
| A. G. Bell | 1,118 5 0 | A. B. Clarke | 1,050 0 0 |
| J. Hutchinson | 1,100 0 0 | T. H. Harper* | 931 16 10 |
| T. Cuthbert | 1,068 0 0 | | |

CHISWICK.—For building two houses and stables for Mr. L. Cox. Mr. J. Hume, architect and surveyor, Chiswick :—

| | | | |
|---|---|---|---|
| Eydman & Sons | £1,448 | Speechley & Smith | £1,220 |
| Adamson & Son | 1,330 | L. L. Leeder | 1,175 |
| Blackman | 1,229 | Bendon | 1,160 |

COOKHAM DEAN.—For the erection of the New Infants' School, for the Vicar, Churchwardens, and Committee. Mr. Gordon P. G. Hills, architect, 4, Adam-street, Adelphi, W.C. Quantities supplied by Mr. C. A. Bassett-Smith, 10, John-street, Adelphi, W.C. :—

| | | | |
|---|---|---|---|
| R. G. Lacey | £1,270 | W. Creed | £1,150 |
| Cooper & Sons | 1,267 | H. H. Taft (reduced tender accepted) | 1,135 |
| Silver & Sons, Ltd. | 1,189 | | |

DOVER.—For the supply of flints, for the Town Council :—

*1,000 cubic yds. of Pit Flints at 4s. 10d. per yd.*

M. E. Stiff* (Mrs.), Dover.

*150 cubic yds. of Field Flints at 6s. 6d. per yd.*

E. Broadley,* Dover.

ELGIN.—For the extension of Moray-street from Rose avenue to Wards-road. Mr. A. A. Turriff, Burgh Surveyor, Elgin :—

| | | | |
|---|---|---|---|
| Milne & Son | £655 0 | Chisholm & Co. | £546 10 |
| Jas. Mackenzie | 580 0 | Fraser, Inverness* | 532 10 |

ENNISKILLEN (Ireland).—For the erection of business premises, High-street, for Mr. W. Boyd. Mr. T. Elliott, architect, 37, Darling-street, Enniskillen :—

| | | | |
|---|---|---|---|
| J. Reid | £1,460 | J. Harvey, Enniskillen* | £1,400 |
| J. Donnelly | 1,403 | | |

FARNHAM ROYAL (Bucks).—For the erection of dwelling house and stabling at Farnham Royal for Mr. Herbert, Windsor. Mr. S. M. Wyborn, architect, Park Chambers, Windsor :—

| | | | |
|---|---|---|---|
| J. Devrill | £1,980 | H. D. Bowyer | £1,813 |
| W. Watson | 1,895 | C. W. Cox & Sons, Maidenhead* | 1,790 |
| H. Charman | 1,832 | | |

HALSTEAD.—For additions to industrial schools. Messrs. Baker & May, architects, Colchester :—

| | | | |
|---|---|---|---|
| T. J. Ward | £775 0 0 | Sudbury, Sen. | £541 5 0 |
| Runnacles & Co. | 566 0 0 | G. Sharp* | 535 7 6 |
| Sudbury & Sons | 550 4 0 | | |

HINCKLEY (Leicestershire). — For alterations and additions to the "Holly Bush" Inn, for Messrs. Marston, Thompson, & Son, Limited Mr. Geo. Yates Mills, architect, Irongate, Derby. Quantities by the architect :—

| | | | | | | |
|---|---|---|---|---|---|---|
| Hall & Son........ | £696 | 4 | Thomas West, Burton-on-Trent* .. | £576 | 15 |
| Greaves & Farmer | 655 | 0 | | | |

ILFORD.—For erecting and completing shop premises. Cranbrook - road, Ilford, Essex, for Mr. W. F. Prentis, Messrs. Verlyck & Dunn, architects :—

H. L. Pridmore, Ilford*.................. £2,195

ILFORD. — For the "Seven Kings" Hotel, Ilford, for Messrs. Savill Brothers, Limited. Messrs. W. G. Bartleet & Son, architects, 56, New Broad-street. Quantities by Messrs. W. E. Stoner & Sons, 8, Blomfield-street, E.C. :—

Hammond & Sons* ...................... £7,675

LONDON.—For additions and alterations to workhouse, Constance-road, Camberwell, for the Guardians of St. Giles, Camberwell. Messrs. Henry Jarvis & Son, architects :—

| | | | |
|---|---|---|---|
| G. J. Newton ...... | £7,313 | Chessum & Sons.... | £6,884 |
| Kirk & Randall .... | 7,145 | Gough & Co., Hendon* ........ | 6,394 |
| G. Parker .......... | 6,949 | | |
| Staines & Son ...... | 6,888 | | |

LONDON.—For alteration and additions to No. 54, Russell-square, Bloomsbury, for Mr. C. J. Woolff. Mr. Philip E. Pilditch, architect :—

| | | | |
|---|---|---|---|
| Parkinson.......... | £1,925 | Kirk & Kirk* ...... | £1,540 |
| Brown ............ | 1,590 | | |

LONDON.—For the erection of fifty-four cottages at Erith, S.E., for the South-Eastern Railway Company. Messrs. H. S. Saunders and Messrs. G. Humphreys Davies, & Co., joint architects :—

| | | | |
|---|---|---|---|
| Holloway Bros..... | £27,180 | W. Sheppard ...... | £23,857 |
| Howell J. Williams | 24,777 | G. E. Wallis & Sons | 23,787 |
| Stebbings & Pannell | 24,570 | T. Knight ........ | 23,707 |
| Perry & Co. ...... | 24,167 | J. Smith & Sons.... | 23,491 |

LONDON.—For alterations, &c., to 19, High-street, Marylebone. Mr. W. W. Gwyther, architect :—

J. W. Heeps* ........................ £2,449

LONDON.—For alterations at the "Lamb Hotel," Caledonia Market, Islington, for Mr. J. Bambridge. Mr. C. Wisher, architect, Wellesley-road, Leytonstone :—

| | | | |
|---|---|---|---|
| Salt.............. | £1,989 | Britten ............ | £1,812 |
| Todd .............. | 1,076 | Rowe .............. | 1,799 |
| Easton ............ | 1,855 | Holmes & Annesley* | 1,672 |

LONDON.—For the erection of electric light generating station in Townmead-road, Fulham, for the Fulham Vestry. Mr. F. Hastings Medhurst, B.Sc., A.M.Inst.C.E., Engineer. Quantities by Mr. Walter Herring :—

F. G. Minter*...................... £22,970

LONDON. — For rebuilding "The Pigeons" Hotel, Romford-road, Stratford, E., for Messrs. Savill Brothers, Limited. Mr. Henry Poston, architect, 39, Lombard-street, E.C. Quantities by Messrs. R. L. Curtis & Sons, 119, London Wall, E.C. :—

| | | | |
|---|---|---|---|
| Mowlem & Co. .... | £13,500 | Grover & Sons .... | £12,710 |
| Charles Cox ...... | 12,827 | Hall, Beddall & Co. | 12,673 |
| Killby & Gayford .. | 12,736 | Todd & Co.*...... | 12,397 |

LONDON.—Annual and triennial oontracts for the Hornsey District Council. Mr. E. J. Lovegrove, Engineer and Surveyor :—

*Portland Cement for One Year ending March* 31, 1900.

The Arlesey Lime and Portland Cement Co., Arlesey* (per ton) ................ £1 15

*For General Stores. One Year ending March* 31, 1900.

Gibb & Co., Fenchurch-street* ..
G. Tyrie, Shoreditch* ..........
Middleton, Great George-st., E.*
} For portions, as Schedule.

*Iron and Steel. One Year ending March* 31, 1900.

Pfeil & Co., Clerkenwell*..........Per Schedule.

*For Forage. One Year ending March* 31, 1900.

Brimage & Co., Camden Town* .... As Schedule.

*For Harness and Stable Requisites. One year ending March* 31, 1900.

Gidden, Streatham-street, W.C.*.... As Schedule.

*Wheelwright's Work and Cart Fittings. One Year ending March* 31, 1900.

Callow, Pembroke-street, Islington.* As Schedule.

*Street Watering and General Cartage Work. Three Years ending March* 31, 1902.

W. Walker, Holloway* .. .......... As Schedule.

*Road Materials. One Year ending March* 31, 1900.

T. Adams, Wood Green* .......... As Schedule.

*Paving Granite Kerb Channel Pitching and General Masons' Materials. One Year ending March* 31, 1900.

W. Griffiths, Bishopsgate-street, E.C.*..As Schedule.

*Broken Stone for Macadamising. One Year ending March* 31, 1900.

L. Sommerfield, Great Tower-street., E.C.*..For Alderney Granite as Schedule.

Narborough & Enderby Granite Quarries Co., Ltd.* For Enderby Granite as Schedule.

*For Masons' and Paviors' Work. One Year ending March* 31, 1900.

W. Griffiths, Bishopsgate-street, E.C.*..As Schedule.

*In situ Concrete Paving. One Year ending March* 31, 1900.

Stuarts' Granolithic Co., Limehouse*..5s. 3d. per yard super.

*For Stand Post Work Maintenance. Three Years ending March* 31, 1902.

J. & F. May, Lincoln's Inn, W.C.*..As Schedule.

*Disinfectants. One Year ending March* 31, 1900.

Adcock, Easton & Co., Finsbury Park* ....................
Essett's Sanitary Fluid Co., Battersea* ....................
Sanitas Co., Bethnal Green* ....
} For parts, as per Schedule.

HEREFORD.—For the erection of new buildings in connexion with the proposed electricity station in Widemarsh-street. Mr. John Parker, City Engineer :—

| — | Buildings. | Chimney. | Ironwork. | Lightning Conductor. | Total. |
|---|---|---|---|---|---|
| | £ | £ | £ | £ | £ |
| C. Cooke .......................... | 2,300 | 510 | 596 | 94 | 3,500 |
| Lewis & Co., Hereford................ | 2,241† | 461† | 453 | 50† | 3,205 |
| Alexander & Duncan, Leominster........ | — | — | 394* | — | — |
| Lewis Hodges ........................ | 2,498 | 522 | 552 | 48 | 3,620 |
| Bowers & Co. ........................ | 2,480 | 477 | 426 | 55 | 3,438 |
| Hill & Smith ........................ | — | — | 445 | — | — |
| J. Cheese .......................... | 3,373 | 570 | — | — | — |
| H. Price............................ | 2,586 | 503 | 481 | 44 | 3,614 |
| J. W. Smith ........................ | 2,689 | 532 | 474 | 50 | 3,745 |
| Steavenson & Co. .................... | — | — | 410 | — | — |
| Keay, Ltd. .......................... | — | — | 507 | — | — |
| King & Son .......................... | 3,030 | 632 | 670 | 48 | 4,380 |

LONDON.—For alterations to Nos. 67, 69, and 71, Southampton-row, W.C., for Messrs. Walter Hill & Co. Mr. W. H. Pertwee, architect, Clifford's Inn, E.C. Quantities by Mr. Joseph Rookwood, 47, Museum-street, Bloomsbury, W.C. :—

| | | | |
|---|---|---|---|
| Killby & Gayford .. | £2,821 | Snewin Bros. ...... | £2,583 |
| Steven Bros......... | 2,656 | F. T. Chinchen .... | 2,496 |
| Harris & Wardrop .. | 2,597 | | |

LONDON.—For alterations at Nos. 76 and 78, Queen's-road, Bayswater, for Messrs. John Welford & Sons :—

F. T. Chinchen* ............................£284

MAIDENHEAD.—For the erection of a dwelling house on the Highway Estate, for Mr. Pendrill :—

Cox & Sons, Maidenhead* (no competition) .. £485

MAIDENHEAD.—For drainage works and alterations to The Cottage, North Town, Maidenhead, for Mr. W. T. Western. Mr. E. J. Shrewsbury, architect, Queen-street Chambers, Maidenhead :—

Chas. W. Cox & Sons, Maidenhead*........£224

MANCHESTER.—For pulling down old brew-house and erecting new malt stoves, &c., for the directors of the Openshaw Brewery at their premises in Brook-street, Openshaw, Manchester. Messrs. C. K. & T. C. Mayor, architects, 41, John Dalton-street, Manchester :—

E. & C. Jackson, Openshaw..........£789 18 3

MANCHESTER. — For alterations and additions to Arley House, Withington, for Mrs. F. Mellor. Messrs. C. K. & T. C. Mayor, architects, 41, John Dalton-street, Manchester :—

J. Lunn, Wilmslow-road, Withington ......£300

MARLBOROUGH (Wilts).—For the construction of sewers, &c., for the Town Council. Messrs. Fairbank & Son, engineers, 13, Lendal, York :—

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| J. & T. Binns | £5,064 | 0 | 0 | W.S.Meredith | £4,100 | 0 | 0 |
| W. Gibson .. | 4,770 | 0 | 0 | A. T. Catley.. | 3,870 | 0 | 0 |
| T. Bell ...... | 4,399 | 19 | 9 | F. Talbot, Reading* .. | 3,833 | 19 | 4 |
| Johnson Bros. | 4,321 | 0 | 0 | J. Ford ...... | 3,337 | 3 | 2 |
| J. C. Trueman | 4,114 | 0 | 0 | | | | |

OCKBROOK (near Derby).—For alterations and additions to the "Royal Oak" Inn, for Messrs. Offiler's Brewery, Ltd., Derby. Mr. Geo. Yates Mills, architect, Irongate, Derby :—

| | | | | | |
|---|---|---|---|---|---|
| Clifford ........ | £660 | 12 | 3 | Adams & Brailsford .. | £570 |
| G. Durant...... | 574 | 0 | 0 | Maddocks* .......... | 549 |

[All of Derby.]

ST. MARY'S, SCILLY.—For additions to "Tregarthen's Hotel," for the Hotel Company, Limited. Mr. O. Caldwell, architect, Penzance :—

| | | | |
|---|---|---|---|
| Thomas James...... | £2,491 | W. Stephens ...... | £2,340 |
| James & Bottrell.... | 2,343 | Walters, Penzance† | 2,405 |

TEDDINGTON.—For road-making, &c., for the Teddington Urban District Council. Mr. M. Hainsworth, engineer :—

*Road-making.*

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Nowell & Co. .. | £7,697 | 4 | 3 | Lawrence & Thacker.... | £6,562 | 8 | 8 |
| Free & Sons .. | 7,495 | 12 | 11 | W. Adamson, Kingston*.. | 6,278 | 16 | 6 |
| S. Kavanagh.. | 7,478 | 13 | 6 | | | | |
| Thos. Adams.. | 6,813 | 17 | 8 | | | | |

*Tar-paving.*

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Nowell & Co. | £1,287 | 0 | 0 | Chittenden, Lake, & Co. | £858 | 2 | 3 |
| Thos. Adams.. | 1,217 | 5 | 0 | Asphaltic Limestone Concrete Co., Birmingham* | 836 | 17 | 1 |
| Lawrence & Thacker .... | 1,153 | 4 | 0 | Wm. Shepherd | 831 | 4 | 2 |
| S. Kavanagh.. | 1,150 | 6 | 3 | | | | |
| Free & Sons .. | 1,131 | 15 | 0 | | | | |
| Hobman & Co. | 1,042 | 5 | 10 | | | | |
| J. Smart...... | 926 | 5 | 11 | | | | |
| Mainwright & Co. ........ | 865 | 2 | 8 | | | | |

UXBRIDGE.—For the execution of drainage works (contracts Nos. 4 and 5) for the Rural District Council. Mr. J. Anstie, C.E., 10, Marchwood-crescent, Ealing. Quantities by the engineer :—

*Contract No. 4.*

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| A. Kellett .... | £2,296 | 13 | 4 | C. Ford (Harlesden)* .... | £1,415 | 0 | 0 |
| Kitteringham.. | 1,791 | 0 | 0 | | | | |

*Contract No. 5.*

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| A. Kellett .... | £2,937 | 12 | 9 | Kitteringham (Waltham) * | £2,070 | 0 | 0 |
| C. Ford...... | 2,377 | 10 | 0 | | | | |

WAKEFIELD.—For the execution of water-supply works, for the Corporation. Mr. C. C. Smith, C.E., Town Hall, Wakefield :—

*Kirkham Filter Beds and Lindale Hill Service Reservoir.*

| | | | |
|---|---|---|---|
| *Contract No. 1.*—Parker & Sharpe, York*.. | £33,491 | 7 | 8 |
| *Contract No. 2.*—Stanton Iron Works Co., Ltd., Nottingham*...... | 2,689 | 11 | 5 |
| *Contract No. 3.*—Glenfield Co., Ltd., Kilmarnock* .............. | 469 | 19 | 3 |

WEMBLEY PARK.—For the erection of a house for the Tower Company, Limited. Mr. Matt. Garbutt architect :—

| | | | |
|---|---|---|---|
| Spiers & Sons ...... | £1,660 | Tennant & Co. .... | £1,568 |
| E. Wheeler ........ | 1,652 | Do. (revised scheme)* | 1,400 |

## LONDON SCHOOL BOARD TENDERS.

AT the last meeting of the London School Board, the Works Committee submitted the following lists of tenders :—

* Denotes accepted, or recommended for acceptance.

ARTHUR - STREET. — Enlargement of Blind School :—

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| R. S. Ronald .. | £665 | 0 | 0 | Freeman & Son | £515 | 15 | 0 |
| H. & G. Mallett | 611 | 0 | 0 | H. Line........ | 515 | 15 | 0 |
| Rice & Son.... | 599 | 0 | 0 | G. Kemp*...... | 442 | 0 | 0 |

HOMERTON ROW (Enlargement).—Providing auxiliary heating in three halls, six class-rooms, cloak-rooms, and lavatories, ground, first, and second floors, in connexion with existing low-pressure hot-water apparatus :—

| | | | | | |
|---|---|---|---|---|---|
| G. Davis .......... | £398 | 0 | J. C. & J. S. Ellis | £247 | 10 |
| Harlow & Son .... | 330 | 0 | Cannon & Sons.... | 240 | 0 |
| Price, Lea & Co. .. | 310 | 0 | Kallaway & Co. .. | 209 | 0 |
| J. & F. May ...... | 269 | 0 | Wontner - Smith, Gray, & Co.*.... | 207 | 0 |
| Bates & Pearce.... | 259 | 4 | | | |

ST. DUNSTAN'S-ROAD (revised).—Special school for sixty children and Manual Training Centre on arches :—

| | | | |
|---|---|---|---|
| J. G. Cowell........ | £6,188 | Johnson & Co., Ltd. | £4,952 |
| O. Craske........ .. | 5,161 | Lathey Bros........ | 4,690 |
| Leslie & Co., Ltd... | 5,119 | McCormick & Sons.. | 4,554 |
| J. Carmichael ...... | 5,054 | E. Triggs*.......... | 4,495 |
| C. Wall............ | 5,028 | | |

UPTON HOUSE.—New drainage, alterations to offices inside the building, refitting offices outside, replacing slate sinks with glazed fireclay, and alterations to washing lavatories, &c. :—

| | | | |
|---|---|---|---|
| Johnson & Co. ...... | £3,228 | Martin, Wells, & Co. | £2,999 |
| F. & F. J. Wood .. | 3,118 | Killingback & Co. .. | 2,877 |
| Lawrance & Sons .. | 3,097 | F. Britton* ........ | 2,813 |
| Lathey Bros........ | 3,042 | | |

*Repairs to Buildings on Schedule.*

WEST LAMBETH.—Group 1. SOUTHWARK.—Group 4 :—

| | West Lambeth, Group 1. Per cent. | | Southwark, Group 4. Per cent. on Schedule Prices. |
|---|---|---|---|
| G. Brittain............ | + 8⅓ | .... | + 8⅓ |
| W. V. Goad .......... | + 22½ | .... | +22½ |
| Lathey Bros. .......... | + 7½ | .... | +10 |
| J. Marsland .......... | + 9 | .... | + 9 |
| Maxwell Bros., Lim. .. | + 8⅓ | .... | + 8⅓ * |
| B. E. Nightingale .... | + 22½ | .... | +22½ |
| Rice & Son .......... | + 7 * | .... | +12 |

*Interior Cleaning. The work at the following schools will be executed between March* 18 *and April* 8, 1899.

BELVEDERE-PLACE :—

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Lathey Bros. .. | £272 | 15 | 0 | E. Proctor .... | £193 | 0 | 0 |
| Edwards & Medway .... | 246 | 15 | 4 | E. Triggs ...... | 170 | 0 | 0 |
| H. J. Williams.. | 223 | 0 | 0 | Nightingale .... | 162 | 0 | 0 |
| J. F. Ford .... | 207 | 0 | 0 | Holliday & Greenwood*.. | 154 | 0 | 0 |
| F. R. Blaxton.. | 201 | 19 | 0 | | | | |

RICARDO-STREET :—

| | | | | | |
|---|---|---|---|---|---|
| C. S. Jones........ | £283 | 0 | S. H. Corfield .... | £157 | 0 |
| A. W. Derby...... | 266 | 10 | J. Kybett ........ | 156 | 0 |
| T. Willson ........ | 206 | 0 | J. F. Holliday* .. | 145 | 0 |

SHAP-STREET :—

| | | | |
|---|---|---|---|
| Chessum & Sons .... | £277 | Marchant & Hirst .... | £169 |
| Snewin Bros. & Co. .. | 274 | J. Kybett ............ | 168 |
| W. Shurmur ........ | 262 | G. Barker............ | 162 |
| Silk & Son .......... | 246 | J. Haydon .......... | 158 |
| Collis Willmott ...... | 215 | S. H. Corfield* ...... | 128 |

ADDINGTON-STREET SCHOOL (York-road).—For additional heating :—

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Comyn, Ching, & Co. .......... | £58 | 0 | 0 | W. Simmons .... | £49 | 19 | 0 |
| Vaughan & Brown, Ltd. .. | 57 | 0 | 0 | Knight & Sons .. | 44 | 10 | 0 |
| Cannon & Sons | 55 | 0 | 0 | Stevens & Sons .. | 40 | 0 | 0 |
| | | | | J. Grundy ...... | 38 | 9 | 0 |
| | | | | Duffield & Co.*.. | 37 | 0 | 0 |

BLOMFIELD-ROAD SCHOOL (Plumstead). — For adaptation of house for schoolkeeper :—

| | | | | | |
|---|---|---|---|---|---|
| Thomas & Edge .. | £425 | 0 | E. Proctor ........ | £350 | 0 |
| J. H. Hodgin...... | 415 | 0 | Jones & Groves* .. | 269 | 10 |
| C. Foreman ...... | 387 | 0 | | | |

BROMLEY HALL-ROAD SCHOOL (Bromley).—For enlarging boiler-room :—

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| G. Barker ...... | £220 | 0 | 0 | J. F. Holliday.. | £167 | 18 | 6 |
| A. W. Derby .. | 197 | 0 | 0 | J. T. Robey* .. | 160 | 0 | 0 |

GRAVEL-LANE SCHOOL (Houndsditch). — For double windows for rooms in front of school :—

| | | | | | |
|---|---|---|---|---|---|
| H. Line .......... | £535 | 0 | Munday & Sons.... | £457 | 0 |
| Johnson & Co. .... | 520 | 0 | F. R. Blaxton* .... | 246 | 10 |

HATFIELD-STREET SCHOOL (Blackfriars).—For additional heating :—

| | | | | | |
|---|---|---|---|---|---|
| H. G. Price, Lea, & Co. .......... | £285 | 0 | G. Davis.......... | £220 | 0 |
| J. C. & J. S. Ellis, Limited ........ | 239 | 5 | Sharp, O'Brien, & Co. ............ | 205 | 0 |
| Cannon & Sons.... | 234 | 0 | Berry, Campbell, & Co. .......... | 182 | 10 |
| Wenham & Waters, Limited ........ | 222 | 0 | Kite & Co. ...... | 175 | 0 |
| | | | G. & E. Bradley*.. | 169 | 10 |

[*See also next page.*

HONEYWELL-ROAD SCHOOL (Wandsworth Common).—For partition in infants' department :—

| | | | |
|---|---|---|---|
| W. Hammond........ | £175 | Maxwell Bros., Ltd. .. | £134 |
| Williams & Sons...... | 165 | E. Triggs ............ | 112 |
| Lathey Bros. ........ | 149 | Garrett & Son*.. .... | 108 |
| B. E. Nightingale.... | 134 | | |

"JOHN RUSKIN" SCHOOL (Beresford-street).—For cutting out lower part of house for new entrance, and adapting upper rooms for schoolkeeper :—

| | | | |
|---|---|---|---|
| Lawrance & Sons .. | £1,068 | Smith & Sons ........ | £649 |
| J. Marsland ........ | 830 | Jones & Groves*...... | 570 |
| H. & G. Mallett.... | 688 | | |

MANSFORD - STREET SCHOOL (Old Bethnal Green-road).—For erecting gallery across girls' hall :—

| | | | |
|---|---|---|---|
| Spencer & Co. .... | £569 10 | Williams & Son .. | £379 0 |
| Lawrance & Sons.. | 397 0 | McCormick & Sons | 298 10 |
| Grover & Son .... | 38. 0 | Marchant & Hirst* | 282 0 |

MEDBURN-STREET.—Removing existing apparatus, and providing and fixing low-pressure hot-water apparatus for all rooms not warmed by open fires; also for halls, corridors, cloak-rooms, and lavatories on ground, first, and second floors :—

| | | | |
|---|---|---|---|
| Stevens & Sons.... | £600 0 | G. Davis.......... | £460 0 |
| Oldroyd & Co.,Lim. | 580 0 | Duffield & Co. .... | 450 0 |
| J. Grundy ........ | 532 0 | C. Kite & Co.* .... | 435 0 |
| T. S. Knight & Sons | 468 0 | Russell & Co. .... | 384 10 |

MONSON-ROAD HIGHER GRADE SCHOOL, HATCHAM.—For special rooms :—

| | | | |
|---|---|---|---|
| Thomas& Edge | £5,280 0 0 | J. & C. Bowyer | £4,343 0 0 |
| Kirk & Randall | 5,118 0 0 | H. & G. Mallett | 4,331 0 0 |
| J. F. Ford.... | 5,115 0 0 | Akers & Co... | 4,276 0 0 |
| Wall & Co. .. | 4,849 0 0 | E. Triggs .... | 4,065 0 0 |
| E. Proctor .. | 4,626 16 8 | Garrett & Sons* | 3,888 0 0 |

PRINCESS MAY-ROAD SITE, STOKE NEWINGTON (FINSBURY AQ).—For new School for 961 children :—

| | | | |
|---|---|---|---|
| Williams & Son .... | £24,674 | T. L. Green ...... | £24,175 |
| Chessum & Sons .. | 24,648 | C. Cox............ | 23,722 |
| F. & F. J. Wood .. | 24,384 | Grover & Son .... | 23,619 |
| J. & M. Patrick.... | 24,311 | Scrivener & Co. .. | 23,521 |
| Johnson & Co., Limited ........ | 24,262 | L. H. & R. Roberts | 23,132 |
| | | Lawrance & Sons.. | 23,064 |
| W. M. Dabbs .... | 24,197 | Perry & Co.*...... | 22,423 |

ROTHERHITHE NEW-ROAD SCHOOL. — For partition in girls' department :—

| | | | |
|---|---|---|---|
| J. C. Chalkley.. | £97 0 0 | J. Marsland .... | £68 0 0 |
| W. V. Goad .... | 85 0 0 | Spencer & Co. .. | 61 0 0 |
| Bruce, Croom & Co. .......... | 75 17 6 | Maxwell Bros., Limited ...... | 57 0 0 |
| J. F. Ford...... | 72 0 0 | W. Martin* .... | 54 0 0 |

ST. JOHN'S-ROAD SCHOOL (Hoxton).—For sanitary and drainage works :—

| | | | |
|---|---|---|---|
| Willmot& Sons | £2,076 0 0 | Marchant & Hirst ...... | £1,927 0 0 |
| Lawrance&Sons | 2,064 0 0 | Ashby&Horner | 1,911 0 0 |
| G. Foxley.... | 2,045 0 0 | Stevens Bros.* | 1,864 0 0 |
| R. P. Beattie | 2,014 16 2 | | |

SHERBROOKE-ROAD SCHOOL (Fulham).—For partition in boys' department :—

| | | | |
|---|---|---|---|
| Maxwell Bros., Ltd. | £77 0 | E. Triggs.............. | £62 |
| Lathey Bros. ...... | 75 0 | J. Garrett & Son* .... | 57 |
| W. Hammond...... | 68 10 | | |

STATION-ROAD SCHOOL, HIGHBURY. — For works to offices :—

| | | | |
|---|---|---|---|
| Ashby Bros. .... | £1,924 0 | Gough & Co. .... | £1,401 11 |
| McCormick & Sons | 1,800 0 | Ashby & Horner | 1,336 0 |
| F. Britton ...... | 1,600 0 | Killingback & Co. | 1,242 0 |
| Godson & Sons .. | 1,584 0 | Martin Wells&Co.* | 1,229 0 |
| Rice & Son...... | 1,437 0 | | |

TOWER-STREET (Seven Dials). — For forming manual centre :—

| | | | |
|---|---|---|---|
| W. Hornett .......... | £331 | Johnson & Co. ...... | £245 |
| T. Cruwys .......... | 325 | T. Nicholson*........ | 190 |

TENNYSON-STREET SCHOOL, BATTERSEA.—For scheme of structural alterations and improvements :—

| | | | |
|---|---|---|---|
| J. Marsland ...... | £18,390 | W. Downs ........ | £17,775 |
| C. Cox............ | 18,243 | Lathey Bros. ...... | 17,685 |
| Kirk & Randall.... | 18,205 | Johnson & Co., Lim. | 17,533 |
| F. & H. F. Higgs . | 18,158 | Lawrance & Sons .. | 17,492 |
| Parsons & Co. .... | 18,083 | Edwards & Medway | 16,568 |
| Holloway Bros..... | 17,912 | Gregory & Co.*.... | 15,987 |
| J. Carmichael...... | 17,818 | | |

UPPER KENNINGTON-LANE SCHOOL.—For electric lighting :—

| | | Extra Price for Variations.† |
|---|---|---|
| Drake & Gorham ............ | £385 10 0 | .... £1 3 0 |
| The Westminster Engineering Co., Limited .............. | 369 10 0 | .... 1 7 0 |
| F. Geere Howard ............ | 318 0 0 | .... 1 3 0 |
| Laing, Wharton, & Down, Ltd. | 292 0 0 | .... 1 6 0 |
| ‡Woods & Co.* .............. | 267 0 0 | .... 1 3 0 |

† This is the price, per lamp (including switch and plain pendant) for any additions or deductions made during the progress of the work.

‡ These contractors presume that the hours of the work will be as usual, not at night or at other unusual hours.

VAUXHALL-STREET SCHOOL (Lambeth).—For partition in boys' department :—

| | | | |
|---|---|---|---|
| G. Brittain.......... | £47 10 | W. V. Goad ........ | £33 10 |
| J. Marsland ........ | 45 0 | Rice & Son*........ | 30 0 |
| B. E. Nightingale .. | 42 10 | | |

WILLIAM-ST. PUPIL TEACHERS' SCHOOL (Hammersmith).—For improving ventilation of large class-room :—

| | | | |
|---|---|---|---|
| G. H. Sealy........ | £195 0 | W. R. & A. Hide .. | £95 15 |
| F. T. Chinchen.... | 124 10 | W. Brown.......... | 92 0 |
| W. Hammond .... | 113 5 | C. Gurling* ........ | 85 0 |
| R. S. Buckeridge .. | 107 0 | | |

WILMOT-STREET SCHOOL (Bethnal Green).—For additional heating :—

| | | | |
|---|---|---|---|
| Price, Lea, & Co., | £98 0 | J. C. & J. S. Ellis, Limited ........ | £72 10 |
| Fraser & Son ...... | 96 0 | | |
| J. Esson............ | 85 0 | Palowkar & Sons .. | 59 15 |
| J. & F. May........ | 82 0 | G. Davis* ........ | 55 0 |

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# SZERELMEY STONE LIQUID

## REPORT DATED 1ST FEBRUARY, 1899.

**Stone House in Exposed Position on Yorkshire Moors. Ernest Newton, Esq., Archt.**

High Lands, Burley-in-Wharfedale, Leeds.

Dear Sirs,

I am glad to say that the test of the efficiency of the Szerelmey process, afforded by the severe gales and heavy rains of the last few weeks, has been entirely successful. The weather has been quite as bad as anything we had last winter—I think worse; but instead of the water being driven through the walls, as it was then, everything has kept perfectly tight and dry, and we have been saved the serious discomfort and damage which we suffered last winter.

I am very pleased with the result, and I consider that the very exposed situation of my house—just on the edge of the moors and subject to exceptionally strong westerly gales—has enabled me to put your process to as severe a test as you are likely to find in this part of the world, and I think you will be pleased to hear that it has stood the test with such complete success.

I am, yours truly,
(Signed) W. H. MITCHELL.

N. C. Szerelmey & Co., Szerelmey Works, Rotherhithe New Road, S.E.

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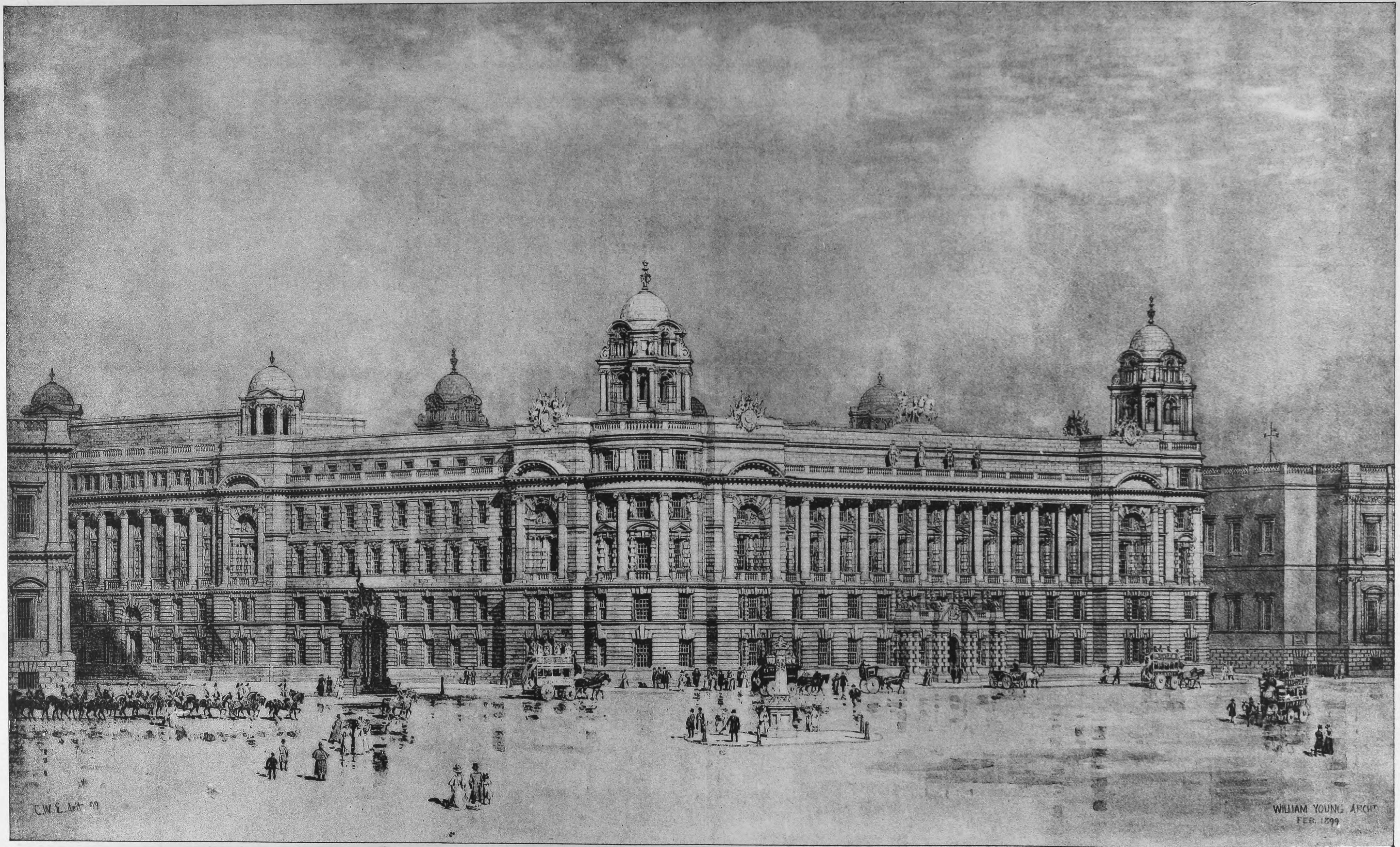
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PROPOSED NEW WAR OFFICE.—Mr. W. Young, F.R.I.B.A., Architect.

FRONT TO WHITEHALL, AND PART OF FRONT TO WHITEHALL PLACE.

## Public Offices Westminster.

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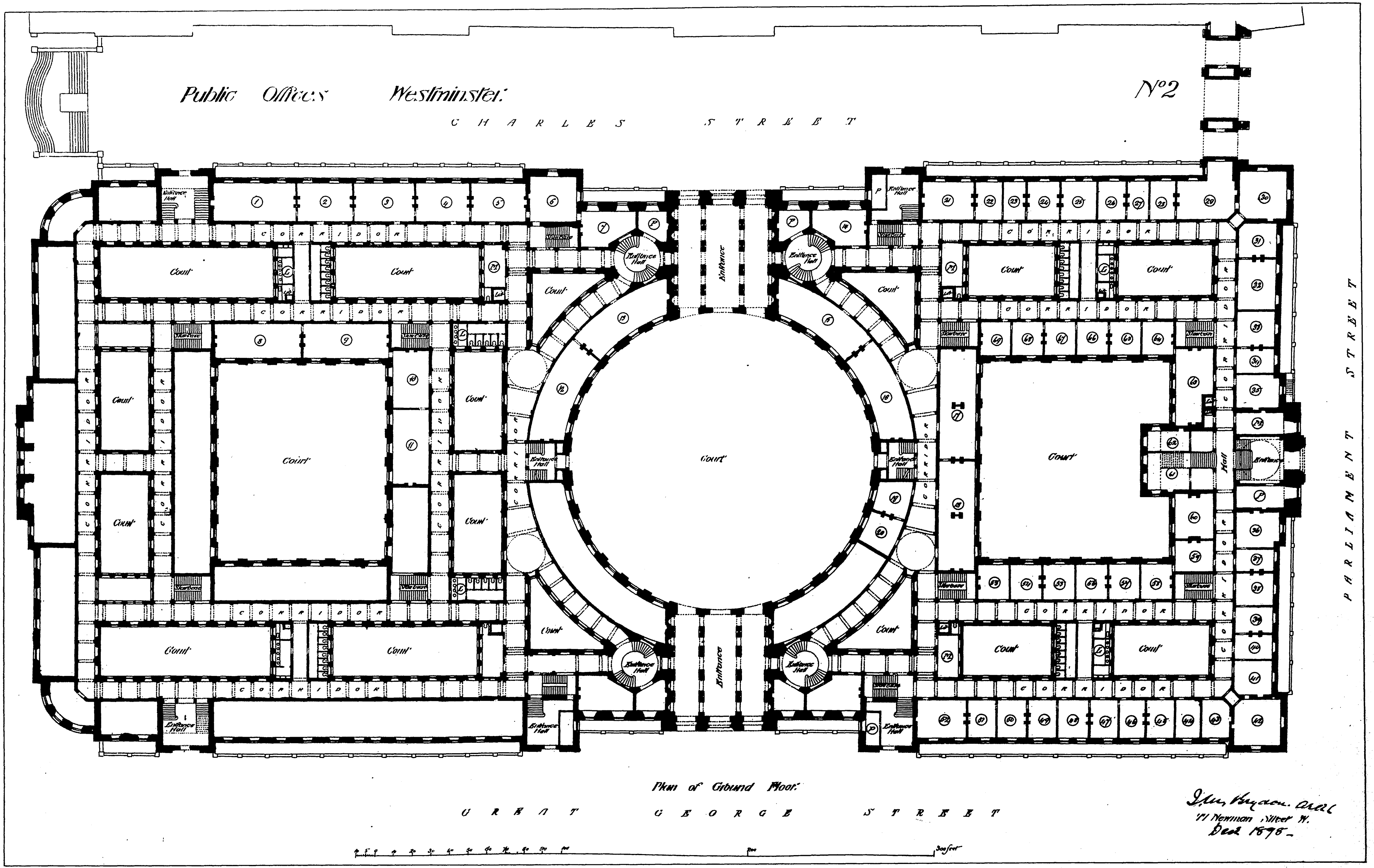
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PARLIAMENT STREET
GREAT GEORGE STREET
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Entrance
Entrance Hall
Corridor
Staircase
Hall
300 feet

Plan of Ground Floor.

J. McK. Brydon. Archt
71 Newman Street W.
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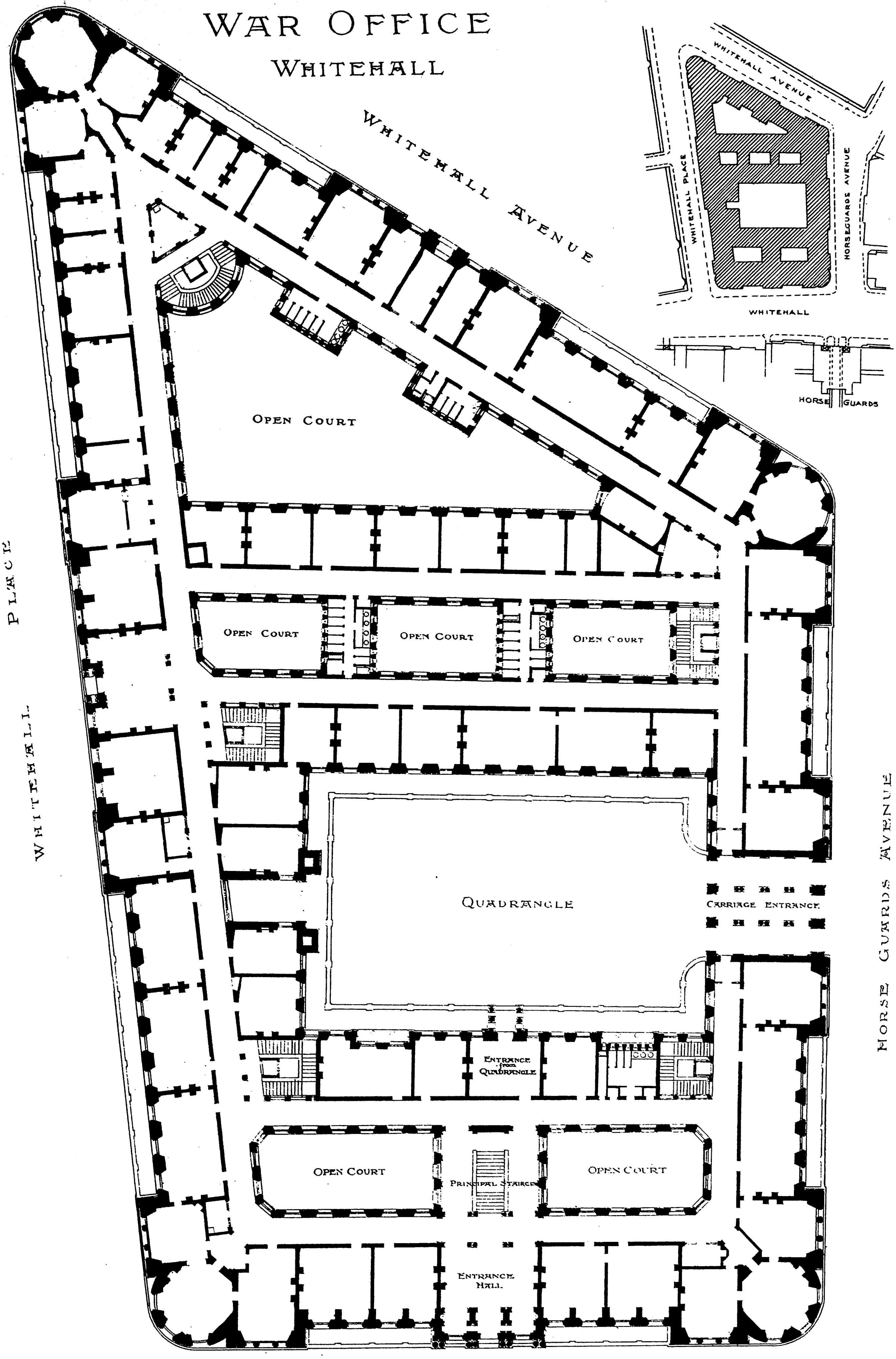
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CARRIAGE ENTRANCE
HORSE GUARDS AVENUE
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OPEN COURT
PRINCIPAL STAIRCASE
OPEN COURT
ENTRANCE HALL
WHITEHALL AVENUE
WHITEHALL PLACE
HORSEGUARDS AVENUE
WHITEHALL
HORSE GUARDS

WHITEHALL
GROUND FLOOR PLAN

FEET 0 5 10 15 20 25 50 100 FEET

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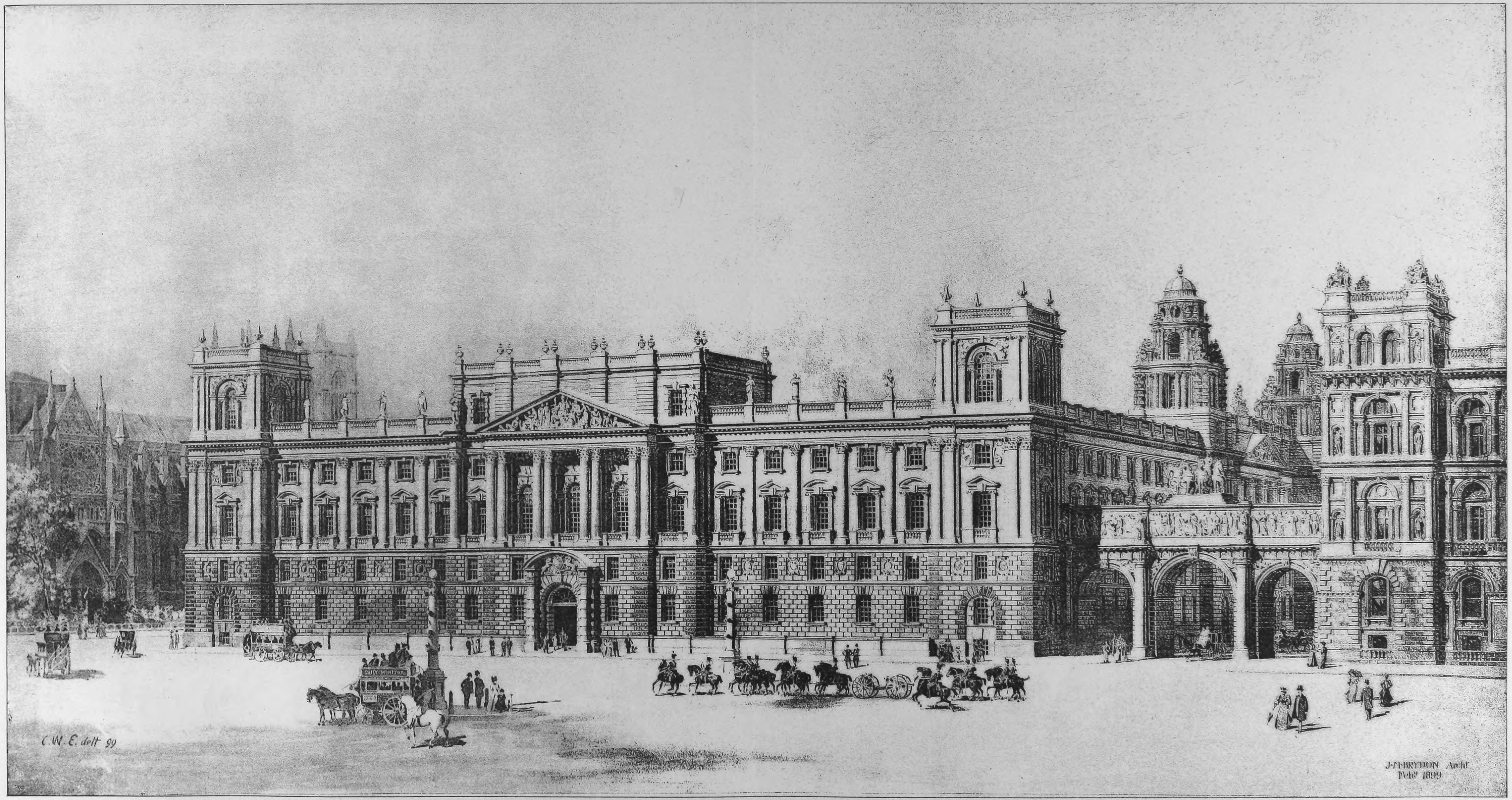
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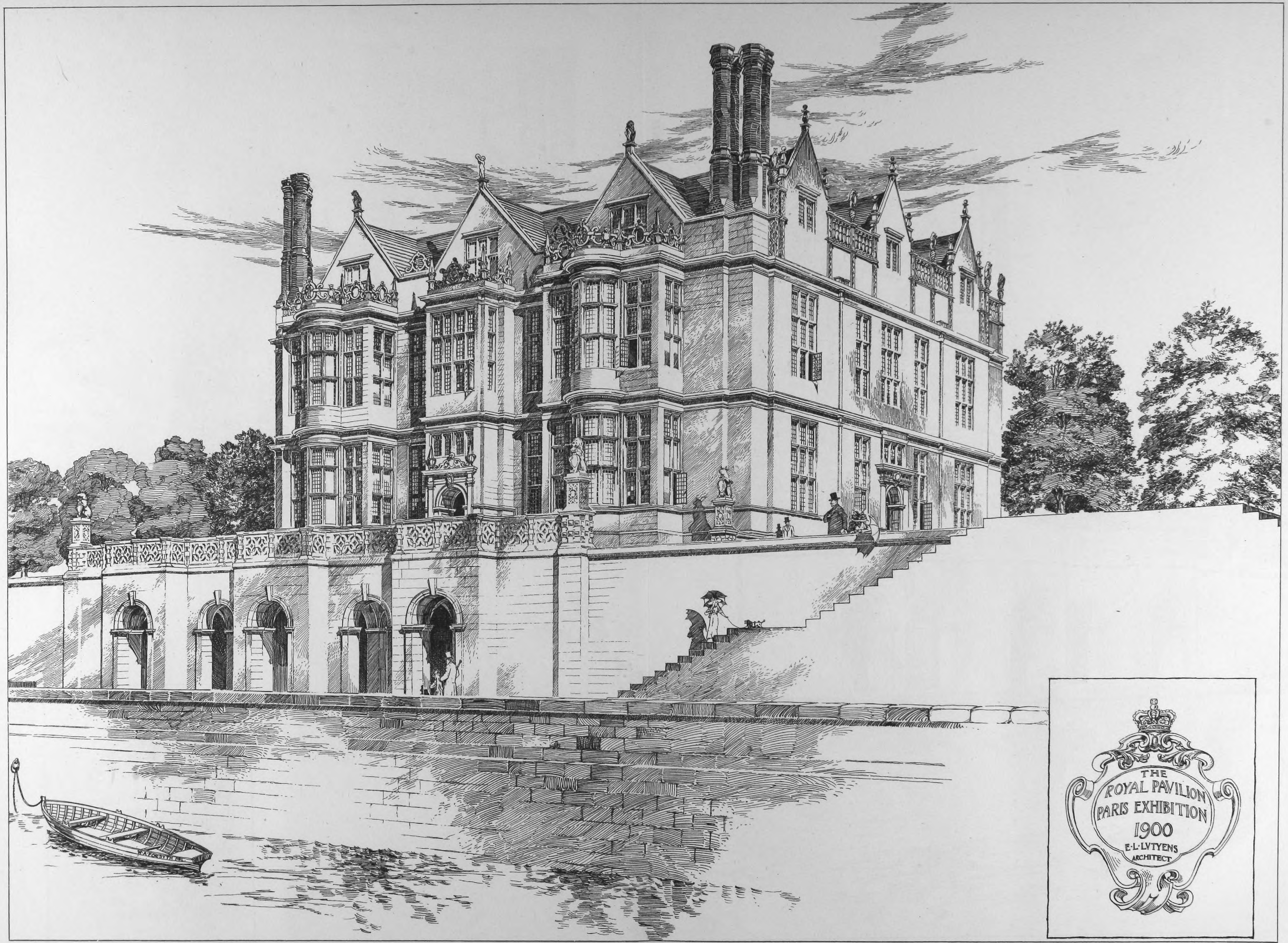
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PARIS EXHIBITION
1900
E·L·LUTYENS
ARCHITECT

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# The Builder.

VOL. LXXVI. No. 2930 APRIL 1, 1899.

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## *The Proposed Drainage By-laws for London.*

FOR some time the Public Health Committee of the London County Council has been engaged in preparing a series of by-laws relating to the construction of drains, soil pipes, waste pipes, &c., which shall apply to the whole county of London. At the present time there are in force certain by-laws of the County Council regarding soil pipes; but, in the main, the drainage regulations of the metropolis are prepared and enforced by the several vestries, the result being a conglomerate of confusing and often contradictory details, the requirements of one vestry differing in many respects from those of all its neighbours. To the architect and builder, as well as to the householder, this confusion is irritating and involves needless waste of time, and any attempt to replace such diverse and divers regulations by a series of by-laws uniformly applicable to the whole of London, cannot fail to be regarded as an attempt in the right direction. There is, moreover, the question of the legality of the "Regulations" made by the vestries, and this will be set at rest by the issue of the Council's proposed by-laws. It should be stated that the by-laws will not apply to the *City* of London.

The proposals now under consideration, and which we print *verbatim* on another page, differ in many respects from those which were put forward by the committee about two years ago. Nearly all the by-laws have been amplified by the inclusion of details which were ignored in the original document, but in some cases the new proposals are less stringent than the old ones. As an example of the amplification just referred to, we may mention the question of subsoil drainage, which now forms the subject of five clauses, but was dismissed in one clause two years ago. As an example of the reduced stringency of the new proposals, the weight of iron soil pipes may be given; 3½-in. pipes being reduced from 65 lbs. to 50 lbs. per 6-ft. length; 4-in. from 73 lbs. to 60 lbs.; 5-in. from 121 lbs. to 80 lbs.; and 6-in. from 142 lbs. to 100 lbs. Further instances of both classes of alterations will be noticed, as we briefly review the proposed by-laws *seriatim*.

Subsoil drainage is first considered. The most important point is that subsoil-drainage is not made compulsory: "A person who shall erect a new building *and* shall cause the subsoil of the site of such building to be drained. . . . shall," &c. As some sites do not need draining, it is, of course, right that subsoil drainage should not be everywhere required, but it is questionable whether the discretionary power should be vested in the building-owner, as appears to be allowed by the by-law. We may be quite sure that the worst kind of jerry-builders will never "cause the subsoil of the site" of the buildings they erect "to be drained," and the by-law should make it clear that the subsoil must be drained, if, in the opinion of the District Surveyor or other specified official, this is a sanitary necessity. The provisions respecting subsoil drainage are not by any means onerous; the pipes must be "suitable earthenware field pipes," disconnected from the sewer by means of a trap and air-shaft with suitable grate. For the sake of clearness a few corrections ought to be made. In the first and fourth clauses it is implied that subsoil drains will always communicate directly with a "sewer"; at any rate, it is clear that the proposed by-law will not apply to subsoil drains which do not so communicate. But in many cases it will be more convenient to connect the subsoil drains with the sewage drains rather than with the sewer, and it will be well, therefore, to add, in the first clause, after "communicating with any sewer," the words, "or sewage drain," and to add the same words in the fourth clause after "such sewer." In the second clause it should be clearly stated on which side of the trap the "ventilating opening" should be placed.

The second by-law deals with the drainage of surface-water, and here again the same discretionary power appears to be vested in the building-owner. Whether it is wise to leave the drainage of "any area, forecourt, or paved or unpaved surface within the curtilage of the building" to the option of the builder or building-owner is certainly open to question. It has been shown over and over again that undrained surfaces (other than grass-plots and gardens) in the immediate vicinity of buildings assist in the spread of disease. A recent Local Government Board inquiry into the causes of typhoid fever at Swinton, near Manchester, elicited the fact that most of the cases occurred in houses of which the yards were unpaved and undrained. The builders of cheap houses will be only too glad to save the few shillings which the drainage of areas and yards would cost, and it is precisely in such houses that lack of drainage will be most disastrous. We think the by-law ought to insist on all areas, forecourts, yards, and paths being properly drained.

In the matter of rainwater pipes, too, no compulsion is intended by the by-law. If any one fixes a rainwater pipe, he must make it discharge over or into a properly-trapped gully, but apparently he can please himself whether he fixes one or not. Eaves-droppings are not so beneficial either to the walls of buildings or to the heads and shoulders of passers-by as to be allowed by the County Council. Eaves-troughs and rainwater pipes ought to be made obligatory, except, perhaps, in the case of the smallest outbuildings and temporary sheds. The second clause of this by-law states that rainwater pipes shall not receive the discharges "from any water-closet, urinal, slop or other sink, or lavatory." As the discharges from baths were included in the same category two years ago and are not mentioned now, we may conclude that bath-wastes may, under the proposed by-laws, be connected with rainwater pipes; but if baths, why not lavatories?

Sewage-drains may be "of glazed stoneware or semi-vitrified ware, or of cast iron, or of other equally suitable material." Cast-iron drain pipes must have the metal not less than $\frac{5}{16}$ in. thick if 3 in. in diameter, and not less than $\frac{3}{8}$ in. thick if 4 in., 5 in., or 6 in. in diameter. Stoneware and other pipes must have the material $\frac{1}{2}$ in. thick if 3 in. in diameter, $\frac{5}{8}$ in. thick if 4 in., 5 in., or 6 in. in diameter, and $\frac{3}{4}$ in. thick if 9 in. in diameter. Cast-iron drains may have either flange joints or socket joints, the diameter and depth of socket being specified for the several sizes of drain. Socket joints must be caulked with lead, and flange joints must be "securely bolted together with some suitable insertion." Stoneware and other pipes must be "jointed with socket joints properly put together with cement or other equally suitable material," and as the depth and diameter of the sockets are specified, it follows that some of the patented drain pipes, such as those with screwed joints, cannot be used under the new by-laws. There is room for doubt whether such a sweeping regulation is desirable; and as the Committee's intention has clearly been to allow considerable latitude in the by-laws so that new inventions of merit may be adopted, we think that a saving clause ought in this case also to be included. With this exception we do not think that any reasonable objection can be taken to the proposals for regulating the materials and joints of drain pipes.

The question of gradient is dismissed in one word—"suitable." This certainly is not explicit enough for a subject of such great importance, and will probably lead to that diversity of practice in the different districts of London, which it is the aim of these by-laws to prevent. What one surveyor will think "suitable," another may consider totally inadequate; and in order to prevent such an unfortunate contradiction, we think that minimum gradients should be specified, a proviso being inserted that smaller falls will be allowed if satisfactory means of flushing are provided.

All drains, it is said in By-law 4, Clauses 6 and 8, must be laid on a bed of concrete "not less than 6 in. thick, and projecting on each side of the drain to an extent at least equal to the external diameter of the drain," and then embedded in concrete (the full width of this bed) to at least half the height of the pipe. Drains under buildings must be entirely covered with concrete not less than 6 in. thick, unless they are of cast-iron, when they may be carried above the floor on adequate supports or laid underground on a concrete bed. As the use of cast-iron pipes under buildings allows the omission of the concrete covering, reduces the number of joints to one-third or one-fourth, and ought to permit a slight reduction in the gradient, we do not think it would be much hardship if it were decided that all drains under buildings must be of cast-iron, especially as such drains are more likely to stand the water test, and will keep watertight for a much longer period than stoneware drains. Means of access must be provided at each end of a drain passing under a building. By Clause 7 of the same by-law the water test is made compulsory for all drains, except subsoil drains, "at least 2 ft. head of water" being required. If this clause is adopted by the Council, a great impetus will be given to the use of stoneware pipes with special joints or of iron pipes.

All inlets to drains, except those provided for ventilation, must be trapped, and for this purpose any kind of trap may apparently be used except bell traps, dip traps, and D traps. Grease-traps are not mentioned. In the previous by-laws the intercepting trap, stopping aërial communication between the drain and the sewer, must be "within the curtilage" of the building, but as these words are now omitted, we conclude that the trap may be placed in the street, with the cover in the curb of the footpath, according to the practice of many provincial towns. This is a reasonable innovation. Access to the trap must be provided, but this may be secured either by a manhole "or other separate means of access."

By-law 8 treats of the ventilation of drains, and is interesting because it allows three methods of ventilation instead of the two usually specified. The first has the air inlet near the trap, and an outlet shaft near the head of the drain; the second has the positions of inlet and outlet reversed; and the third, which is the new arrangement, permits two "vertical pipes or shafts" to be used, carried up "to such heights and in such positions that when either acts as an inlet the other may be a safe outlet for foul air." This is a great improvement. But it ought to be clearly stated that there must not be any trap on the line of drain between the two ventilators in any of the three arrangements. Ventilation pipes must be constructed like soil pipes, and must be of the same diameter as the drains with which they are connected, except that, when a 3½-in. soil pipe is used as a ventilator, it will be considered large enough to ventilate a 4-in drain. The air-inlet grates must be "*above and near* the level of the surface of the ground," instead of "at or near" as in the previous by-laws, and must have apertures measuring in the aggregate not less than the sectional area of the drains they are intended to ventilate.

The tenth by-law deals with waste pipes from lavatories and sinks (other than slop-sinks or urinals), and requires the waste pipes to be of "lead, iron, or stoneware"; the last-named material will certainly not be advantageous for long waste pipes. The waste pipes must be trapped close to the fittings, but bell traps, dip traps, and D traps may not be used for the purpose. The pipes must discharge over or into a gully, or over a channel leading to a gully. The traps must be "ventilated into the external air whenever such ventilation may be necessary to preserve the seal of such trap." The connexion of waste pipes from several fittings is clearly contemplated. It is somewhat curious that the waste pipes from baths are not mentioned—they may presumably be left untrapped; and, as we have already pointed out, the connexion of bath wastes with rainwater pipes appears to be allowed by the third by-law.

The five clauses of By-law 11 are concerned with soil pipes, under which name are included the waste pipes from slop-sinks, urinals, and water-closets. Those from slop-sinks and urinals may be 3 in. in diameter, but those from water-closets must be not less than 3½ in. in diameter, and all must be of *drawn* lead or cast iron. The weights of iron soil pipes have already been given. Lead soil pipes must weigh, per 10 ft. length, not less than 60 lb. if 3 in. in diameter, 70 lb. if 3½ in., 80 lb. if 4 in., 100 lb. if 5 in., and 120 lb. if 6 in. Soil pipes must be fixed outside buildings, "whenever practicable;" internal soil pipes must always be of drawn lead; iron pipes must have either bolted flange-joints or caulked lead socket-joints, but it is not specified that lead pipes must have wiped joints. The wastes from baths, lavatories, and sinks (other than slop-sinks) may not be connected with soil pipes, and it is distinctly laid down that "there shall not be any trap in such soil pipe or between the soil pipe and any drain with which it is connected." In other words, the foot-disconnexion of soil pipes is prohibited, and every soil pipe *must* be used as a drain-ventilator, whether it is in a suitable position or not. This hard-and-fast rule does not strike us as altogether satisfactory, especially as the soil pipes may be within the building. The tops of soil pipes, as of drain-ventilating pipes, may be left open, neither cowls nor wire-guards being required; this simplification is a decided improvement on the existing requirements of the vestries, which vary very considerably. The ventilation of traps connected with soil pipes is regulated in By-law 17, and is only required when a soil pipe receives the discharges from more than one fitting. The ventilation pipes must be of drawn lead or cast iron, not less than 2 in. in diameter and weighing (if lead) at least 15 lb. a yard, and (if iron) at least 25 lb. per 6-ft. length. If the ventilation pipe is carried up inside the building, it must be of lead. As in the case of soil pipes, it might with advantage be ordained that ventilation pipes must, "whenever practicable," be carried up outside the building. The ventilation pipe must be carried up as high as the soil pipe, or connected with the soil pipe above the highest fitting.

By-laws 12 to 16 deal with the connexions between lead and iron pipes, stoneware and lead, lead and stoneware, iron and stoneware, and stoneware and iron; and in each by-law a proviso is inserted that any other connexion than those described may be adopted if it is "equally suitable and efficient." This is a wise and reasonable provision.

The remaining by-laws deal with maintenance, penalties, application to existing buildings, &c., and do not call for particular notice. We have pointed out the main features of the proposals of the Committee, and have made one or two criticisms, but we have no hesitation in saying that on the whole they are a body of practical regulations, which are neither capricious nor unduly onerous. Provision is made in many cases for the adoption of new and improved methods, when these shall have commended themselves to the officials whose duty it will be to enforce the by-laws, and several stringent or unnecessary clauses have been either modified or omitted. The by-laws have not yet received the sanction of the County Council, so that it is not too late for amendments to be considered, either those which we have suggested or others which our readers may like to offer.

At the very earliest it will be some months before the by-laws can possibly come into force, as they will not be considered by the Council until after Easter, and, after being adopted, they must be confirmed at a subsequent meeting. Whether they will ever come into force at all will depend upon the powers to be given to the municipalities contemplated in the London Government Bill, now being considered by the House of Commons. If this becomes law—and, unfortunately, there seems little doubt that it will—the power to regulate drainage and sanitary arrangements may be given to the new municipalities, and the existing state of confusion will be continued, perhaps for generations. Every effort ought to be made to prevent such a retrograde step.

## NOTES.

The New A.R.A.

We may congratulate the Royal Academy on having recognised (rather late in the day) the claims of Mr. Aston Webb for election as an architectural Associate of their body. Mr. Webb is the kind of architect we like to see in the Academy, as he represents the alround view of the art of architecture in its completeness; not merely the designing of detail, but the expression of design in plan and construction. There seems to have been a too prevalent idea within the ranks of the Academy, that plan has little or nothing to do with art; whereas it is an essential element in the art of architecture, and ought to be recognised as such in an Academy of Arts.

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**London Government Bill.**

It is not surprising to find that the London County Council, at its last meeting, passed a number of recommendations embodied in the Report of the Local Government and Taxation Committee on the London Government Bill, in condemnation of various features in that measure. They evidently realised that, as we have already remarked, the London Government Bill, whether intentionally or not, is in reality a measure for whittling away the power of the London County Council. We fear, it is true, that we cannot quite rise to the heights of Mr. Dickinson's panegyric, in declaring that the London County Council "had by its honesty and unselfish work attained a position which would last while London lasted," since we hold that the Council, in pursuing political warfare rather than the honest carrying out of London work, has in a great measure been false to its trust, and in fact shows symptoms of becoming little better than the latter-day Metropolitan Board of Works. But there is always the chance and the hope that it may reform itself; and as long as that is possible, we must always look with apprehension on any project for weakening the central authority in the government of London, and promoting local variation and caprice in municipal legislation; and so far we think the attitude of the London County Council towards the Bill is justifiable.

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**The Chelsea Water Supply.**

Evidence on the London water question is gradually accumulating, and can only be ignored at immense risk. We have recently received a copy of the Report prepared by Dr. Louis C. Parkes and Dr. Samuel Rideal on the water supplied by the Chelsea Waterworks. It is not pleasant reading. Notwithstanding careful filtration through sand, the water supplied to consumers contains, in seven cases out of ten, blood-heat microbes which have in all probability been derived from sewage or polluted surface water, and which the sand-filters have failed to retain. Further evidence is afforded by the sediment deposited on the "candle" of a Berkefeld filter in a house in Cadogan-square, Chelsea; this sediment contained "countless colonies" of microbes, some of which were spore-bearing, and in some respects not unlike the *Bacillus enteriditis sporogenes*, which is now frequently considered to be the cause of summer diarrhœa. The doctors point out that a system of filtration which allows the passage of "the common accompaniments of sewage and animal pollutions" may on occasion allow the passage of virulent disease germs, which may cause widespread sickness and death. They conclude that "considerations of public safety require that reliance should not be placed upon sand-filtration, as at present conducted, as the sole means of defence, when the water to be operated upon is derived from a tainted source." Whether it is wise to continue to use water "from a tainted source" is a question the doctors do not consider, but this is the really vital question which London is called upon to answer, though there does not appear to be any likelihood that it will be satisfactorily answered during the life of this Government.

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**The Fire Brigades Bill.**

The Fire Brigade Bill, which is due for its second reading on April 12, should be a most useful measure for obtaining a greater efficiency of our Fire Brigades throughout the Kingdom. The Bill has been promoted by the National Fire Brigades Union, and has the support of the British Fire Prevention Committee. Its careful wording is primarily due to Mr. Horace Folker and Mr. C. H. Brown of the Union, and to Mr. Pym, M.P., who is bringing it in. The Bill should have the attention of the architects and surveyors serving under County or Rural Councils, or under provincial municipalities, for there is not the slightest doubt that a better fire service, combined with the building by-laws generally enforced, would do much to reduce the annual fire loss. The intention of the Fire Brigades Act is that inspectors should be attached to the Local Government Board, who will investigate the efficiency of the fire brigades throughout the country, and only certify for their grants or their claim towards public support, if they are really efficient. Centres like London, which has its own Act, would, of course, be out of the sphere of the new measure, but there is many a provincial town of over 100,000 inhabitants to which the Act will apply. As far as the rural districts are concerned, we trust that, with an efficient country Fire Brigade, we shall not be constantly hearing of the fine old manor houses and country seats which are being lost every year, too frequently owing to the absence of suitable appliances and properly-trained men to handle them.

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**Cottages in Rural Districts.**

The depopulation of the rural districts is a subject which is constantly causing comment. It is likely to continue to be a subject of greater and greater importance until those who own property in rural districts understand that the agricultural labourer will make his way to the towns unless better accommodation is found for him in the country. At a recent meeting of the Cheshire Dairy Farmers' Association a well-known landowner had the good sense to state that the remedy for the depopulation was "more cottages and better cottages." Many of the cottages which are to be found in country villages are in a state which is a disgrace to the age, and in many districts also the number of cottages is too few. This is more particularly the case in the South and East of England, where farming is in a less satisfactory state than in other districts. It is not likely that a young and industrious labourer will be satisfied to walk two or three miles night and morning to and from his work and live in a cottage in a bad state of repair and with insufficient accommodation, when in London he can get conveyed at a cheap rate to and from his work and have a decent home. No doubt the rent in and about London prevents him from obtaining any better net return there for his labour than in the country, but in the one place he has a comparatively comfortable home and in the other he has not.

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**The Electric Arc.**

The paper on "The Hissing of the Electric Arc," read by Mrs. Ayrton last week to the Institution of Electrical Engineers, is a useful contribution to our knowledge of a somewhat mysterious phenomenon. In an ordinary direct current arc lamp with solid carbons, when we diminish the resistance in series with the lamp the current increases gradually and continuously until the arc begins to hiss, there is then a sudden rise in the current and a sudden drop in the electric pressure across the terminals of the lamp. When the positive carbon of a hissing arc is examined, the crater is seen to have become so large that it has begun to extend up the sides of the carbon. This led Mrs. Ayrton to think that the hissing was caused by the air having direct access to the crater, the oxygen causing the carbon to burn instead of being merely volatilised. In the arc, when burning normally, the crater on the positive carbon is protected from direct contact with the air by carbon vapour. In support of her opinion she pointed out that the light coming from the outer envelope of the "open" electric arc was always bright green, and so also was the light coming from the crater of the hissing arc. In "enclosed" arc lamps this light was absent both from the aureole and the crater. Again, the image of the positive carbon on a screen when the arc is on the point of humming shows circles of light revolving slowly, and when it begins to hum they rotate very rapidly. Mr. Trotter showed some years ago that the humming arc made sometimes as many as 450 revolutions per second. It seems probable that this is caused by draughts getting into the arc. Mrs. Ayrton showed many interesting experiments in support of her views. For example, she showed that blowing oxygen down a hollow positive carbon at once started hissing, although the current was well under the normal hissing current. In experimenting with other gases many curious effects were found, and a new field of inquiry discovered. We wish all success to Mrs. Ayrton's investigations, which are not only of practical importance to electricians, but are of great scientific interest.

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**The Action of Water on Zinc and Galvanised Iron.**

A paper relating to this subject was recently communicated to the Society of Chemical Industry by Mr. H. E. Davies. The results of a number of experiments have led the author to conclude that (1) all kinds of water attack zinc in presence of air; (2) rain-water appears to have the least action; (3) a moderate degree of hardness favours the action, and extreme hardness does not prevent it; (4) allowing the zinc to become coated with deposit by long contact with air-exposed water does not altogether prevent further action; (5) when water containing zinc compounds is drunk, zinc is found in all viscera. Mr. Davies also finds that zinc is more rapidly dissolved by water stored in vessels of galvanised iron than by water in contact with pure zinc. We do not think, however, that much danger to health need be apprehended from the storage of water in clean vessels of galvanised iron, for we know of a case where rain-water collected from a galvanised iron roof and stored in a galvanised iron vessel upon the sides of which numerous white blotches of zinc compound were visible, was used for a long period for drinking purposes without any apparent effect upon the health of those who consumed it. Nevertheless, tanks of galvanised iron, in common with all other descriptions of water tank, should be kept as free as possible from deposits of any kind.

**Tullyallan Castle, Fifeshire.**

It is announced that this interesting building, together with the estate, which extends over 4,125 acres, has been placed in the market. The castle, which is finely situated upon rising ground which overlooks the Forth, is remarkable for the elegance and taste, rather than for the strength and security, of its design, and for the beautiful vaulting, consisting of groined and ribbed arches resting upon a row of central pillars, in the two rooms of the ground floor. Notwithstanding the Early English style of some of the details, Messrs. D. McGibbon and T. Ross* assign the older parts of the castle (which was formerly held by the house of Blackadder) to the fifteenth century, and compare it with Tantallon and Doune, Morton and Rait, as an example of the stage between the keep proper and the castle with quadrangle—the main buildings being extended with towers and wings to form a commodious residence. At Tullyallan the recess and windlass-chamber for the drawbridge remain, whilst the great hall has an outside entrance door, upon the first floor level, which it may be presumed was gained by a removable outside stair, as the staircase, within a projecting octagonal tower, passes between a bedroom on that floor and the adjoining parlour or private hall. Another notable feature at Tullyallan are the moulded corbels, to serve as lamp-brackets, at the side of the moulded jambs and hood of the fireplace in the smaller room on the ground floor. There is a tradition that the castle occupies the site of a stronghold of the Macduffs, Thanes of Fife, wherein Lady Macbeth was killed.

**Oriel College, Oxford.**

The University authorities recently agreed to take over Adam de Brome's Chapel from Oriel College, together with a sum of 270*l.*, the estimated cost of repairs which are at once necessary, whilst the college retain a right of access to De Brome's tomb for repairs, and so on. In 1326 Edward II. gave his almoner, Adam de Brome, a licence to build and endow a college in honour of the Virgin, towards which the King had already granted the advowson and parsonage-house of St. Mary's. Seven years later the parsonage-house was converted as St. Mary's Hall, and Edward III. granted the Society a tenement styled L'Oriele, on which the college was re-established, and to which, it is understood, its name is due. The Charity Commissioners have entered into negotiations with Oriel College in respect of the Hospital of St. Bartholomew, Oxford, granted to them by Edward III., and which is now used as farm-buildings. It is alleged that the college authorities, in not maintaining a chaplain for the hospital chapel, and in other directions, fail to fulfil their obligations as regards the hospital, and the almspeople. The total net income is estimated at about 105*l.*, but it is generally admitted that under modern conditions the administration of the charity should be re-modelled.

**Society of British Artists.**

Certain landscapes and sea-pieces are the relieving points among the general mediocrities of this exhibition. Mr. F. A. W. Armstrong's "Evensong" (63) is a poetic landscape in a peculiar manner which has been started by one or two gifted painters and is imitated by others. Mr. Spenlove's "A Soliloquy of Night" (57) looks as if it may be good, but is so obscured by the glass that no very definite opinion can be formed of it. Mr. Ayerst Ingram's "A Freshening Breeze" (86) is a bright sea-piece. Mr. J. W. Parsons' "Corrievreckan" (116) represents the movement of sea-water but not its surface; Mr. Gouldsmith's "In Mid-Ocean" (502), with the ship's hull sunk behind the lumpy water, is a spirited performance. Among the President's contributions by far the best is the rather small one, "The Monastery of Fiesole" (360); it has not the hard style of the "Interior of Amiens" (90), a large work of little value. The figure pictures are mostly of the most commonplace order; Mr. Mastin's "For a Dream's Sake" (126) is one of the best, and Mr. Borough Johnson's "Eve's First View of Herself" (434) is a pretty nude, both in expression and drawing. Among the landscapes other than those mentioned already, we may notice Mr. Val Davis's "A Fen Village" (12); Mr. Walter Fowler's "An Old Port in East Anglia" (113); Mr. Reginald Smith's "Sheep Pastures by the Sea" (129); Mr. Walter Thompson's "The Stream" (274), a poetic little sketch; and Mr. J. D. Ferguson's "Flower Market, Paris" (437), a clever sketch of the impressionist type.

**Mr. McLean's Gallery.**

The exhibition at Mr. McLean's Gallery in the Haymarket does not include any picture of the first interest, unless we rank as such Millais' "Emma Moreland," which however is well known. Among the landscapes is an exceptionally fine example of Mr. Wimperis's work, "The Moorland"; a Highland scene by Mr. Louis B. Hurt, in which the effect of the strong light on a hill-side in the middle distance, through a break in the clouds, is given with remarkable truth and reality; a fine calm scene by Westerbeck, "On the Dunes at Scheveningen"; and a painting by Clays of an English subject (unusual with him), "A Stormy Evening off Gravesend." None of the figure-pictures exhibited are of much interest, save the Millais already referred to.

**The Retiring Architect of the L.C.C.**

We may congratulate Mr. Blashill, who this week retired from the office of Architect to the London County Council with the thanks of his late employers, on a very well earned leisure. For a good many years he has carried on with great ability and energy the work of a position requiring special and rather unusual qualifications; and no appointment of the kind could have been better justified by the results. It will not be easy to adequately fill his place.

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Appointment.—The Council of Charing Cross Hospital have appointed Mr. A. Saxon Snell architect in connexion with the proposed rearrangement and extension of the hospital.

## THE ARCHITECTURAL ASSOCIATION SPRING VISITS:

### THE TESTING STATION OF THE BRITISH FIRE PREVENTION COMMITTEE.

The Architectural Association and the Institution of Junior Engineers were invited by the British Fire Prevention Committee to visit their testing station at North Bank, Regent's Park, on Saturday, March 25. About sixty members, the larger proportion being of the Engineers, attended and witnessed the test which took place during the afternoon. Mr. E. O. Sachs, the chairman of the executive, explained the origin and objects of the committee.

The test which was made on Saturday was that of a floor of solid deal baulks, 9 in. thick, exposed to a fierce fire for one hour, following on a smouldering fire of a quarter of an hour. As the rules of the committee do not permit any member or visitor to publish any account of a test carried out, the result cannot here be described. The committee will publish from time to time careful records of all tests, and these will be available for the guidance of those interested in the subject. A vote of thanks was accorded to Mr. Sachs, Mr. Farrow, and the other members of the committee who had received the party.

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## THE ARCHITECTURAL ASSOCIATION DISCUSSION SECTION.

The eleventh meeting of the Discussion Section of the Architectural Association was held at 56, Great Marlborough-street, W., on the 24th ult., Mr. H. J. Leaning, Chairman of the Section, presiding.

Mr. Louis Jacob read a paper dealing with the subject of "Arbitration," and commenced by quoting a definition from the "Encyclopedia Britannica," where arbitration is explained as "an arrangement of taking and abiding by the judgment of a selected person instead of an established Court of Justice." He held, further, that, as far as possible, matters of dispute should be settled without entangling ourselves in the meshes of the law, that lawyers, too, were not so qualified, generally speaking, as architects or surveyors to deal with building disputes because of their lack of technical knowledge, and was in favour of the establishment of a Building Court on the lines of the Admiralty Court, where, before a Judge with professional assessors, matters needing decision could be tried, and awards fairly arrived at, as suggested by Mr. A. A. Hudson in a paper read before the Surveyors' Institution. No architect should be his own arbitrator. Should a contractor foolishly sign such an agreement he must bide by the consequences. All points referred to an arbitrator (or third surveyor under the London Building Act, 1894), should be clearly defined and set forth, and the award, in detail and as explicitly, should settle the said points in dispute. The hearing of evidence was perhaps one of the most difficult things the layman, as arbitrator, had to do, and here against a solicitor or barrister he was seriously handicapped. No award could be set aside unless either misconduct could be proved against the umpire or arbitrator, or that the award had been improperly procured. Should the award not be taken up, the parties were still liable for the umpire's charges, though he would probably have difficulty in obtaining them. Arbitration was perhaps not quite so popular as a few years ago, and things seemed rather to tend towards the special Court, as above referred to

Mr. E. Greenop, opening the discussion, stated that the "legal mind" was necessary for an architect and surveyor to act properly as arbitrator, and that a weak umpire often led to great injustice. The Tribunal of Appeal under the London Building Act was too costly to be of much practical service.

Messrs. Satchell, Matthew Garbutt, George Smith, Hopkins, Strange, and the chairman continued the discussion. Mr. Strange mentioned Professor Kerr's book on "The Consulting Architect" as a good one on this subject, and the chairman said the fact of the arbitrator not being bound to give his reasons for his award was the weak point in arbitrations, no finality being thus arrived at.

The next meeting is fixed for May 5, when a debate conducted by Mr. H. A. Satchell and Mr. R. W. Schultz on the contract system is to be opened.

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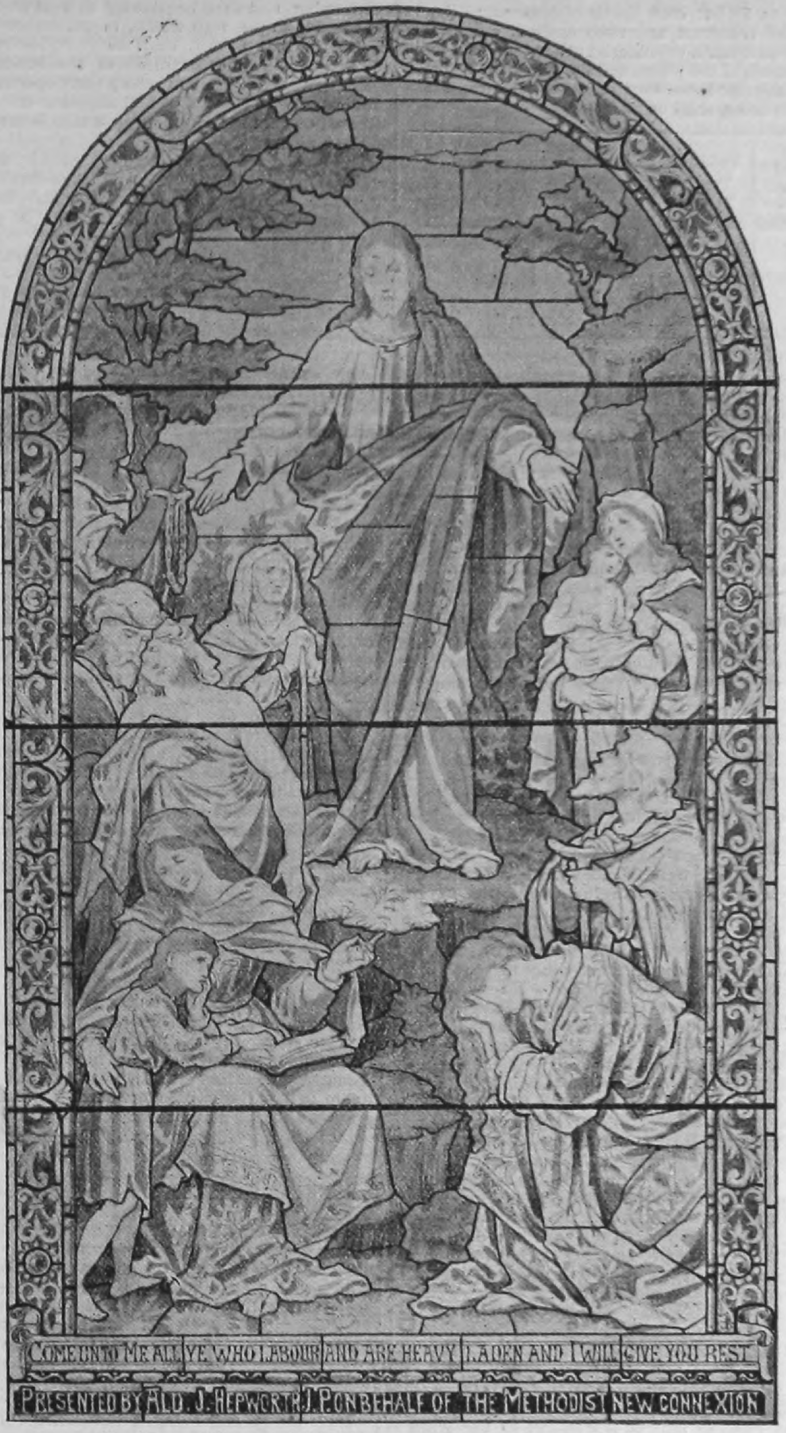
* "The Castellated and Domestic Architecture of Scotland," vol. i., 1887: from which work we take some particulars.


COME UNTO ME ALL YE WHO LABOUR AND ARE HEAVY LADEN AND I WILL GIVE YOU REST
PRESENTED BY ALD. J. HEPWORTH J.P. ON BEHALF OF THE METHODIST NEW CONNEXION

*Centenary Memorial Window in Wesley's Chapel, City-road.*

## THE WESLEY CENTENARY MEMORIAL WINDOW.

WE give herewith a sketch of the window which was unveiled not long ago in connexion with the great meeting held in Wesley's Chapel, City-road, to commemorate Wesley's Centenary. It illustrates the text, "Come unto Me all ye that labour and are heavy laden, and I will give you rest," and was presented by Alderman J. Hepworth, of Leeds, as an offering from the Methodist New Connexion.

The window was carried out by Messrs. Mayer & Co., of Munich, from the design of Mr. F. Mayer.

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**ELECTRIC LIGHTING EXTENSIONS AT HAMMERSMITH.**—At the Hammersmith Electric Lighting Station, Fulham Palace-road, the inauguration has just taken place of the first extension of the generating station and public and private lighting. The company were shown over the new generating station by the consulting engineer, Mr. A. H. Preece, A.M.Inst.C.E. The extensions consist of the following:—A new engine-house, 40 ft. by 27 ft., with rectifier and pump-room adjoining, designed by Mr. Hugh Mair, the Vestry's Surveyor; two engines of 500-horse-power; two alternators of 300 units per hour capacity; a Ferranti main feeder switch-board; a water-tube boiler of 250-horse-power; a 500-horse-power evaporative condenser, and three pumps.

## LONDON BY-LAWS AS TO THE DRAINAGE OF BUILDINGS.

THE Public Health Committee of the London County Council reported to the meeting of the Council on the 21st ult. that for some time they had been engaged in the preparation of by-laws under Section 202 of the Metropolis Management Act, 1855, which empowers the Council to make by-laws for regulating "the dimensions, form, and mode of construction, and the keeping, cleansing, and repairing of the pipes, drains, and other means of communicating with sewers, and the traps and apparatus connected therewith." They now submitted to the Council a series of proposed by-laws which have received the approval of the Local Government Board. The Act requires the by-laws to be approved by a Secretary of State, but the Local Government Board, within whose province the subject-matter of the by-laws now more properly comes, have considered them at the request of the Home Secretary. The Committee mentioned that the Metropolis Management Amendment (By-Laws) Bill, which is being promoted at the instance of the Council for the purpose of enabling it to make by-laws requiring the submission of plans of drains and drainage works, contains a clause transferring to the Local Government Board the powers of the Secretary of State in respect of the confirmation of drainage and certain other by-laws. This clause has been inserted by desire of the Local Government Board.

"The drainage by-laws which we now submit," continued the Report, "have been prepared after careful consideration of suggestions made by the London Sanitary Authorities, the Sanitary Institute, the Royal Institute of British Architects, the Association of Municipal and County Engineers, the Society of Engineers, and other bodies. They have been the subject of long correspondence with the Local Government Board, and they are now in the form in which we think they might be made by the Council. At present persons constructing drains have to do so to the satisfaction of the various Vestries and District Boards, and the requirements in different districts vary considerably. We think the adoption by the Council of a series of by-laws which will apply throughout London will be welcomed by the Sanitary Authorities, and will tend to the more uniform administration of the law relating to drains. In drafting the by-laws we have found it absolutely necessary to include provisions dealing with soil pipes and their connexions, and we therefore propose that the existing by-laws on these matters included in those made by the Council under Section 39 of the Public Health (London) Act, 1891, shall be repealed as from the coming into operation of the new by-laws. This will have to be done by a repealing by-law, and the Local Government Board have suggested to us a form for the purpose, which we append to this Report. This repealing by-law will be submitted to the various Sanitary Authorities for their observations two months before it is made by the Council. The by-laws under the Public Health Act do not apply to the City of London, and we have, at the desire of the Local Government Board, inserted a clause in the new drainage by-laws excluding the City from their operation, as the Corporation state that they have special powers as to drains, under the City of London Sewers Act, 1848. It will be necessary that the new drainage by-laws, which require confirmation by a Secretary of State, and the repealing by-law, which requires confirmation by the Local Government Board, shall come into force simultaneously, and the Local Government Board have intimated that they will arrange for the two sanctions to be given at the same time. The Metropolis Management Act, 1855, provides that the drainage by-laws, if made at one meeting, shall have no force and effect until submitted to and confirmed at a subsequent meeting, and we think the Council should now make them, and should confirm them at the expiration of two or three months, when the time allowed under Section 114 of the Public Health (London) Act, 1891, has elapsed. There are certain other requirements as to advertisement, publication, &c., which differ according to whether the by-laws are made under the Metropolis Management Act or under the Public Health Act. We will take care that these requirements are observed. We recommend—(*a*) That the Council do make by-laws under Section 202 of the Metropolis Management Act, 1855, in the terms set out in Appendix I. to this report, and that the seal of the Council be affixed to copies of such by-laws. (*b*) That the Council do, pursuant to Section 114 of the Public Health (London) Act, 1891, send to the London Sanitary Authorities a proposed by-law, in the terms set out in Appendix II. to this Report, for the purpose of repealing certain existing by-laws under that Act, which relate to soil pipes and the ventilation of the traps of water-closets. (*c*) That the Clerk be instructed to advertise notice of the Council's intention to apply for confirmation of the repealing by-law, and to take the other steps prescribed by the Public Health Acts."

### *Appendix I.—Drainage By-Laws.—The Metropolis Management Act*, 1855, *Section* 202.

By-laws made by the London County Council for regulating the dimensions, form and mode of construction, and the keeping, cleansing, and repairing of the pipes, drains, and other means of communicating with sewers and the traps and apparatus connected therewith.

1. *Drainage of Subsoil.*—A person who shall erect a new building and shall cause the subsoil of the site of such building to be drained by means of a drain communicating with any sewer, shall not construct such subsoil drain in such a manner or in such a position as to communicate directly with such sewer, but shall provide a suitable and efficient trap between such subsoil drain and such sewer.

He shall provide a ventilating opening to such trap at a point in the line of such subsoil drain as near as may be practicable to such trap, and communicating directly with the open air.

He shall cause such ventilating opening to be furnished with a suitable grating or other suitable cover for the purpose of preventing any obstruction in or injury to any pipe or drain by the introduction of any substance through such opening. He shall cause such grating or cover to be so constructed and fitted as to secure the free passage of air through such grating or cover by means of a sufficient number of apertures, of which the aggregate extent shall be not less than the sectional area of the pipe or drain to which such grating or cover may be fitted.

He shall cause such subsoil drain between such trap and such sewer to be constructed in manner prescribed by the by-laws in that behalf for a drain used for conveying sewage.

He shall cause such subsoil drain above uuch trap to be formed of suitable earthenware field pipes properly laid to a suitable fall and to discharge into such trap.

2. *Drainage of Surface Water.*—A person who shall erect a new building and shall cause any area, forecourt, or paved or unpaved surface within the curtilage of the building to be drained by means of a drain or drains communicating with any sewer shall cause every inlet to such drain or drains to be constructed as a properly-trapped gully and shall cause such drain or drains to be otherwise constructed in manner prescribed by the by-laws in that behalf for a drain used for conveying sewage.

3. *Rain-Water Pipes.*—Every person who shall erect a new building, and shall provide, in connexion with such building, a pipe or channel for the purpose of conveying to any sewer any water that may fall on the roof, shall cause such pipe or channel to discharge over a properly-trapped gully or into such gully above the level of the water in the trap thereof.

He shall not cause any such pipe or channel to be so constructed as to receive into such pipe or channel any solid or liquid matter from any water-closet, urinal, slop or other sink, or lavatory.

4. *Materials, &c., for Drains.*—Except in the case of a drain constructed for the drainage of the subsoil of the site of a building, every person who shall erect a new building shall, in the construction of every drain of such building coumunicating with a sewer, use good sound pipes formed of glazed stoneware or semi-vitrified ware, or of cast iron, or of other equally suitable material.

He shall not construct any such drain so as to pass under any building, except in any case where any other mode of construction may be impracticable.

*Size of Drain.*—He shall cause every such drain to be of adequate size, and, if constructed or adapted to be used for conveying sewage, to have an internal diameter of not less than 4 in.

*Drain to be Laid on Concrete.*—He shall also cause every such drain, whether or not constructed or adapted to be used for conveying sewage, to be laid on a bed of good concrete not less than 6 in. thick, and projecting on each side of the drain to an extent at least equal to the external diameter of the drain. He shall also cause such drain to be laid with a suitable fall.

*Fall of Drain. Joints of Drain.*—If he shall construct such drain of cast-iron jointed with socket joints, he shall cause such joints to be not less than 2½ in. in depth, and to be made with molten lead properly caulked, and he shall also cause the annular space for the lead, in the case of 3-in. and 4-in. pipes, to be not less than ¼ in. in width, and, in the case of 5-in. and 6-in. pipes, to be not less than ⅜ in. in width. If such drain be jointed with flange joints he shall cause such joints to be securely bolted together with some suitable insertion.

If he shall construct such drain of stoneware, semi-vitrified ware, or material other than cast-iron, he shall cause such drain to be jointed with socket joints properly put together with cement or other equally suitable material.

*Drain to be Water-tight.*—He shall cause every such drain (other than a drain constructed for the drainage of the subsoil of the site of a building) to be so constructed as to be water-tight, and to be capable of resisting a pressure of at least 2 ft. head of water.

*Concrete to be Filled In.*—He shall cause good concrete to be filled in, so that it shall extend to the full width of the concrete bed already prescribed in this by-law, and so that such drain shall be embedded to the extent of not less than half its diameter.

*Thickness and Weight of Iron Pipes.*—If he shall construct any such drain of cast-iron, the thickness and weight of the pipes in proportion to the diameter thereof shall be as follows :—

| Internal Diameter, Inches. | Thickness of Metal, not less than | Weight per 9-ft. length (including socket and beaded spigot or flanges—the socket not to be less than ⅜-in. thick), not less than |
|---|---|---|
| 3 | 5/16 of an inch | 110 lb. |
| 4 | ⅜ ,, | 160 ,, |
| 5 | ⅜ ,, | 190 ,, |
| 6 | ⅜ ,, | 230 ,, |

*Thickness, Sockets and Joints of Stoneware Pipes.*—If he shall construct any such drain of stoneware, semi-vitrified ware, or material other than cast-iron, the thickness of the pipes, and depths of the sockets, and the annular space for the cement in proportion to the diameter, shall be as follows :—

| Internal Diameter, Inches. | Thickness of Pipe not Less than | Depth of Socket not Less than, Inches. | Annular Space for the Cement, not Less than |
|---|---|---|---|
| 3 | ½ of an in. | 1½ | 5/16 of an in. |
| 4 | ½ ,, | 1¾ | 5/16 ,, |
| 5 | ⅝ ,, | 2 | 5/16 ,, |
| 6 | ⅝ ,, | 2 | 5/16 ,, |
| 9 | ¾ ,, | 2 | 7/16 ,, |

*Drains under Buildings.*—Where any such drain (other than a drain constructed for the drainage of the subsoil of the site of a building) passes under a building, he shall cause such part thereof as passes under the building to be laid where practicable in a direct line for the whole distance beneath such building, and to be completely embedded in and covered with good and solid concrete at least 6 in. thick all round.

Provided that in any case where such drain shall be constructed of iron, he shall not be required to cover such drain with concrete, but unless it be carried above ground and also be carried at least at each joint on adequate piers or other sufficient supports, constructed of iron, stone, brick, or cement concrete, it shall be laid on a bed of good concrete in accordance with the requirements of this by-law relating to drains which do not pass under a building.

He shall whenever practicable cause adequate means of access to such drain to be provided at each end of such portion thereof as is beneath such building.

*Composition of Concrete.*—He shall cause all concrete used in connexion with any such drain, whether under a building or not, to be composed of clean gravel, hard brick broken small, or other suitable ballast, well mixed with clean sand and good Portland cement in the proportion of one part of sand, one part of cement, and five parts of other material, or with clean sand and good blue lias lime in the proportion of one part of sand, one part of lime, and four parts of other material.

*Inlets to Drains to be Trapped.*—He shall cause every inlet to every such drain, not being an inlet provided in pursuance of the by-law in that behalf as an opening for the ventilation of such drain, to be properly trapped by an efficient trap so constructed as to be capable of maintaining a sufficient water seal. He shall not construct or fix in or in connexion with any such drain, any trap of the kind known as a bell trap, a diptrap, or a D trap.

*Protection of Drain Beneath Wall.*—He shall, in every case where any such drain is laid beneath a wall, cause such drain to be protected at the part beneath the wall by means of an arch, flagstone, or iron support, which shall not bear on the drain and shall be of sufficient size and strength to prevent any disturbancc of, or other injury to, such drain.

*Drains to be Trapped from Sewer.*—5. Every person who shall erect a new building shall provide in every main drain or other drain of such building which may immediately communicate with any sewer, a suitable and efficient intercepting trap (in order to cut off the drain from the sewer) at a point as distant as may be practicable from such building, and as near as may be practicable to the point at which such drain may be connected with the sewer.

*Access to Trap.* — He shall, except in cases where the means of access to be provided in compliance with the preceding by-law shall give adequate means of access to such trap, provide a separate manhole or other separate means of access to such trap for the purpose of cleansing it.

6. A person erecting a new building shall cause every means of access provided in compliance with any of the foregoing provisions of these by-laws to be constructed so as to be water-tight up to the level of the adjoining ground surface or roadway, and to be fitted with a suitable manhole cover, and, if placed within a building, to be fitted with an air-tight cover.

7. *No Right-Angled Junctions.*—A person who shall erect a new building shall not construct the several drains of such building communicating with a sewer in such a manner as to form in such drains any right-angled junction, either vertical or horizontal. He shall cause every such branch drain or tributary drain to join another drain obliquely in the direction of the flow of such drain, and as near as practicable to the invert thereof.

8. *Ventilation of Drains.*—Every person who shall erect a new building shall, for the purpose of securing efficient ventilation of the drains of such building communicating with a sewer, comply with the following requirements :—

(i.) He shall provide at least two untrapped openings to the drains, and in the provision of such openings he shall adopt such of the arrangements hereinafter specified as the circumstances of the case may render the more suitable and effectual.

*Alternative Arrangements.*—(*a*) One opening being above and near the level of the surface of the ground adjoining such opening, shall communicate with the drains by means of a suitable pipe, shaft, or chamber, and shall be situated as near as may be practicable to the trap which, in pursuance of the by-law in that behalf, shall be provided between the main drain or other drain of the building and the sewer. The point at which such opening communicates with the drain shall also in every case be situated on that side of the trap which is the nearer to the building.

The second opening shall be obtained by carrying up from a point in the drains, as far distant as may be practicable from the point at which the first-mentioned opening shall be situated, a pipe or shaft, vertically, to such a height and in such a position as to afford by means of the open end of such pipe or shaft a safe outlet for foul air.

(*b*) In every case where the foregoing arrangement of the openings to the drains may be impracticable or undesirable, there may be substituted the arrangement hereinafter prescribed.

One opening shall be obtained by carrying up from a point, as near as may be practicable to the trap, which, in pursuance of the by-law in that behalf, shall be provided between the main drain or other drain of the building and the sewer, a pipe or shaft, vertically, to such a height and in such a position as to afford, by means of the open end of such pipe, a safe outlet for foul air. The point at which such opening communicates with the drain shall also in every case be situated on that side of the trap which is the nearer to the building.

The second opening, being at a point in the drains as far distant as may be practicable from the point at which such last-mentioned pipe or shaft shall be carried up, shall be above and near the level of the surface of the ground adjoining such opening, and shall communicate with the drains by means of a suitable pipe or shaft.

(*c*) If in any case neither of the two preceding arrangements are desirable, then both the first and second openings may be obtained by carrying up from the points referred to in the previous subsection suitable vertical pipes or shafts to such heights and in such positions that when either acts as an inlet the other may be a safe outlet for foul air.

(ii.) *Gratings or Covers to Openings.*—He shall cause every opening provided in accordance with any of the arrangements hereinbefore specified to be furnished with a suitable grating or other suitable cover for the purpose of preventing any obstruction in or injury to any pipe or drain by the introduction of any substance through any such opening. He shall, in every case, cause such grating or cover to be so constructed and fitted as to secure the free passage of air through such grating or cover by means of a sufficient number of apertures, of which the aggregate extent shall be not less than the sectional area of the pipe or drain to which such grating or cover may be fitted.

(iii.) *No Bends or Angles in Pipes.*—He shall not, except where unavoidable, cause any bend or angle to be made in any pipe or shaft used in connexion with any of the arrangements hereinbefore specified.

(iv.) *Size of Pipes.*—He shall cause every pipe or shaft which may be used in connexion with any of the arrangements hereinbefore specified to be of a sectional area not less than that of the drain with which such pipe or shaft may communicate.

(v.) *Construction, Material, and Weight of Pipes.*—He shall cause every pipe or shaft used in connexion with any of the arrangements hereinbefore specified to be constructed in the same manner and of the same material and weight as if such pipe or shaft were a soil pipe.

(vi.) *Use of Soil Pipes as Ventilating Pipes.*—Provided always, that for the purpose of any of the arrangements hereinbefore specified the soil pipe of any water-closet, or the waste pipe of any slop sink constructed or adapted to be used for receiving any solid or liquid excremental filth, in every case where the situation, sectional area, height and mode of construction of such soil pipe or such waste pipe shall be in accordance with the requirements applicable to the pipe or shaft to be carried up from the drains, shall be deemed to provide the necessary opening for ventilation which would otherwise be obtained by means of such last-mentioned pipe or shaft.

Provided also that any such soil pipe or waste pipe shall, where such soil pipe or waste pipe shall have an internal diameter of not less than 3½ in., and shall in all other respects comply with the requirements as to the position, height, and mode of construction of the pipe or shaft to be provided for the ventilation of any drain, be deemed to provide adequate ventilation for any drain having an internal diameter of not more than 4 in.

9. *No Inlets to Drains Within Buildings.*—A person who shall erect a new building shall not construct any drain on such building communicating with a sewer in such a manner that there shall be within such building any inlet to such drain, except such inlet as may be necessary from the apparatus of any water-closet, slop-sink, or urinal.

10. *Material of Waste Pipes.—Traps to Waste Pipes.*—A person who shall erect a new building shall cause every pipe in such building for carrying off waste water from every lavatory or sink (not being a slop sink or urinal constructed or adapted to be used for receiving any solid or liquid excremental filth) to a sewer, to be constructed of lead, iron, or stoneware, and to be trapped immediately beneath such lavatory or sink by an efficient siphon trap,

which shall be constructed of lead, iron, or stoneware, with adequate means for inspection and cleansing, and which shall be ventilated into the external air whenever such ventilation may be necessary to preserve the seal of such trap.

He shall not construct or fix in or in connexion with such waste pipe, lavatory, or sink, any trap of the kind known as a bell-trap, a dip-trap, or a D-trap.

*Waste Pipes to Discharge in the Open Air.*—He shall cause every pipe in such building for carrying off waste water to a sewer to be taken through an external wall of such building, and to discharge in the open air over a properly-trapped gully or into such gully above the level of the water in the trap thereof, or over a channel leading to such a gully.

11. *Soil Pipes. Situation and Material.*—Any person who shall provide a soil pipe in connexion with a new building for the purpose of conveying to a sewer any solid or liquid excremental filth, or shall for that purpose construct a soil pipe in connexion with an existing building, shall, whenever practicable, cause such soil pipe to be situated outside such building, and shall construct such soil pipe in drawn lead or of heavy cast-iron. Provided that in any case where it shall be necessary to construct such soil pipe within such building, he shall construct such soil pipe in drawn lead, and so as to be easily accessible.

*Thickness and Weight.*—He shall construct such soil pipe, whether inside or outside the building, so that its weight, if the pipe be of lead, and its thickness and weight, if the pipe be of iron, in proportion to its length and internal diameter, shall be—

| Diameter. | Lead. — Weight per 10-ft. length not less than | Iron. | |
|---|---|---|---|
| | | Thickness of metal not less than | Weight per 6-ft. length (including socket and beaded spigot or flanges —the socket not to be less than ¼ in. thick) not less than |
| in. | lbs. | in. | lbs. |
| 3½ | 70 | 3/16 | 50 |
| 4 | 80 | 3/16 | 60 |
| 5 | 100 | ¼ | 80 |
| 6 | 120 | ¼ | 100 |

*Joints.*—If he shall construct such soil pipe of cast iron with socket joints, he shall cause such joints to be not less than 2½ in. in depth, and to be made with molten lead properly caulked, and he shall also cause the annular space for the lead, in the case of 3½-in. and 4-in. pipes, to be not less than ¼-in. in width, and, in the case of 5-in. and 6-in. pipes, to be not less than ⅜ in. in width. If he shall construct such soil pipe with flange joints he shall cause such joints to be securely bolted together with some suitable insertion.

*No Connexions with Rain-water and Waste Pipes. No Traps.*—He shall construct such soil pipe, whether inside or outside the building, so that it shall not be connected with any rain-water pipe or with the waste of any bath, or of any sink other than that which is provided for the reception of urine or other excremental filth, and he shall construct such soil pipe so that there shall not be any trap in such soil pipe or between the soil pipe and any drain with which it is connected.

*Diameter.*—He shall cause such soil pipe, whether inside or outside the building, to be circular and to have an internal diameter of not less than 3½ in., and to be continued upwards without diminution of its diameter, and (except where unavoidable) without any bend or angle being formed in such soil-pipe, to such a height and in such a position as to afford by means of the open end of such soil pipe a safe outlet for foul air.

12. *Outlet. Connexion of Lead Soil Pipe, &c., with Iron Drain, &c.*—Any person who shall connect a lead soil pipe, waste pipe, ventilating pipe, or trap with an iron pipe or drain communicating with a sewer, shall insert between such lead soil pipe, waste-pipe, or trap, and such iron pipe or drain, a flanged thimble of copper, brass, or other suitable alloy, and shall connect such lead soil pipe, waste pipe, or trap with such thimble by means of a wiped or overcast metallic joint, and shall connect such thimble with such iron pipe or drain by means of a joint made with molten lead, properly caulked; provided always that it shall be sufficient if he shall connect the lead soil-pipe, waste pipe, ventilating pipe, or trap with the iron pipe or drain in an equally suitable and efficient manner.

13. *Connexion of Stoneware Trap of Closet, &c., with Lead Soil Pipe, &c.*—Any person who shall connect a stoneware or semi-vitrified ware trap or pipe with a lead soil pipe, waste pipe, or trap communicating with a sewer, shall insert between such stoneware or semi-vitrified ware trap or pipe and such lead soil pipe, waste pipe, or trap a brass socket, and shall insert such stoneware or semi-vitrified ware trap or pipe into such socket, making the joint with Portland cement, and shall connect such socket or appliance with the lead soil pipe by means of a wiped or overcast metallic joint; provided always that it shall be sufficient if he shall connect the stoneware or semi-vitrified ware trap or pipe with the lead soil pipe, waste pipe, or trap in an equally suitable and efficient manner.

14. *Connexion of Lead Soil Pipe, &c., with Stoneware Drain, &c.*—Any person who shall connect a lead soil pipe, waste pipe, ventilating pipe, or trap with a stoneware or semi-vitrified ware pipe or drain communicating with a sewer, shall insert between such lead soil pipe, waste pipe or trap and such stoneware or semi-vitrified ware pipe or drain, a flanged thimble of copper, brass, or other suitable alloy, and shall connect such lead soil pipe, waste pipe, or trap with such thimble by means of a wiped or overcast metallic joint, and shall insert the flanged end of such thimble into a socket on such stoneware or semi-vitrified ware pipe or drain, making the joint with Portland cement; provided always that it shall be sufficient if he shall connect the lead soil pipe, waste pipe, ventilating pipe, or trap with the stoneware or semi-vitrified ware pipe or drain in an equally suitable and efficient manner.

15. *Connexion of Iron Soil Pipe, &c., with Stoneware Drain, &c.*—Any person who shall connect an iron soil pipe, waste pipe, ventilating pipe, or trap with a stoneware or semi-vitrified ware pipe or drain communicating with a sewer, shall insert the beaded spigot end of such iron soil pipe, waste pipe, or trap into a socket on such stoneware or semi-vitrified ware pipe or drain, making the joint with Portland cement; provided always that it shall be sufficient if he shall connect the iron soil pipe, waste pipe, ventilating pipe, or trap with the stoneware or semi-vitrified ware pipe or drain in an equally suitable and efficient manner.

16. *Connexion of Stoneware Trap of Closet, &c., with Iron Soil Pipe, &c.*—Any person who shall connect a stoneware or semi-vitrified ware trap or pipe with an iron soil pipe, waste pipe, trap, or drain communicating with a sewer, shall insert such stoneware or semi-vitrified ware trap or pipe into a socket on such iron soil pipe, waste pipe, trap, or drain, making the joint with Portland cement; provided always that it shall be sufficient if he shall connect the stoneware or semi-vitrified ware trap or pipe with the iron soil pipe, waste pipe, trap, or drain in an equally suitable and efficient manner.

17. *Ventilation of Trap of Water-closet.* — Any person who shall construct any water-closet, the soil pipe of which shall communicate with any sewer and shall be in connexion with any other water-closet, shall cause the trap of every such water-closet to be ventilated into the open air at a point as high as the top of the soil pipe, or into the soil pipe at a point above the highest water-closet connected with such soil pipe, and so that the ventilating pipe shall have in all parts an internal diameter of not less than 2 in., and shall be connected with the arm of the soil pipe or the trap at a point not less than 3 in. and not more than 12 in. from the highest part of the trap and on that side of the water seal which is nearest to the soil pipe. He shall cause the joint between the ventilating pipe and the arm of the soil pipe or the trap to be made in the direction of the flow.

He shall construct such ventilating pipe in drawn lead or of heavy cast iron. Provided that in any case where it shall be necessary to construct such ventilating pipe within a building he shall construct such ventilating pipe in drawn lead.

He shall construct such ventilating pipe, whether inside or outside a building, so that, if the pipe be of lead, its weight shall not be less than 45 lbs. per 12 ft. length, and if the pipe be of iron its thickness shall not be less than 3/16-in. and its weight not less 25 lbs. per 6 ft. length.

He shall in all cases cause the joints in, and the connexions to, such ventilating pipe to be made in the same manner as if such ventilating pipe were a soil-pipe.

18. *Slop Sinks for Filth and Urinals.*—A person who shall erect a new building, and shall construct in connexion with such building a slop sink or urinal constructed or adapted to be used for receiving any solid or liquid excremental filth for conveyance to any sewer, shall construct or fix immediately beneath such slop sink or urinal an efficient syphon trap, so constructed as to be capable of maintaining a sufficient water seal between such slop sink or urinal and any drain, soil-pipe or waste pipe in connexion therewith. He shall not construct or fix in or in connexion with such slop, sink, or urinal, any trap of the kind known as a bell trap, a dip trap, or a D trap.

He shall as regards the ventilation of the trap of such slop sink or urinal and the construction of the waste pipe of such slop sink or urinal comply with all the requirements of the preceding by-laws which are applicable to the ventilation of the trap of a water-closet and the construction of a soil-pipe, always provided that the internal diameter of the waste pipe of any such slop sink or urinal shall not be less than 3 in., and where the internal diameter of such waste pipe is 3 in. the weight of such pipe for every 10 ft. of length shall, if such waste pipe be constructed of lead, be not less than 60 lbs., and if such waste pipe be constructed of cast iron the weight of such pipe for every 6 ft. of length shall be not less than 40 lbs.

19. *Maintenance in State of Repair.*—The owner of any building shall as respects such building at all times maintain in a proper state of repair all pipes, drains, and other means of communicating with sewers, and the traps and apparatus connected therewith.

20. *Penalty.*—Every person who shall offend against any of the foregoing by-laws shall be liable for every such offence to a penalty of two pounds, and in the case of a continuing offence to a further penalty of twenty shillings for each day after written notice of the offence given in accordance with Section 202 of the Metropolis Management Act, 1855.

21. *Application of by-laws to Existing Buildings.*—These by-laws shall, so far as practicable, apply to any person who shall construct or reconstruct any pipe or drain or other means of communicating with sewers, or any trap or apparatus connected therewith, so far as he shall effect any such works in any building erected before the confirmation of these by-laws, as if the same were being constructed in a building newly erected.

22. These by-laws shall not extend to the City of London.

*Appendix II.—Proposed Repealing By-law.*—By-laws made by the London County Council under the Public Health (London) Act, 1891.

By-law under Section 39 (1).—With respect to water-closets and the proper accessories thereof in connection with buildings, whether constructed before or after the passing of this Act.

From and after the date of the confirmation of this by-law, the by-law numbered 4, and so much of the by-law numbered 3 as provides as follows, that is to say—

"If he shall construct any water-closet and shall fit or fix any trap to any existing water-closet or in connexion with a soil pipe, which is itself in connection with any other water-closet, he shall cause the trap of every such water-closet to be ventilated into the open air at a point as high as the top of the soil pipe, or into the soil pipe at a point above the highest water-closet connected with such soil-pipe, and so that such ventilating pipe shall have in all parts an internal diameter of not less than two inches, and shall be connected with the arm of the soil-pipe at a point not less than three and not more than twelve inches from the highest part of the trap and on that side of the water seal which is nearest to the soil-pipe"—
in the series of by-laws with respect to "water-closets, earth-closets, privies, ashpits, cesspools, and receptacles for dung, and the proper accessories thereof in connexion with buildings, whether constructed before or after the passing of this Act," which was made by the London County Council on June 22, 1893, and confirmed by the Local Covernment Board on June 28, 1893, shall be repealed.

### *By-Laws made by the London County Council under the Public Health (London) Act, 1891 and now Proposed to be Repealed.*

By-laws under Section 39 (1).—With respect to water-closets, earth-closets, privies, ashpits, cesspools, and receptacles for dung, and the proper accessories thereof in connexion with buildings, whether constructed before or after the passing of this Act.

* * * *

3. If he shall construct any water-closet, or shall fix or fit any trap to any existing water-closet or in connection with a soil-pipe, which is itself in connection with any other water-closet, he shall cause the trap of every such water-closet to be ventilated into the open air at a point as high as the top of the soil-pipe, or into the soil-pipe at a point above the highest water-closet connected with such soil-pipe, and so that such ventilating pipe shall have in all parts an internal diameter of not less than 2 in., and shall be connected with the arm of the soil-pipe at a point not less than 3 in. and not more than 12 in. from the highest part of the trap and on that side of the water seal which is nearest to the soil-pipe.

4. *Soil Pipes.*—Any person who shall provide a soil-pipe in connexion with a building to be hereafter erected, shall cause such soil pipe to be situated outside such building, and any person who shall provide or construct or refit a soil pipe in connexion with an existing building, shall, whenever practicable, cause such soil pipe to be situated outside such building, and in all cases where such soil pipe shall be situated within any building, shall construct such soil-pipe in drawn lead, or of heavy cast iron jointed with molten lead and properly caulked.

He shall construct such soil pipe so that its weight in proportion to its length and internal diameter, shall be as follows:—

| Diameter. | LEAD. — Weight per 10 ft. length. Not less than | IRON. — Weight per 6 ft. length. Not less than |
|---|---|---|
| 3½ inches. | 65 lbs. | 48 lbs. |
| 4 " | 74 " | 54 " |
| 5 " | 92 " | 69 " |
| 6 " | 110 " | 84 " |

Every person who shall provide a soil pipe outside or inside a building shall cause such soil-pipe to have an internal diameter of not less than 3½ in., and to be continued upwards without diminution of its diameter, and (except where unavoidable) without any bend or angle being formed in such soil pipe, to such a height and in such a position as to afford by means of the open end of such soil pipe a safe outlet for foul air, and so that such open end shall in all cases be above the highest part of the roof of the building to which the soil pipe is attached, and, where practicable, be not less than 3 ft. above any window within 20 ft. measured in a straight line from the open end of such soil pipe.

He shall furnish the open end of such soil pipe with a wireguard covering, the openings in the meshes of which shall be equal to not less than the area of the open end of the soil pipe.

In all such cases where he shall connect a lead trap or pipe with an iron soil pipe or drain he shall insert between such trap or pipe and such soil-pipe or drain a brass thimble, and he shall connect such lead trap or pipe with such thimble by means of a wiped or overcast joint, and he shall connect such thimble with the iron soil pipe or drain by means of a joint made with molten lead, properly caulked.

In all such cases where he shall connect a stoneware trap or pipe with a lead soil pipe, he shall insert between such stoneware trap or pipe and such soil pipe a brass socket or other similar appliance, and he shall connect such stoneware trap or pipe by inserting it into such socket, making the joint with Portland cement, and he shall connect such socket with the lead soil pipe by means of a wiped or overcast joint.

In all cases where he shall connect a stoneware trap or pipe with an iron soil pipe or drain, he shall insert such stoneware trap or pipe into a socket on such iron soil pipe or drain, making the joint with Portland cement.

He shall so construct such soil pipe that it shall not be directly connected with the waste of any bath, rain-water pipe, or of any sink other than that which is provided for the reception of urine or other excremental filth, and he shall construct such soil pipe so that there shall not be any trap in such soil pipe or between the soil pipe and any drain with which it is connected.

The consideration of the recommendations of the Committee was postponed until after the Easter recess of the Council.

## *ARCHITECTURAL SOCIETIES.*

Aberdeen Society of Architects.—The first annual dinner of this Society was held in the Imperial Hotel, Aberdeen, on the 24th ult. Mr. James Souttar, President of the Society, occupied the chair, and Mr. Arthur Clyne, vice-president, was croupier. In the speeches during the evening reference was made to recent accidents during building operations in the city, the jury in an inquiry as to the death of an apprentice-mason, having found that the lad "lost his life by the falling of a gable in Ann-street, Aberdeen," adding that "they consider the design of the building of the gable defective, and that it was weakened by the 'dooking' of the wall too soon." Reference was made to the propriety of duly qualified responsible architects only being employed, and to a proposed conference to discuss the advisability of the Corporation appointing a public inspector of all buildings.

Glasgow Architectural Association.—At the usual fortnightly meeting of this Association on the 21st ult., in the Rooms, 187, Pitt-street, Mr. Alex. McGibbon, the Chairman, referred to the recent resolution sent to the Aberdeen Town Council regarding Greyfriars Church, mistakenly called St. Nicholas in the letter, and for which he took all blame. It was of course a confusion of names only; there had been no confusion of the buildings.—Mr. Sam Mavor then delivered a lecture on the "Electric Lighting of Interiors." The lecturer pointed out that it does not require a skilled craftsman to lay electric light conductors in the grooves of wood casings, erected by a joiner, nor to screw to their bases manufactured switches and such apparatus. The result is that much wiring work is done by men and lads who are not tradesmen and who are ignorant of the consequences which might arise from their inexperience or carelessness. Many defects are of a kind which cannot be discovered by ordinary tests, after the completion of the work, and it is, therefore, of great importance that wiring work should be inspected during progress. Architects were strongly urged to encourage their clerks of works to qualify as inspectors of electric light wiring, as they only were in a position to give inspection of the nature required. The best arrangement of electric lamps in residences and other buildings was described, and the relative reflecting powers of walls of various colours and the ratio of candle-power to superficial area and cubic contents to be lighted were given. It was pointed out that much money was wasted in the lighting of shop windows by unsuitable arrangements of lamps. Arc lamps were often fitted too low, and passers were dazzled by the glare so that they could not see the goods exhibited. The barbarous practice of interposing unshaded arc lamps between the goods and the observer, is much too frequent in shop windows. Lamps so placed make it impossible for an observer, without a painful effort, to see the objects beyond them. The vendor thus renders an inspection of his wares a disagreeable operation instead of an inviting diversion.—At the close Mr. Mavor was awarded a hearty vote of thanks for his paper.

## *ARCHÆOLOGICAL SOCIETIES.*

Surrey Archæological Society.—The forty-fourth annual meeting of this Society was held on Saturday, March 18, at the Council-rooms, in the Castle Arch, Guildford, Surrey, this being its first meeting there. Viscount Midleton, President, occupied the chair, and moved the adoption of the report and statement of accounts for the past year. The report stated that, "in accordance with the resolution of the annual meeting held in March, 1898, the Council had entered into a lease with the Mayor and Corporation of Guildford of the two houses adjoining the Castle Arch; and the headquarters of the Society, with the collections at 8, Danes' Inn, London, and elsewhere, were removed there at Midsummer. Although by the terms of the lease the cost of the structural repairs falls upon the Corporation, the Society has incurred a heavy expense by reason of the great alterations necessary in adapting the interior of the premises to its purposes, and the greater part of the special fund raised to meet this and other expenses incident to the removal has had to be devoted to the settlement of the builder's account. Even with this deduction from the fund, which now amounts to 258*l.* 11s., the Council is enabled with the residue to carry out much in the way of purchasing show cases and binding the books in the library, that would otherwise have proved a serious burden on the Society's usual resources. It therefore feels that its thanks are greatly due to all those who have so generously come forward with their contributions to aid in the Society's work. At the same time, in that the above sum still falls short by 40*l.* of the sum originally asked for, viz., 300*l.*, the Council will be glad to receive any further subscriptions that may be forwarded to the fund. The library and museum exhibits have been diligently and carefully arranged, and will shortly be ready for the inspection and use of members. Although, in accordance with the terms of the lease, the Museum must be opened on one afternoon in the week to the free inspection of the public, it is hoped that the charge on the remaining days to non-members of a small fee for admission will add an appreciable source of income to the Society's finances. The annual excursion was held on Thursday, July 28, the meeting-place being Farnham, whence Moor Park, Whitmead, and Waverley Abbey were visited (*vide Builder*, August 13, 1898). The Council takes this opportunity of returning the thanks of the Society to all who assisted in rendering the meeting successful. The part of the Society "Collections" (Vol. xiv., Part 1) for the year 1898 was duly issued to all members not in arrear with their subscriptions. In this part are valuable papers by Mr. J. Lewis André, F.S.A., and Mr. A. Ridley Bax, F.S.A. Mr. M. S. Giuseppi, F.S.A., contributes a transcript of the Parliamentary surveys relating to Southwark, and the "Catalogue of Church Plate" is still being continued by the Rev. T. S. Cooper, M.A., F.S.A. With this part of the "Collections" a circular was issued to members setting forth what has been done on the site of Waverley Abbey during the last summer, and what it is proposed to do in the approaching summer. The Council has already had reason to consider that work of this kind, while being of general interest to archæologists, is likely to make the Society popular in the county. In order that the excavations may be carried on successfully, the Council will have a proposal to lay before the general meeting with regard to the appropriation of a small sum of money from the reserve fund for this purpose. The Council has great satisfaction in drawing attention to the improved state, in a year of exceptional expenditure, of the Society's finances. During the past year it has been enabled to expend the sum of 50*l.* on an addition of 45*l.* 12s. 2d. Two and Three-quarter per Cent. stock to the Society's reserve fund. There is also a considerable decrease from the end of 1897 in the deficit, as shown in the statement of assets and liabilities at the end of last year. To this result an economy in the matter of the annual part of the collections has in some measure contributed; but the saving thus effected cannot, in the opinion of the Council, be again ventured upon without seriously impairing the usefulness of the Society's work. On the other hand, the saving in rent, which is slightly noticeable in the account now submitted, will be still further observed in the accounts for future years, while an addition to the Society's usual sources of revenue is obtained from the rent of the second house in the Castle Arch. But it is to the increase in the number of new members that the Society is mainly indebted for its improved financial position. The Council has to deplore the loss by death of two Vice-Presidents, viz., Sir Henry W. Peek, Bart., and Major Alfred Heales, F.S.A., and of one member of the Council, viz., Mr. J. Fisher Eastwood. In Major Heales the Society has lost one to whom it has been indebted for many important contributions to the collections. One of the very last acts of his life was to forward his valuable set of rubbings of monumental brasses for presentation to the Society's museum at Guildford. Mr. Eastwood, who has been on the Council since 1892, took a great interest in the establishment of the Society's headquarters at Guildford, and the Council feels greatly the loss it has sustained of his active services in connexion with the special committee formed to carry out the details of the removal. By the resignation of Mr. Philip Norman, Treasurer S.A., a second seat on the Council became vacant. The two vacancies have been filled by the elections of Sir Frederick Pollock, Bart., F.S.A., and Lieut.-Col. W. Marsden, M.A. The number of members is 323, viz., annual, 227; life, 95; and honorary, 1. During the year 45 new members have been elected, viz., 37 annual and 8 life. By death the Society has lost 11 members, viz., 7 annual and 4 life. By resignation, 3 members. Total, 14. Gain over loss, 31." Colonel Godwin Austen seconded the adoption of the report and balance-sheet, which was carried unanimously. Sir Cuthbert Peek moved and Dr. Smiles seconded the re-election of the following retiring members of the Council:—Rev. R. M. Blakiston, Lieut.-Col. Thornton, and Messrs. A. R. Bax, A. P. Boyson, George Curling, S. W. Kershaw, F. A. H. Lambert, and H. E. Malden; this was adopted. Viscount Midleton moved and Lord Ashcombe seconded the re-election of the hon. secretaries, Mr. Montague Giuseppi and the Rev. T. S. Cooper, which was also carried, and for which both those gentlemen returned thanks. Messrs. W. F. Potter and Cecil T. Davis were re-elected auditors, with thanks for past services. Lord Ashcombe proposed a special vote of thanks to Mr. Ralph Nevill for his gratuitous services as Honorary Architect in connexion with the necessary alterations to that building. Mr. A. J. Style seconded. Mr. R. Nevill, in reply, said when one began to deal with an ancient building it was not so easy as one might think. We should all like to keep it as it was, but those whose business it was to deal with it knew that was not always possible, and he hoped that in this case they had not done more than they ought to have done. The meeting was then made special to consider a resolution "that the Council be empowered to appropriate a sum of £25 from the reserve fund towards the expenses of the excavations on the site of Waverley Abbey. Viscount Midleton moved this resolution, and said he did not think the whole of the work could be carried out for less than 200*l.*, but they did not propose to do it all at once, it was better to proceed step by step. Mr. Mill Stephenson, in seconding the resolution, said he had had some little experience in excavations, both in regard to mediæval and early remains, and the site at Waverley was one of the most interesting he knew. It was the mother church of the Cistercian order in England, and, as the Rev. Mr. Cooper had said, he had no doubt the whole of the ground plan of the building would be recovered, and he hoped funds would be forthcoming to enable them to finish the excavations within the next couple of years. The motion was carried unanimously. On the motion of Messrs. A. J. Style and F. B. Eastwood a hearty vote of thanks to the President was passed, and this closed the proceedings.

## THE LONDON COUNTY COUNCIL.

THE usual weekly meeting of this Council was held on Tuesday at the County Hall, Spring Gardens, Lord Welby, Chairman, presiding.

*Loan.*—On the recommendation of the Finance Committee, it was agreed to lend the Poplar District Board 5,588*l.* for paving works.

*Spitalfields Market.*—The Public Control Committee recommended, and it was agreed to enter into, a provisional agreement with the freeholders for the purchase, subject to Parliamentary power being obtained, of the freehold and market rights of Spitalfields market for the sum of 170,000*l.*, plus 1,250*l.* to include all costs and fees in respect of negotiations, &c.

*The Late Superintending Architect.* — Mr. Strong, Vice-Chairman of the Council, said he had much pleasure in moving, on the retirement of Mr. Thomas Blashill as Superintending Architect of the Council, "That this Council, upon the retirement of Mr. Blashill, records its appreciation of the services rendered by him to the Council and to London during the twelve years, 1887 to 1899, he has held the office of Superintending Architect of Metropolitan Buildings and of Architect of the Council. That the above resolution be engrossed and be presented to Mr. Blashill."

Mr. Cornwall, who seconded, and several other councillors, spoke in high terms of the services of Mr. Blashill as Superintending Architect. Colonel Ford said he thought it was unfortunate that it had not been thought proper to secure the reappointment of Mr. Blashill.

The motion having been unanimously agreed to,

Mr. Blashill, who had been called in to receive the thanks of the Council, said that it would always be a pleasure to him to remember that the best services of his life had been devoted to the great central authority of London.

*Drury-lane Theatre.* — The Theatres and Music Halls Committee recommended, and it was agreed to approve of, certain drawings showing a block of new buildings, comprising workrooms in connexion with Drury-lane Theatre.

*Stairways, Woolwich Ferry.*—On the recommendation of the Bridges Committee it was agreed to sanction an expenditure of 1,400*l.* for erecting new staircases with glass roofs, and the removal of the existing stairs, at Woolwich Ferry, and to accept the tender of Messrs. Walter Macfarlane & Co., amounting to 1,158*l.* 10s.

*Fire-Resisting Materials.*—The report of the Building Act Committee contained the following paragraph, the recommendation being agreed to :—

> By the provisions of the London Building Act, 1894, the Council may from time to time approve as fire-resisting for the purposes of the London Building Act, 1894, any materials which may appear to it to be suitable for the purpose. We have had before us an application that coke breeze concrete may be so approved. The Council's Architect and the Chief Officer of the Fire Brigade have reported favourably upon the material, which in our opinion is one which might properly be approved as fire-resisting when used for filling in between joists of floors. We therefore recommend — (*a*) That the Council do, in pursuance of the powers vested in it by the second schedule of the London Building Act, 1894, approve of the following material as fire-resisting, namely, concrete, composed of properly burned coke breeze, free from dust and organic impurities, and Portland cement, in the following proportions, viz., five parts by measurement of coke breeze to one part by measurement of Portland cement, mixed together with clean water to the satisfaction of the District Surveyor, when such concrete is used for filling in between the joists of floors, and is filled in to the depth of at least 5 in. (*b*) That notice of such approval of the Council be given to the Royal Institute of British Architects, the Surveyor's Institution, the London Chamber of Commerce (incorporated), the Institute of Builders, and to the District Surveyors under the London Building Act, 1894, and be also advertised in the leading daily and professional papers.

*The London Government Bill.*—Recommendations of a Progressive character of the Local Taxation Committee regarding the London Government Bill were adopted after a long debate. The following remarks on the London Building Act, 1894, occurred in the report :—"The proposals contained in the Bill with respect to transferring some undefined and unagreed parts of the administration of the London Building Act, 1894, to the Borough Councils are, in our opinion, open to considerable criticism. This Act was settled definitely only four years ago after a long and elaborate inquiry in Parliament. The proposal now is to reopen the whole question as to the authorities that are to deal with the respective portions of the Act, and leave the settlement of this to the Privy Council, who may deal with it in one order or in successive orders as they think fit. Thus the law relating to buildings in the Metropolis will be still more complicated than it is at present, and that uniformity and independence in the method of execution, which it is essential should be observed over the whole of the Metropolis, will be destroyed."

*Tramways.*—A report of the Highways Committee for proposing increases in the wages of tramway servants and giving them one day's rest in seven was adopted.

Having transacted other business the Council adjourned for the Easter recess at 2 a.m. on Wednesday morning, having sat continuously eleven hours.

## METROPOLITAN ASYLUMS BOARD.

SIR EDWIN H. GALSWORTHY, the Chairman, presided on Saturday at the fortnightly meeting of the Managers of the Metropolitan Asylum District, held at the County Hall, Spring Gardens.

*Darenth Asylum and Schools.*—It appeared that there had been further diphtheria cases at Darenth, the number of patients now numbering eighteen, and including one of the medical officers. The Darenth Committee recommended that they should be authorised to obtain tenders by advertisement for the fixing of sanitary appliances and the execution of alterations in the drainage system as specified in the bills of quantities prepared by the foreman of works. The cost was estimated at about 2,200*l.* Mr. Cochran moved an amendment to refer the report back, and this was seconded by Mr. W. M. Acworth, who said it was an unheard-of thing for a Committee to prepare specifications, and to carry out works to the value of over 2,000*l.* under the superintendence of a foreman. Obviously new suggestions would be made during the progress of the work, and was a casual majority of the Committee to alter the specifications ? The managers were about to appoint an engineer, and he hoped this work would be deferred until they could have the advice of that officer. —Mr. Bruce said this was not a question of main sewers, but of a series of simple alterations to the drains of the buildings. The cost was large simply because the same operations had to be repeated many times over. There was not the slightest necessity for extravagant expert advice. — Captain Andrew thought if 2,000*l.* was to be spent plans should be properly drawn and the work carried out under the supervision of a professional man. Mr. Helby, on behalf of the Committee, said when they proposed to employ Mr. Harston as architect for the painting of the asylum, the managers referred the matter back. In this case there was less necessity for an architect. The internal soil pipes needed to be made joint-proof, and certain simple alterations were required in the lavatory basins. It was the number of operations that ran up the cost. Within the next twelve months about 15,000*l.* would have to be spent on improving the condition of this institution.

The amendment was then rejected, and the Committee's proposal was carried.

*The Southern Hospital.*—The Works Committee submitted preliminary plans for the projected Southern Hospital, and the architect's descriptive report, which they recommended should be sent to the Local Government Board for approval prior to the elaboration of finished drawings. The foundations of the blocks would differ owing to the nature of the ground, and the Committee considered it impossible to invite schemes for the heating arrangements and engineering works, and useless to work out the foundations, until they were in possession of the views of the Local Government Board as to the general suitability of the designs. The completed drawings and estimates would be submitted to the managers with as little delay as possible. Mr. J. H. Brass said this was a most expensive set of plans. He hoped the managers would inquire into the cost per bed before sending the plans to the Local Government Board. Mr. J. T. Helby : This is a design selected in competition, and we have already given instructions as to the accommodation to be provided. The plans must carry out the orders of the Local Government Board as to air space and so on. Practically, these are sketch plans, and it might be convenient if they remained a short time on view. The Chairman : They have been on view a considerable time. Mr. A. C. Scovell (Chairman of the Works Committee) said the Committee were as well aware as Mr. Brass of the extremely costly nature of this hospital. They could quite foresee that the cost would be a very large sum indeed, and he had a very strong feeling about the great expenditure, but the Committee had done their best to cut it down, and he did not see how they were to save the cost of a single brick.

The plans were then adopted, and a resolution was carried authorising the Committee to omit from the plans the thirty "separation rooms" provided in the original scheme. The Committee held that the working requirements of the hospital would not justify the increased cost entailed.

## APPLICATIONS UNDER THE LONDON BUILDING ACT, 1894.

AT the meeting of the London County Council on Tuesday, the Building Act Committee brought up the following list of applications under the 1894 London Building Act. Those applications to which consent has been given are granted on certain conditions.*

### *Formation of Streets—Manor Park Estate.*

*Lewisham.*—The construction, in connexion with the formation of new streets on the Manor Park estate, Lee and Lewisham, of the proposed bridges intended to carry public roads over the river Quaggy (Mr. A. W. Osborn for Messrs. Johnson & Aldridge).—Refused.

### *Lines of Frontage.*

*Hampstead.*—Projecting porches and bay-windows to seven pairs of semi-detached houses on the south side of Lymington-road, West End-lane, Hampstead (Messrs. Boehmer & Gibbs for Messrs. Boddy & Chapman).—Consent.

### *Width of Way.*

*Southwark, West.*—Dwellings for persons of the working class on the west side of Lancaster-street, Borough-road, Southwark, within the prescribed distance from the centre of the street, to a height exceeding the distance from the front wall of such dwellings to the opposite side of the street (Messrs. Joseph, Son, & Smithem).—Consent.

### *Line of Frontage and Width of Way.*

*Poplar.*—A church on the south side of Yabsley-street, Poplar, to abut upon Raleana-road (Messrs. J. & S. F. Clarkson for the Rev. A. Chandler).—Consent.

### *Means of Escape from Top of High Buildings.*

*Holborn.*—That Mr. G. D. Martin be informed that the Council, in the exercise of its powers under Section 63 of the London Building Act, 1894, is prepared to grant a certificate in respect of the means of escape in case of fire to be provided for the persons dwelling or employed on the sixth floor of a building on the south side of New Oxford-street, Holborn, at the corner of Bloomsbury-street, on the site of Bedford Chapel (for Mr. A. J. Sanderson).—Agreed.

*Marylebone, West.*—That Mr. T. Holloway be informed that the Council, in the exercise of its powers under Section 63 of the London Building Act, 1894, is prepared to grant a certificate in respect of the means of escape in case of fire to be provided for the persons dwelling or employed on the fourth, fifth, and sixth floors of the Hotel Great Central, Marylebone-road, St. Marylebone (for Colonel Edis).—Agreed.

### *Space at Rear.*

*Peckham.*—A modification of the provisions of Section 41 of the London Building Act, 1894, with regard to open spaces about buildings, so far as relates to the proposed erection of additions to No. 352, St. James's-road, Old Kent-road, Peckham, without an open space at the rear (Mr. J. Warne, for the committee of the North Camberwell Progressive Club).—Refused.

*Marylebone, West.*—A modification of the provisions of Section 41 of the London Building Act, 1894, with regard to open spaces about buildings, so far as relates to the proposed erection of No. 8, Northumberland-street, Marylebone, at the corner of Paddington-street, to partly abut at the rear upon a disused burial ground in Paddington-street (Mr.

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* Names of applicants are given in brackets. Buildings are new erections unless otherwise stated.

Beresford Pite, for Messrs. Matthews Brothers).—Refused.

### *Working-class Dwellings.*

*Hammersmith.*—That the Council do make an order as follows:—Whereas Mr. H. M. Newlyn, of 40, Old Broad-street, London, on March 15, 1899, under the provisions of Section 42 of the London Building Act, 1894, delivered on behalf of the trustees of Christ Church, Westminster Bridge-road, at the County Hall, a block plan of six blocks of intended dwelling-houses, to be inhabited by persons of the working class, and proposed to be erected, not abutting upon a street, on land at the rear of Nos. 217 and 219, King-street West, Hammersmith, with entrances from that street and Hampshire-hog-lane, . . . . ; now the Council, in the exercise of its powers under Section 42 of the said Act . . . . does by this order sanction the said eighth-scale plan, dated December 4, 1897, and the block plan, dated March 15, 1899 . . . .—Agreed.

### *Cubical Extent.*

*Westminster.*—The erection at the Stag Brewery, Brewer-street, Pimlico, of two ale-stores, each to exceed in extent 250,000 but not 450,000 cubic ft., and to be used only for the purposes of the trade of a brewer (Mr. J. G. Ensor for Messrs. Watney, Combe, Reid & Co., Limited).—Consent.

### *Buildings for the Supply of Electricity.*

*Southwark, West.*—That the Council do approve of the plan submitted with the application of Mr. F. Bailey on behalf of the City of London Electric Lighting Company, Limited, for the construction of a furnace chimney-shaft at the Company's station on the east side of Love-lane, Bankside, Southwark, and that the Council do also authorise the erection of such chimney-shaft.—Agreed.

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## THE BUILDING TRADE DISPUTE.

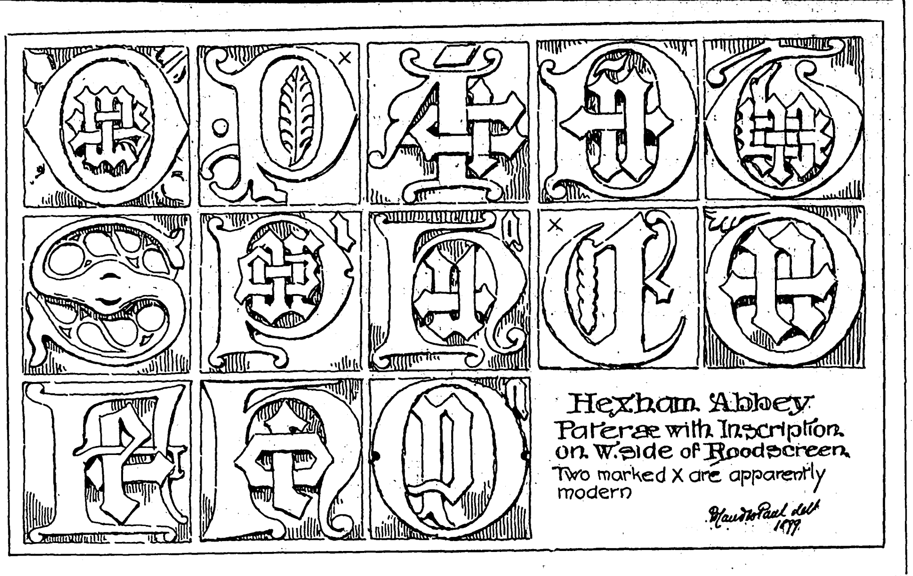
ON Monday the lock-out of union plasterers entered upon its fourth week, and at present there is no prospect of the dispute being speedily terminated. The Union officials have again intimated to the National Association of Master Builders that they are willing to agree to a conference, but the employers are not inclined to adopt such a course unless the Union give an undertaking that they will discontiue the objectionable practices of which the Masters' Association complain. On Saturday about 2,000 men each received the usual strike pay of 15s. per week, this sum being supplemented for the first time by about 12s. per man, as a result of the special levy made upon those members of the society remaining at work. In many of the affected districts, we understand, the local branches of the Operative Plasterers' Association have addressed a circular to architects and owners of buildings stating that they are prepared to find competent men to finish the plastering of any structure where the employers have locked-out their members.

The movement of the locked-out plasterers in Leeds to establish a Co-operative Plasterers' Society has, it is stated, been successful. The whole of the necessary capital has been subscribed. The men have already secured a large contract, upon which they will commence working after the Easter holidays. Many buildings in the city are at a standstill owing to the plasterers being stopped. On Monday, Mr. M. Deller, the general secretary of the Plasterers' Union, issued a circular addressed to the trade unionists of the United Kingdom appealing for financial assistance to help them to carry on the struggle with the Master Builders' Association.

◆

HARLEY HOUSE, MARYLEBONE-ROAD.—We understand that the site of this house and grounds, in which is a rookery, is about to be taken for the erection of residential flats. The house, which formed the residence of the King of Oude when he visited England many years ago, has been occupied for some while past by a convent (Marie Réparatrice) of nuns, for whom a chapel was built in the garden. The convent will migrate to Priory Lodge, Hampstead, which represents the cottage at Frognal that Dr. Johnson rented for his wife, and where it is said he wrote, in 1748, "The Vanity of Human Wishes."

CAMBRIDGE UNIVERSITY.—The Financial Board have recommended the adoption of electric light for the Senate House, and that the installation shall be carried out after the designs and specifications of Mr. T. G. Jackson, R.A., at an estimated cost of 400*l.*, exclusively of the architect's commission. The Antiquarian Committee report in favour of the erection, upon the site acquired from Downing College, of a new museum of general and local archæology and of ethnology, and the Museums and Lecture-rooms Syndicate advise that, in their opinion, immediate steps should be taken to provide new buildings for purposes of the department of botany.


X
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Hexham Abbey
Paterae with Inscription
on W. side of Roodscreen
Two marked X are apparently modern
del.
1899

# Illustrations.

## HEXHAM ABBEY.

THE sombre and somewhat heavy-looking mass of the remaining portions of Hexham Abbey Church forms the most conspicuous object in the skyline of the picturesque old market town to which it has served as a nucleus and an appropriate centre. It overlooks the small old-fashioned market-place; its eastern side facing the houses and streets, while to the west it is practically open to the country, and borders on grassy slopes, trees, and running streams.

The situation is one with considerable natural advantages, and there is abundant evidence of continuous occupation from pre-historic times. There is, however, no conclusive evidence of a Roman settlement, and it is clear that the worked stones of Roman date in the building were brought from Corstopitum or Colchester, now Corbridge, three miles to the east of Hexham.

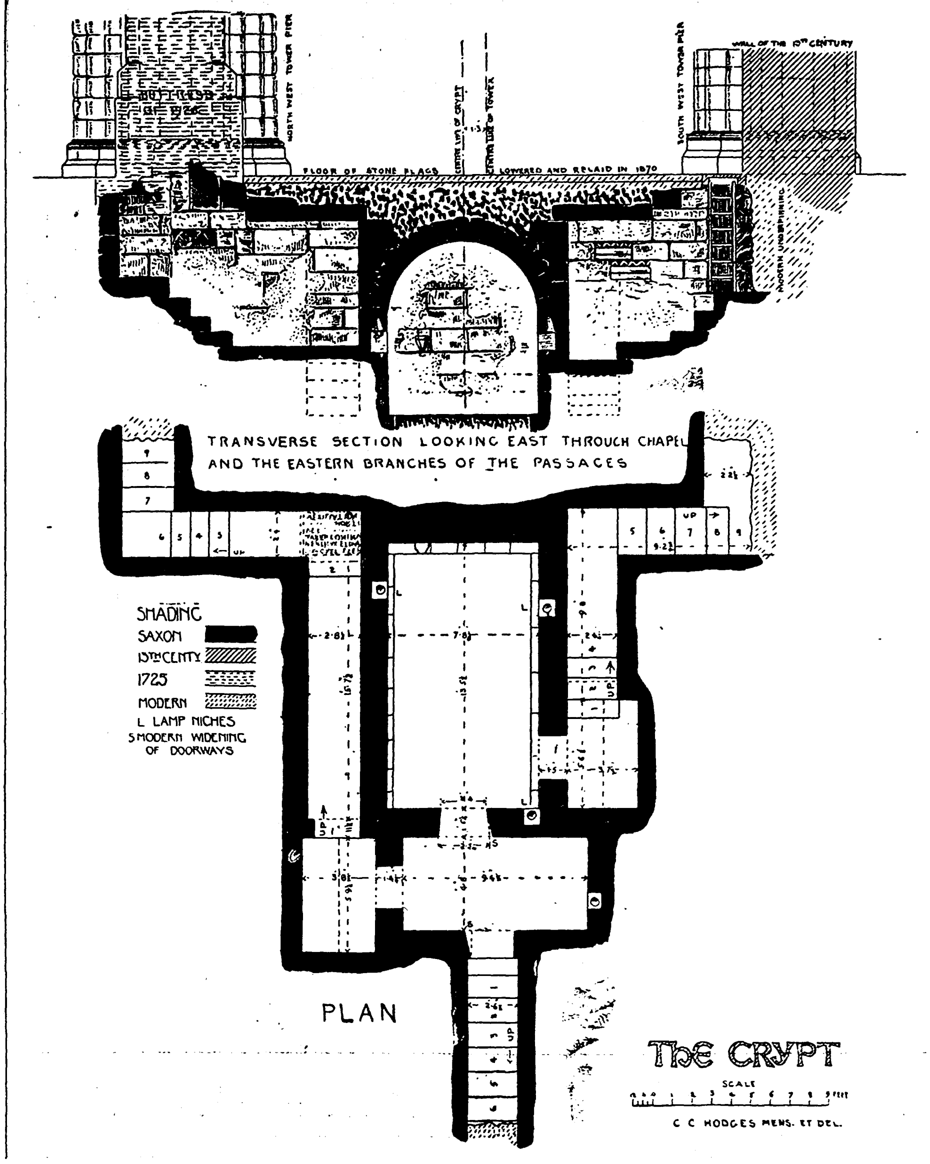
The ecclesiastical establishment owes its origin to the pious intentions of Etheldrida, the wife of Ecgfrid, King of Northumbria (670-685), who about the year 674 gave to St. Wilfrid a considerable estate, which had been her marriage dowry, to enable him to found a church at Hexham. This territory formed what was afterwards the Regality of Hexham, and was a peculiar of the Archbishops of York, who were at once the patrons and visitors of the priory, and lords of the regality in a civil sense.

This is not the place to describe at any length St. Wilfrid's troubled life, which began with his inducing the queen to leave her husband and to follow a religious life. The story has been often told, and need only be alluded to here when it has any direct bearing on the church and its change of state. Etheldrida died in 679, and her death was the immediate cause of Wilfrid's temporary banishment from his favourite monastery of Hexham. During his absence the church was, in 681, raised to the dignity of a bishop's see, and so remained until 821, when, no doubt owing to the Scandinavian inroads, it was allowed to lapse, and was subsequently represented by Lindisfarne and then Durham. The church maintained its monastic character until its overthrow under Halfdene the Dane in 875. It remained in a ruinous condition, and was practically abandoned by its priest, who dwelt with the Congregation of St. Cuthbert, at Durham, until 1083, when William of St. Cariteph, Bishop of Durham, ejected the secular and married clergy, and introduced Benedictine monks into his church. This led to Hexham being again occupied and repaired, and served by its priest, Eilaf. Political causes transferred Hexham to the possession and control of the Archbishops of York at this time, and in 1113 Thomas II. established a priory of Austin Canons there, who made joint use of Wilfrid's church and buildings with Eilaf until his death in 1138. Like other northern houses, the priory throve and prospered during the period of peace between England and Scotland, which terminated in the reign of Edward I., and subsequently it suffered serious inroads from the Scots, until in 1346 the defeat at Neville's Cross broke their power for a long period. The most destructive of these raids was that of the year 1296, when the church and monastic buildings, then in progress and nearing completion, were burned and defaced. A long period of extreme poverty ensuing caused the church and other buildings to remain incomplete at the date of the Dissolution in 1536. Since then the remaining portions of the church have served as the parish church of the town, as they clearly did before the Dissolution, and the surviving parts of the conventual buildings have been occupied as the residence of the lord of the manor of Hexham. The estates have passed, either by purchase or marriage, through the families of Carnaby, Forster, Fenwick, Blackett, and Beaumont, and are now in the possession of Mr. Wentworth Blackett Beaumont.

Any description of Hexham Abbey must of necessity begin with the church built by St. Wilfrid. This seems to have been begun about the year 674, and was more or less complete in its main structure and furnishing by 679. Our knowledge of it is almost entirely derived from the written descriptions of those who knew it, in a more or less perfect state. Richard, the third prior, who died about 1175, is its latest describer. He says: "It was begun by making crypts and subterranean oratories, which had passages with many branches beneath the floor. The church above was built with stones squared and of various sizes, and supported by well polished columns. It had three distinct stories or levels, which were carried out to an immense height and length. He also decorated the walls and the capitals of the columns by which they were supported, and the arch of the sanctuary, with figures and statues, and carvings in relief on the stones, as well as pictures and paintings in wonderful variety and great beauty. The body of the church was surrounded with aisles and porches on every side, which with surprising and inexplicable skill communicated with each other by means of winding stairs in stone towers. In these tower stairs and above them were different ways leading to long galleries formed in the walls, with many turnings and branches, some leading up and some leading down, so artfully contrived that a great multitude of men might be there surrounding the whole church and yet not be seen by those on the floor below. Both above and below were oratories as private as they were beautiful. In the porticoes were altars. . . . The atrium of the temple he also surrounded by a wall of great thickness and strength, and, moreover, an aqueduct in a stone channel ran through the midst of the town for the use of the offices."

The same writer goes on to say that this church was one of the grandest in all the north of Europe, and that considerable ruins and foundations were to be seen about it in his day.

Nothing of this remarkable church now remains above ground, but from time to time carved stones, which must have been in its walls, have been dug up on the site or found in the walls of the later buildings about it. These consist of portions of the slabs with carving in relief, and decorated string courses with small baluster shafts arranged in rows and used as ornaments. Similar string courses are to be seen at Jarrow, and still *in situ* in the case of



the western porch of St. Peter's, Monkwearmouth.

The crypt of Wilfrid's church is, fortunately, complete, and is a most interesting underground oratory, which has a parallel at Ripon.[*] It was formed to serve several purposes. First, as a means of exhibiting, in a suitably mysterious manner, the relics of saints and martyrs brought by Wilfrid from Rome; secondly, as a place of refuge and resort, where religious rites could be carried on in times of danger, and also, perhaps, as a place of sepulture for those held in special veneration. Its plan and arrangements are shown in the accompanying illustrations. The larger chamber contained an altar, and a bracket for a crucifix still remains. It was lighted by means of three lamp niches, and has a full centred barrel vault. Here the relics would be exhibited and mass said. The two side passages have each small vestibules, rather wider than the passages, to obviate crowding at these places. The passage in the south side, which has a doorway opening directly into the oratory, was for the use of the priests. The other two passages were for the people to descend and ascend by, they viewing the religious rites from the ante-chapel, the door between which and the oratory is splayed for that purpose, while the other doorways have square jambs. The material of which this crypt is formed is squared stones of Roman workmanship and evidently brought from Colchester (Corbridge). The size and grandeur of the church beyond its contemporaries, which so impressed its describers, is to be accounted for in a practical manner by the enormous amount of ready-dressed ashlar which the builders found ready to their hands only three miles from the site. There are two Roman inscriptions still in the crypt, and an inscribed altar was removed from it in the last century and is now lost. A finely carved monumental slab 9 ft. high was found in a foundation which still remains to some length, and is shown on the plan. It appears to have formed the western wall of the monastic buildings on the east side of the cloister of the time of Wilfrid. At Durham a wall in exactly the same relative position is the earliest part of the conventual buildings there.[*] There is much yet to be learned about St. Wilfrid's church; very little can be conjectured as to its actual plan, and an attempted plan of a portion of it which has been published is entirely apocryphal. It is clear that the greater part of its foundations remain under the floor of the existing church, and from time to time the writer has seen considerable portions of them. It is to be hoped that an opportunity may arise for a more systematic examination than has hitherto occurred. In the church are preserved many stones of this date, the most interesting being a part of one of the carved wall slabs already mentioned. There are many portions of sculptured crosses and grave-covers of pre-Conquest date, including a complete and very singular hog-backed stone. The remaining portions of the famous Cross of Acca, Bishop of Hexham, who died in 740, which was one of the largest, as it certainly was the most beautiful, of all the productions of that school of Anglian stone-carvers which seems to have made Hexham their centre, is now set up in the Cathedral Library, Durham, where also may be seen parts of the curious baluster string courses and two of Wilfrid's water pipes.

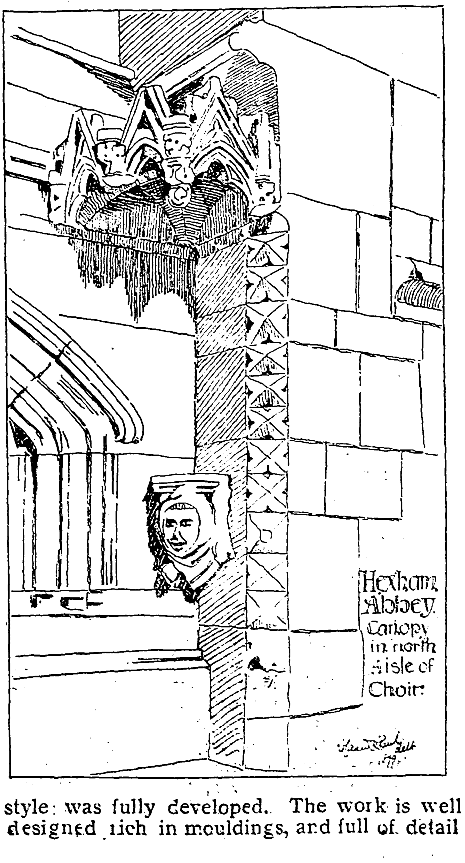
In a general way it may be concluded that the later church stands on the same ground as did its predecessor, and this accounts for the very abnormal proportions of the different limbs of the cross. The site available was too nearly of square form to admit of the long nave which was such a distinctive feature of the plans laid down in the twelfth century.[†] We have documentary as well as visual evidence of the restricted nature of the site on the east, and the small dimensions of the nave point to a similar difficulty on the west side. It is highly probable that the extent of the remains of the nave represent the dimensions of the body of Wilfrid's church, and it is on this site that the fragments of ornamental details from its walls have been found; the unfinished walls of the later nave are also entirely composed of stones which have done duty three times—in the Roman buildings, in the Saxon church, and in their present position, and contrast strongly, in dressing and colour, with the material in the later church, which was quarried at the time of its building, and is all derived from the beds of coarse sandstone on the south side of the Tyne.

The very substantial character of the early church led to its survival to a much later date than was usually the case, and the Austin canons do not seem to have been in any great hurry to replace it. Their poverty in the early days of the priory may have had something to do with this, and led to the remarkable fact that the Norman period is entirely unrepresented in Hexham. The new church was not begun until the transition from Norman to Gothic was in full progress, and the pointed arch in use, both for arches of construction and decoration alike, and the last traces of the modified chevron ornaments had died away.

The plan of laying down a large cruciform church, a cloister, and a complete series of conventual buildings, was adopted here as in other places, but the work was dealt with in sections and proceeded slowly, for something approaching a century and a quarter had passed away since the new church had been begun when the disastrous raid of 1296 found it incomplete and stopped all further progress.

The first work done was to build the aisle walls of the choir outside St. Wilfrid's choir, which from internal evidence seems to have extended to the second bay east of the crossing. These aisles are of distinctly Transitional character, and severely plain and heavy in their design. The window arches are without hoods inside, but have nook shafts both inside and out. The internal capitals are carved with volute scrolls at the angles, which are a distinct mark of date. The north aisle wall was made 1 ft. thicker than the south, probably for defensive reasons.

The main arcades of six bays on either side followed, and necessitated the removal of the eastern part of the earlier church before they could be finished; they were probably worked from east to west and then from west to east, as the junction occurs at the second pair of piers from the tower. The triforium and clearstory and the vaulting of the aisles followed, and were not finished until the Early English


Hexham Abbey
Canopy in north Aisle of Choir

style was fully developed. The work is well designed, rich in mouldings, and full of detail

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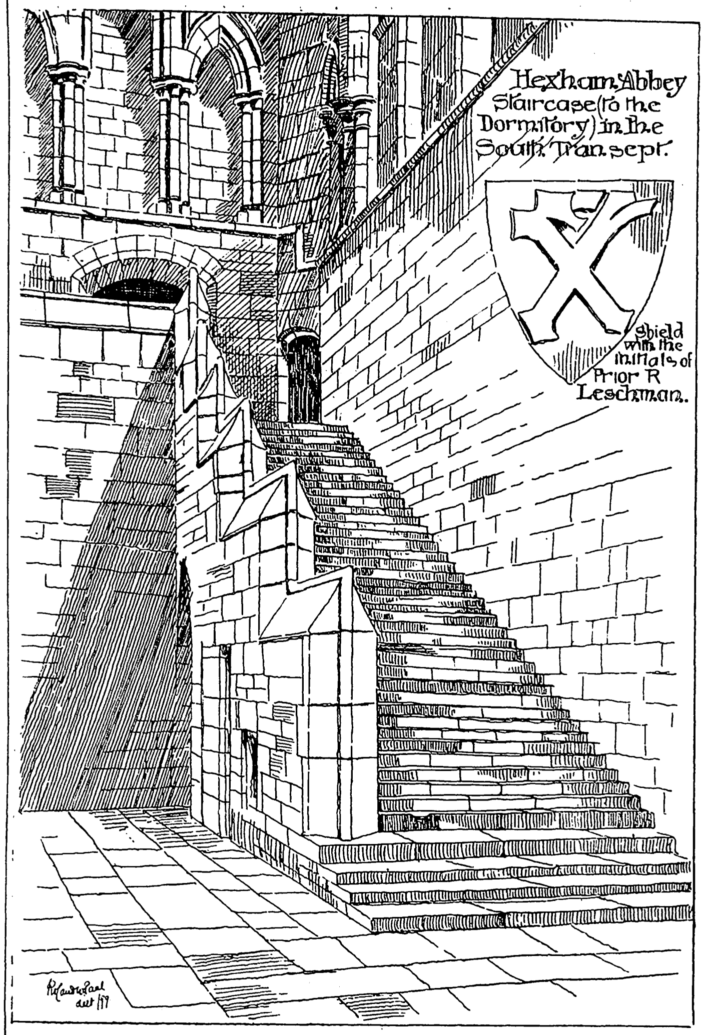
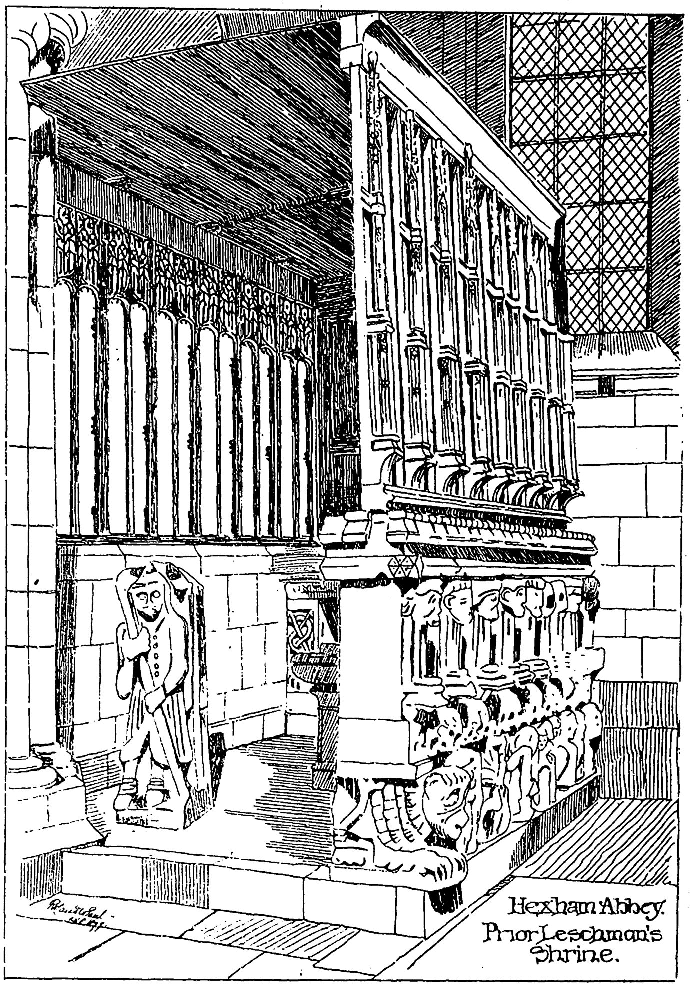
[*] *Builder*, February 4, 1893.

[*] Greenwell's "Guide to Durham Cathedral," 5th ed., p. 17.

[†] *E.g.*, plan of Byland Abbey, *Builder*, October 3, 1896; a typical example of a perfect twelfth-century church plan.


Hexham Abbey
Staircase (to the Dormitory) in the South Transept.
Shield with the initials of Prior R Leschman.


Hexham Abbey.
Prior Leschman's Shrine.

though the execution is coarse when compared with contemporary work in Yorkshire and further south. The architect was clearly working on both sides of the border, as there can be no doubt that the designs of Jedburgh and Pluscardyn, at least, and probably Arbroath, were emanations from the same brain. The triforium has bold semicircular arches containing a pair of pointed sub-arches and pierced spandrils. The clearstory is well developed and unusually lofty (it is 10 ft. higher than that of the nave of Selby, a church on a much larger scale). It is arcaded continuously on the exterior and interior, and the interior has a well-managed arrangement of double shafts, which has a parallel at Romsey. The eastern crossing piers and the arch over them were built with the choir, and a junction effected with the remainder of the early church. For a few years the building must have had a singular appearance, with its extended Gothic choir added to a partly ruinous and dilapidated Early Romanesque church.

The next section seems to have been the eastern range of claustral buildings, including the slype, and then the south transept, the eastern wall of which is earlier than the western. The western crossing piers followed, with the other three arches over them, and joining the eastern arch, but the fine mouldings were omitted, except in the soffit order, which is alike in all the four arches. Other minor changes of detail—as, for instance, in the abaci—are interesting, as showing the development of the principles of the growing Gothic style. The design of the south transept is plain to a degree, there being no carving whatever, and the impressive effect is entirely gained by the fine proportions, the subordination of mouldings and other details to their position, and the very moderate amount of window surface at the south end, owing to the abutment there of the dormitory and its appurtenances. The slype is brought within the church, and this has led to the production of the finest feature of the interior, viz., the very large and broad night stair, at the head of which is a gallery of ample dimensions over the slype—an arrangement which has only one parallel in England, viz., the Austin Canons Church at Oxford, now the Cathedral; but Hexham is by far the finer example. The transepts have aisles on their eastern side only, but there are galleries in the west walls at two separate levels. These terminate now at the western crossing piers; but had the intended nave been erected, they would have been continued round the whole church.

After another pause the north transept was added. Its architecture is a later and a richer specimen of Early English. Though much more ornate than the south wing, its effect is not nearly so pleasing, and there is a certain coarseness and want of proportion apparent. The wall arcade is introduced for the first time in the church, and is well designed, but executed in a rather blundering manner. In the aisle the arcade was returned partly across the aisle to divide it into three chapels, an arrangement which may be seen still remaining in the transepts at Lincoln, and clearly indicated in the Nine Altars at Fountains.

As in the case of the south transept, the east side was built first as high as the clearstory, then the north end, then the west side, till a junction was made with the other work at the west side of the crossing. There are indications of a pause before the clearstory was added, and also of a curious change in the original intention, made during the progress of the work at the north end. This comprised an alteration in the position of the newel stair, from the north-east to the north-west angle, and the raising of the gallery, which crosses the north end, to a higher level than was at first intended. This is shown by a built-up doorway, between the clearstory and triforium levels, in the well of the newel stair at the north-east angle. Enough details are left belonging to the earlier intention to show what it was.

The great length of the transept is the most distinctive feature of Hexham Abbey, being out of all proportion with the scale of the church. The internal dimensions east to west is 225 ft. 4 in., while that from north to south is 156 ft. 4½ in. Each transept is four bays in length, if the slype in the south transept is counted as a bay. Taken together, the choir and transepts are a valuable text-book of the Early English style. The design is a powerful one, full of boldness and originality. Its most marked feature is the excessive stilting of the window arches internally to the lancets at the north and south ends and on the west side of the north transept; a peculiarity which belongs more to the northern than to the southern side of the border. The vaulting is confined to the aisles, and is all quadripartite with well-moulded ribs. A vault over the main spans does not appear to have been contemplated, though the triple vaulting shafts are made a prominent feature in the design, both between the bays and between the lancets at the north end.

The tower was built soon after the completion of the north transept. It is low and broad, and though it has had a later parapet added, it does not appear to have ever been intended to rise more than a single stage above the ridges of the roof. Each face is pierced by two belfry windows, each divided into two by a plain mullion, bifurcated in the head, and with well-moulded joints and arches. A blind arcade of three members completes the fenestration of the sides. The angles are embraced by broad flat buttresses, which die out beneath a corbel table carrying the parapet. The height is 102 ft. from the ground to the stumps of the intended angle pinnacles. It has been suggested that the towers of the churches in these wild regions were kept low to render them inconspicuous as landmarks, and so escape attack from pirates and border raiders. The Austin Canons and Benedictines had no rule against high towers and rings of bells as the Cistercians had.

The Chapter House, if ever completed, has entirely perished, and the only indications of its design are the remains of wall ribs against its north and west walls. These show that it was a lofty apartment, vaulted in a single span, with a quadripartite vault. The side walls were divided by buttresses into three bays, and lighted by lancet windows. Some of its foundations were traced a few years ago. The vestibule which intervened between the Chapter House and the cloister is in a much better state of preservation, as it was used as a slaughter-house for more than a century. Its height is equal to that of the slype, and it was vaulted in nine compartments, with moulded ribs springing from circular columns, and, on the walls, from triple vaulting corbels. It was arcaded all round, and had the usual triple openings on the east and west sides. Those on the east are still nearly perfect, but the western doorway, which was one of the richest pieces of work in the abbey, fell out during a thunderstorm about 1820. It is thus described in the diary of a lady who knew it :—"A hand at the top seemed to hold vine, fruit, and foliage, descending both sides of the arch, and terminating with two lizards at the bottom." Not a stone of this fine work has been preserved to us. The arcade is carried across the side openings, both on the east and west sides, in a curious manner by placing detached shafts at the centre of the opening on both sides, as indicated on the plan. The shafts are gone, but the bases remain, and show what the design was.

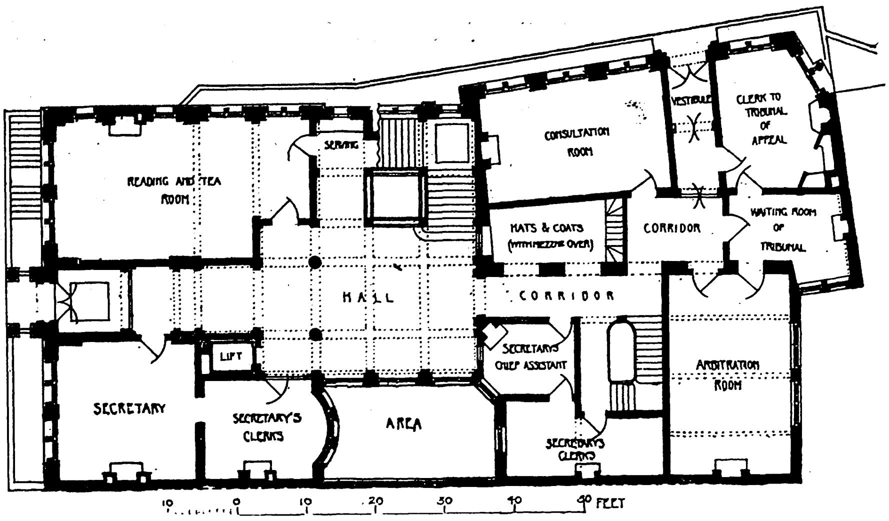
The calefactory was a long room to the south of the vestibule, and was vaulted in two spans with chamfered ribs. Over these two apartments was the dormitory, with a high-pitched roof, the weathering of which could be seen on the south transept wall as late as 1878, when the facing fell away. The night door to the dormitory remains, built up at the head of the night stair.

The other buildings erected before 1296 were the frater, the lavatory, and the cellarium. The frater was a large hall about 100 ft. in length and 28 ft. wide. From the foundations uncovered some years ago, and the details found, it may be described as having had large windows with rich geometrical tracery, and an open roof, the principals carried on stone shafts with richly carved capitals. The pulpit seems to have been made a distinct feature of the interior and richly ornamented. The frater stood on an undercroft, the floor of which is on the ground level, so a flight of steps led to the frater doorway. This doorway was placed close to the south-west angle, and its western jamb remains. On the return or west wall is the beautiful lavatory arcade—one of the finest in England, and perhaps the richest example of the wall type of lavatory. Its basins were to be seen, in a shattered condition, in 1795, and had good carving under the lips of the bowls. The lavatory suffered damage, but fortunately escaped destruction, when the Abbey-house was burned in 1818.

The cellarium is complete and occupies the ground story of the western range. It is a lofty and well-built structure with a barrel vault with moulded and chamfered ribs. All above has been modernised more than once, but in 1795 it retained much of its original character and showed much added work of the time of Prior Leschman (1480-1491).

The continuation of the work would naturally have been the rebuilding of Wilfrid's nave which was standing in 1296, had not the Scots raid placed a period to further progress. The impoverishment of the convent was so great during the fourteenth century that little was done except repairs. One effort was made, however, to extend the church to the east, and to compensate in some measure for the lack of a nave. This consisted in the erection of a range of chantry chapels across the east front, but at a low level and only of slight building. The date of this work is fixed by a deed of Archbishop Zouche given May 28, 1350, which permits the prior and convent to enclose 5 ft. in width of land from the market-place so as to make their procession round the church. This points to the extension having been or being about to be made. This building added greatly to the value of the church, and its variety of style gave the east end that complication of form and detail which is one of the charms of our larger mediæval erections. It opened to the choir by means of five arches, three to the centre alley and one at the end of either aisle. These arches were all well moulded, and had raking crocketted canopies, carved corbels, and dividing shafts. There were seven traceried windows and two moulded doorways, one at either end. This building fell into disrepair, and was used as a lumber-room in the last century. It was then floored at half-height, and the upper floor used as a school, and in 1858, when the ill-advised restoration of the church was in hand, it was entirely removed, all trace of it being destroyed as far as the site goes. Complete drawings of it remain, as well as photographs, and a good part of its window tracery is in neighbouring gardens. It is shown on the plan as being of greater interest than the existing east wall, which, though a piece of good masonry, is manifestly a bald copy of the east end of Whitby Abbey, and of no architectural importance.

The fifteenth century wrought some changes in the church, and saw a determined effort made towards building the nave. The remains of Wilfrid's church were removed, and the stones in the walls used for the new work, which comprised an arcade of six bays and an aisle on the north side, a solid wall on the south, with a range of large windows over the cloister roof on the south, with a large arched recess in the wall for the carrells, and a west front with a central doorway and a great window above it. A newel stair was arranged behind the western respond of the arcade, and no doubt intended to terminate in a turret above the level of the roof. How far this work proceeded cannot now be known. A good deal more remained in 1795 than is to be seen to-day. Carter's sketch gives the jambs of the south windows. These are now all gone. The work was languishing in 1429, as we learn from a significant clause in the will of Roger Thornton, of Newcastle, who died in that year. "It'm I wylle yat cccc marc, whilk yat ye priour and Couent Hexham awe me bee dispendet upon bygging of yeir Kyrk, if yei wol make greable seurtez yat it shal soo be deuly doon." "Yeir Kyrk," means their church, and church in mediæval parlance means nave. The work was, therefore, in progress in 1429, and as the east wall shows that the roof was never put on, it may be concluded it was abandoned from want of means, and the Dissolution came before a final effort could be made to complete it.



*New Building for the Surveyors' Institution. Ground Plan.* [*See next page.*

About the same time, and almost up to the time of the dissolution, much work was done in the choir in reroofing it and the transept, inserting a large east window of heavy "Perpendicular" character to replace the old lancets, and supplying rich furniture and paintings.

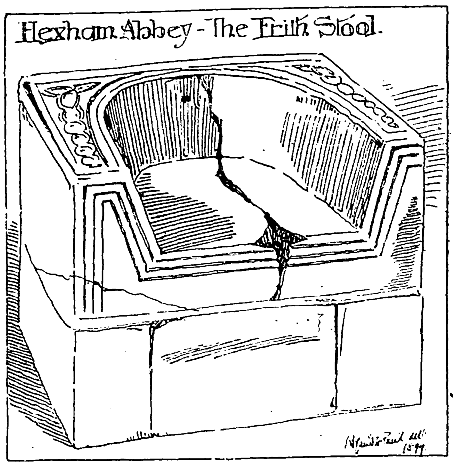
Two small chantry chapels remained as late as 1860. One belonging to the Ogle family stood on the south side, and had a tester at the east end over the altar with heraldic painting, a painted reredos, and traceried side screens. Prior Leschman's chantry was on the north side, and remains in great part though removed to the south transept. The fine ranges of stalls were also of this date, and had canopies and carved misereres. The rood screen is a grand work of Prior Thomas Smithson's time (1491-1524). It still retains a large number of painted panels.

The monuments are not numerous, but there are five good effigies; one ecclesiastic, two knights in mail, a lady, and a civilian. There is a good altar tomb *in situ*, built up between the west end of the north choir aisle and the aisle of the north transept. The table of this tomb is a fine slab of limestone, incised with a most beautiful design of a cross formed of a vine with leaves and fruit.

The history of the church during the last two centuries has been a succession of repairs and damages. The first of these on a large scale seems to have been carried out under Sir Walter Blackett, between 1725 and 1739. In the earlier year, the crypt was discovered, owing to the foundation being dug for the great buttress to support the tower. At the same time, the old east window was replaced by one of bastard Gothic character, the canopies of the stalls cut away and galleries erected over them, and the east end of the choir "beautified" by the setting up of a reredos of Grecian design, to mask the arches opening to the eastern chapels. In 1810-11 the roofs were stripped, the lead sold, and Westmoreland slates substituted. In 1830 great alterations took place and much damage was done. The east window of 1729 was blown in and replaced by one of even worse design than its predecessor. Photographs of this "restoration" are extant. The final blow fell in 1858-60, when what took place is only too well known, and one cannot forget to mourn over the "cartloads of beautiful carved woodwork which were taken out of the church and variously disposed of." The only voice raised in protest was the *Builder* of the day, and the issue of October 27, 1860, contains these memorable words: "The absence of proper historic and archæological feeling in the working committee is apparent from the fact, among others, that no competent person has been placed locally in charge of the restoration. The absence of supervision has enabled the contractors to use considerable license. On the day we visited the church they were forming a large warm-air drain 6 ft. wide and 6 ft. deep, and 120 ft. long, through the length of the north transept; that is to say, making a cutting through layers upon layers of coffins and skeletons, the burials of generations, the fragments of which were being wheeled out openly into the churchyard; and to form a cover for this drain the contractors were using up fragments of Norman coffin lids and zig-zag ornaments, and entire gravestones of more modern date, because the sexton thought the churchyard was too full of them, and he wanted them out of his way. Many sculptured stones were lying about the churchyard, of a very interesting description from their early character and comprehensiveness, of which it would be a great pity to lose sight."

The abbey gateway remains in its lower story and is of good Transitional work. The vault remained complete, and the wall dividing the inner and outer halls with its larger and smaller arches, until after 1814, when they were removed to make the ruin "more picturesque."

CHARLES C. HODGES.


Hexham Abbey - The Frith Stool.
1899

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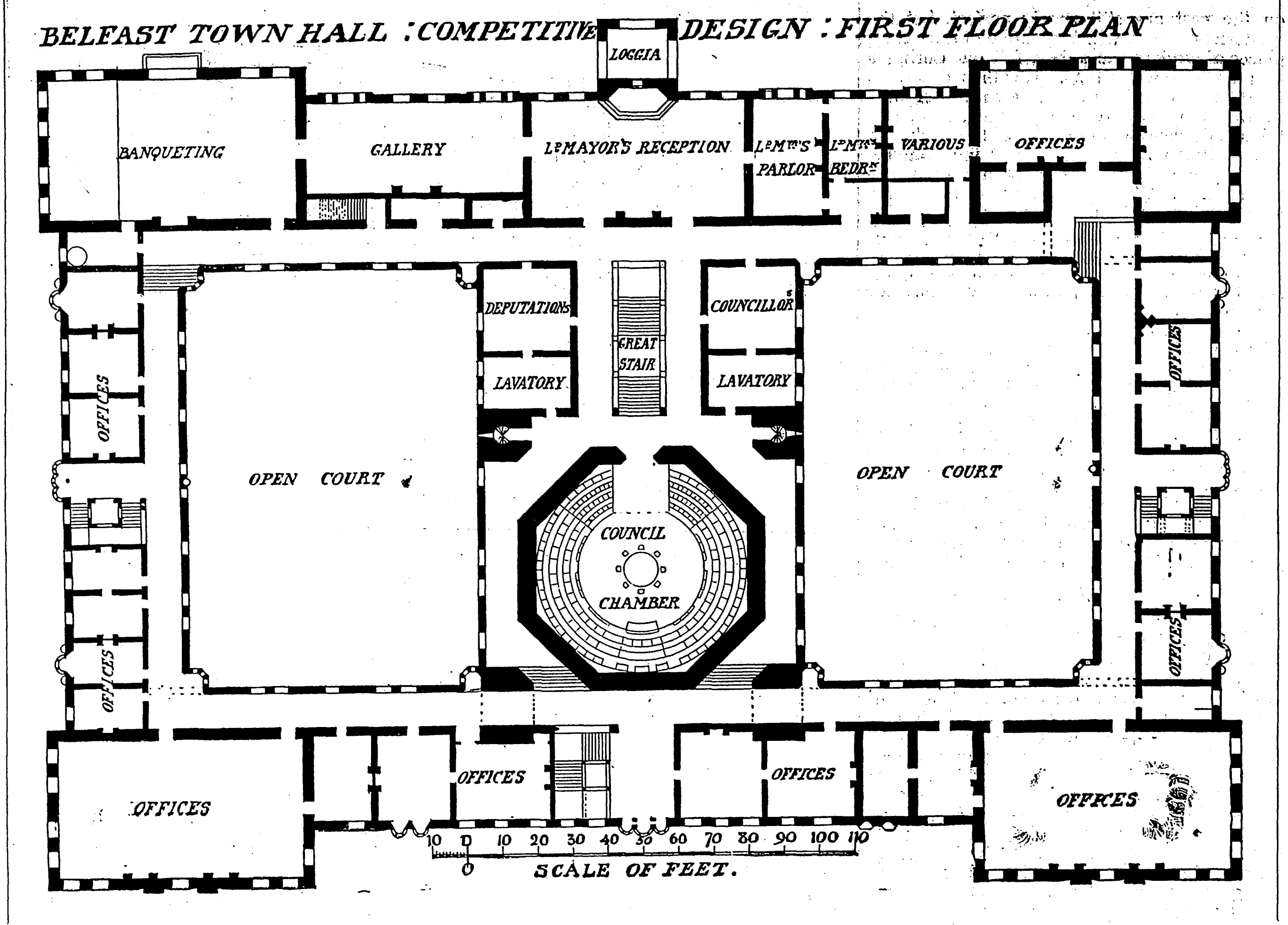
*** The series of the "Abbeys of Great Britain" is continued this month with illustrations of Hexham Abbey. For the list of Abbeys which have already appeared, and for particulars for future arrangements, see p. xviii.



BELFAST TOWN HALL : COMPETITIVE DESIGN : FIRST FLOOR PLAN

## THE SURVEYORS' INSTITUTION BUILDINGS.

We give a perspective view and plan of this building, which has recently been completed in Great George-street, Westminster, from the designs of Mr. A. Waterhouse, R.A.

The architect has had to provide accommodation not only for the Institution, but also rooms for the Tribunal of Appeal, and a museum for the forestry collection, of which the Institution is gradually making a special feature.

The ground floor, which has a large hall and a marble staircase, contains on the left of the entrance a reading and tea room, and on the right the secretary's office. The other rooms of the secretarial department occupy a position further back, and the remainder of the floor is taken up by a consultation room, an arbitration room, and other apartments for the Tribunal of Appeal.

On the first floor the most important features are the great meeting-room, which will provide seating accommodation for nearly 200 persons, with corridors in Little George-street, a large room for the council and for arbitrations, and the library, which occupies the whole of the frontage to Great George-street, thereby securing a good light ; it is capable of housing a collection of books numbering 20,000.

The forestry museum occupies the second floor, passing through the third or top floor, on the level of which a gallery runs round the apartment, which has an open timbered roof. The third floor contains caretaker's and store-rooms.

The principal materials used on the exterior are Ancaster stone and Ruabon brick, as best calculated to resist the deteriorating effects of the London atmosphere.

The general contractors for the building were Messrs. Foster & Dicksee, of Rugby. The heating has been carried out by Mr. J. Jeffreys ; the electric lighting by Messrs. Belshaw & Co. ; the fibrous plaster ceilings by Mr. J. M. Boekbinder ; the constructional ironwork by Messrs. Handyside & Co., of Derby ; the ornamental ironwork by Messrs. Hart, Son, Peard, & Co. ; the mosaic floors by Mr. L. Oppenheimer ; the lifts by Messrs. Waygood & Co. ; the sanitary fittings by Mr. Geo. Jennings ; the lead lights by Messrs. W. James & Co. ; the grates and chimney-pieces by Messrs. Shuffrey & Co. ; the parquet flooring by Mr. Ebner ; the decorating by Messrs. Campbell, Smith, & Co., and the wall tiling by Messrs. Craven, Dunmill, & Co.

## DESIGN FOR A STONE BRIDGE :

### THE APPROACH.

This design was submitted in competition for the "Tite" prize in 1897.

As the set conditions required the embankment for foot passengers only, a special feature has been made of the approach from the embankment to the bridge, and the illustration shows that part of the design with the water stairs in connexion.

The design is by Mr. G. B. Carvill, and was exhibited at the Royal Academy of 1897.

## COMPETITIVE DESIGN FOR THE NEW CITY HALL AT BELFAST.

The design shown here was one of those sent in in the preliminary competition. The building was planned with two floors generally, and a third floor on the two shorter sides.

The entrance hall is shown on the ground floor under, and the same size as, the Lord Mayor's reception-room, and from it the great stair leads up to the Council chamber. This room was to consist of an octagon 60 ft. in diameter and 90 ft. from the floor to the vault crown, lit by two ranges of four great windows in each. The arrangement and idea of the room was suggested by that of a cathedral chapter-house, and the dome, rising to a height of 190 ft. above the ground, was intended to emphasise the centre from which the municipal life radiates.

The city functions were to be provided for in a fine suite of rooms occupying the greater part of the main front of the building on the first floor. The remainder of the building was to be occupied by the various municipal offices.

The materials of the building were to be red brick and white stone dressings ; the corner blocks to be roofed with green slate ; the dome to be of iron framing covered with copper. The rest of the roofs to be flat, constructed in iron and concrete covered with asphalt.

The interior of the Council chamber was intended to have oak stalls, tapestry hangings, mosaic or painting on pendentives under a gallery midway of the height, then ashlar stone work up to the vault ; the upper windows stained, the lower ones clear glass. The banqueting and reception rooms were to have panelling and plaster ceilings ; the great stair and entrance hall to be decorated with marble on walls and floor.

The whole design is kept simple, and effect has been sought in the general dignity of the mass of the building and by means of enriched features sparingly introduced ; and the general aim of the designers, Messrs. A. G. Humphry and W. Bonner Hopkins, was to avoid what was either commonplace or pretentious.

The estimated cost was 148,441*l*., the whole contents being 2,835,620 cubic feet.

The perspective drawing was exhibited at the Royal Academy of 1897.

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## Books.

"*The Temple of Mut in Asher.*" By Margaret Benson and Janet Gourlay. (London: Murray. 1899.)

THIS book puts on record the results of three short seasons' excavation made by the two writers—the first-named being a daughter of the late Archbishop—among the very ruinous remains of a considerable temple in the plain of Thebes. It is modestly explained and insisted upon that the work was entirely amateur, and was undertaken as a gentle pastime in a favourite winter resort with little hope of any important finds ; in performance, however, it has certainly proved distinctly creditable. Much advice and help was obtained from professional archæologists who happened to be at Thebes from time to time, among others, from Professor Petrie himself, and not a few discoveries of great interest were made. The new inscriptions are edited by Mr. Percy Newberry, who, during a residence at Thebes of several years, has made large collections of tracings and copies of the scenes and writings in the ancient tombs.

Mut was the consort of Amen, god of Thebes, the great national god of Egypt under the Theban kings of the XVIIIth to XXVth dynasties. The chief temple at Karnak, celebrated for its vast and imposing hall of columns and for its obelisks, was dedicated to Amen ; south of it lay the temple dedicated to Mut, the whole of which might easily be contained in the hypostyle hall of the temple of Amen ; not far off, but at a much later date, was built a temple to the third member of the Theban triad, the moon-god Khonsu, son of Amen and of Mut. Early in the century the English explorer, Burton, made a plan of the surface ruins of the Temple of Mut, which has remained in MS. in the British Museum, where also there is preserved another old plan of the same by Hay. Both plans are valuable as showing *in situ* columns and walls soon afterwards converted into building materials and lime by the orders of Muhammed Ali. Not much can be said for the plan of the building by the "celebrated" Mariette, which these ladies have had the cruelty to reproduce along with their new one by Mr. E. F. Benson, thus inviting for it a comparison with facts which French archæological work is seldom qualified to bear. Architectural students must always beware of trusting the plans of Mariette, unless, perhaps, where the whole of a ruin has remained uncovered after excavation. A few years ago the temple site was marked only by lioness-headed statues standing out of the *débris*, and by the lake (for old ceremonial use in connexion with temple feasts) which still enclosed the ruins on three sides. Many of the black basalt statues of the lion-goddess had been removed to European museums early in the century. Their inscriptions show that they were dedicated by various kings throughout the Theban dynasties to a goddess Sekhemt (often represented with feline head), of whom Mut seems to have been the Theban form. The name of the temple and its surroundings was Asheru ; this explains the title of the book now before us.

In Part II. we have the history of the excavation during the three short successive seasons which it occupied. Parts III. and IV. deal with Egyptian religion and history, in order to explain and illustrate for readers unversed in Egyptology the history of the temple and the principal monuments found there. The ruins yielded fragments of an unusual number of votive statues, including a crouching figure of Senmut, the great minister of Queen Hatshepsut, and architect of Dêr el Bahri, and a striking portrait (plate xxiv.) of Mentuemhat, Governor of Thebes under King Taharqa in the evil days of Assyrian invasion. This portion of the book is particularly well and thoughtfully written, and contains many ingenious remarks, though the views expressed and the conclusions arrived at might not always bear the test of a fuller acquaintance with original sources. In Part V. are printed copies of the inscriptions on the statues, with some translations and comments. The introductory chapter explains the circumstances of the undertaking, and a very full index adds to the utility of the volume.

The plentiful illustrations from photographs and the new plan of the ruins are of extreme interest. From among the remains of many statues the head of a woman (plate vi.) is of an unusual type and very pleasing ; that of an old man (pl. vii.) is extraordinary in its impress of personality, and it is tantalising that there should be no means of identifying the original. It is otherwise with the portrait of Mentuemhat. This will be classed as one of the most remarkable portraits discovered in Egypt, and enough of the inscription remains to identify the head as that of the Governor of Thebes, who must have exercised almost regal power throughout the country at the time of the first Assyrian invasion. The inscription on another statue—unfortunately headless—of the same personage is also of interest. The portrait statue of Senmut (plate xii.) is conventional and disappointing. Bakenkhonsu, the architect of the Ramesseum and of the building of Rameses II. in the Temple of Karnak, certainly lived during the reigns of Sety I. and Rameses II. ; here, however, we have his statue (plate xviii.) inscribed upon the wrists with the cartouches of Rameses III. Hence it may be calculated that he lived at least a century, unless, indeed, this inscription be a mere case of *post mortem* approval, which seems possible. Many familiar names of kings and officials recur ; in fact, in its rich yield of statues, this excavation has brought to light several authentic portraits of celebrities whose faces were before unknown to us.

The bearing of the inscriptions has, in most cases, been well rendered by Mr. Newberry, to whom the great names of the Theban necropolis are, perhaps, better known at present than to any one else. The very remarkable blocks (pls. xx.-xxii.) representing laden ships of the Ethiopian king, Piankhy, are so fragmentary and isolated that it is difficult to decide as to their purport. Some of the ships are laden with good things, apparently from Upper Egypt or Ethiopia, including dom-palm nuts called *kuk* (a name, by the way, which has evidently been transferred to cocoa-nuts). Comprised in other cargoes are gold, oxen, pigeons, fine stones, reeds, &c. Perhaps they were presents to the temple of spoil from the north, brought on galleys from Sais, the chief city of the Delta, from Heracleopolis, Hermopolis, &c., and in the galley of Amen, which had probably sailed with the king on his expedition to crush an invader from the Delta. Galleys of the king, which may have come to meet the conqueror from his native Ethiopia, are also represented, and all bring presents dedicated, in all likelihood, after Piankhy's triumphant return to Thebes from the overthrow of Tefnekht. This powerful prince, issuing from the western Delta, had united the whole of Lower Egypt in an attempt to recover Upper Egypt from the Ethiopians. On the block representing "The Great Ship of Sais" (pl. xx.), the inscription mentions as owner a "ruler of Heracleopolis," whom Mr. Newberry identifies with Tefnekht the invader. But it is impossible that the two should be identical, for the Tefnekht of the new inscription is Samtaui-Taifnekht, and his family probably held the lordship of Heracleopolis for many generations, while Tefnekht, the leader of the attack, only laid seige to that city.

The plan of the temple shows, as usual, a patchwork of many periods, beginning with the reign of Hatshepsut (*c.* B.C. 1500), and continuing to receive additions and alterations down to the destruction of Thebes by Ptolemy X. But a shrine had probably existed there from very remote times, though no remains have as yet been found older than fragments of statuary of the XIIth dynasty (*c.* B.C. 2500). Of architectural remains there seems nothing of importance.

The excavation may have been amateurish, but it was at all events better than the open plundering by Arabs and dealers which has always been permitted where scientific excavation is almost prohibited by an embarrassed government. The two ladies, astonished by their own success, have done their best dutifully to render a true and useful account of their work, for which Egyptologists and all interested in the monuments of Egypt cannot but be grateful to them.

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*The Cathedral Church of York : a Description of its Fabric and a brief History of the Archi-Episcopal See.* By A. CLUTTON-BROCK. London : George Bell & Sons.

THOUGH all the volumes of this series have one object and arrangement, they necessarily vary a good deal in style and treatment, and especially in interest, this variation arising as much from the different attainments and sympathies of the writers as from the varying interest of the buildings and the treatment appropriate to them. While the series loses something of symmetry in these differences, it gains greatly in interest, and especially in value and completeness as a treatise on our Cathedral architecture. The particular value and interest of the present volume lies in the author's thoughtful criticisms of the architecture of York Cathedral, and his examination and analysis of its beauties and of what he calls "the strange ineffectiveness" of some parts. Such a treatment is very appropriately and usefully applied in this case, since most persons who see the building for the first time, especially if they are familiar with other great Cathedrals, are influenced by this ineffectiveness and are uneasily conscious of a difficulty in admiring it as much as they think they ought to do. Mr. Clutton-Brock shows that, as regards the nave and west end at any rate, the impression is justified; and although he praises the choir, and especially the retro-choir, he plainly admires it chiefly for the beautiful old glass in the windows. His criticism is, indeed, very destructive. Of the upper part of the west towers he says :—"Nowhere else, surely, has a Gothic architect approached so closely to the ideals of his 'churchwarden' imitators of the beginning of this century." And on page 73 there is the following passage applied to the nave, but equally applicable to the whole church :—"It is a significant fact that the builders were afraid to place a stone vault on their nave, and thus it is a Gothic building without that feature which gives its whole significance to the Gothic style, and by reason of which the design of this nave came to be what it was. It is a curious paradox that the builders of York should have abandoned one of the most attractive features of earlier art (a separate triforium arcade) in pursuit of a more logical design, and should then have been forced to abandon that very vault which gave their design all its logic." We cannot say whether the author himself attaches the greater importance to these and similar passages, or to those in which he finds something to admire ; but the latter read rather as if they were dictated by a consciousness of holding some sort of brief for the minster, and a desire to say all he can for his client. Indeed, the book as a whole confirms and justifies our previous impression that York Cathedral, except for its stained glass, its "five sisters," the de Grey monument, and a few minor details, is an over-rated building, as great cathedrals go.

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*The Cathedral Church of Southwell : a Description of its Fabric and a Brief History of the Episcopal See.* By the Rev. ARTHUR DIMOCK, M.A. London : George Bell & Sons.

WHILE fulfilling its main object by recording the facts with general accuracy and reasonable fulness, this is a less satisfactory book than most of the volumes of Messrs. Bell's excellent series. The short historical part is uninteresting, and some of the statements are a good deal more positive than the evidence warrants. It is very likely that, as the author says on page 8, "the Jewish money-lenders of York and Lincoln assisted in the building of Southwell" ; but the only proof adduced for this positive, detailed assertion is the general conclusion of Mr. Green that, in Norman England, "castle and cathedral alike owed their existence to the loans of the Jews." The descriptive portions are too palpably coloured by the prejudices of the writer ; prejudices common enough, unfortunately, a generation or so ago, but which now seem singularly puerile. It would be almost inconceivable, had we not heard it with our own ears, that any student of Gothic architecture, though he might prefer another period, should ever have sweepingly characterised Perpendicular work as "ugly" or "debased." Yet Mr. Dimock evidently adheres to this exploded view, as shown by the following excerpt from a long passage to the same effect on pages 35-37 :—". . . . Let us," he says, "in our ecclesiastical architecture fix upon the exact year of 1350. Let us compare in the same building what was finished before this with what was finished after, and we arrive at this result—evolutionary development of beauty before, evolutionary development of ugliness after. . . ." This reflection is a general one ; if it had been confined to Southwell an excuse for it might have been found in the poverty of the few windows which represent the Perpendicular style there ; though it would still have been ridiculous to call the west window "the great eyesore and disfigurement of the building." Some of the main points of interest in the architecture are well brought out, but we cannot find any remark on the unusually squat proportions of the Norman arcades. The interest of the aisle vaulting with its Norman groin ribs is alluded to ; but while matters of minor import are pointed out, nothing is said about the significant expedients the builders had to adopt to fit their round arches to such a purpose, or the curious way in which, in some cases, one diagonal rib has been completed and the other left to butt up against it on each side. The unique beauty of the Chapter House and its carvings are well worthy of the unstinted appreciation Mr. Dimock accords them ; but he might have said a word on behalf of the marvellous Mansfield stone in which all the minute undercut foliage is executed, and which still preserves every contour and arris, even every mark of the tool, as fresh as on the day the mason left it. In conclusion, we may add that, though we recognise the propriety of avoiding technical descriptions in popular handbooks as far as possible, such a policy leads not only to a good deal of circumlocution, but, if carried too far, to some obscurity. We have tried honestly, but in vain, to grasp the meaning of the following sentence in the description of the Chapter House doorway on page 92 :—"The outside member of the main arch, which carries the hood, stands apart against the wall ; the others are against the main jamb, of which the mouldings are visible underneath." The view of the doorway, from a photograph, which faces page 92, is a very good one, but it does not help us.

*The Cathedral Church of Gloucester. A Description of its Fabric and a Brief History of the Episcopal See.* By H. J. L. J. MASSÉ, M.A. London : George Bell & Sons.

THIS is a particularly interesting summary account of a particularly interesting building. The author has no doubt had a rather easier task than have some of the writers of this series of volumes, inasmuch as the literature of Gloucester Cathedral is less voluminous and more reliable than in some other cases. With the conclusions of Professor Willis, Mr. St. John Hope, and the devoted cathedral architect, Mr. Waller, before him he must have felt his labour greatly lightened. But our thanks are none the less due for the care, taste, and scholarly acumen with which Mr. Massé has selected, arranged, and remarked upon his material. He appears to be almost equally at home in dealing with the history of the fabric, with ritual arrangements or stained glass, heraldic devices or the organ and church music. We should not have been inclined to quarrel with a less judicial tone, in this case, in descriptions of the beauty and interest of the structure ; it is only when speaking of the tower that any of the enthusiastic appreciation often wasted on less worthy objects is shown. To many people Gloucester is the most beautiful and by far the most interesting, structurally, of our cathedrals, though historical associations and minor causes place others above it in the popular imagination. And this monograph is worthy of it as regards both the letterpress and the illustrations. To Mr. Waller it admittedly owes much, and not least some exceptionally good plans and sketches, and a very interesting view, on page 15, of the remains of the original structure stripped of those clever later additions that have converted what is still mainly a Norman building into one that appears at first sight, from many points of view, a wholly Perpendicular one.

*Laxton's Builders' Price-Book.* Eighty-second edition. London : Kelly's Directories, Limited. 1899.

*Lockwood's Builders, Architects, Contractors, and Engineers' Price-Book.* Edited by FRANCIS T. W. MILLER, A.R.I.B.A. London : Crosby Lockwood & Son. 1899.

THESE two annual volumes, which appear to vie with each other in the matter of growth both in the variety and completeness of the information, have again made their appearance.

The first named of these books is growing in bulk as well as in years to such an extent that the late "Henry Laxton," by whom the work was originally compiled (to quote the title-page) would hardly recognise it, and one cannot help thinking that the prices in this issue compared with those in the issues in which he had a hand would make that recognition still more difficult ; such is the continual advance in prices and the continual addition to the already large variety of building materials that the revision of such a work as this is an undertaking of some magnitude ; and this appears to have been conscientiously carried out in the volume before us. We are glad to see that the brickwork prices in particular have been brought up to date, instead of leaving the reader to make a calculation from prices that were obviously inadequate.

The notes referring to the various descriptions of stone continue to be a useful feature, but we should prefer to see a different arrangement of labours than that appearing on page 100. We do not think many surveyors measure these on the lines thereon set forth. A much better arrangement is that on page 91, giving the quarry prices, and one that is more in accordance with general custom.

Lighting by electricity being now so general, more than warrants the space given to it, and the various rules, tables, and comparisons will be found of assistance.

The table on "the adaptation of a price-book to meet varying rates of wages," given on pages xxxvi. and xxxvii. will hardly be found so useful as anticipated in the preface, as either the examples are not based upon the rates given, or if they are, are anything but clear in their explanation. This is, of course, a matter of small importance compared with the contents of the whole book, but if given at all should at all events be perfectly clear.

The various chapters at the end of the book referring to Acts of Parliament and other matters of a legal nature, will be found useful and convenient for reference, and possibly some of the decisions in the superior courts reported may help to solve some of the problems continually arising from the ambiguous wording of some of these Acts of Parliament.

The second book mentioned in our heading, while not being quite so bulky or able to lay claim to so long a life as "Laxton," is at any rate no mean rival, and may be considered to have taken a permanent position as a standard work on the subject of builders' prices. The chapter relating to mason's work is a particularly strong one, and the general arrangement of this chapter and the consistency of the pricing is all that can be desired. The arrangement of labours is carried out thoroughly in accordance with that found in a well-prepared mason's bill. The electric lighting chapter is also a remarkably good one. We think the price of 50s. per M. for stocks delivered is somewhat high as a basis of the price for brickwork even in this time of high prices.

This book is thoroughly up to date and contains numerous useful chapters and notes upon matters that not many years ago would have been thought out of place in a price-book, but are nevertheless welcome ; not the least useful being the chapter on legal notes and memoranda, backed up as it is by references to decided cases.

Both books are well arranged and bear the impress of careful editing and each will do its part in keeping up the reputation of works now so familiar to the building world. Yet with all our appreciation of the usefulness of these two works, we are unable to praise them without a certain amount of reserve when we make a comparison of the prices. It is evident that some note or notes should be given showing the basis of pricing. One cannot help thinking that in the majority of cases that basis must be a very unstable one, as the following examples will show. These are taken at random and of very diverse description. Laxton (p. 51), brickwork all in stocks, 17*l.* 2s. 6d. per rod ; Lockwood (p. 43), the same item (taken on the basis of the calculation set forth in the heading), 16*l.* 15s. Laxton (p. 73), blue or red Staffordshire quarries, 6 in. by 6 in. by 1 in., 7*l.* 10s. per M.; buff do., 8*l.* per M.; blue or red do., 9 in. by 9 in. by 1½ in., 12*l.* per M.; buff do., 13*l.* Lockwood (p. 56), 5*l.* 5s., 5*l.* 10s., 9*l.* 10s., and 10*l.* respectively. Laxton (p. 88), Doulting stone at Paddington, 1s. 9½d. per foot cube ; at Nine Elms, 1s. 11½d. Lockwood (p. 72), 1s. 6½d. and 1s. 7½d. respectively. Laxton (p. 100), Portland stone, 2s. 8d., 3s. 6d., and 4s. 9d. per foot cube. Lockwood (p. 87), 3s. 3d., 4s., and 4s. 8d. per foot cube for similar items. Laxton (p. 155), oak cleft fencing, 4 ft., 5 ft.. and 6 ft. high, 44s., 54s., and 66s., per rod respectively. Lockwood (p. 152), 31s. 8d., 40s. 10d., and 54s. 2d. per rod for similar items. Laxton (p. 158), and Lockwood (p. 210), the prices for wainscot and mahogany display striking discrepancies, *e.g.*, ½ in. wrought both sides; in the former, wainscot or Honduras mahogany, 1s. 1½d., Spanish, 1s. 6½d. ; in the latter, wainscot, 1s. 7d., Honduras mahogany 1s. 6d., and Spanish, 2s. 1d. And, again, Laxton (p. 185, &c.), and Lockwood (p. 212, &c.), the prices for Spanish mahogany show amusing discrepancies, especially when one compares those for Honduras, which are in many cases almost identical. The foregoing examples, taken from two standard works, both prepared with evident care and a good knowledge of the subject, serve to show that (and this is backed up by a comparison of contractors' prices for actual work) there is a marvellous diversity of opinion even amongt authorities. This is more surprising with those items of every-day usage, and where there are regular market prices for material, the only open question being that of labour. The fact, however, remains, and it seems to indicate that, however good a price-book may be, it should only be used with a due regard to the special circumstances of the individual case before the estimator.

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BAPTIST CHAPEL, READING.—The foundation-stone of a new Baptist chapel has just been laid at the corner of Grovelands-road. The chapel measures 72 ft. by 38 ft. inside, and will be 26 ft. high. It will provide accommodation for 450 people, and arrangements are being made to increase the number of sittings when necessary by successive enlargements to 520, and eventually 650. Messrs. Cooper & Howell are the architects, and the builders are Messrs. Collier & Catley.

## TRADE CATALOGUES.

THE new Lincrusta-Walton catalogue is a production of higher artistic interest than usually belongs to trade catalogues. It contains a number of reproductions in relief of the embossed patterns for dadoes, fillings, and friezes, made in Lincrusta-Walton, on a reduced scale from small dies. The general character of the designs, as our readers probably are aware, is excellent, and the reproductions on this small scale have an exceedingly pretty effect on the page, while they enable the intending purchaser to make a better choice than he could make from illustrations on the flat. The designs also include ceilings.——The "B. & S. Folding-Gate Company," whose folding gates have proved most useful for lift doors and other similar situations, are also carrying out artistic metal work, and their present catalogue includes designs for enclosing railings, grilles (not "grills," as spelt in the catalogue), chandeliers and electroliers ; the latter were designed in the first instance for use in lift cars, but are suitable for other purposes. There is a general good character about the designs ; among other things the makers have been successful in producing a good effect by the combination of small and comparatively simple repeating patterns in grille fences, as in Nos. 700 and 701. The gas-lamps or "gas fixtures," as they are called, are good ; better than the electric light fixtures, which are not very good specimens of design ; in fact, electric lighting has not given rise to the development in lighting design which might have been expected. ——Mr. Joseph Hamblet (West Bromwich) sends us his illustrated catalogue of Staffordshire terra-metallic pavings, some of them with the roughing arranged in decorative patterns, which some purchasers may prefer ; we think ornament is rather out of place on a floor destined for hard wear, and prefer the simple bevelled squares or crosscut patterns, which at all events look more lasting. The catalogue also shows Staffordshire vitrified blue bricks for channels, &c., and terra-metallic bricks for copings, window-sills, cornices and string-courses, &c. ; one useful application is to form projecting half-round channels, built into the wall, for wall creepers, ferns, &c. We may also notice the machine-made invert blocks, and roofing tiles.——Messrs. Moetler & Co. send an illustrated catalogue of paraffin small ranges and heaters ; also their "Ætna" and other brazing-lamps and blow-lamps ; and an illustrated list of reserve parts in stock for the repair of any of these articles.——Messrs. G. M. Callender & Co. send a pamphlet in regard to their "pure bitumen damp-course," for which they claim, among other advantages, that it will not crack with any settlement of brickwork, being too elastic and yielding to any movement. We believe it is a very good damp-course, and the quality of yielding to settlement without cracking is an invaluable one for any damp-proof course, though it is going a little too far to say that settlement is "fatal to all other systems of damp-course."

## The Student's Column.

### ARCHITECTURAL HYGIENE :

### XII.—TYPICAL DRAINAGE PLANS.

IN commencing this article perhaps a few general remarks will be of value, although most of these have already been previously given.

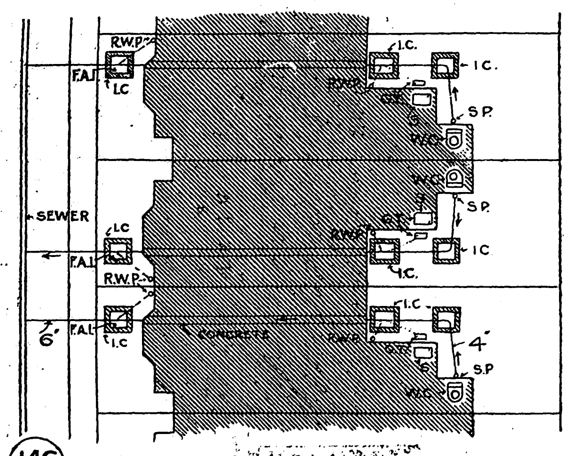
It should be remembered that among the essentials of a good drainage system are the following :—

1. The rapid removal of sewage, this being governed by the fall of the pipes. This should be carefully attended to, as in the event of the fall being too great the liquids will pass away and leave the solid matter behind. It is generally agreed among experts that a rate of 4 ft. 6 in. per second is a safe velocity, but where a special drain for rain-water is constructed so great a velocity is not necessary, and 2 ft. 6 in. to 3 ft. per second is quite sufficient. It is usually sufficient to allow the following inclinations :—

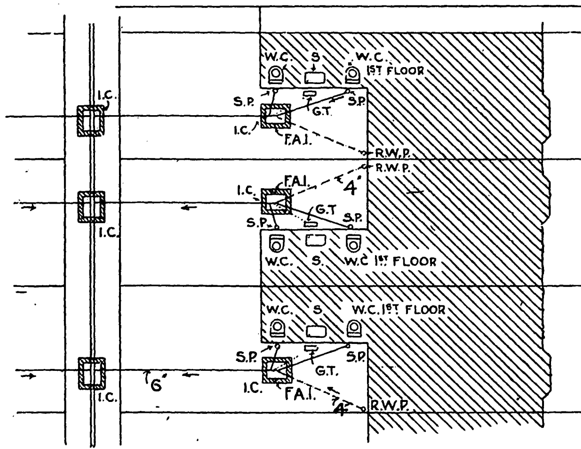
A fall of 1 in 40 for 4-in. pipes.
Do. 1 in 60 for 6-in. pipes.
Do. 1 in 90 for 9-in. pipes.

2. The careful laying of the drains, so as to ensure their safety in the future. The pipes should be laid on a bed of concrete, and pro-

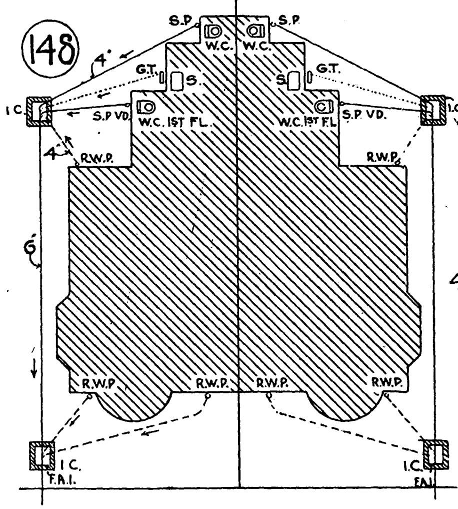
# TYPICAL DRAINAGE PLANS


R.W.P.
F.A.I.
I.C.
S.P.
W.C.
G.T.
SEWER
CONCRETE
4'
6'

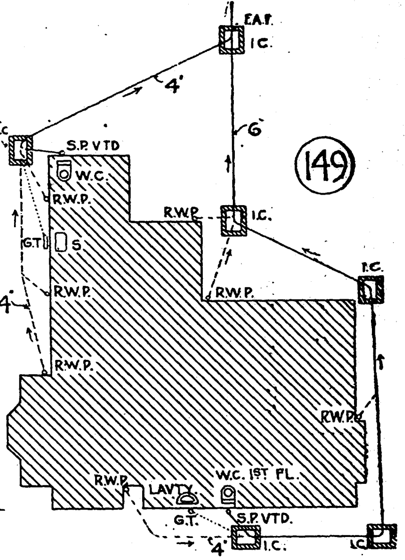
146 TERRACE HOUSES DRAINED TO FRONT STREET


W.C.
S
W.C. 1ST FLOOR
S.P.
G.T.
I.C.
F.A.I.
R.W.P.
4'
6'

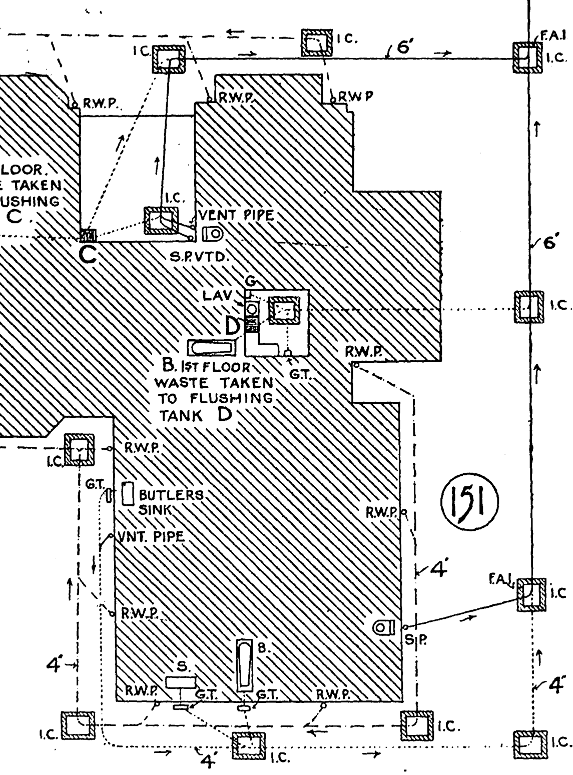
147 TERRACE HOUSES DRAINED AT BACK


S.P.
W.C.
G.T.
S
S.P. VD.
W.C. 1ST FL.
I.C.
R.W.P.
F.A.I.
4'
6'

148 SEMI-DETACHED HOUSES


F.A.I.
I.C.
S.P. VTD
W.C.
R.W.P.
G.T.
S
LAVY.
W.C. 1ST FL.
4'
6'

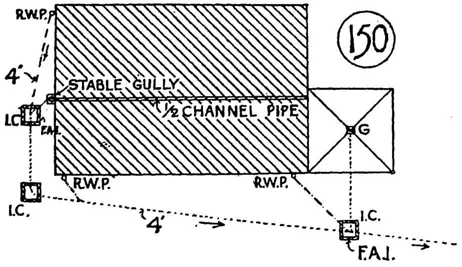
149 DETACHED HOUSE


RAIN WATER TANK
PUMP
R.W.P.
I.C.
F.A.I.
B. 1ST FLOOR. WASTE TAKEN TO FLUSHING TANK C.
C
VENT PIPE
S.P. VTD.
LAV
D
B. 1ST FLOOR WASTE TAKEN TO FLUSHING TANK D
G.T.
BUTLERS SINK
VNT. PIPE
S.
B.
S.P.
4'
6'

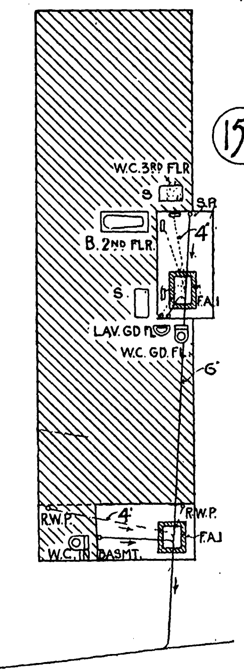
REFERENCES.

B. BATH WASTES
G. GULLEY FOR R.W.P.S ETC.
I.C. INSPECTION CHAMBERS.
S.P. SOIL PIPES.
R.W.P. RAIN WATER PIPES.
G.T. GREASE TRAPS
F.A.I. FRESH AIR INLETS.
S. SINKS.
W.C. WATER CLOSET.

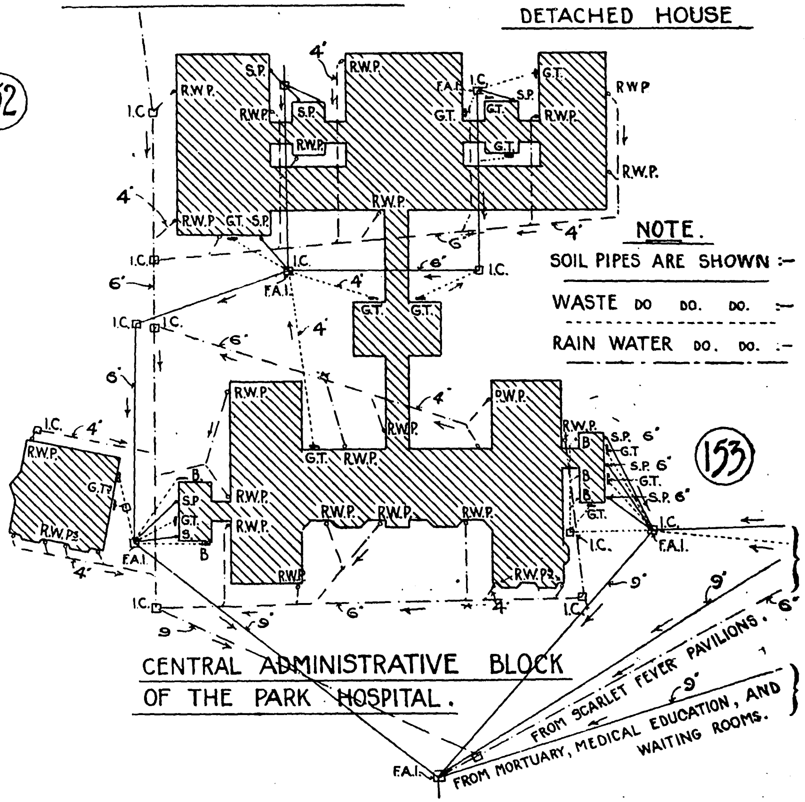
151 LARGE COUNTRY HOUSE, SHOWING COLLECTION AND STORAGE OF RAIN WATER


R.W.P.
STABLE GULLY
½ CHANNEL PIPE
G
I.C.
F.A.I.
4'

150 SMALL STABLE.


W.C. 3RD FLR.
S
S.P.
B. 2ND FLR.
LAV. GD FL.
W.C. GD FL.
F.A.I.
R.W.P.
W.C. IN BASMT.
4'
6'

152 TOWN HOUSE


R.W.P.
S.P.
G.T.
F.A.I.
I.C.
B
S.
4'
6'
9'
FROM SCARLET FEVER PAVILIONS.
FROM MORTUARY, MEDICAL EDUCATION, AND WAITING ROOMS.

NOTE.

SOIL PIPES ARE SHOWN :—
WASTE DO. DO. DO. :—
RAIN WATER DO. DO. :—

153 CENTRAL ADMINISTRATIVE BLOCK OF THE PARK HOSPITAL.

*Illustrations to Student's Column.*

perly jointed with Portland cement as before described.

3. The proper ventilation of the whole system of drainage on the house side; and to ensure this the inspection chamber should have a mica-flap fresh-air inlet, and every soil-pipe should be carried up above the roof with an open end.

4. Where possible, and where there is a small amount of water at one's disposal, an automatic flushing tank should be fixed for periodical discharge into the drain. In this can be collected, if desired, the wastes from baths, lavatories, sinks, &c.

5. All rain-water pipes and bath wastes should discharge over gully traps and should be disconnected from the drain.

All soil pipes should be carried direct to the manholes without gully traps, and should be carried well above the roof with an open end.

The following typical drainage plans are given:—

*a.* Terrace houses drained towards front street.
*b.* Terrace houses drained towards the back.
*c.* Semi-detached houses.
*d.* Detached house.
*e.* Small stable.
*f.* Large country house.
*g.* Town house.
*h.* Hospital.

(*a*) *Terrace Houses Drained towards Front Street.*—First we deal with a system of drainage which is often met with in the erection of terrace houses.

In this system it will be noticed by reference to fig. 146 that the drainage empties itself into the sewer laid in the front street, thus necessitating the laying of drain pipes underneath the house. It has already been pointed out in a previous chapter that this is a system which should be avoided, wherever possible, because of its several disadvantages, but in this case it is impossible to use any other system. It should be noted that precaution to a large extent has been taken by embedding the pipes in concrete, so as to give additional security against the entry of sewer gas into the house. The drainage to be dealt with in this case is a soil waste, scullery sink waste, and the rain-water. A reference to the diagram will show how this is effected. Attention need only be drawn to the fact of the necessity of laying the drains in a perfectly straight line, from the house to inspection chamber, and from thence to the sewer. Where the pipes pass through an inspection chamber they should be of half or three-quarter section. Illustrations of these have been already given in previous chapters. A fresh-air inlet is shown at the lowest point of the drain introduced into inspection chamber. The soil pipes in all cases would be carried up well above the roof and covered with a wire cage.

(*b*) *Terrace Houses Drained towards the Back.*—Fig. 147 shows a system of drainage in which the sewer is at the back of the house, thus enabling the sewage from the other side of the street to be discharged into the same sewer. This arrangement does away entirely with the objectionable practice of carrying the drain-pipes underneath the house, with all the attendant trouble and expense in case of anything by chance going wrong. With the drainage under the house it is necessary to break up the floor and the concrete to enable one to get at the obstruction. By referring to the diagram it will be observed that each house has an inspection chamber, into which the soil and rain-water pipes, &c., are taken; from thence the pipes have a clear run down to the sewer, at the junction of which a further inspection chamber is placed. It will be noticed that in case of a blockage a man would find no difficulty whatever in reaching any part of the drainage system with his drain rods, and thereby removing easily and quickly any obstruction.

(*c*) *Semi-detached Houses.*—The next system to come under our notice is that required for semi-detached houses, which is illustrated in fig. 148. By reference to it, it will be seen that each house is provided with two inspection chambers for the purpose of reaching the branch drains. The planning of these follow out the principles already laid down, namely, that they should be laid in a perfectly straight line with easy bends, so as to help the flow of the sewage into the proper direction to reach the sewer. Care should be taken that the bends should not be abrupt, and that no sharp angles should occur so as in any way to impede the flow of sewage and thereby cause a stoppage. It should also be noted that, where possible, as many junctions should be made in the manholes, so that in case of defects any part of the system can be reached from these.

(*d*) *A Detached House.*—Our next illustration is for a detached house, shown in fig. 149. It will be noticed that, owing to the shape of the building, and of the fact of the sewer being at the back of the house, a larger number of inspection chambers are necessary than in any of the previous examples.

It shows the necessity of planning the house as much as possible so that the sanitary arrangements are placed near each other. This is often difficult to manage, but it should be the architect's aim.

(*e*) *A Small Stable.*—Fig. 150 shows the drainage of a small stable. It will be noticed that a half channel-pipe, 6 in. in diameter, runs the whole length of the stable with a sufficient fall towards the stable gully to carry off all water and other liquids. Of course, the stable floor itself has a slight fall towards this pipe. A gully should be provided with a proper grid so as to intercept all straw and other refuse that might be carried down the channel and thence into the drain. On the right of the stable will be noticed a small washing-place for carriages with a gully in the centre. The flooring of this space should be laid to a fall towards the gully. The water from this portion and the stable is then collected into the inspection chambers and from thence to the sewer. A fresh-air inlet is provided at the lowest manhole.

(*f*) *Large Country House.*—Fig. 151 shows us a method of draining a large country house. It will be noticed by reference to the plan that the rain-water is stored in a tank which is connected to a pump; this arrangement is very convenient in neighbourhoods where there is not a plentiful supply of water, or where the rain-water can be utilised for domestic purposes. It will also be noticed by referring to the diagram that the waste from the baths is collected into automatic flushing tanks marked D and C, which discharge their contents at regular intervals into the drains, thereby tending to keep them clean and sweet.

(*g*) *A Town House.*—Fig. 152 shows a method of draining a modern town house. In such it is generally necessary to carry the drains for some distance under the house. It will be noticed that the drainage in this case consists of water-closets and lavatories from ground floor, bath-room, second floor, and a water-closet from third floor. The drainage is all connected into one manhole and is easily accessible from it. The drain is then carried under the house. This portion of the drain should be 6 in. in diameter. If of glazed stoneware, it should be laid on a 6 in. bed of concrete and encased all round with 6-in. of the same material. Some architects prefer heavy cast-iron pipes for under house drainage, but there is always the difficulty of prevention of rust, even when preventitive solutions are used. The advantages of iron piping are that it can be obtained in longer lengths.

Iron pipes lined with glass or with a lead lining can also be used.

(*h*) *A Hospital.*—Fig. 153 shows the system of drainage adopted in the administrative block of the Park Hospital, and is produced here by permission of Mr. Edwin T. Hall, the architect of the building It will be noticed that in this plan also the rain-water is kept separate from the other drains, but it will be seen that the main line of the rain-water drainage is discharged into the last inspection chamber, no attempt being made to collect it for use.

The wastes from scarlet-fever pavilions and offices are also emptied into this inspection chamber before discharging into the sewer.

In draining a building of this description it should have careful thought and consideration, as unnecessary expense and trouble can be avoided by so doing, and what looks at first sight to be a very complicated plan is really thoroughly simple and efficient.

◆

**Baptist Chapel, Darnall, Sheffield.**—A new chapel is being erected in Darnall-road for the Baptists. The buildings will comprise a school chapel —to be called the Ebenezer Chapel—36 ft. by 53 ft., with accommodation for about 300; an infants' school room 27 ft. by 17 ft.; three class-rooms, and vestries. The only portion of the buildings now in course of erection is the school chapel. It will be a brick structure, and is being erected under the supervision of Messrs. Hemsoll & Paterson, architects. The cost of the present building will be about 1,000*l.*

# Correspondence.

*To the Editor of* The Builder.

## THE NEW ARCHITECT OF THE L.C.C.

Sir,—You have not called attention to what will result from the selection of the Council. For twelve years the District Surveyors and Architects have been in the habit of taking counsel with Mr. Blashill on various matters connected with his office, well knowing that he has had large experience in building in London, and a practical knowledge of the Building Act acquired when a District Surveyor. I understand that for over twenty years the new Architect has had nothing to do with building in London or with the Building Act. It looks very like appointing a junior common law barrister to be a Chancery Judge.

It will now be felt that any opinions emanating from the office are given by a member of the staff.

The management of men seems a strange qualification for an architect; surely a contractor's manager would have done. It is possible, however, that the new London Bill will supersede the Superintending Architect, so that the above difficulty will not exist. Observer.

## THE NEW GOVERNMENT OFFICES.

Sir,—All your readers will be grateful to you for the interesting views and plans of the proposed new Government offices which found a place in your last issue.

Referring to your criticism upon Mr. Brydon's very able design, I think most architects will agree that the high attic is too long. If the top windows were omitted, the balustrading carried on, and a sculptural group placed where the windows occur, a much better effect would be produced, and the sky-line would gain greatly by the change.

*Windermere.* Robert Walker.

## THE DISPOSAL OF HOUSE REFUSE.

Sir,—I should be glad if you would allow me to ascertain, through the medium of the *Builder*, the views of my fellow-readers as to the best way of disposing of the house refuse from a large country mansion.

It consists of soil from earth-closets, ashes, animal and vegetable refuse from the kitchens and sculleries, tins, bottles, paper, crockery, &c.

I have hitherto carted it to a tip, but for various reasons can do so no longer, and must get rid of it some other way.

My idea is to build a destructor, on the same lines as those in use, I understand, in some of the districts of London, but on a smaller scale, and, if necessary, modified to suit this special case.

I should not have enough refuse to keep the destructor always going, but could store the refuse in a shed to keep it dry until I had a large heap, and then light up and burn it.

I shall be grateful for any information, advice, or suggestions respecting this matter, and for any replies to the following questions:—

Where, in London or in the country, is there a destructor that I could see?

Is there in the market a portable or semi-portable destructor or furnace made of iron and lined with fire-clay or ganister that will burn such refuse as I have described?

Estate Clerk of Works.

◆

## *OBITUARY.*

**Mr. Birket Foster.**—We regret to hear of the death of Mr. Birket Foster, which took place at Weybridge on Monday. Mr. Birket Foster was a water-colour painter of remarkable ability, who at one time enjoyed a reputation which art-critics of the younger generation are probably hardly aware of; some thirty to forty years ago he was currently looked on as the leading water-colour artist of England, and very small studies from his brush commanded very large prices. He continued painting as well as ever up to the latest date that he exhibited, but the point of view had changed. Mr. Birket Foster was always a conscientious artist according to the standard he had adopted; but it was a conventional standard, not founded on truth to Nature so much as on an adopted scheme of his own, and hence did not retain its place. Among artists of this conventional school, however, he was exceptionally gifted. Mr. Foster was seventy-four years old at the time of his death.

**Mr. William Hague.**—We regret to announce the death of Mr. William Hague, the Dublin architect. Mr. Hague designed several important architectural works, both in Dublin and the provinces.

◆

**Soldiers' Mission Hall, Winchester.**—A new mission-hall in connexion with the Winchester Soldiers' Home has been opened in the High-street. The building has been erected by Mr. G. Evans, from the designs of Mr. T. Stopher, architect, Winchester.

## GENERAL BUILDING NEWS.

Reopening of Dromore Cathedral, Ireland.—The Cathedral Church of Christ the Redeemer, Dromore, which has been closed since last December, while undergoing extension and a course of internal decoration, has just been reopened. The principal change made in the building has been the removal of a gallery from the west end and the construction of an addition on the north side. The main aisle of the church has also been made of uniform width, and new seats added. In the centre of the north side of the church a gallery has been erected. The font has been removed from the main aisle, and a baptistry formed at the north side of the chancel, while the chancel has also received attention, a tile floor and marble steps having been added. The plans for the alterations and additions were prepared by Mr. Henry Hobart, C.E., and the contract has been carried out by Mr. John Graham, jun. Messrs. Musgrave & Co. were responsible for the heating arrangements, and Messrs. Carlisle & Wilson for the stained glass.

Parish Church, Kilbarchan, Renfrewshire.—The joint committee for the erecting of a new church at Kilbarchan have accepted tenders for the erection of the new building. The architect is Mr. W. H. Howie, Glasgow. The church, which will consist of nave, transept, and apse, is estimated to cost upwards of 6,000*l.*, and is being built on a site adjoining the present church.

School Accommodation, Lerwick, Shetland.—The School Board of Lerwick recently resolved to provide additional school accommodation for the burgh at a cost of 5,100*l.* The scheme which was finally approved of involved the demolition of one of the existing schools, the Central, and the construction in its place of a three-standard school, containing Board-room and other conveniences. An addition was also proposed to be made at the Anderson Institute School, which would give accommodation for two standards, besides providing room for drill, cooking classes, and other purposes. The scheme was arrived at after consultation with Mr. Wilson, architect for the Edinburgh School Board, who prepared the plans. At a recent meeting of the Board the bearing of the new Code on the building scheme was discussed. It was reported that the plans had been approved by the Department, but, it being considered that the changes contemplated by the Code would alter the whole scheme, it was resolved to instruct the architect to delay any further procedure.

Unitarian Schools, Bradford.—On the 23rd ult. the new schools in connexion with Chapel-lane Unitarian Chapel, Bradford, which have been built on the site of the old schools behind the chapel, were opened. The schools have been built from the plans of Messrs. Empsall & Clarkson, whose designs were accepted in limited competition, and under whose superintendence the erection of the buildings has been carried out by the following contractors:—Messrs. T. Shackleton & Co., masons and bricklayers, Clayton Heights; Mr. W. M. Binns, carpenter and joiner, Bradford; Mr. Henry Lindley, plumber and glazier, Leeds; Mr. Andrew Taylor, plasterer and tiler, Eccleshill; Messrs. William Thornton & Son, slaters, Bingley; Mr. D. E. Hutton, painter, Shipley; Mr. J. Anderson, hot-water engineer, Bradford. The new schools are in a building with three floors. The ground floor is divided into a general school room and three class-rooms, and above these is an assembly-hall, called the Channing Hall. The assembly-hall has a platform at one end.

Aberdeen New Market Buildings.—It has been resolved to provide a refrigerating chamber in these buildings, according to plans by Mr. W. Kelly, architect, Aberdeen.

Proposed Slaughter-house Extension, Aberdeen.—Plans for a proposed extension of the slaughter-house in Wales-street, Aberdeen, belonging to Aberdeen Flesher Incorporation, have been prepared by Mr. John Rust, jun., architect, Aberdeen. The estimated cost is upwards of 17,000*l.*

Hampstead Public Baths.—On the 24th ult. Colonel C. H. Luard, R.E., on behalf of the Local Government Board, held a public inquiry into an application of the Hampstead Vestry for sanction to borrow 5,950*l.* in connexion with the recent additions and fittings of the new public baths in Finchley-road, of which Messrs. Spalding & Cross were the architects.

West Ham Corporation Hospital, Dagenham.—The County Borough of West Ham having acquired the Rookery Farm at Dagenham, Essex, 116 acres in extent, have isolated a space of 3¾ acres on which they have erected a small-pox hospital, from designs prepared by Mr. Lewis Angell, the Borough Engineer and Architect. The hospital has the following accommodation:—An entrance lodge and offices; an administration block, including the medical officer's and matron's rooms, twenty-eight bedrooms for nurses and attendants, mess-rooms, dispensary, kitchen, laundry, and other offices; two pavilions containing four wards, each ward 60 ft. long by 26 ft. wide, also a receiving-room, bathrooms, nurses' duty-rooms, and sanitary annexes; isolation block for four beds and offices; and discharging block, laundry, disinfecting chamber, and mortuary. The hospital will accommodate forty-four patients and the necessary staff. The materials used are stock bricks with Portland stone and red brick dressings.

New Brompton Co-operative Society's Bakery.—This building is designed entirely for the manufacture of bread, cake, pastry, and confectionery. The ground floor has a loading shed to the front, where the vans are loaded from the cooling-room, which is divided off by revolving shutters so arranged that the cooling of the bread is not affected to any extent while vans are being loaded. From this cooling-room there are two entrances to the bakery proper, which is 60 ft. square and 15 ft. in height. It has six ovens upon one side, with space for a similar number on the opposite side when required. Through a doorway at the far end is a corridor, from which the dining-room, lavatories, engine-room, coal store, &c., are reached, with a doorway opening into yard. In one corner of the bakery is the staircase leading to the first floor. Here are kneading and sponge rooms (the latter fitted with hot-water apparatus to regulate the temperature) and a pastry and cake bakery, with provision for two ovens. On the top floor is the flour store, capable of storing between 2,000 and 3,000 sacks of flour. The three floors are connected by a lift fitted with automatic safety gear, the lift well having openings both sides at bottom, so that the lift may be emptied or loaded with equal convenience from either bakery or cooling-room. It is worked, with the other machinery, by a gas-engine. The whole of the machinery plant, supplied by Messrs. Baker & Sons, of Willesden, is of the most moderntype, comprising, on the second floor, the hoist-gear for the lifting of flour from the vans 40 ft. below, also a blender on the same floor, from which the flour passes (after being mixed and blended) through a tube to the kneader on the floor below, which is capable of kneading two sacks of flour at one time. The dough is passed down a channel to the ground floor to a rather complex piece of machinery which divides, weighs, and forms it into loaves, placing it on tables ready for ovens. The building is built with white glazed bricks to all internal walls. The floors are fireproof and covered with wood blocks carried with steel joists, on girders supported at intervals by columns, four to each floor. The roof is spanned by wrought-iron principals, and covered with slates The exterior walling consists of best local stock bricks, with Batchelor's red bricks to arches, strings, quoins, and gable and eaves-courses. The architect is Mr. E. J. Hammond, the builder Mr. J. H. Harris, of Chatham. There is a retail shop adjoining, with the usual stores and offices. The whole has been erected at a cost of between 8,000*l.* and 9,000*l.*

Cottage Homes for Chard.—Cottage Home buildings are to be erected at Chard in commemoration of the Diamond Jubilee. The architects are Messrs. Symes & Madge, of Chard.

New Theatre, Bordesley, near Birmingham.—The new Imperial Theatre, Bordesley, is now in course of erection, and it is expected to be ready for opening in October. The plans have been prepared by Messrs. Owen & Ward. The building has two frontages, one to High-street of 104 ft., and the other to Clyde-street of 134 ft. There are arranged twelve exits from the various parts of the house, communicating directly with the streets, and each section of the building has at least two fireproof staircases connected therewith. The grand hall leading to circle and stalls is approached through three pairs of mahogany and glass doors, and is 25 ft. by 20 ft., with staircases on both sides leading to the dress circle. The ceiling of the hall will be domed and decorated with hand-painted panels illustrative of Shakespeare's works, and the walls will be lined with marble in parti-colours, and the floors paved with marble mosaic. The interior accommodation is arranged into orchestra and pit stalls, pit, dress circle, balcony, and gallery, together with six private boxes, and will seat 2,500 persons. The auditorium is 69 ft. by 65 ft., and the stage is 69 ft. by 40 ft. Saloons are arranged to all parts of the house. There are also offices, wardrobe-room, ballet-room, &c. Both gas and electricity will be employed for lighting purposes throughout. The interior decorations will be principally of fibrous plaster in the Renaissance style, the prevailing colours being cream, blue, and gold; whilst the draperies and upholstering will be in old gold silk. The elevation to High-street is in red Ruabon brick, with buff terra-cotta dressings by Messrs. Doulton & Co., the two extreme angles being surmounted by square towers, whilst a gabled pediment adorns the central feature. An ornamental iron and glass verandah is placed as a shelter over the principal entrances. There will be a fireproof curtain to the proscenium opening.

Business Premises, Bristol.—A block of business premises having frontages in Wine-street and The Pithay and Tower-lane have been erected for Messrs. Harris & Sons, ironmongers, &c. The materials used were Cattybrook brick with Bath stone dressings. The architect was Mr. Henry Williams, and the builder Mr. George Humphreys.

## SANITARY AND ENGINEERING NEWS.

Great York-street Schools, Hanley.—These schools have been heated and ventilated by Messrs. Matthews & Yates, of Swinton, on the Plenum system, a large Cyclone Air Propeller being used for the fresh air supply, in conjunction with heaters for each room. The vitiated air is extracted by means of Cyclone electric fans, placed at convenient points in the roof. Messrs. Scrivener & Sons, of Hanley, are the architects.

## FOREIGN.

France.—M. Rodin has been commissioned by the Société Nationale des Beaux-Arts to undertake a statue to the memory of Puvis de Chavannes, which is to include a reproduction of M. Rodin's bust of the painter in the museum at Amiens. The bust will be placed on a stele supported by a female figure symbolising "Peinture."——Some excavations on the left bank of the Seine at Paris, for the Orléans Railway Company, have led to the discovery of the substructure of the "Petit Châtelet," demolished in 1782.——In the small square in front of the Théâtre Francais the Paris Municipality intend to have underground conveniences constructed after the model of the recent ones in London.——The death is announced of M. Modot, architect to the commune of Châtenay, who took an important part in founding the series of prizes established by the Société Centrale des Architectes.—The death is announced of M. Jules Printemps, the sculptor, who was a pupil of Jouffroy and of M. Falguière.——The Société des Aquarellistes Français has opened its twenty-first exhibition in the Galerie at the Champs Elysées. It is a small collection of works of considerable refinement. Among the exhibitors are MM. Besnard, Aublet, Jourdain, Jeanniot, Adrien Moreau, and Maurice Lenoir; the latter exhibits about ten studies of eighteenth-century scenes in his well-known style. The Spanish scenes by M. Worms, the animal paintings by M. Guignard and M. Julien Dupré, and the "Cadets de Gascoyne," by M. Vibert, are among others of the best works; and M. Vibert's own portrait is exhibited by M. Vollon.

## MISCELLANEOUS.

Professional and Business Announcements.—Mr. F. Gleadow, civil engineer, has removed his office from 13, Victoria-street, to Parliament Mansions. Victoria-street, Westminster, S.W. —— Mr. Joseph Blackburn, electrical engineer and contractor, of Nottingham, has converted his business into a limited company under the style of "Blackburn, Starling, & Co., Limited."——Mr. George P. Allen, architect and surveyor, has removed his offices from 6, John-street, Adelphi, to 3, New Inn, Strand.

Preventing Oak from becoming Worm-eaten.—It is necessary that the sapwood should be deprived of starch. According to E. Mer, in the *Comptes Rendus*, the drying and absorption of the starch from the sapwood is effected much more rapidly if the bark is removed in a ring below the branches and in another ring near the base of the trunk than when the bark is completely stripped from the trunk, or in a ring below the bottom branches only. Removal of the bark from the bottom of the trunk alone is said to leave the tree more susceptible to the attacks of insect larvæ and to the growth of fungi.

Paris Exhibition, 1900.—Protection of Patents.—It has been the custom, on the occasion of every recent International Exhibition held in France, to pass a temporary Act, giving protection to patents, designs, and trade marks, in addition to the Act of May 23, 1868, which is quoted in the French Regulations of the Paris Exhibition of 1900. In view, however, of a recent decision of the French Court of Appeal, which has attracted much attention, the French Government are taking special steps to protect exhibitors in 1900. The Royal Commission for the Paris Exhibition have been officially informed by the Consul-General of France that a Bill will shortly be laid before the French Chamber, in which certain clauses referring to the invalidation of patents are suppressed. The Act of 1868 will be re-enacted on the present occasion with some amendments. It will give the owner of a design the rights conferred by patent from the date of admission to three months after the close of the Exhibition without prejudice to any patent or registration which he may effect before the expiry of that period. This gives a longer protection than is afforded in similar cases in the United Kingdom by British law, which specifies that application for the registration of the design must be made before or within six months from the date of the opening of the Exhibition. Her Majesty, by an Order in Council dated February 2, 1899, has declared that the provisions of Sections 39 and 57 of the Patents, Designs, and Trade Marks Act of 1883 shall apply to the Paris Exhibition of 1900. This relieves exhibitors from the conditions specified in the said Sections of giving notice of their intention to exhibit The new French Act, it is believed, will give British subjects greater protection than the ordinary British law affords to French subjects; and this, coupled with the fact that French judicial decisions have no effect as binding precedents, should allay any fears which British exhibitors may entertain with regard to exhibiting at the Paris Exhibition of 1900.

Yorkshire Federation of Building Trades Employers.—A meeting of the Yorkshire executive of Building Trades Employers was held at the

People's Hotel, Harrogate, on the 23rd ult., Mr. Spink, of Sheffield, presiding, and thirty-three delegates were present from Leeds, Sheffield, Hull, Bradford, Halifax, York, Barnsley, Huddersfield, Harrogate, Spen Valley, &c. Offers of support from kindred associations and individuals affected were reported from all parts, and the question of a general lock-out was fully considered, and resolutions passed thereon. The meeting throughout was most enthusiastic in its determination to suppress the constant tyranny practised by trade unionists throughout England, and arising out of the plasterers' lock-out. The executive, before dispersing, received the master builders of Harrogate and surrounding towns, and were asked to explain the aims and objects of the Federation, and to receive them into membership. It was pointed out that those union men who were working in Scotland were working at a great disadvantage. The Federation complained that the matter had not been put to the men in a proper way, the vote having been taken by a show of hands instead of by ballot, and that what Mr. Dellar, the operative plasterers' secretary, asked for was a vote of confidence in the union, and did not ask the questions submitted by the masters. The Federation strongly resented the report that they seek to smash up the men's union, the question being one directly affecting the principles and wages or hours.

Early Architecture in Warwickshire.—Mr. J. A. Cossins, in a paper read before the Archæological Section of the Midland Institute recently on "Early Architecture in Warwickshire," said: "Though it cannot be called a work of architecture, the great monolith, called the King's Stone, at Long Compton, is the oldest erection by man in stone remaining in the county. Of Roman buildings we have nothing or next to nothing. The oldest fragments of building remaining are very probably some fragments of masonry in the wing wall which crosses the moat at Tamworth Castle and the ground and second stories of the central tower of Wootton Wawen Church. These are of the kind generally called Saxon; but although the well-known arches of the tower at Wootton Wawen have all the most prominent characteristics of that style, it is very probable the church was not built by the great and influential Wagen, from whom the place derives its name, but by Robert de Toner, to whom the Conqueror granted the place very soon after the Conquest, certainly not later than the eleventh century. There are some fragments of wall here and there in some of our oldest churches which may be of a date earlier than 1066, but it is by no means certain that they are so old. There can be but little doubt that for a century or more before the year A.D. 1000 very little building that was not of a slight and temporary nature had been done, for it was very generally believed that the world would come to an end in that year, and in anticipation of the dissolution of all worldly interests many wealthy men had made over their lands and money to the Church. After the year had passed, with a reasonable allowance for errors in computation, it is not surprising, considering how long church building had been neglected and how full the coffers of the Church had become, that building in stone began to be general, and that it was carried on with feverish haste. After the establishment of the Norman power, and during the reigns of the first three kings, cathedrals, monasteries, and churches were built in amazing numbers, but the wealth and energy of the nation during the time of Stephen were bestowed chiefly on building castles. During his reign there were founded, and either wholly or partially built, at least 1,500 castles, of which 1,150, it is said were destroyed by Henry III. How all this building was accomplished in about eighty years, if the population was as small as it is generally supposed to have been, must for ever remain a mystery. There is very little doubt that the Saxons, when they built in stone, made rude copies from the already rude architectural fragments of Roman works, which must have been then very plentiful. But our earliest real Norman work was either done or superintended by masons brought over from the Continent. It was at first rude and simple, with very thick mortar joints, but very soon improved, and very noble and grand works of extraordinary richness were produced. In Warwickshire we have in Bickenhill Church arcade an example of the ruder kind; in Polesworth an arcade as simple, but better executed; and in Beaudesert and Stoneleigh works of extreme elaboration. Of the 288, or thereabout, churches in the county, about eighty-five have remains of Norman work, but there are many more that are of early foundation of which no remains exist that can be recognised as Norman or earlier; about thirty-five are mentioned in Domesday Book as being then in existence, and it is probable that those belonging to monasteries were not included.—*Birmingham Post.*

Commons Preservation Society.—A meeting of the Executive Committee of the Commons Preservation Society was held at 1, Great College-street, Westminster, on Monday, under the presidency of the Right Hon. G. Shaw-Lefevre. It was reported that forty-eight Bills coming within the sphere of the Society's operations had been introduced into Parliament during the current Session, and that satisfactory arrangements had now been made with the promoters of a number of the Bills under which power was sought to compulsorily acquire common lands and open spaces or to extinguish rights-of-way. Amongst other Bills to which clauses had been added at the instance of the Society was that promoted by the Great Western Railway, which had now agreed to give an equivalent area of land for the portions of Langport Common Moor, Somerset, and Roborough Down, Devon, to be extinguished. The Uxbridge and Rickmansworth Railway also agreed to add an equivalent in respect of Ickenham Green, Middlesex, of which six acres were within the limits of deviation of their proposed works. The Burley-in-Wharfedale Urban District Council had reduced the area of land to be absorbed on Burley Moor from 33 acres to 16 acres; and they would only enclose the land with an open iron railing, so that the public might have access to all parts of the common, and in deference to the Society's representations the Menstone Waterworks Company had agreed not to interfere with any common rights over their contemplated gathering ground on Burley Moor. It was further reported that the objectionable features of the Woking Water and Gas Bill, so far as they affected the scenery of the Tillingbourne Valley, had now been removed, and that an instruction to Committee moved by Mr. J. M. Paulton, M.P., for the Society had been adopted by the House of Commons on the second reading of the East London Water Bill, with a view to making compulsory the substitution of a suitable area of open space for the 194 acres of common land at Waltham and Chingford to be absorbed for the proposed new reservoirs.—Sir Charles Dilke agreed to move on the third reading of the Bradford Tramways and Improvement Bill an instruction to the Committee to strike out of the Bill the provisions under which 50 acres of Baildon Moor would be transferred to the Lord of the Manor as part compensation for his interest in the remainder of the Moor. It was further agreed to oppose on third reading the London, Brighton, and South-Coast Railway Bill, as, in the opinion of the Society, the land proposed to be given in exchange for 2 acres of Earlswood Common, Redhill, was unsatisfactory. Correspondence with the Office of Woods and Forests with respect to the suggested Bill to authorise the alienation of 250 acres of land in the New Forest, was considered. The Society expressed its disapproval of the Bill in its present form and made alternative proposals to the Department. The action of the Crown with respect to the depasturage of sheep and the sale of land in the Forest of Dean was considered, and a further report on the matter was ordered to be drawn up. It was stated that apart from its various County Committees, the Commons Preservation Society was dealing with over twenty cases of interference with common land and open spaces, and with upwards of fifteen cases of enclosure of roadside waste or obstruction of rights-of-way in various parts of the country.

Destruction of Martello Towers.—The Martello Towers on the Kentish coast, erected as part of the Duke of Wellington's scheme for the protection of southern England against Napoleon's threatened invasion, are gradually disappearing. It has now been decided to have two of these towers near Hythe blown up by the Royal Engineers. One is the tower split during the recent gales by the sea scouring out the foundations, and the other is near the Grand Redoubt.—*Morning Post.*

## *CAPITAL AND LABOUR.*

The Hull Building Trade Dispute.—The dispute in the Hull building trade has culminated in a strike of carpenters and joiners. It is stated that one of the master builders has conceded the advance demanded, and taken several men in to work. Some members of the Carpenters' and Joiners' Association have left the town for work elsewhere.

## *LEGAL.*

### PUTNEY LIGHT AND AIR DISPUTE.

Mr. Justice North, in the Chancery Division on the 24th ult., had before him the case of Ayling *v.* Clements and Others, on a motion by Messrs. Edward Ayling & Sons, boat-builders, of Putney, for an *interim* injunction restraining the defendants, their servants, contractors, or workmen until the trial of the action from building or erecting upon the defendants' land, formerly known as White House, Riverside, Putney, adjoining the plaintiffs' property, a boathouse, in such a manner as to obstruct the free access of light and air to the windows and ventilators of the plaintiffs' premises.

Mr. H. Terrell, Q.C., in opening the case for the plaintiffs, said that the defendant Clements, since the notice of motion, sold his interest in the property to the defendant Aldis, and there would be no order against Clements except that the costs would be costs in the action. The other defendant besides Aldis was Hirst, the builder. The plaintiffs' property included a boathouse and workshop, and consisted of two stories—the ground floor being used as a storeroom for boats and the first floor being used as the workshop. The building was originally built in 1859, when it had on its western side a sloping roof with three skylights, and it had also on the first floor facing the tow-path three windows. At that time Messrs. Simmons, the boat builders, were in occupation. In 1882 they sold the property, together with certain adjoining property, to Messrs. Alexander. In that year Messrs. Alexander rebuilt the boathouse, raised the height somewhat, and advanced the front of the house nearer towards the towpath. In the place of the three skylights on the western slope of the roof they opened six skylights and the new roof was put a few feet higher than the old one. The light derived from the three old skylights was preserved in three of the new skylights. In 1895 Messrs. Alexander sold the premises to a Mr. Stewart, who in 1897 sold them to the plaintiff. On June 9, 1898, the defendant Clements, who had acquired the adjoining property, entered into a building agreement with Mr. Hirst, under which the latter was to build, on what was formerly a garden, some residential flats. On August 17 the defendants' architects served upon the plaintiffs a party-wall notice, by which they claimed that the western wall of the plaintiffs' premises was a party wall.

Mr. Macnaghton, Q.C., for Mr. Hirst, said he did not now suggest that this was a party wall. He withdrew that altogether now.

Mr. Terrell, continuing, said that discussions and interviews followed, and the defendants were allowed to build a dwarf wall. The plaintiff, however, subsequently found that the defendants had built rather more than a dwarf wall, and a heated interview followed, in which each party charged the other with breach of faith. The defendants had built this wall, which entirely blocked up the plaintiffs' ventilators and interfered with the light to the skylights.

In the result, his Lordship was of opinion that, although there was an infringement of the plaintiffs' new windows, they did not coincide with the position of the old ones, and, therefore, the new ones not being ancient lights, he refused the application.

### THE ANCIENT LIGHT DISPUTE AT KNIGHTSBRIDGE.

The case of Geeks *v.* Kellett, which was reported in the *Builder* of the 18th ult., was again mentioned to Mr. Justice Byrne, in the Chancery Division of the High Court of Justice, on the 24th ult. It will be remembered that the plaintiff applied, on the 10th ult., on motion for an *interim* injunction till the trial or further order restraining the defendant from the alleged interference with his ancient lights at Nos. 33, 34, 35, and 36, Albert Gate, Knightsbridge, of which premises the plaintiff is the freeholder, and the case was then ordered to stand over to give the defendant an opportunity of answering the affidavits filed by the plaintiff.

Mr. Farwell, Q.C. (who appeared with Mr. Rowden for the plaintiff) now stated that the parties had arranged their differences, and there would be a taxation of costs as between solicitor and client.

Order accordingly.

### ABBEY MANSIONS.

Probably the end of the long litigation *re* Abbey Mansions (Orchard-street, Westminster), was reached before Mr. Marsham (at the Westminster police-court on the 28th ult.), who delivered a judgment of a very technical nature on the County Council summonses against the builder. His worship held that a limitation of time estopped the County Council from taking proceedings for the reduction of the height of the building. All the dangerous structure summonses which the County Council had taken out were withdrawn, but as they succeeded in the arbitration under this head he allowed them sixty guineas costs. Mr. Marsham said that the buildings were no doubt all right now, but they were not at all satisfactory at first.—*Morning Advertiser.*

### IMPORTANT CLAIM AGAINST BUILDERS UNDER THE WORKMEN'S COMPENSATION ACT, 1897.

The hearing of the case of Hoddinott *v.* Newton Chambers, & Co., Limited, was concluded in the Court of Appeal, composed of Lords Justices A. L. Smith, Collins, and Romer, on the 25th ult., on an appeal by the defendants from the decision of Mr. Lushington, the Judge of the Wandsworth County Court, on an application for compensation under the Workmen's Compensation Act, 1897. The plaintiff or claimant was the widow of a deceased workman, who at the time of his death was in the employment of the appellants. It appeared that a stable had been built for the London General Omnibus Company about six months before the time of the accident, and was occupied by the company. After it was so occupied the company's engineer, considering it necessary to strengthen the structure by putting in iron stays to prevent vibration, the appellants were employed to put in stays to fasten together the columns and girders of the stable. To do this three planks were placed on two trestles about 8 ft. from the ground, and the workmen stood on the planks whilst at work. These trestles and planks were removed each night on account of the horses in the stable. At the time of the accident the deceased man was standing on the planks engaged in assisting to raise up one of the iron stays when he overbalanced himself, fell off, and was killed. Two questions were raised (1) whether the building was over 30 ft. in height, and (2) whether it was being "constructed or repaired by means of a scaffolding" within Section 7, Sub-section 1 of the Workmen's Compensation Act, 1897. The height from the ground to the parapet of the building was 28 ft., and from the ground to the top of the roof the height was 36 ft. The appellants contended that, inasmuch as nothing was being done to the roof, the height of the building must be taken, as in Section 5 of the London Building Act, 1894, from the ground to the top of the parapet. They also contended that the building, if over 30 ft. in height, was not being "constructed or repaired by means of a scaffolding," the work consisting of alterations to the building, and not repairs, and that the arrangement of the planks and trestles was not a "scaffolding." Mr. Lushington decided both the questions in favour of the claimant and awarded her 245*l.* 14s. as compensation. The claimant had brought an action under the Employers' Liability Act, 1880, to recover damages, alleging that the planks and trestles were defective, but Mr. Lushington gave judgment for the appellants in that action, and then upon the application of the claimant the Judge proceeded under Section 1, Sub-section 4 of the Act of 1897 to settle the question of compensation under that Act. The Judge, however, deducted from the compensation awarded under that Act the costs of the witnesses called by the appellants in the action under the Employers' Liability Act, 1880. The employers now appealed.

At the conclusion of the arguments of counsel, Lord Justice Smith, in giving judgment, said that as the building was shown to be more than 30 ft. in height up to the top of the roof, in his opinion the applicant had made out that the building exceeded 30 ft. in height within the meaning of the Act. With regard to the question whether the planks and trestles constituted a scaffolding, the County Court Judge had found that they did; and, in his opinion, it could not be said that there was no evidence of a scaffolding having been used. Speaking for himself he thought it was immaterial whether that which was alleged to be a scaffolding was inside or outside a building. Neither did he think that the scaffolding need be 30 ft. high, as the Act did not say so. Passing on to the question whether the deceased man was employed by the undertakers on a building which was being either constructed or repaired by means of a scaffolding, his Lordship said that "undertakers" were defined in Sub-section 2 of Section 7, and were stated to be in the case of a building the persons undertaking the construction, repair, or demolition. In the present case the building was already completed, and was in actual use; and after it was completed, something which was not in the original design was found to be necessary in order to strengthen it. Thereupon ironmasters were called in to put in girders for this purpose. In his opinion, it was impossible to say that this was employment by the ironmasters on a building which was being constructed. Then, was this a case of repairing a building? In his opinion it was not. Nothing was out of repair; the building was a new building which wanted something additional in order to strengthen the roof; putting in that something additional was not repairing. He thought that the claim failed on the ground that this was not a case of employment on a building which was being constructed or repaired. In his opinion the appeal must, therefore, be allowed.

Lords Justices Collins and Romer concurred, and the appeal was accordingly allowed.

Mr. R. M. Bray, Q.C., and Mr. Spencer Bower appeared for the appellants, and Mr. Ruegg, Q.C., and Mr. Moyses for the respondent.

## ACTION BY CONTRACTORS.

THE case of Braithwaite *v.* the Urban District Council of Ilkley came before the Court of Appeal on the 28th ult., on the appeal of the plaintiffs from an order of Mr. Justice Ridley staying all proceedings in the action under Section 4 of the Arbitration Act, on the ground that the subject matter of the action was matter for arbitration.

It appeared that the plaintiffs were contractors at Leeds who had entered into a contract with the defendants to construct certain sewerage works. One of the conditions in the contract was that if at any time after the works were completed any dispute or difference should arise between the Council and the contractor, the same should be referred to the engineers, whose decision and award should be final and binding. Another clause in the contract stated that the engineers referred to should be Messrs. John Warr & Mallinson, of Leeds, or other the engineer for the time being of the Council or their deputy duly appointed. There was also a proviso for getting a special form of arbitration if the contractors were dissatisfied with the engineers' award. The plaintiffs, in constructing the sewers, came upon a number of large boulders which were common in that district, and through which they had either to tunnel or blast. They claimed that this excavation should be paid for as "rock excavation" under the terms of the contract at a higher rate. Mr. Warr, the engineer, said that this was not rock excavation, and refused to certify for it as such. The plaintiffs thereupon brought the present action to obtain the amount they claimed to be due. It appeared that after the contract had been entered into the firm of John Warr & Mallinson dissolved partnership, no notice being served upon the contractors. When the dispute arose the Urban District Council wished to refer the matter to the arbitration of Mr. Warr, but the plaintiffs said that the firm of Warr & Mallinson were the sole arbitrators appointed under the contract, and they declined to accept Mr. Warr as arbitrator, he having already expressed an emphatic and decided opinion against the plaintiffs on the subject matter in dispute between the parties.

In the result both parties consented that there should be an open reference to a gentleman to be named by the President of the Bradford Arbitration Surveyors' Society, all the costs being in the discretion of the arbitrator.

Order accordingly.

Mr. C. A. Russell, Q.C., and Mr. R. C. Glen appeared for the plaintiffs; and Mr. T. Willes-Chitty for the defendants.

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## MEETINGS.

### MONDAY, APRIL 3.

*Liverpool Architectural Society.*—Mr. J. F. Doyle on "The New Royal Insurance Buildings."

### TUESDAY, APRIL 4.

*Glasgow Architectural Association.*—Mr. John Arthur on "Estate Feuing Plans and their Preparation."

*Perth Architectural Association.*—Mr. C. J. Menart on "Ecclesiastical Architecture of the Middle Ages." 8 p.m.

### WEDNESDAY, APRIL 5.

*Royal Archæological Institute.*—(1) Mr. J. Lewis André, F.S.A., on "Ritualistic Ecclesiology of North-East Somerset." (2) Mr. J. P. Harrison, M.A., on "Influence of Eastern Art on Western Architecture in the Eleventh Century." 4 p.m.

*Builders' Foremen and Clerks of Works' Institution.*—Ordinary meeting of Members. 8 p.m.

*British Archæological Association.*—Dr. Fryer, M.A., on "Ancient Fonts in Gower." 8 p.m.

*Edinburgh Architectural Association.*—8 p.m.

### SATURDAY, APRIL 8.

*Edinburgh Architectural Association.*—Visit to Woodhouselee.

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## RECENT PATENTS:

### ACCEPTED SPECIFICATIONS.

### *Open to Opposition until May 22.*

[1898] 1,188, Cameron, Commin, & Martin, Generation of Gas for Lighting, Heating, and power purposes from Sewage, &c.; and Sewage-purification Tanks. 3,591, Day & Lavigne, Turret Lathes. 6,442, Walther; and 8,685, Lathams, Disinfectants and their Application. 6,849, Roberts, Collapsible Centre for supporting Arches. 6,876, Reid, Strainer or Drainer for Sinks. 7,080, Nesbitt, Gas-generators. 7,838, de Szepczynski; and 8,675, Graetz, Generation of Acetylene Gas. 7,895, Barton, Fusible Cut-out. 8,918, Doré, Bricks and Tiles. 9,182, Millican, Timber-sawing. 9,745 Penman, Supply of Gas to Buildings. 10,056, Saxl, Controlling Apparatus for Acetylene Generators. 10,471, Purvis, Filtration of Sewage or Impure Waters. 10,618, Pillinger, Indicating and Recording Apparatus for Electrical Meters. 10,639, Homer, Solder. 10,734, Place, Combined Gulley and Ventilator. 10,750, Brodie, Collection and Removal of House Refuse. 10,846, Farrow, Paper Hangings and Wall Coverings. 11,008, Strauss, Lathing for Fire-proof Walls, Ceilings, &c. 11,013, Collins, Knobs and Handles for Mortise and Rim Locks, &c. 11,094, Kinniburgh & Barr, Adjustable Holder for Paint, Whitewash, and other Brushes. 11,302, Brier, Electrical Switches. 11,325, Stocks, Combined Rib and Coal Saver for Fire-ranges. 11,498, Gover & Proctor, Holders for Electrical Glow-lamps. 12,100, Hodges & Lilley, Floor Spring-Hinges for Swing-Doors. 12,678, Schlickeysen, Combined Clay Sump or Pug-Mill Mixer and Brick Press, for Pressing Bricks, Slabs, Pipes, Tiles, &c., and for Mixing Mortar, Concrete, &c. 13,312, Michaelson; and 26,789, Allgemeine Elektricitäts G., Electrical Incandescent Lamps. 14,399, Blackburn & Spence, Electrical Measuring Instruments. 16,974, Twyford, Sinks, Lavatory Basins, Slop Hoppers, &c. 18,187, Crossingham & Hobbs, Circular-saw Guards. 19,775, Howson, Lavatories, Sinks, Baths, Wash Tubs, &c. 22,879 and 23,162, Relf & Westlake, Rock-boring Machines and Tools or Bits therefor. 24,071, McCall's Sliding Hinge Window Company & McCall, Windows. 25,769, Maschinenbau A. G. Nürnberg, Suspension Bridges. [1899] 1,093, Harris, Fire-escapes. 1,329, Lebioda, Hardening Wood. 1,530, Mercer, Safety and Time-Saving Devices for use in Window Cleaning and Glazing. 2,762, Kahnweiler, Bath Accessory. 3,054, Bremer, Hollow Concrete Floors, Walls, &c. 3,205, Saunders, Bricks, Tiles, Slabs, &c. 3,246, Von Hosstrup, Flushing Cisterns. 3,362, Rogers, Automatical Combined Emergency Air Float, Valve, and Trap. 3,658, Deichsel, Wire Fencing and Analogous Structures.

### ABSTRACTS OF PATENTED INVENTIONS.

26,834.—GAS BURNERS: *T. Fletcher & Fletcher, Russell & Co.*—For an atmospherical gas burner, and to prevent lighting-back and choking of the burner, a perforated or metallic gauze partition is placed between the mixing-tube and the outlets, the sum of the areas of the outlets and the sum of the areas of the openings in the partition being, each of them, equal to the cross-sectional area of the mixing-tube.

26,886.—INSPECTION OPENINGS, AND GULLY TRAPS: *Albion Clay Co. & A. W. Bird.*—A pan, which has a short length of pipe leading to a trap, is fixed at the bottom of the gulley or opening, and the inlet drains discharge through the pipe, the outlet has an opening, for cleaning purposes, the opening being carried up to the ground level by pipe-lengths.

26,929.—PENS FOR USE BY DRAUGHTSMEN AND OTHERS: *A. H. Garot.*—The nibs are carried in a cone which fits upon the end of the handle, and the similarly shaped handle-end is pressed against the outer cone by means of pins and a helical slot when the handle and cylinder are turned relatively to one another in order to adjust the distance between the nibs; a dotting wheel can be pivotted between the nibs, and ink may be supplied from within the handle.

26,995.—SHANKS AND SHAFTS OF ROTATING TOOLS: *J. Schluch & J. Fober.*—The engagement of pins with either the right or the left-handed threads in the sleeve or handle serves to rotate the shank or shaft of screw-drivers, drills, and similar tools, the pins are pivotted to a sleeve around the tapered end of the central shank, whilst cross-pins which engage in slots in the sleeve, prevent rotation in certain positions; the pins may be removed from one set to another set of grooves by pulling the shank until they enter holes in a loose washer, and by then turning the shank.

27,065.—ACETYLENE GENERATORS: *J. Benjamin.*—The perforated carbide holders are placed within generating cylinders contained in water-jackets mounted upon the tank of a gas-holder; on the cock of the water-pipe which supplies each generator is fitted a toothed sector to gear with pins upon a rod attached to the bell and guided by a grooved tube, so that the bell's motion will regulate the supply of water to the carbide; the produced gas passes into the bell through a well and a pipe rising therefrom, and out of the bell by a pipe that descends into another well, which communicates with the service pipe; by a pivotted lever arrangement two generators can be brought into alternate operation.

27,094.—WATER WASTE PREVENTERS AND KINDRED APPLIANCES: *J. Shanks.*—For the prevention of noise an air pipe is fixed from the crown of the siphon to the bottom of the tank, and its end is there upturned to form a seal; the basin is curved to fit the body of the user; the hinged closet-seat is composed of a thin sheet of metal, faced upon both surfaces with vulcanite or similar non-conducting material, and so perforated that the two surfaces can be moulded together; the flushing rim has two series of flushing apertures, whereby jets are directed down the sides and towards the outlet. To maintain the level in the basin an auxiliary cistern is fitted with a ball-cock; and in order that the supply cock of the flushing cistern may work with a small up and down motion of the float, the float lever is pivotted in a bracket and joined by a pin and slot joint to the arm of a cam that operates the plug valve.

27,104.—SLABS FOR FLOORS: *H. Eichler.*—The slabs are composed of sawdust, quartz, and ground lime, pressed in moulds; the upper layer of sawdust may be dyed with tan-liquor, or each slab's upper surface may have a design thereon, made of saw-dust dyed with mahogany-liquor.

27,121.—FILTERING MEDIA: *W. Leuscher.*—For use as a filtering medium or absorbent the inventor adopts a mixture of clay, asbestos, coal, flour, sawdust, &c., formed into a plastic mass, and then dried and burnt; the burning process is dispensed with if lime or cement has been mixed with the asbestos.

27,228.—SELF-CLOSING VALVES AND COCKS: *J. Merrill.*—For a water-tap, a hollow bib, with openings for the passage of water, is attached to the valve, and is raised from its seal by a lever, or otherwise; when the bib is released, water presses the valve against its seat; into the valve casing is screwed a sleeve in which the bib slides.

27,232.—BRAKES FOR WINCHES: *R. Petrick & C. Wohlfahrt.*—The band-brakes are connected to pivotted levers; the lifting-rope passes over a roller mounted at the end of the levers and between two other rollers, whereof one is forced inwards by the rope's tension, which operates against a spring behind the roller; thus the inclination of the rope between the two sets of rollers depends upon the weight of the load, and the more vertical it becomes, the greater is the ratio between the brake power and the lifting power.

27,261.—MANHOLE DOORS AND FRAMES, AND GRATINGS.—A spanner-shaped lever, pivotted to a lug and engaging with a projection, holds down the cover or grating; for unlocking and raising the cover, a hook is inserted underneath the lever's free end, and as the projection becomes disengaged the nose of the lever acts as a fulcrum which enables the lever to raise the cover.

27,397.—GULLEY TRAPS: *J. Johnson, S. Johnson, & E. Jones.*—The silt-box rests upon projections which are placed lower than the water-line but above the seal, the water passes through a vertical opening protected by bars into a passage which is formed in the side of the gulley, and so to the seal. Should the grating become stopped the water is diverted to beneath a ledge and so through another opening into the trap.

27,430.—SAWING AND PLANING WOOD: *G. Cameron.*—The contrivance, which is particularly applicable for use in shipyards and other outdoor works, consists of a portable support for sawing, rabbeting, planing, and similar machinery; to a trolley is fixed a cast-iron base-plate, whereon is mounted a revolvable plate that can be clamped at any angle by hand-screws which work in concentrical grooves, rotary planing cutters, or a circular saw, driven directly by an electro-motor, can be fixed upon the base-plate.

27,483.—ELECTRIC ARC LAMPS AND GLOBES: *P. Spies, W. H. Newall, & A. W. Shout.*—Two flat plates, hinged endwise, form a clutch for the upper carbon which passes freely through a hole in the abutting ends of the plates, whilst the outer ends are linked to a tube attached to the core of a solenoid; the raising of the core lifts the outer ends of the plates in order that they may grip and raise the upper carbon; feeding ensues when the hinge is lowered to the base-plate; copper springs, attached to the tube (of the core) and bearing against the lamp-frame and the carbon, maintain electrical connexion with the upper carbon; an insulated plate, resting upon thin rods below another plate, carries the lower carbon, the plates having circular channels which contain a ring of small glass tubes around the arc.

27,499.—SASH FASTENINGS AND LATCHES: *A. Hodgson-Brown.*—To one sash is secured a plate on which moves freely a ring with a hooked stem which engages with a button upon the other sash; a flanged disc, mounted eccentrically upon the former sash by means of a shouldered pin, governs the motion of the stem and ring.

27,566.—LIFT VALVES AND SPINDLES: *J. Whitfield.*—In order to prevent leakage in a high-pressure water-cock, the water is made to press upon a conical or cup-shaped washer or valve, made of some yielding material which is laid between flanges formed upon the spindle.

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## SOME RECENT SALES OF PROPERTY:

### ESTATE EXCHANGE REPORT.

March 16.—By VENTOM, BULL, & COOPER.

Kilburn.—Willesden-lane, f.g.r. 22*l.*, reversion in 84 yrs. .......... £600

# COMPETITIONS, CONTRACTS, AND PUBLIC APPOINTMENTS.

## COMPETITIONS.

| Nature of Work. | By whom Advertised. | Premiums. | Designs to be delivered. |
|---|---|---|---|
| *Boys School | St. Thomas Sch. Bd. Exeter | ........ | No date |

## CONTRACTS.

| Nature of Work or Materials. | By whom Required. | Forms of Tender, &c. Supplied by | Tenders to be elivered. |
|---|---|---|---|
| Alterations to Northgate School | Gt. Yarmouth Sch. Bd. | Bottle&Olley, Archt. Queen-st. Great Yarmouth | April 4 |
| Broken Granite (10,000 tons) | Cannock (Staffs.) R.D.C. | H M. Whitehead, Dist. Surv. Brewood, Stafford | do. |
| Underground Convenience | Fleetwood (Lancs.) U.D.C. | J. Todsley, Town Hall, Fleetwood | do. |
| Alterations to Parish Church, Clifton, Cumberland | .. | J. Howes, Archt. Workington | do. |
| Bridge, Needham | Norfolk & East Suffolk C.C. | H. Miller, County Surv. 16, Museum-st. Ipswich | do. |
| Sewerage Works | Halesowen R.D.C. | W. Fiddian, Surv. Town Hall, Stourbridge | do. |
| Sewerage Works, North-road | Egremont U.D.C. | J. Bowly, Town Hall | do. |
| Surveyor's Materials | Newburn-on-Tyne U.D.C. | T. Gregory, Surv. Newburn-on-Tyne | do. |
| *Road Materials | Bromley U.D.C. | Council Offices | do. |
| *Wrought Iron Fencing | Watford U.D.C. | D. Waterhouse, 14, High-st. Watford, Herts. | April 5 |
| Construction of Road | Southend Corp | A. Fidler, C.E. Southend | do. |
| Alterations to R.C. Schools, Egremont | ... | J. S. Stout, Archt. Gillfoot, Egremont | do. |
| Two River Walls, Hull | N. E. Ry. Co. | T. M. Newell, Engr. Dock Offices, Hull | do. |
| Rope Factory, &c. Bath-rd. Bristol | Terrell & Sons | H. Williams, Archt. 24, Clare-st. Bristol | do. |
| Girder Bridge, Pandy | ........ | R. L. Bamford, Surv. Widemarsh-st. Hereford | do. |
| Water Supply Works | Thrapston R.D.C. | T. Lloyd, Halford-street, Thrapston | do. |
| Stoneware Pipes | Birmingham Corp. | J. Knight, Engr. Council House, Birmingham | do. |
| Road Materials | Houghton-le-Spring R.D.C. | D. Balfour, C.E. Houghton-le-Spring R.S.O. | do. |
| Making Gladston-road | Barry (Glam.) U.D.C. | J. C. Pardoe, C.E. 60, Holton-rd. Barry Docks | do. |
| Paving Works | Middleton (Lancs.) Corp. | W. Welburn, Boro Surv. Town Hall | do. |
| C.I. Pipes | Exeter T.C. | D. Cameron, Surv. 18, Bedford-circus, Exeter | do. |
| Stoneware Pipes | Hove T.C. | H. H Scott, Boro. Surv. Town Hall | do. |
| *Water Mains, Outside Hydrants, &c. at Hospital | Metropolitan Asy Bd. | Norfolk House, Norfolk-st. Strand | April 6 |
| Iron Foundry, Albert-rd Halifax |  | Jackson & Fox, Archt. 7, Rawson-st. Halifax | do. |
| Supplying and Laying C.I. Main, Guildford-rd. | Farnham Water Co. | G. McDonald, 104, West-st. Farnham | do. |
| Business Premises, Ushaw Moor, Durham |  | J. W. Taylor, Archt. Newcastle-on-Tyne | April 7 |
| Sewerage Works | Andover T.C. | A. Purkess, Boro. Surv. Andover | do. |
| Road Works | Stamford U S A. | T. J. Ward, Surv. Stamford | do. |
| Steel Girders, &c. | Wolverhampton Corp. | J. W. Bradley, C.E. Town Hall | April 8 |
| Villa, Cornelly, Wales | Mrs. Jenkins | P. J. Jones, Archt. Bridgend | April 10 |
| *10-ton Steam Road Roller | Cty. Boro. West Ham | Lewis Angell, Town Hall, Stratford | April 11 |
| Six Cottages, Helsby Station, Cheshire | L. & N.W. and G.W. Ry. Cos. | A. E. Bolter, Paddington Station, W. | do. |
| *Road-making at Southwold | Coast Development Co Ltd. | H. Miller, 16, Museum-st. Ipswich | April 12 |
| *Sinking Well | Greenwich Union | T. Dinwiddy, 12, Croom's Hill, Greenwich, S E. | do. |
| *Yorks. Paving, Granite Kerb, &c. | Strand Dist. B. of W. | 5, Tavistock-st. W.C. | do. |
| *Baltic Hemp, Carpenter's, &c. Work, Iron Plate Wares, Lamps, &c | Admiralty | Director Navy Contracts, Admiralty, S W. | April 13 |
| Rebuilding Forester's Arms Inn, Gateshead | R. Newton | A. G. Kyle, Archt 145, Pilgrim-st. Newcastle-on-Tyne | do |

## CONTRACTS—*Continued.*

| Nature of Work or Materials. | By whom Required. | Forms of Tender, &c. Supplied by | Tender to be delivered. |
|---|---|---|---|
| Sea Defence Wall, Heswall, Cheshire | ........ | C. W. Oates, Dee View-rd. Heswall | April 15 |
| *Asphalt Kerb, York Paving, Granite, &c. | Bermondsey Vestry | F. Sumner, Town Hall, Spa-rd. S.E. | April 17 |
| *Buoy Store, &c. at Trinity Store, Penzance | Trinity House Corp. | Trinity House, London, E.C. | do. |
| Stables, Cardiff | G. W. Ry. Co. | G. K. Mills, Paddington Station, W. | April 18 |
| *Stone Paving | Tottenham U.D.C. | P. E. Murphy, 712, High-rd. Tottenham | do. |
| *Iron Arched Roof | Newcastle-on-Tyne Corp. | Town Hall | April 20 |
| *Enlarging School Premises | Weybourne (U.D.) Sch. Bd. | F. Andrews, Offices, Holt, Norfolk | April 27 |
| *Engines, Pumps, &c. for Water Works | Gravesend & Milton Water Works Co. | J. Mansergh, 5, Victoria-st. S.W. | do. |
| Three Houses, Bow-road, Middlesbrough | ...... | J. Ward, 21, Granville-rd Middlesbrough | No date |
| Seventeen Houses, Stella, Durham | .... | T. C. Nicholson, Archt. Blaydon-on-Tyne | do. |
| Chapel and Schools, Scotter | ........ | J. J. Green, Archt, South John-st. Liverpool | do. |
| Stores, Lowestoft | Gourock Ropework Co. | F. W. Richards, Archt. Stanley-st. Lowestoft | do |
| House and Shop, Sefton-rd. Morecambe | Mr. Stutton | Marshall Bros. Archt. Back-crescent, Morecambe | do. |
| Central Stores, Bridge-st. Wrexham | ........ | Morison & Son, Archt. King-st. Wrexham | do. |
| Church, Elland, Yorks. | .... | R. H. Hall, Archt. 33. Old Queen-st. Westminster | do. |
| *Painting and Whitewashing | War Dept. | R. E. Office, Mill-lane, Woolwich, S.E. | do |
| Shop, Cook-lane, Keighley | ...... | Judson & Moore, Archt. York-chmbrs. Keighley | do. |
| Stabling, Long Eaton, Notts. | Co-op. Soc. | W. V. Betts, Archt. Bradford-road, Old Basford, Nottingham | do |
| Store Premises, Little Moss | Waterloo Indus. Prov. Soc. Ltd. | A. J. Howcroft, Archt. 12, Clegg-st. Oldham | do |
| Police Station, Prudhoe | ....... | J. Cresswell, Archt. Moot Hall, Newcastle-on-Tyne | do. |
| Seventeen Houses, Cwmaman, Aberdare | Building Club | L. Smith, Archt. 20, Commercial-street, Aberdare | do |
| Glass Works, Savile Town, Dewsbury | . .... | Judson & Moore, Archt. Keighley. | do. |
| Four Houses and House and Shop, Prospect-terrace, Allerton | ...... | R. Drake, Archt. 142, Allerton-rd. Allerton | do. |
| House and Stable, Tamworth-road, Ashby | ........ | Mr. Pickthorn, Market-st. Ashby-de-la-Zouch | do |
| Additions to Business Premises, Leeds-road, Bradford | . .. | Empsall & Clarkson, Archt. 7, Exchange, Bradford | do. |
| Presbyterian Church, Felixstowe | Trustees | G. W. Leighton, Archt. Princes-st. Ipswich | do. |
| Alterations to Inn, Railway-street, Lurgan | V. Harrison | W. J. Moore, Archt. Ann-st. Belfast | do. |
| Assembly Hall, Coxhoe, Durham | ... .. | C. A. Todd, Clarence Villa Hotel, Coxhoe | do. |
| Villa, Allerton, Yorks. | . .. | J W C. Atkinson, Archt. 1, Ivegate, Bradford | do. |
| Additions to College, Harrogate | Rev. J. Haslam | J. M. Fawcett & Son, Archt. Basinghall-st. Leeds | do. |
| Six Houses, Longsight, Manchester | ... .... | H. E. & A. Bown, Archt. James-st. Harrogate | do |

## PUBLIC APPOINTMENTS.

| Nature of Appointment. | By whom Advertised. | Salary. | Application to be in. |
|---|---|---|---|
| *Surveyor and Inspector of Nuisances | Kendal Corp. | 175*l*. per annum | April 5 |
| *General Engineering Assistant | Birkenhead Corp. | 110*l*. rising to 150*l*. | April 7 |
| *Four Divisional Highway Surveyors | West Riding C.C. | 250*l*. per annum | April 10 |
| *Clerk of Works | Walthamstow U.D.C. | 4*l*. per week | do. |
| *Architectural Draughtsman (2) | Scarboro. Corp | ........ | do. |
| *Clerk of Works | Tunstall U.D.C. | 3*l*. 3s. per week | April 12 |
| *Building Inspector | Tottenham U.D.C. | 150*l*. per annum | April 17 |

*Those marked with an asterisk* (*) *are advertised in this Number. Competitions, p.* iv. *Contracts, pp.* iv. vi. viii. x. & xx. *Public Appointments, pp.* xviii. xix. & xx.

| | |
|---|---|
| Willesden-lane, f.g.r. 52*l*., reversion in 84 yrs. | £1,450 |
| Kenilworth-rd., f.g.r. 6*l*., reversion in 84 yrs. | 160 |
| By STIMSON & SONS. | |
| Wood Green.—Finsbury-rd., f.g.r. 15*l*., reversion in 58¾ yrs. | 445 |
| Camberwell.—11, 12, and 13, Mazzard-row, f. | 1,250 |
| 36 to 62 (even), Picton-st., and 2a, Chiswell-st., f. | 4,130 |
| Bermondsey.—10 to 18 (even), Cranswick-rd., u.t. 79 yrs., g.r. 25*l*. | 1,700 |
| 10, Credon-rd., u.t. 79 yrs., g.r. 5*l*. | 300 |
| 9, Bermondsey-sq., u.t. 15 yrs., g.r. 6*l*. 10s., r. 38*l*. | 195 |
| Stepney.—32 to 40 and 50 to 60 (even), Ocean-st., u.t. 8¼ and 6¾ yrs., g.r. 23*l*. | 360 |
| By BEADEL, WOOD, & CO. | |
| Blackheath.—Shooter's Hill-rd., f.g.r. 20*l*., reversion in 38 yrs. | 870 |
| Shooter's Hill-rd., f.g.r. 20*l*., reversion in 44 yrs. | 790 |
| Shooter's Hill-rd., f.g.r.'s 144*l*., reversion in 45 yrs. | 5,500 |
| Shooter's Hill-rd., f.g.r.'s 85*l*. 7s. 6d., reversion in 48 yrs. | 3,190 |
| Woodland's-rd., f.g.r. 20*l*., reversion in 43 yrs. | 1,770 |
| Langton-ter., f.g.r.'s 44*l*., reversion in 54 yrs. | 2,350 |
| St. John's Pk., a peppercorn g.r., reversion in 54 yrs. | 255 |
| Old Dover-rd., a peppercorn g.r., reversion in 45 yrs. | 440 |
| St. John's Pk., f.g.r. 34*l*. (part peppercorn), reversion in 74 yrs. | 1,170 |
| St. John's Pk., f.g.r.'s 85*l*., reversion in 74 yrs. | 2,695 |
| St. John's Pk., f.g.r.'s 60*l*. 16s., reversions in 63 and 64 yrs. | 2,250 |
| Invicta-road, f.g.r.'s 64*l*. (part peppercorn) reversion in 83 yrs. | 1,770 |
| Acorn-ter., f.g.r.'s 56*l*., reversion in 83 yrs. | 1,495 |
| Combe-ter., f.g.r.'s 115*l*., reversion in 73 yrs. | 3,490 |
| Denzil-ter., f.g.r.'s 86*l*. 6s., reversion in 71 yrs. | 2,545 |
| Humber-rd. East, f.g.r. 8*l*. 8s., (part peppercorn), reversion in 71 yrs. | 410 |
| Humber-ter., &c., f.g.r.'s 42*l*. 16s. (part peppercorns), reversion in 71 yrs. | 1,480 |
| Woolwich-rd., &c., f.g.r.'s. 375*l*. (with several peppercorns), reversions in 71 yrs. | 10,760 |
| By WYATT & SON (at Havant). | |
| Havant, Hants.—West-st., &c., two enclosures of building land, 3 a. 3 r. 19 p., f. | 1,165 |
| March 17.—By DYER, SON, & HILTON (at Lewisham). | |
| Lewisham.—40 to 46, Brookbank-rd., u.t. 70¾ yrs., g.r. 21*l*., r. 161*l*. | £1,770 |
| 19 to 25, 29 to 35 (odd), Ellerdale-st., u.t. 70¾ yrs., g.r. 24*l*., r. 185*l*. | 1,985 |
| By BLAKE & DANNATT. | |
| Bow.—161, Burdett-rd., u.t. 67 yrs., g.r. 6*l*., r. 43*l*. 4s. | 325 |
| Stockwell.—3 and 4, Stockwell-st., f., r. 60*l*. | 820 |
| Old Kent-rd.—51 to 57 (odd), Bridson-st., u.t. 38 yrs., g.r. 8*l*. | 395 |
| Blackheath.—45, St. John's Park, u.t. 67½ yrs., g.r. 8*l*., r. 50*l*. | 430 |
| By PROTHEROE & MORRIS. | |
| Islington.—Warren-st., i.g.r. 65*l*., u.t. 28½ yrs., g.r. 18*l*. | 610 |
| Camden Town.—Arlington-rd., i.g.r. 34*l*., u.t. 38 yrs., g.r. 13*l*. 9s. | 250 |
| Camden Park-rd., i.g.r. 14*l*., u.t. 51 yrs., g.r. nil | 260 |
| Regent's Park.—Osnaburgh-st., i.g.r. 27*l*., u.t. 23½ yrs., g.r. 11*l*. | 200 |
| By ROBINSON & SONS. | |
| Shepherd's Bush.—142, 142a, 144, 148, and 150, Goldhawk-rd., u.t. 47½ yrs., g.r. 238*l*., r. 411*l*., | 2,005 |
| By ROBSON & PERRIN. | |
| Kensal Rise.—69 and 161 Mortimer-rd., u.t. 93½ yrs., g.r. 11*l*. 15s., r. 72*l*. | 710 |
| By W. G. SHADRAKE. | |
| Regent-st. — Great Marlborough-st., "The Grapes" p.-h., a freehold rental of 130*l*., reversion in 36 yrs. | 4,025 |
| Theydon Bois, Essex.—Piercing Hill, The Poplars and nearly 4 a., f. | 1,950 |
| Piercing Hill, The Chestnuts, f. | 750 |
| By STIMSON & SONS. | |
| St. Pancras.—163 and 165, Euston-rd., area 2,350 ft., f., r. 90*l*. | 2,750 |
| Seymour-st., &c., f.g.r. 45*l*., reversion in 28 yrs. | 1,330 |
| Hampden-st., f.g.r. 35*l*., reversion in 41½ yrs. | 990 |
| Stibbington-st., f.g.r. 110*l*., reversion in 41½ yrs. | 3,080 |
| Stibbington-st., f.g.r. 110*l*., reversion in 22¾ yrs. | 3,300 |
| Stibbington-st., f.g.r. 27*l*., reversion in 31½ yrs. | 810 |
| By VENTOM, BULL, & COOPER. | |
| Hampstead.—West End-lane, Crowhurst, u.t. 78 yrs., g.r. 20*l*. | 1,750 |
| Rotherhithe. — Rotherhithe-st., "The Noah's Ark" p.-h. and "The Three Compasses" p.-h., f., r. 109*l*. | £4,220 |
| Beatson-st., Globe Buildings, f. | 715 |
| 348, 350, and 352, Rotherhithe-st., f., r. 51*l*. 17s. | 455 |
| 376, 378, 382 to 390, Rotherhithe-st., f. | 1,390 |
| Rotherhithe-st., a boat-builder's yard and a timber yard, f., r. 50*l*. | 990 |
| Cricklewood.—1, Hillside, u.t. 67 yrs., g.r. 14*l*. | 1,200 |
| March 18.—By YOUNG & HOWES (a Bath). | |
| Camerton, &c., Somerset.—Woodborough House, also Woodborough and Braysdown farms, 420 a. 3 r. 35 p., f. | 46,600 |
| March 20.—By JOHN BOTT & SON. | |
| Herne Hill.—No. 28, also Neckar Lodge, Forth House, Fairmount, and The Lodge, c., r. 420*l*. | 7,600 |
| By MOSS & JAMESON. | |
| Norwood.—12, Camden Hill-rd., f., e.r. 45*l*. | 490 |
| Brixton.—1, 3, 11, and 19, Ashmere-grove, u.t. 85 yrs., g.r. 32*l*., r. 145*l*. | 1,350 |
| By ALFRED RICHARDS. | |
| Tottenham.—639, High-rd., f. | 2,110 |
| 81, 83, 95, 97, 99, 101, 123, and 125, Park-lane, with nursery ground and arable land in rear, area about 11 a., f. | 4,600 |
| 784 and 786, High-rd., f., r. 102*l*. | 1,720 |
| Bromley-by-Bow.—12, St. Leonard's-st., f., r. 30*l*. | 655 |
| 6, Union-st. and 5, Providence-pl., f. | 350 |
| By JOHN H. BETHELL. | |
| Upton Park.—24 to 28, The Broadway, f., r. 260*l*. | 5,810 |
| 9 and 10, The Parade, f., r. 72*l*. | 1,210 |
| 9 and 11, Plashet-grove, f., r. 65*l*. | 950 |
| 226, Gipsy-lane, u.t. 79 yrs., g.r., 6*l*., r. 30*l*. | 380 |
| Manor Park.—611, Romford-rd., u.t. 94 yrs., g.r. 8*l*. 8s., r. 40*l*. | 405 |
| By MELHUISH & SON (at Paulton). | |
| Hallatrow, Somerset. — A freehold farm, comprising 61 a. 3 r. 24 p. | 3,750 |
| March 21.—By DAVID BURNETT & CO. | |
| Walworth.—4 and 6, Orb-st., u.t. 61 yrs., g.r. 16*l*., r. 83*l*. 12s. | 760 |
| Sydenham.—Wiverton-rd., a freehold building site | 710 |
| Mile End.—18 to 30 (even), ambridge-rd., The Letting of a Building Site, area 6,700 ft., for 90 yrs., at per annum | 170 |

| | |
|---|---|
| **By C. RAWLEY CROSS & Co.** | |
| Ealing.—46, Castlebar-rd., u.t. 52 yrs., g.r. 5*l*., r. 40*l*. | £400 |
| Notting Hill.—26 and 30, Tobin-rd.; 1 to 4, Joliffe's-yard; 1 and 2, Thomas'-mews, and a ground rent 7*l*., u.t. 29 yrs., g.r. 6*l*. | 530 |
| **By DUNCAN & KIMPTON.** | |
| Ealing.—Spring Bridge-rd., c.g.r. 26*l*., reversion in 40 yrs. | 2,105 |
| Norwood.—32, Hamlet-rd., u.t. 59 yrs., g.r. 6*l*. 10s., r. 50*l*. | 400 |
| **By GRANT, WHIELDON, & Co.** | |
| Lee.—Leylands-rd., i.g.r.'s 190*l*., u.t. 65 yrs., g.r. 8*l*. | 3,102 |
| Eltham-rd., i.g.r. 55*l*., u.t. 65 yrs., g.r. 5*l*. | 1,000 |
| Notting Hill.—51, Lansdowne-rd., u.t. 43 yrs., g.r. 12*l*. 5s., r. 80*l*. | 670 |
| **By DEBENHAM, TEWSON, & Co.** | |
| Piccadilly Circus, &c.—Piccadilly Mansions, u.t. 69 yrs., g.r. 1,520*l*., e.r. 4,033*l*. 11s. | 25,000 |
| Southwark.—163, 165, and 167, Borough High-st., area 6,640 ft., f. | 10,000 |
| Mermaid-court, two freehold warehouses, area 2,250 ft. | 3,050 |
| Kensington.—16, Young-st., f., r. 120*l*. | 3,250 |
| **By HEPPER & SONS (at Leeds).** | |
| Leeds.—East Parade, The East Parade Chapel Estate, area 1,853 yds., f. | 31,000 |
| **By W. ROLFE (at Masons' Hall Tavern).** | |
| Eastcheap.—Love-lane, "The Cock" p.-h., u.t. 69 yrs., r. 525*l*., with goodwill | 11,000 |
| **By WHETHERLY & HASLETT (at Masons' Hall Tavern).** | |
| Whitechapel-rd.—"The Nag's Head" p.-h., f., with goodwill | 21,510 |
| Southwark.—King's Head Inn Yard, "The King's Head" p.-h., u.t. 71 yrs., r. 150*l*., with goodwill | 5,670 |
| **March 22.—By G. PEARCE & SONS.** | |
| Islington.—24 and 26, Canonbury-rd., u.t. 19½ yrs., g.r. 13*l*., r. 85 | 465 |
| De Beauvoir Town.—148, Southgate-rd., u.t. 23½ yrs., g.r. 4*l*. | 545 |
| Barkingside, Essex.—Hainault-rd., a freehold building estate, area 3 a. 0 r. 3 p. | 375 |
| **By ROGERS, CHAPMAN, & THOMAS.** | |
| South Kensington.—15, Thurloe-pl., u.t. 29 yrs., g.r. 10*l*., r. 110*l*. | 950 |
| 3, Pelham-cres., u.t. 14 yrs., g.r., &c., 14*l*., e.r. 110*l*. | 525 |
| **By GEORGE BILLINGS.** | |
| Bow.—68, 69, 71, and 73, Lichfield-rd., u.t. 43 yrs., g.r. 15*l*., r. 128*l*. | 1,390 |
| 177, Turner's-rd., u.t. 62½ yrs., g.r. 4*l*., r. 39*l*. | 350 |
| **By H. DONALDSON & SON.** | |
| Haggerston.—1 to 11 (odd), Hay-st., area 2,900 ft., f. | 820 |
| Kingsland.—22, Laburnum-st., f., r. 40*l*. | 665 |
| Dalston.—147, 151, and 153, Queen's-rd., r. 112*l*.; also l.g.r. 8*l*., u.t. 20½ yrs., g.r. 24*l*. | 725 |
| **By DOUGLAS YOUNG & Co.** | |
| Old Kent-rd.—282 to 288 (even), East-st., f., r. 160*l*. | 2,000 |
| Clapham.—326, Clapham-rd., f., r. 65*l*. | 1,250 |
| 4 and 5, Cottage-grove, u.t. 46 yrs., g.r. 9*l*., r. 65*l*. | 475 |
| Somers Town.—26, Clarendon-st., u.t. 30½ yrs., g.r. 15*l*., r. 52*l*. | 180 |
| Marylebone.—12, Charlton-st., u.t. 15 yrs., g.r. 24*l*., r. 60*l*. | 355 |
| 5, Barrett-st., f., r. 70*l*. | 960 |
| Stoke Newington.—90, Lordship-rd., u.t. 47½ yrs., g.r., 10*l*. 10s., r., 50*l*. | 455 |
| Ealing Dean.—283, Uxbridge-rd., u.t. 76 yrs., g.r. 8*l*., r. 30*l*. | 320 |
| **By J. S. RICHARDSON (at Croydon).** | |
| Croydon.—22 and 24, Dryden-rd., u.t. 84 yrs., g.r. 9*l*. | 240 |
| **By C. & F. RUTLEY (at Croydon).** | |
| Whyteleafe, Surrey.—6 to 10, Bournecroft-cottages, u.t. 68 yrs., g.r. 9*l*. 7s. 6d. | 600 |
| Whyteleafe-rd., Kenilworth-cottages, f. | 570 |
| **By DICKINSON & RIGGALL (at Louth).** | |
| Louth, Lincs.—"The Wellington Hotel," area 1,950 yds., f. | 3,350 |
| **March 23.—By FAREBROTHER, ELLIS, & Co.** | |
| Bayswater.—Porchester-rd., &c., f.g.r.'s 100*l*., reversion in about 45 yrs. | 6,500 |
| Kildare Gardens, &c., f.g.r.'s 355*l*., reversion in about 52 yrs. | 18,500 |
| **By Messrs. CRONK.** | |
| Meopham, Kent.—Upper Gooses Farm, 22 a. 2 r. 26 p., f. | 850 |
| **By EDWIN EVANS.** | |
| Wandsworth-rd.—F.g.r.'s 33*l*., reversion in 89 yrs. | 850 |
| Battersea.—119, Salcott-rd., u.t. 82¾ yrs., g.r. 6*l*. 10s., r. 34*l*. | 315 |
| Chelsea.—30, Cremorne-rd., u.t. 87 yrs., g.r. 14*l*. | 920 |
| Clapton.—21 to 24, Blinco-rd., f., r. 104*l*. | 1,050 |
| Forest Gate.—331 to 341 (odd), Cann Hall-rd., u.t. 88 yrs., g.r. 27*l*. | 815 |
| 255, Ramsay-rd., u.t. 88 yrs., g.r. 5*l*., r. 26*l*. | 230 |

*Contractions used in these lists.*—F.g.r. for freehold ground-rent; l.g.r. for leasehold ground-rent; i.g.r. for improved ground-rent; g.r. for ground-rent; r. for rent; f. for freehold; c. for copyhold; l. for leasehold; e.r. for estimated rental; u.t. for unexpired term; p.a. for per annum; yrs. for years; st. for street; rd. for road; sq. for square; pl. for place; ter. for terrace; cres. for crescent; yd. for yard, &c.

## TO CORRESPONDENTS.

F. G. & Co. (appeared in our last issue).—J. W. B. (amount should have been stated).

NOTE.—The responsibility of signed articles, letters, and papers read at public meetings, rests, of course, with the authors.

*We cannot undertake to return rejected communications.*

Letters or communications (beyond mere news items) which have been duplicated for other journals are NOT DESIRED.

We are compelled to decline pointing out books and giving addresses.

Any commission to a contributor to write an article is given subject to the approval of the article, when written, by the Editor, who retains the right to reject it if unsatisfactory. The receipt by the author of a proof of an article in type does not necessarily imply its acceptance.

All communications regarding literary and artistic matters should be addressed to THE EDITOR; those relating to advertisements and other exclusively business matters should be addressed to THE PUBLISHER, and *not* to the Editor

## PRICES CURRENT OF MATERIALS.

### TIMBER.

| | | | | | | |
|---|---|---|---|---|---|---|
| Greenheart, B.G. ... ton | £8 | 0 | 0 | 0 | 0 | 0 |
| Teak, E.I. ... load | 10 | 10 | 0 | 15 | 10 | 0 |
| Sequoia, U.S., ft. cu. | 1 | 9 | 0 | 2 | 0 | 0 |
| Ash, Canada, load | 3 | 17 | 6 | 5 | 5 | 0 |
| Birch, do | 3 | 0 | 0 | 5 | 0 | 0 |
| Elm, do | 4 | 12 | 6 | 5 | 15 | 0 |
| Fir, Dantsic, &c. | 1 | 10 | 0 | 3 | 10 | 0 |
| Oak, do | 3 | 5 | 0 | 3 | 15 | 0 |
| Canada | 4 | 0 | 0 | 6 | 0 | 0 |
| Pine, Canada red | 0 | 0 | 0 | 0 | 0 | 0 |
| Do, yellow | 4 | 7 | 6 | 6 | 5 | 0 |
| Lath, Dantsic, fath. | 4 | 10 | 0 | 5 | 10 | 0 |
| St. Petersburg | 4 | 0 | 0 | 6 | 10 | 0 |
| Wainscot, Riga, &c., log | 3 | 15 | 0 | 6 | 5 | 0 |
| Odessa, crown | 3 | 15 | 0 | 6 | 5 | 0 |
| Deals, Finland, 2nd and 1st std. 100 | 9 | 15 | 0 | 10 | 5 | 0 |
| Do., 4th and 3rd | 9 | 15 | 0 | 10 | 5 | 0 |
| Do., Riga | 8 | 5 | 0 | 9 | 5 | 0 |
| St. Petersburg, 1st yellow | 11 | 15 | 0 | 14 | 5 | 0 |
| Do., 2nd yellow | 10 | 15 | 0 | 12 | 5 | 0 |
| Do., white | 9 | 15 | 0 | 11 | 15 | 0 |
| Swedish | 9 | 15 | 0 | 16 | 15 | 0 |
| White Sea | 10 | 15 | 0 | 18 | 0 | 0 |
| Canada Pine, 1st | 18 | 15 | 0 | 25 | 5 | 0 |
| Do., do., 2nd | 13 | 15 | 0 | 17 | 0 | 0 |
| Do., do., 3rd, &c. | 6 | 15 | 0 | 10 | 0 | 0 |
| Do. Spruce, 1st | 8 | 5 | 0 | 10 | 5 | 0 |
| Do., do., 3rd and 2nd | 7 | 0 | 0 | 8 | 5 | 0 |
| New Brunswick | 7 | 0 | 0 | 7 | 15 | 0 |
| Battens, all kinds | 5 | 0 | 0 | 16 | 0 | 0 |
| Flooring boards, sq., 1 in., prep., 1st | 0 | 9 | 0 | 0 | 15 | 3 |
| Do., 2nd | 0 | 7 | 0 | 0 | 12 | 3 |
| Other qualities | 0 | 5 | 3 | 0 | 6 | 6 |
| Cedar, Cuba, ft. | 0 | 0 | 4 | 0 | 0 | 4½ |
| Honduras, &c. | 0 | 0 | 4 | 0 | 0 | 4½ |
| Mahogany, Cuba | 0 | 0 | 5½ | 0 | 0 | 7½ |
| St. Domingo, cargo av. | 0 | 0 | 5 | 0 | 1 | 3 |
| Mexican do., do. | 0 | 0 | 3½ | 0 | 0 | 4 |
| Tabasco, do., do | 0 | 0 | 4 | 0 | 0 | 6½ |
| Honduras, do. | 0 | 0 | 4½ | 0 | 0 | 6 |
| Box, Turkey, ton | 6 | 0 | 0 | 15 | 0 | 0 |
| Satin, Porto Rico | 0 | 0 | 9 | 0 | 2 | 0 |
| Walnut, Italian | 0 | 0 | 3 | 0 | 0 | 7½ |

### METALS.

| | | | | | | |
|---|---|---|---|---|---|---|
| IRON—Pig, in Scotland ... ton | 2 | 14 | 8½ | 0 | 0 | 0 |
| Bar, Welsh, in London | 6 | 0 | 0 | 6 | 5 | 0 |
| Do. do. at works in Wales | 5 | 15 | 0 | 5 | 17 | 6 |
| Do. Staffordshire, in London | 6 | 5 | 0 | 7 | 10 | 0 |
| COPPER—British cake and ingot | 74 | 0 | 0 | 74 | 10 | 0 |
| Best selected | 74 | 10 | 0 | 75 | 0 | 0 |
| Sheets, strong | 78 | 0 | 0 | 80 | 0 | 0 |
| Chili bars | 69 | 7 | 6 | 0 | 0 | 0 |
| YELLOW METAL ... lb. | 6½d. | | | 7d. | | |
| LEAD—Pig | | | | | | |
| Spanish ... ton | 14 | 5 | 0 | 0 | 0 | 0 |
| English Com. Brands | 14 | 10 | 0 | 0 | 0 | 0 |
| Sheet, English, 6 lbs. per sq. ft. and upwards | 15 | 10 | 0 | 0 | 0 | 0 |
| Pipe | 16 | 0 | 0 | 0 | 0 | 0 |
| ZINC—English sheet ... ton | 30 | 0 | 0 | 0 | 0 | 0 |
| Vieille Montagne | 31 | 0 | 0 | 0 | 0 | 0 |
| Spelter | 27 | 12 | 6 | 27 | 15 | 0 |
| TIN—Straits | 108 | 5 | 0 | 0 | 0 | 0 |
| Australian | 108 | 17 | 6 | 109 | 7 | 6 |
| English Ingots | 112 | 0 | 0 | 113 | 0 | 0 |
| Banca | 0 | 0 | 0 | 0 | 0 | 0 |
| Billiton | 0 | 0 | 0 | 0 | 0 | 0 |

### OILS.

| | | | | | | |
|---|---|---|---|---|---|---|
| Linseed ... ton | 18 | 0 | 0 | 0 | 0 | 0 |
| Cocoanut, Cochin | 29 | 10 | 0 | 0 | 0 | 0 |
| Do. Ceylon | 25 | 15 | 0 | 0 | 0 | 0 |
| Palm, Lagos | 24 | 10 | 0 | 0 | 0 | 0 |
| Rapeseed, English, pale | 22 | 15 | 0 | 0 | 0 | 0 |
| Do. Brown | 21 | 5 | 0 | 0 | 0 | 0 |
| Cottonseed ref. | 16 | 10 | 0 | 17 | 0 | 0 |
| Oleine | 17 | 0 | 0 | 19 | 0 | 0 |
| Lubricating U.S. | 0 | 5 | 3 | 0 | 7 | 6 |
| Do. Black | 0 | 5 | 0 | 0 | 6 | 6 |
| TAR—Stockholm ... barrel | 1 | 6 | 6 | 0 | 0 | 0 |
| Archangel | 0 | 18 | 0 | 0 | 0 | 0 |
| Turpentine | 33 | 0 | 0 | 0 | 0 | 0 |

## TENDERS.

[Communications for insertion under this heading should be addressed to "The Editor," and must reach us *not later than* 10 *a.m. on Thursdays*. N.B.—We cannot publish Tenders unless authenticated by the name and address of the sender; and we cannot publish announcements of Tenders accepted unless the amount of the Tender is given, nor any list in which the lowest Tender is under £100, unless in some exceptional cases and for special reasons.]

* Denotes *accepted*. † Denotes *provisionally accepted*.

CARLISLE.—For additions to Tyneholme, Howard-place, for Mr. F. Robinson. Mr. C. J. Ferguson, architect, 50, English-street, Carlisle. Quantities by the architect:—

| | | |
|---|---|---|
| *Builder.*—T. Creighton, Carlisle* | £925 | 0 |
| *Carpenter and Joiner.*—J. Hodgson, Carlisle* | 372 | 0 |
| *Plumbers.*—Graham & Crawford, Carlisle* | 139 | 0 |
| *Plasterers.*—Ferguson & Son, Carlisle* | 149 | 10 |
| *Slater.*—J. B. Whitfield, Workington* | 53 | 0 |
| *Glazier and Painter.*—R. S. Kirk, Carlisle* | 104 | 7 |

LONDON.—For erecting incandescent lamp factory, Tulip-place, Bermondsey, for Messrs. Mackey, Mackey, & Co., Limited. Messrs. Freeman & Dolley, joint architects. Quantities by Mr. C. J. Ford:—

| | | | | | |
|---|---|---|---|---|---|
| Wilmot & Son | £2,387 | 0 | W. & H. Castle | £2,144 | 0 |
| John Groves | 2,386 | 0 | J. & H. Neale | 2,136 | 0 |
| Chessum & Son | 2,370 | 0 | J. Appleby | 2,030 | 0 |
| Akers & Co. | 2,294 | 0 | Batley, Son, & Holness | 2,027 | 0 |
| Barrett & Power | 2,221 | 0 | R. & E. Evans | 1,998 | 0 |
| Cowley & Drake | 2,170 | 0 | Stapleton & Sons | 1,997 | 0 |
| Almond & Sons | 2,156 | 0 | | | |

LONDON.—For fencing portion of site of new Southern Hospital, for the Metropolitan Asylums Board. Messrs. Treadwell & Martin, architects:—

| | | | |
|---|---|---|---|
| Frank Beadle | £2,690 | Taylor & Brooker | £2,550 |
| Longley & Sons | 2,580 | Stenning & Son | 2,534 |
| Turner & Son | 2,575 | J. & S. Agate | 2,515 |
| Rowland Bros. | 2,570 | Robert Batcheller | 2,512 |
| Mulford Bros. | 2,560 | Murray Marshall | 2,503 |
| Horton & Son (informal) | 2,552 | E. C. White, Basingstoke* | 2,494 |

[Architects' approximate estimate, £2,100.]

KENT COUNTY COUNCIL.—For repairs to main roads, 1899-1900. Mr. F. W. Ruck, County Surveyor, Maidstone:—

| | | | |
|---|---|---|---|
| WESTERN DIVISION.—Section 1: Dartford. 10 m. 0 f. 12 p. | | | |
| The Kent Road Co., Gravesend* | £2,487 | 8 | 4 |
| Section 2: Dartford. 14 m. 7 f. 0 p. | | | |
| The Kent Road Co., Gravesend* | 2,374 | 2 | 6 |
| Section 3: Bromley. 9 m. 1 f. 20 p. | | | |
| The Kent Road Co., Gravesend* | 2,291 | 0 | 0 |
| Section 4: Bromley. 10 m. 3 f. 0 p. | | | |
| Peill & Sons, Bromley* | 1,609 | 6 | 8 |
| Section 5: Wrotham. 10 m. 0 f. 0 p. | | | |
| Chittenden & Simmons, West Malling* | 911 | 16 | 8 |
| Section 6: Rochester. 5 m. 0 f. 20 p. | | | |
| H. T. Bensted, Teynham* | 575 | 10 | 0 |
| Section 7: Sevenoaks. 12 m. 3 f. 0 p. | | | |
| P. Bagwell, Sevenoaks Weald* | 1,139 | 4 | 0 |
| Section 8: Sevenoaks. 13 m. 1 f. 0 p. | | | |
| T. Wood & Sons, Swanley* | 1,191 | 16 | 8 |
| Section 9: Sevenoaks. 6 m. 1 f. 0 p. | | | |
| T. Playfoot, Edenbridge* | 863 | 10 | 0 |
| Section 10: Tonbridge. 12 m. 4 f. 16 p. | | | |
| The Kent Road Company, Gravesend* | 3,013 | 16 | 8 |
| Section 11: Tonbridge. 12 m. 6 f. 12 p. | | | |
| W. Arnold & Sons, East Peckham* | 1,998 | 5 | 5 |
| Section 12: Tonbridge. 18 m. 6 f. 16 p. | | | |
| W. Arnold & Sons, East Peckham* | 1,998 | 5 | 5 |
| Section 13: Malling. 4 m. 5 f. 20 p. | | | |
| Chittenden & Simmons, West Malling* | 339 | 13 | 4 |
| NORTHERN DIVISION.—Section 1: Hoo. 11 m. 3 f. | | | |
| Tuff & Miskin, Rochester* | 1,345 | 3 | 0 |
| Section 2: Rochester. 10 m. 6 f. 24 p. | | | |
| Tuff & Miskin, Rochester* | 1,760 | 10 | 0 |
| Section 3: Malling. 13 m. 6 f. 34 p. | | | |
| Chittenden & Simmons, West Malling* | 2,063 | 7 | 6 |
| Section 4: Malling. 14 m. 4 f. 19 p. | | | |
| Chittenden & Simmons, West Malling* | 1,847 | 9 | 2 |
| Section 5: Maidstone. 4 m. 5 f. 20 p. | | | |
| Ellis & Co., Ltd., Maidstone | 651 | 19 | 2 |
| Section 6: Hollingbourne. 9 m. 3 f. 0 p. | | | |
| Tuff & Miskin, Rochester | 746 | 2 | 6 |
| Section 7: Hollingbourne. 16 m. 2 f. 0 p. | | | |
| Tuff & Miskin, Rochester* | 861 | 6 | 8 |
| Section 8: Milton. 7 m. 6 f. 22 p. | | | |
| Tuff & Miskin, Rochester* | 1,010 | 16 | 8 |
| Section 9: Milton. 9 m. 5 f. 0 p. | | | |
| Milton, R. D. C.* | 376 | 6 | 3 |
| Section 10: Sheppey. 8 m. 6 f. 29 p. | | | |
| R. Lake, Willington* | 813 | 11 | 0 |
| Section 11: Faversham. 9 m. 5 f. 31 p. | | | |
| Tuff & Miskin, Rochester | 1,831 | 5 | 0 |
| Section 12: Faversham. 11 m. 6 f. | | | |
| Tuff & Miskin, Rochester* | 1,702 | 2 | 6 |
| Section 13: West Ashford. 9 m. 5 f. 4 p. | | | |
| Tuff & Miskin, Rochester* | 603 | 7 | 6 |
| Section 14: East Ashford. 13 m. 2 f. | | | |
| East Ashford R.D.C.* | 633 | 6 | 8 |
| SOUTHERN DIVISION.—Section 1: Maidstone. 14 m. 5 f. 14 p. | | | |
| Ellis & Co., Ltd., Maidstone* | £1,599 | 10 | 0 |
| Section 2: Maidstone. 5 m. 1 f. 5 p. | | | |
| Ellis & Co., Ltd., Maidstone* | 901 | 14 | 2 |
| Section 3: Maidstone. 10 m. 2 f. 20 p. | | | |
| Ellis & Co., Ltd., Maidstone* | 1,435 | 9 | 2 |
| Section 4: Hollingbourne. 18 m. 0 f. 20 p. | | | |
| Hollingbourne R.D.C.* | 1,459 | 5 | 0 |
| Section 5: Cranbrock. 15 m. 3 f. 20 p. | | | |
| Tuff & Miskin, Rochester* | 2,126 | 13 | 0 |
| Section 6: Cranbrook. 10 m. 4 f. 0 p. | | | |
| W. Lambert, Horsmonden* | 1,333 | 0 | 0 |
| Section 7: Cranbrook. 11 m. 6 f. 20 p. | | | |
| W. Lambert, Horsmonden* | 1,199 | 8 | 4 |
| Section 8: Tenterden. 9 m. 6 f. 27 p. | | | |
| Arnold & Sons, East Peckham* | 964 | 12 | 6 |
| Section 9: Tenterden. 9 m. 3 f. 27 p. | | | |
| Arnold & Sons, East Peckham* | 1,050 | 10 | 10 |
| Section 10: Tenterden. 7 m. 6 f. 32 p. | | | |
| Arnold & Sons, East Peckham* | 1,009 | 2 | 1 |
| Section 11: West Ashford. 17 m. 0 f. 9 p. | | | |
| West Ashford R.D.C.* | 1,323 | 7 | 6 |
| Section 12: East Ashford. 4 m. 2 f. 0 p. | | | |
| East Ashford R.D.C.* | 526 | 6 | 8 |
| Section 13: Romney Marsh. 7 m. 2 f. 2 p. | | | |
| Ellis & Co., Ltd., Maidstone* | 699 | 11 | 8 |
| Section 14: Romney Marsh. 8 m. 0 f. 0 p. | | | |
| Ellis & Co., Ltd., Maidstone* | 599 | 10 | 10 |
| Section 15: Romney Marsh Level. 3 m. 2 f. 0 p. | | | |
| The Lords, Romney Marsh Level | 480 | 0 | 0 |
| EASTERN DIVISION.—Section 1: East Ashford. 15 m. 5 f. | | | |
| Tuff & Miskin, Rochester* | £1,462 | 0 | 0 |
| Section 2: Blean. 6 m. 0 f. 15 p. | | | |
| Arnold & Sons, East Peckham* | 791 | 10 | 10 |
| Section 3: Blean. 11 m. 5 f. 20 p. | | | |
| The Kent Road Co., Gravesend* | 1,678 | 15 | 0 |
| Section 4: Thanet. 13 m. 7 f. 13 p. | | | |
| Tuff & Miskin, Rochester* | 1,896 | 0 | 0 |
| Section 5: Thanet. 7 m. 0 f. 37 p. | | | |
| Arnold & Sons, East Peckham* | 1,295 | 17 | 11 |
| Section 6: Bridge. 10 m. 3 f. 0 p. | | | |
| The Kent Road Co., Gravesend* | 1,378 | 5 | 0 |
| Section 7: Bridge. 15 m. 1 f. 36 p. | | | |
| The Kent Road Co., Gravesend* | 1,426 | 5 | 0 |
| Section 8: Elham. 13 m. 0 f. 20 p. | | | |
| Arnold & Sons, East Peckham* | 1,113 | 7 | 6 |
| Section 9: Elham. 13 m. 2 f. 23 p. | | | |
| Arnold & Sons, East Peckham* | 1,453 | 4 | 2 |
| Section 10: Elham. 6 m. 4 f. 17 p. | | | |
| Knight & Co., Ltd., Sittingbourne* | 338 | 4 | 2 |
| Section 11. Eastry. 8 m. 5 f. 0 p. | | | |
| The Kent Road Co., Gravesend* | 1,212 | 18 | 4 |
| Section 12: Eastry. 11 m. 7 f. 0 p. | | | |
| The Kent Road Co., Gravesend* | 1,690 | 0 | 0 |
| Section 13: Dover. 8 m. 4 f. 20 p. | | | |
| Arnold & Sons, East Peckham* | 974 | 0 | 10 |
| Section 14: Dover. 9 m. 5 f. 20 p. | | | |
| Arnold & Sons, East Peckham* | 1,710 | 12 | 6 |

Total mileage, 596 m. 0 f. 36 p. Total amount of accepted tenders, 72,369*l*. 12s. 7d. County Surveyor's estimate, 72,348*l*. 18s. 11d. The alternative tenders received for using Guernsey granite in lieu of Cherbourg quartzite would have entailed an extra expenditure of 3,206*l*. 2s. 3d.

[*See also next page.*

LONDON.—For the erection of generating station, &c., in the Town Mead-road, Fulham, for the Fulham Vestry. Mr. F. H. Medhurst, Consulting Engineer, Westminster-chambers, 13, Victoria-street, S.W. Quantities by Mr. Walter Herring, Trafalgar-buildings, Charing Cross, W.C. :—

| — | Generating Station. | | | Additional Foundations. | | | Disinfecting Station. | | | Additional Foundations | | | Transformer Chambers. | | | Total. | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | £ | s. | d. | £ | s. | d. | £ | s. | d. | £ | s. | d. | £ | s. | d. | £ | s. | d. |
| Thomas Bendon | 20,781 | 0 | 0 | 2,146 | 0 | 0 | 2,854 | 0 | 0 | 190 | 0 | 0 | 834 | 0 | 0 | 26,805 | 0 | 0 |
| Clift Ford | 19,237 | 0 | 0 | 2,065 | 0 | 0 | 2,488 | 9 | 0 | 159 | 0 | 0 | 741 | 0 | 0 | 24,690 | 0 | 0 |
| C. G. Hill | 18,580 | 0 | 0 | 2,609 | 0 | 0 | 2,359 | 0 | 0 | 215 | 0 | 0 | 752 | 0 | 0 | 24,515 | 0 | 0 |
| B. E. Nightingale | 18,440 | 0 | 0 | 2,423 | 0 | 0 | 2,473 | 0 | 0 | 224 | 0 | 0 | 795 | 0 | 0 | 24,355 | 0 | 0 |
| Spencer, Santo, & Co., Ltd. | 18,650 | 0 | 0 | 2,167 | 0 | 0 | 2.479 | 0 | 0 | 176 | 0 | 0 | 782 | 0 | 0 | 24,254 | 0 | 0 |
| F. G. Minter* | 17,449 | 0 | 0 | 2,232 | 0 | 0 | 2,312 | 0 | 0 | 183 | 0 | 0 | 794 | 0 | 0 | 22,970 | 0 | 0 |
| Wilkinson Bros. | 17,392 | 2 | 9 | 2,217 | 6 | 3 | 2,262 | 10 | 4 | 169 | 13 | 7 | 713 | 12 | 2 | 22,755 | 5 | 1 |

LONDON.—For building new premises, High-street, Clapham, S.W., for Messrs. T. F. & W. H. Barrett. Mr. Allan Stuart, architect, 61, West Smithfield, E.C. Quantities by Mr. G. T. G. Wright, 3, Great Winchester-street, E.C. :—

| | | | |
|---|---|---|---|
| Killby & Gayford | £9,143 | J. Carmichael | £8,387 |
| Woodward & Co. | 8,957 | Edwards & Medway | 7,800 |
| Holliday & Greenwood | 8,748 | George Parker | 7,359 |

Messrs. M. T. Shaw & Co.'s estimate for constructional ironwork, 720*l.*, is not included in the above.

LONDON.—For the erection of shops and flats, Coldharbour-lane, Brixton. Mr. E. C. Homer, architect :—

| | | | |
|---|---|---|---|
| Minter | £20,375 | Chessum & Sons | £18,990 |
| Grover & Sons | 20,364 | Nightingale | 18,953 |
| Goodson & Sons | 20,082 | Kirk & Randall | 18,840 |
| Patman & Fotheringham | 19,757 | Killby & Gayford | 18,836 |

LONDON.—For the erection of Leighton and Millais buildings—Millbank improvement scheme, for the London County Council :—

| | | | |
|---|---|---|---|
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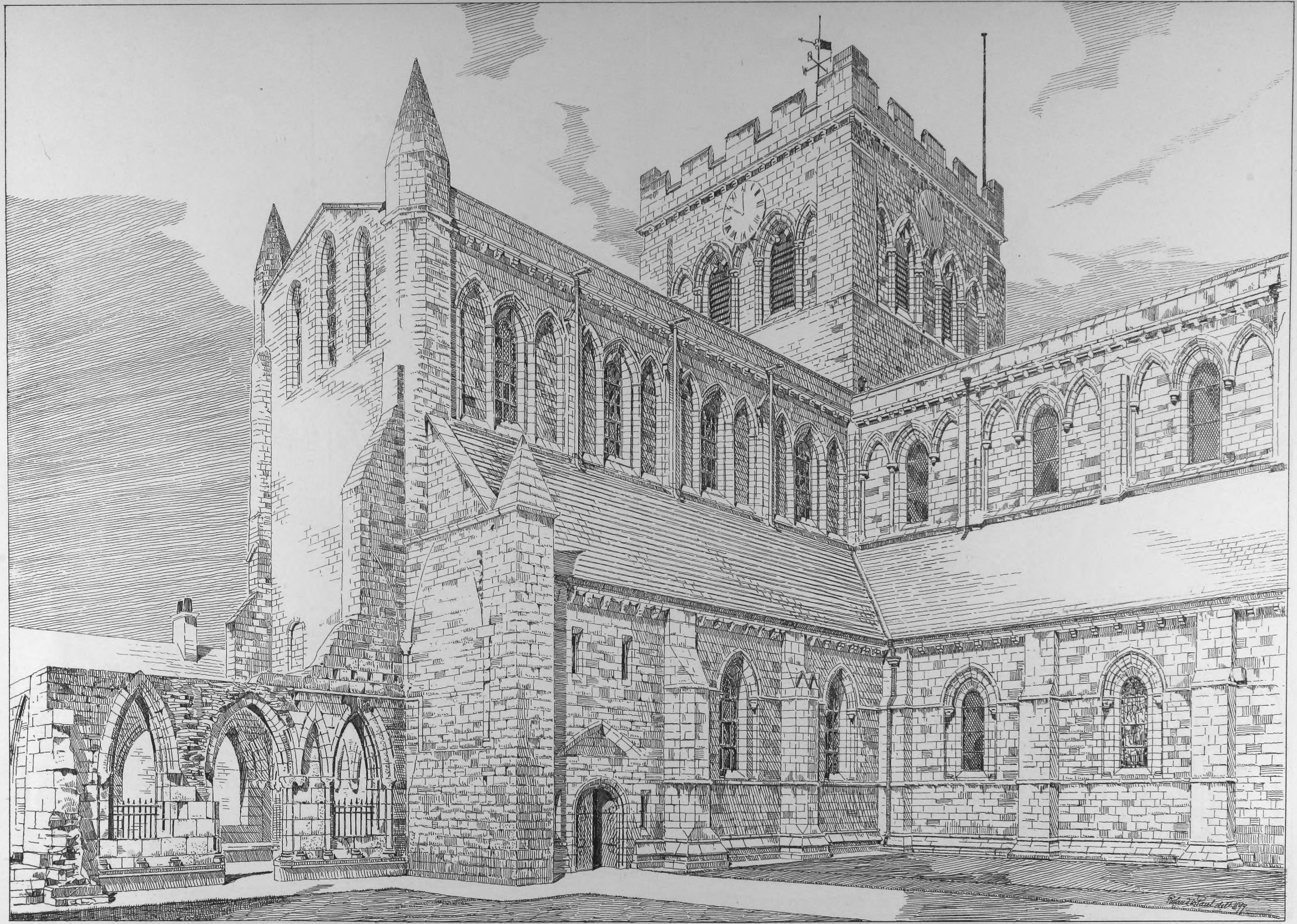

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Drawn by Mr. Roland W. Paul.

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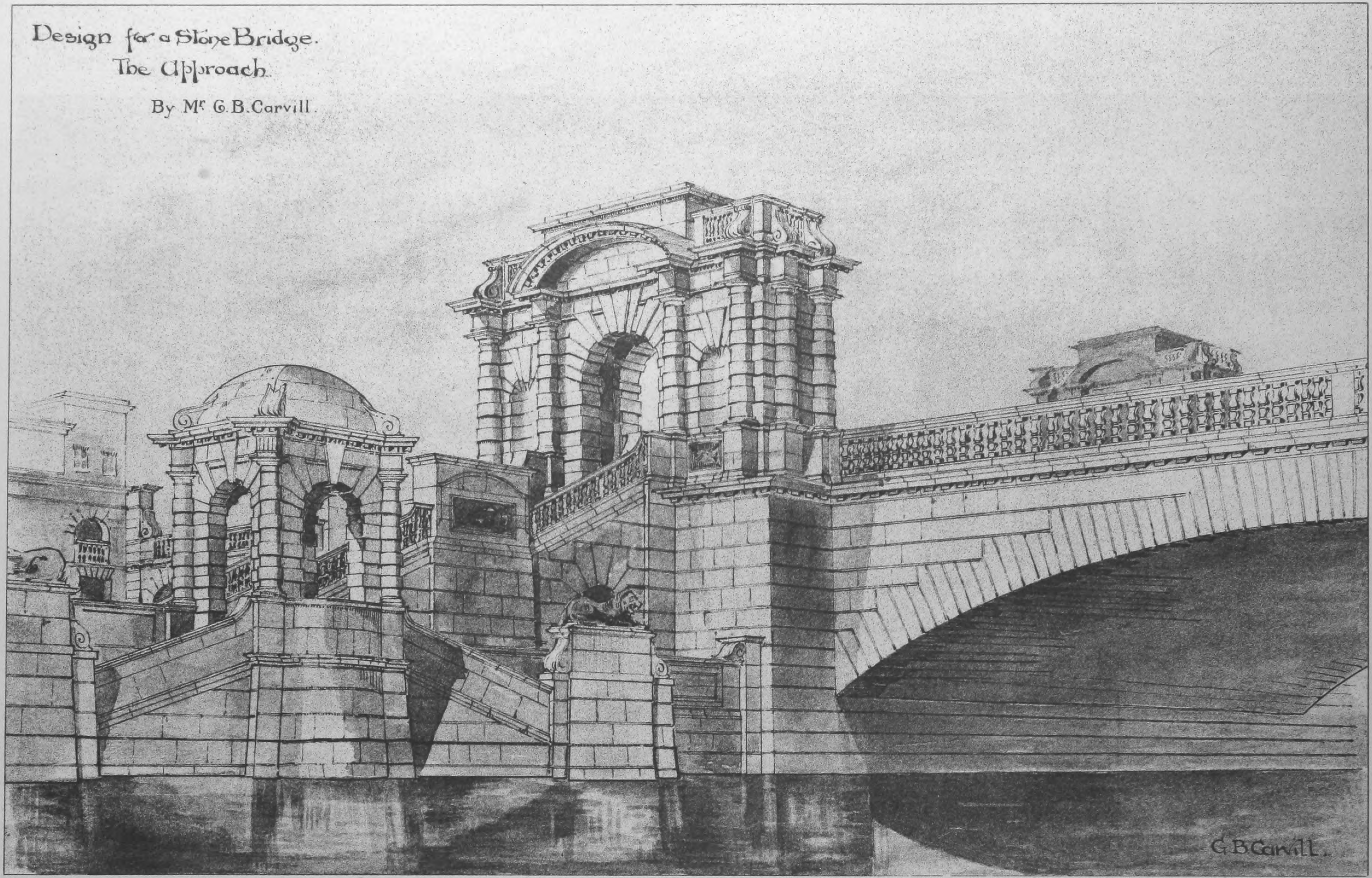
Design for a Stone Bridge.
The Approach.

By Mr G. B. Carvill.



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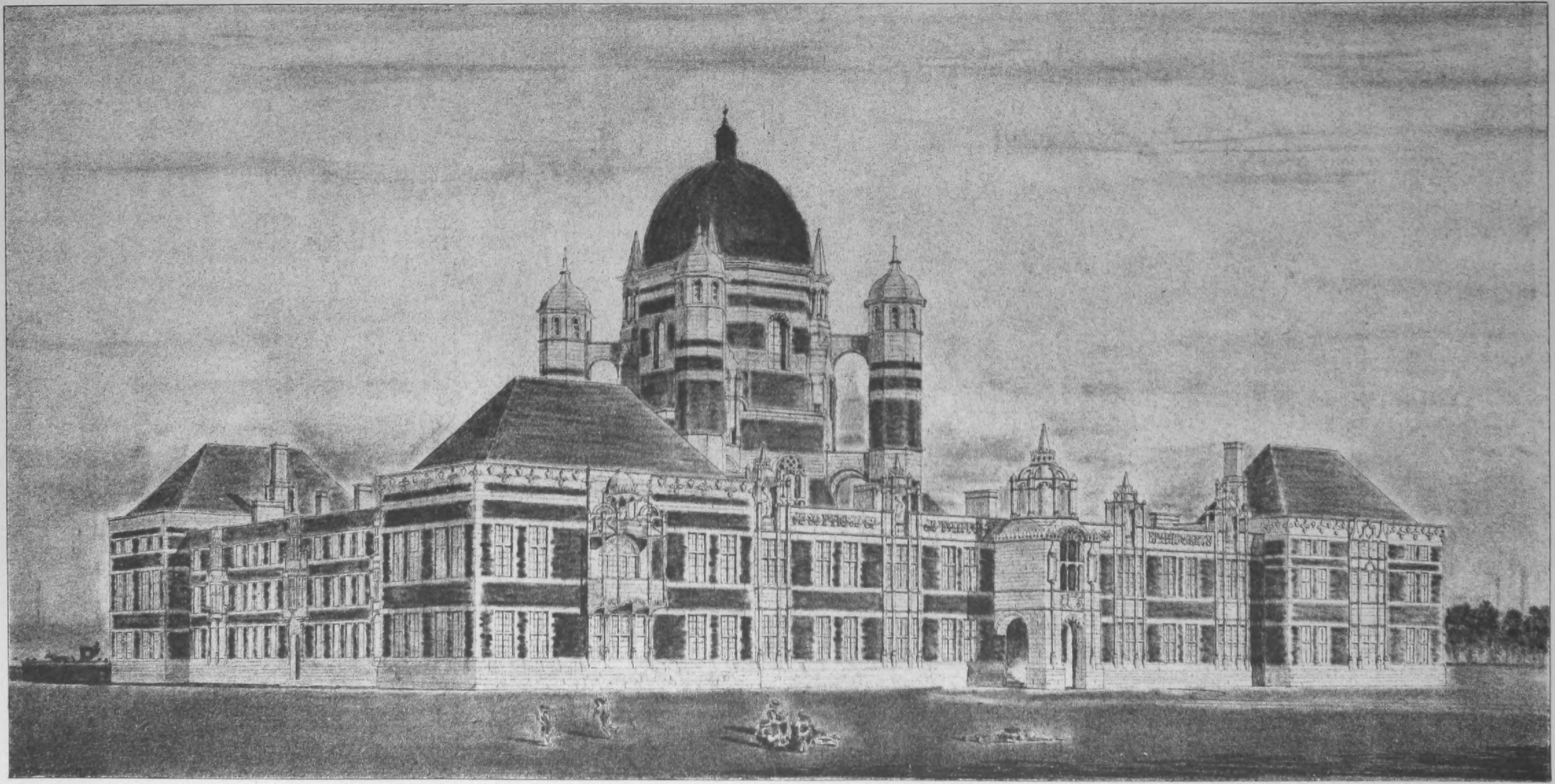

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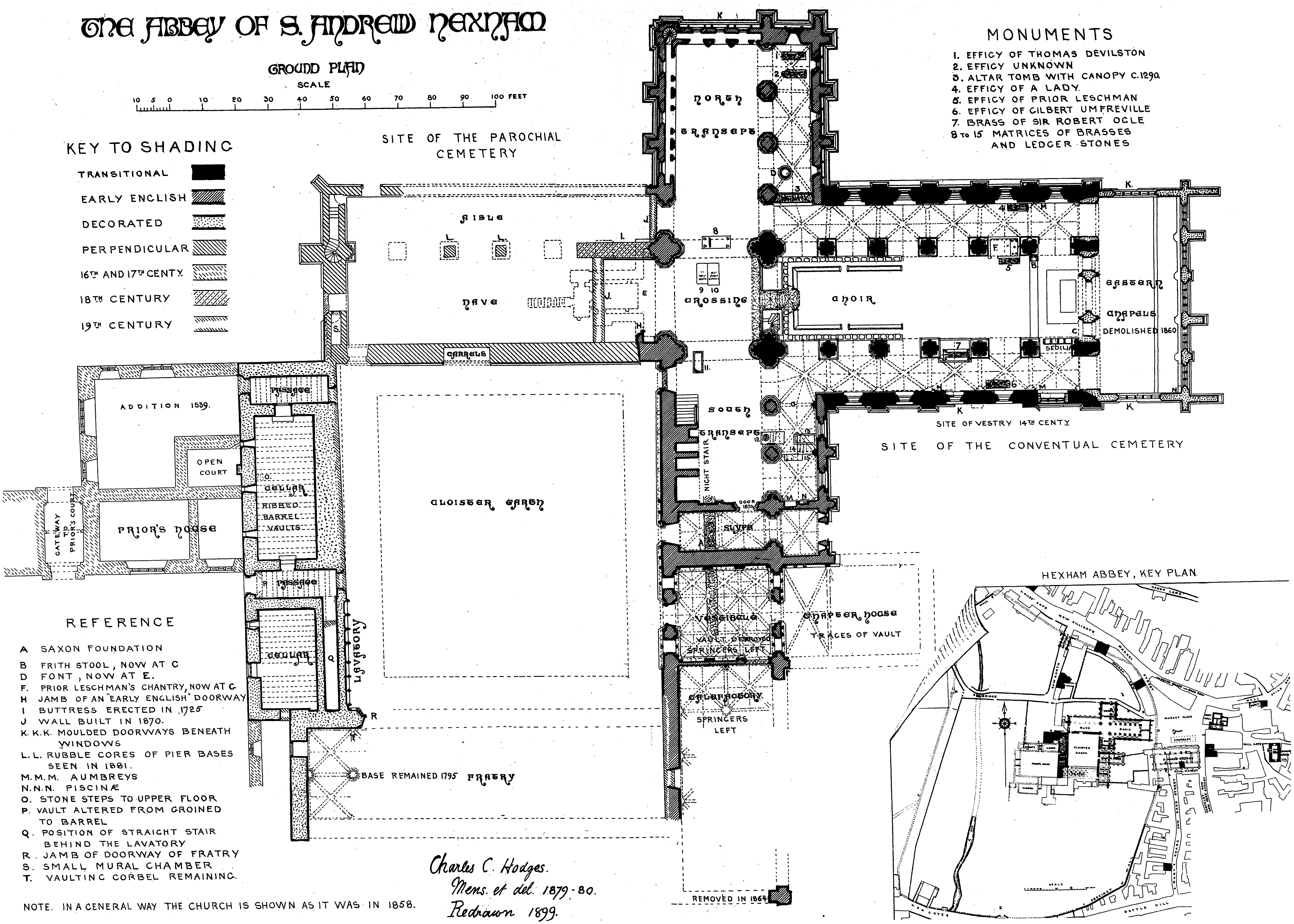


# THE ABBEY OF S. ANDREW HEXHAM

## GROUND PLAN

SCALE

## KEY TO SHADING

| | |
|---|---|
| TRANSITIONAL | ■ |
| EARLY ENGLISH | ▨ |
| DECORATED | ░ |
| PERPENDICULAR | ▨ |
| 16TH AND 17TH CENTY. | ░ |
| 18TH CENTURY | ▨ |
| 19TH CENTURY | ▤ |

## MONUMENTS

1. EFFIGY OF THOMAS DEVILSTON
2. EFFIGY UNKNOWN
3. ALTAR TOMB WITH CANOPY C. 1290.
4. EFFIGY OF A LADY.
5. EFFIGY OF PRIOR LESCHMAN
6. EFFIGY OF GILBERT UMFREVILLE
7. BRASS OF SIR ROBERT OGLE

8 TO 15 MATRICES OF BRASSES AND LEDGER STONES

## REFERENCE

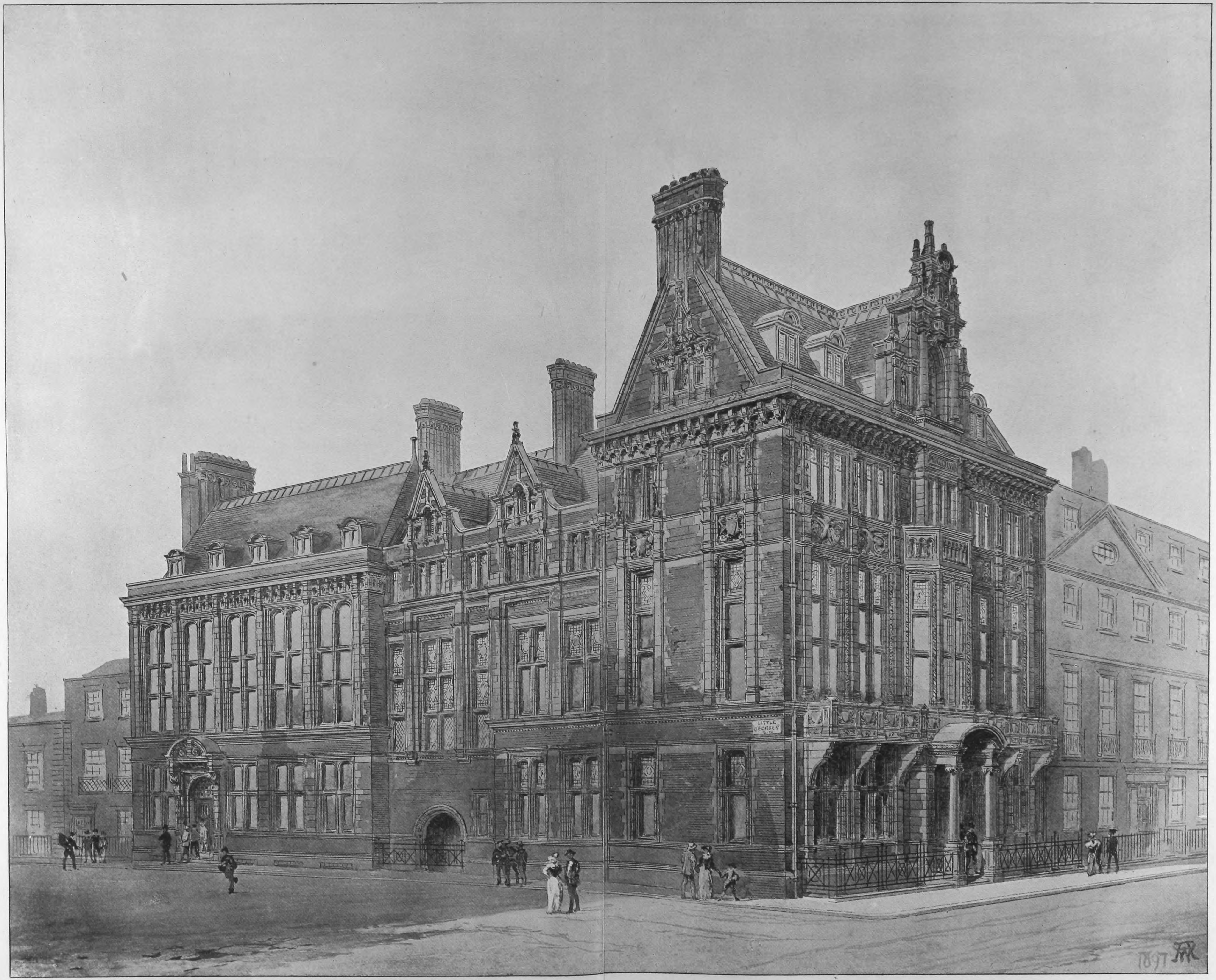
A SAXON FOUNDATION
B FRITH STOOL, NOW AT C
D FONT, NOW AT E.
F. PRIOR LESCHMAN'S CHANTRY, NOW AT C.
H JAMB OF AN "EARLY ENGLISH" DOORWAY
I BUTTRESS ERECTED IN 1725
J WALL BUILT IN 1870.
K. K. K. MOULDED DOORWAYS BENEATH WINDOWS
L. L. RUBBLE CORES OF PIER BASES SEEN IN 1881.
M. M. M. AUMBREYS
N. N. N. PISCINÆ
O. STONE STEPS TO UPPER FLOOR
P. VAULT ALTERED FROM GROINED TO BARREL
Q. POSITION OF STRAIGHT STAIR BEHIND THE LAVATORY
R. JAMB OF DOORWAY OF FRATRY
S. SMALL MURAL CHAMBER
T. VAULTING CORBEL REMAINING.

NOTE. IN A GENERAL WAY THE CHURCH IS SHOWN AS IT WAS IN 1858.

Charles C. Hodges.
Mens. et del. 1879-80.
Redrawn 1899.

HEXHAM ABBEY, KEY PLAN.

10 5 0 10 20 30 40 50 60 70 80 90 100 FEET
SITE OF THE PAROCHIAL CEMETERY
NORTH TRANSEPT
AISLE
NAVE
CROSSING
CHOIR
EASTERN CHAPELS
DEMOLISHED 1860
SEDILIA
CARRELS
SITE OF VESTRY 14TH CENTY.
SITE OF THE CONVENTUAL CEMETERY
SOUTH TRANSEPT
NIGHT STAIR
DOOR 1870
SLYPE
VESTIBULE
VAULT DESTROYED SPRINGERS LEFT
CHAPTER HOUSE
TRACES OF VAULT
CALEFACTORY
SPRINGERS LEFT
REMOVED IN 1864
CLOISTER GARTH
PASSAGE
CELLAR
RIBBED BARREL VAULTS
LAVATORY
BASE REMAINED 1795
FRATRY
ADDITION 1539.
OPEN COURT
PRIOR'S HOUSE
GATEWAY TO PRIOR'S COURT
HAUGH LANE
S. GILES' GATE
NOW GILLIGATE
MARKET STREET
CHURCH ROW
COW GARTH
WALL
MARKET PLACE
SHAMBLES
HALL GATE
MEAL MARKET
NOW BACK STREET
S. MARY'S CHARE
PRECINCT WALL
BATTLE HILL
HEN COTES
SCALE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# The Builder.

VOL. LXXVI. No. 2931.

APRIL 8, 1899.

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Design for Cemetery Chapels and Crematorium, Nottingham.—By Messrs. Charles A. Nicholson and H. C. Corlette ........ } *Double-Page Ink-Photo.*
Robinson Memorial Tower, New College, Oxford.—Mr. Basil Champneys, architect ........ }
House for a Site at Limpsfield, Surrey.—Mr. C. F. A. Voysey, architect ........ *Single-Page Ink-Photo.*
House at Thorpe Mandeville, Northants.—Mr. C. F. A. Voysey, architect ........ *Single-Page Ink-Photo.*
Designs for Wall Papers.—By Mr. C. F. A. Voysey ........ *Double-Page Ink-Photo.*

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## *Chemistry as an Aid in Building.*

WHEN the dark halo of mystery which surrounded the mediæval alchemists gradually dissolved under the influence of the flickering rays of a new light, and the weird and secret operations which our fathers performed in their vain search for the philosopher's stone and the elixir of life became superseded by less fantastic but more useful experiments to discover, by open and systematic research, the nature and properties of the most familiar forms of matter, then was laid the true foundation of that chemical science to which the present generation is so greatly indebted.

Since the expanding force of our teeming centres of civilisation is irresistible, and Nature's scenic beauty is being thrust ever farther and farther from our homes, architecture in its highest form must daily become of greater national importance as the most powerful reactive agent against the depressing and demoralising influence of "speculative-builder" architecture; a type of architecture which, in spite of its dreary monotony, is, unfortunately, extensively adopted in our great metropolis.

That base surroundings tend to create ignoble minds is a generally admitted fact, and it is evident, therefore, that the general beauty or repulsiveness of a town is a matter of vital importance to its whole community. In most British towns, the architectural standard of business and municipal premises has risen during the last quarter of a century in a very encouraging manner, but these same towns still harbour their poorest denizens in quarters which, in their appalling sordidness, are apt to quench the final sparks of human nobleness, whilst they nurture the more fortunate thousands in streets of buildings remarkable only for lack of originality in design.

A noble edifice is one of the most valuable legacies that man can leave to future generations, yet the grandest product of the designer's hand and brain may be rendered of but passing value through inattention to those practical details of construction with which chemistry is concerned. Had more attention been given to the chemical effect of the atmosphere of London upon the stone actually employed in building the Houses of Parliament, it is probable that only the most durable stone from the quarry would have been used; the strenuous efforts of expert men of science to devise or select a satisfactory process for preserving the imposing pile from premature decay would have been unnecessary, and the valuable Report of the Royal Commissioners on the selection of stone would have produced a more satisfactory result.

The "weathering" of stones is, however, but one of a great number of subjects connected with building with which chemistry is intimately associated. "Dry rot" and "wet rot" in timber, the corrosion of metals, the "setting" of cements, the drying of oil paints and varnishes, the discolouration of certain pigments, and the effects of air and water upon quicklime are all, more or less, the results of chemical reaction. Combustion, moreover, is essentially a chemical process, yet it is the main factor to be considered in designing heating and ventilating arrangements.

Artificial building materials, particularly those of a fireproof character, are becoming every year more extensively employed; the production of many of these is dependent upon comparatively recent chemical discoveries, and many owe their commercial success to a large extent to the extraordinary reduction in the price of chemical products which has taken place during the last twenty years. Fireproof coverings for walls and ceilings, and timber made fireproof by chemical treatment, are rapidly increasing in popular favour, while artificial stone has long been a valuable article of commerce. It is too early yet to attempt to ascribe their true permanent value to many of these materials, but the increasing rate of their production is an indication that chemical science is likely to be applied more extensively in the future for the manufacture of building materials than it has been in past years; and, as man's scientific knowledge becomes more advanced, it is possible that very radical changes may be made in the size, shape, and composition of the materials employed in the erection of buildings. Already we have witnessed the common adoption of iron for girders and other purposes, and although brick and stone are unsurpassed as building materials for permanent structures, there is a growing tendency in the construction of business premises and dwellings to sacrifice durability for lessened cost and increased speed of erection; and the diminishing power or will of the average builder's operative to perform satisfactory work is likely to result in an increased use of those artificial products which can rapidly be applied by the square yard by any unskilled lad.

One cannot but feel some regret that the world now moves so fast that the business premises of the father are incapable of being adapted to the requirements of the son; with the result that many strong and interesting buildings are rased to the ground to make way for others more suited to the business necessities of the age. Some three months ago it was announced in the *Builder* that the old Post Office—that massive building on the east side of St. Martin's-le-Grand—is to be pulled down to make way for a new building better suited for the present business of the Post Office. Yet this Classic edifice was built as recently as 1825-1829. If, however, we accept the inevitable, and recognise that the cities of the future will be largely composed of buildings of more soul-inspiring design and more imposing dimensions, but of less massive and durable construction than were the cities of the past, it becomes evident that materials made by the aid of chemistry and the kindred sciences will be in great demand during the next century. But while we foresee a general advance in the architectural standard of the average erection of the future, a question which must remain unanswered is: Will the noblest erections of the future advance beyond the best of those which have come down to us from the past?

In conclusion, mention must be made of one other subject with which chemistry is concerned, and which has not hitherto received sufficient attention from builders in general, viz., the adulteration of building materials. If samples were collected and examined of all the building materials on sale in London at the present time, some surprising results would be obtained. Linseed oil is largely adulterated with mineral and resin oils, fish oil, and cotton-seed oil. White lead frequently consists mainly of barium sulphate or of chalk, but sulphate of lime and sulphate of lead also enter occasionally into its composition, while a certain amount of clay has also been disposed of under this appellation.

Vast quantities of barium sulphate are also sold in the form of paint, but mostly under fancy names at fancy prices. Coloured pigments are notoriously the subject of gross adulteration, and "turps" and methylated spirit are not always above suspicion. A sample of cement or mortar taken from the works and subjected to analysis will oft result in strange revelations, while analyses of metal fittings are not always uninteresting.

But enough has been written to demonstrate that a knowledge of chemistry may be of considerable practical value to the builder and practising architect, and that the influence of chemical science upon building will probably increase appreciably in the immediate future. Chemistry must, of course, always hold a secondary place in the studies of the architectural student; but an elementary knowledge of its laws, and a little practical acquaintance with the common elements and their compounds, is undoubtedly desirable; and contractors would often be obliged to build with better-class materials if architects more frequently seized samples for chemical analysis.

## SOME AMERICAN ARCHITECTURAL DESIGNS.

THE illustrated catalogue of the last exhibition of the T-Square Club, held at Philadelphia early in the present year, forms a document of some interest as illustrative of the present tendencies of architectural design in the United States. In noticing a catalogue of a former year's exhibition we remarked on the very French style of a large proportion of the designs illustrated, even to the method of get-up of the drawings; and the secretary, in sending us the present catalogue, is good enough to say that the managers of the exhibition have taken account of our remarks and have endeavoured to render the present collection of illustrations more representative of modern American architecture. In fact, we observe that the catalogue is prefaced by an interesting correspondence on the subject, "An Unaffected School of Modern Architecture in America—Will it Come?" apparently the result of a circular letter inviting opinions. Among the correspondents are Mr. L. H. Sullivan and Mr. Burnham (of Chicago), Mr. Carrère, Mr. Ernest Flagg, and Mr. Russell Sturgis (of New York), Professor Ware, of Columbia University; and others. The latter writer is frankly pessimistic, and considers that "our entire architectural development, since the beginning of the century, has been wholly in the direction of artificiality and self-consciousness," and that all that architects can do in the present day is to recognise the fact of their self-conscious attitude, and endeavour to express the requirements of each problem through that particular architectural style of the past which fits them most accurately. Whether Professor Ware's "our" refers to America only, or to the human race at large, is not quite clear. Other correspondents think better of the position. Mr. Burnham is of opinion that there is at present a manifest struggle going on between two camps, the archæological and the national, and that "no one who appreciates American character at its true worth" can doubt for a moment which will win the day. Mr. Sturgis thinks that "the development of a national style is a thing to look back upon, not tc look forward to"—in other words, he means to say, we suppose, *nascitur, non fit*; but he thinks it an encouraging feature that so much thoughtful and careful study is given to architectural work at present, and that "composition is being recognised as paramount to detail." Mr. Carrère, on the other hand, in a long and admirably written letter, suggests that too much importance is at present attached to fashions in decorative detail; "it is somewhat as if the men interested in literature should advocate a reformed spelling, or a new vocabulary. But what makes a good literary style is the use made of the words;—not the form of the parts of speech, but the structure of the sentences, the balance of the paragraphs, and the whole movement of the composition." Architecture, he thinks, must work itself out at the hands of active practitioners, not of theorists; "and whatever the architectural language of the future may be, we may be sure that it will not be a 'Volapük.'"

This and others of the letters are very interesting, and nearly all of them contain some excellent observations. We may observe, however, that our own criticism as to the present attitude of American architects did not quite extend to the large question of the development of a modern architecture not bound by precedent. Our point was this: that, admitting that modern architecture is at present almost entirely based on past styles, there are different ways of treating these, and that there may be a national element in the treatment of architectural design, even when based on precedent. English and French architecture are both alike dependent at present on past styles, but a collection of English architectural designs is quite different in feeling, and even in manner of drawing, from a collection of French ones. But in the case of American architectural design there seems to be an absolute effort, among the younger men especially, to imitate the French manner of treatment so closely that one cannot, in fact, distinguish an American drawing from a French one; they seem both to have come out of the same mill. The imitation is even carried into adopting the bad habits of French draughtsmen, such as the inconvenient practice of merely writing on a drawing that it is to a scale of $\frac{1}{120}$, instead of drawing out a 10 ft.-to-an-inch scale on it; by which means the admirable geometrical drawings published, for instance, in the Boston *Architectural Review*, are deprived of half their value through the absence of a definite scale, merely because French drawings are so. If the American architects would leave the École des Beaux-Arts for Frenchmen, and study and develop classic materials their own way, they would achieve a certain national character in their treatment of the same materials, instead of their designs looking merely like French architecture transported across the Atlantic.

There is still a great deal of this École des Beaux-Arts element in the illustrations of the T-Square Club catalogue. "Treatment of a Focal Point in a congested quarter," by Mr. Albert Kelsey, is dated "Paris," and is apparently the work of an American student in process of being Gallicised. "A Terminal Railway Station," by Mr. A. E. Williams (University of Pennsylvania), is not apparently "made in Paris," but looks exactly as if it were, showing that the Parisian method has been carefully and conscientiously imitated in the Philadelphia school. So with "Competitive Design for New York Public Library," by Mr. J. H. Freedlander; "Design for a Ball Room," by Mr. Frank Eurish (Cornell University); design for the same by Mr. A. T. Farrell (Cornell); "Competitive Design for Bronx Park Botanical Building," by Mr. Ernest Flagg; and on page 62 we have two designs for the central feature of a railway station façade, one bearing the names of MM. Marcel & Blanc, of Paris, the other that of Mr. Donn Barber, of New York; yet so similar in design and even in method of execution that they almost seem to be drawn by the same hand. And that is not the way to promote American national characteristics in architectural design.

On the other hand, the proportionate number of these French cookery designs is somewhat less than it has been in some similar collections of American architectural designs, and there are a good many examples of work showing vigour and freedom, and a desire to escape from mere precedent. In Mr. Wilson Eyre's slight coloured sketch of "First Section of the Free Museum of Science and Art" the attempt is made by avoidance of conventional detail, and a mere effective grouping of buildings in which a large circular block forms the principal feature; this is somewhat bald, but there is a wholesome simplicity about it. The design for the Saturday Club House, by Mr. D. K. Boyd (Philadelphia), is an ingenious attempt to combine a classic quasi-temple architecture with windows and gables freely introduced. The Wainwright Tomb in Belle Fontaine Cemetery, St. Louis, by Mr. L. H. Sullivan, a square mass with a plain dome over it, and with highly-wrought detail in its wrought-iron and bronze doors (we take it that the outer guard-doors are wrought-iron and the inner ones bronze), is a piece of really original design of great merit. The "Milwaukee Publishing Library," by Messrs. Ferry & Clas (Milwaukee) is, with the exception of the cupola, a piece of old standard Classic which looks more English than either French or American. The elevation of the Pawtucket Free Public Library, by Messrs. Cram, Wentworth, & Furguson (Boston), though there is not an original detail in it, is an original design, and a very pleasing and refined specimen of neo-Greek.

There are a good many more or less free and picturesque sketches for small country houses; Mr. Wilson Eyre is evidently the chartered libertine of the collection in this sense, and his designs are rather consciously original and defiant of precedent; but he is obviously a man of parts, and his sketches for domestic stained glass are also good. The elevation of the Lutheran Publication House, by Messrs. Miles Day and G. C. Baum, may be commended as a solid street front with a good deal of character; and there are some useful sheets of geometric drawings with detail sections scored over them, such as the "Houses at Tioga," by Mr. Seeler; "New Blind Museum," by Messrs. Cope & Stewardson, &c. The interior detail drawing of an Ingle Nook, by Messrs. Kennedy, Hays, & Kelsey, of irregular stonework with thick joints, and the direction, "masonry to be built up stone for stone from this drawing," is a piece of affectation of the constructed picturesque—an acted rusticity which defeats its own end.

The catalogue is, however, full of interesting matter, as a kind of brief epitome of some of the features and tendencies of contemporary American architecture.

## NOTES.

**The Decoration of St. Paul's.**

AMONG the violent and exaggerated letters which have appeared recently in the daily papers, attacking Sir W. Richmond and his decorations at St. Paul's as if he were a person with no feelings and no position as an artist—some of them apparently written mainly with the object of advertising the writers—we are glad to single out that of Lord Windsor in Thursday's *Times*, which is a reasonable and thoughtful letter, and puts the case in a moderate and sensible manner. Lord Windsor simply asks for a pause in the work before going further, a consideration as to whether it is worth the price we are paying for it; and suggests that "the artist of to-day is wholly out of sympathy with the architect of the seventeenth century." If that is meant as a general statement we do not know that it is entirely true, for there is at present a good deal of sympathy among decorative artists with the architecture of the seventeenth century; if it is meant that the particular artist employed in this case is not in sympathy with Wren, we imagine it is true. Sir W. Richmond is, we think, making some serious mistakes in his recent work at St. Paul's, and we should like to see such mistakes avoided in the future, and as far as possible undone where they have already been made. But we are not on that account going to join in treating an eminent artist as if he were an ignoramus or an apprentice.

**Railway Architecture.**

ANY one who has gone along the line of the Great Central Railway from its terminus in Marylebone-road, through St. John's Wood, West Hampstead, &c., cannot but have been struck by the absolute ugliness of everything that has been done in the form of bridges, blow-holes, walls, fences, &c. We are struck by the contrast when we visit Germany, Austria, or even little Belgium, and find the care that has been taken everywhere to give the best appearance to engineering work. We may not admire Pomeranian brickwork as a style; we may not think majolica the best form of ornamentation; and we may not like to see ironwork treated in colour. But whatever the style may be, the new railway viaducts in Germany and Austria, whether they be in brickwork or iron, are becoming buildings of high constructional and artistic interest, showing what is intended in the construction in such a manner as to be agreeable to the eye. In Prussia station buildings will no doubt rank as the most typical architectural works of the last twenty years, probably even more so than the public offices which have been erected in some academic form of Italian Renaissance. The railings of a railway viaduct and the lamp posts on the bridges will figure as representative of the arts and crafts of the same period, whilst the constructional ironwork will show that a good and light engineering design may well embody that kind of beauty which is best expressed where the purpose of a construction is boldly shown. In London, on the contrary, everything that is associated with railway construction only speaks of that low standard of taste which pervades our utilitarian works.

**Fire Protection in Hotels.**

IT is one of the peculiarities of the Metropolis to boast of its infallibility the moment it hears of another city having been in distress. Instead of the New York Hotel fire having served as a warning to our hotel managers, they have hastened to impress upon the public, through interviews and otherwise, that the Windsor Hotel fire would be quite impossible with us. It is not our purpose to define which of our hotels are safe and which are dangerous, but it would, perhaps, be well to impress still more strongly on the London County Council that the average modern London hotel is not less dangerous, but more dangerous than the average modern hotel in New York, whilst the older buildings are no better. We have before observed that safety in hotels is primarily a question of plan, as far as life is concerned—a question of staircases, passages, lift-shafts, &c. This has already been recognised in several Continental cities, where the distance from any one room to the nearest staircase must not exceed 60 ft., where every block of fifty rooms must be divided by a party wall from the adjoining block, the corridors in each case being closed by substantial doors. Lift-shafts have to be surrounded by 9-in. brickwork; and fire-resisting doors, which close automatically, have to be provided at each floor level. Fire alarms, either automatic or otherwise, fire extinguishing apparatus, &c., have also to be provided; but by no means the same importance is attached to these as to the question of plan just mentioned. Such minor details as handrails on both sides of the staircases also call for consideration; and in one city it is considered necessary that every room, no matter where located, should have easy access to at least two staircases, one of which, however, may be a mere pass or service staircase. As far as construction is concerned, the fire resistance of the corridors and staircases is the point to which greatest importance is attached, whilst all staircases are often required to have windows to the open in order to facilitate ventilation.

**Pearson's Fire Alarm System.**

IN the *Thermostat* for March there is a description of the Pearson Fire Alarm System. In this system thermostats are fitted in all the rooms of a building, and whenever the temperature of any room rises above 120 deg. Fahrenheit a bell rings in the watchman's office and a Morse "tape machine" prints the number of the room in which the fire has started. The thermostats are usually fixed high up on the walls near a ventilator or window, so that the heated air may raise the temperature of the thermostats as early as possible on the outbreak of fire. Mr. Pearson seems to have been very successful in his arrangements for the prevention of the oxidisation of the mercury, so that there is no reason why his instrument should deteriorate with age The simple and effective method of testing the apparatus is also worthy of praise. The system can be usefully extended to whole districts. We understand that round Cripplegate many of the warehouses are connected with a station opposite the Fire Brigade Station. In the event of fire breaking out in any of the rooms connected with this station a bell rings, and the tape of the Morse machine prints a particular number. The attendant then opens a little metal drawer corresponding to this number and takes out a card with the address printed on it, which he sends across to the Fire Brigade Station. The address being known, the officer in charge knows exactly what hose, ladders, &c., he will require. The system seems to us a useful one, as it will sometimes give information of the outbreak of fires long before they would otherwise be discovered.

**Metallic Cores in Mortar and Concrete.**

THE results of an investigation by M. Considère to ascertain the value of metallic cores for strengthening mortar and concrete have recently been published in the "Comptes Rendus." It has been said that metallic cores can have very little strengthening effect upon the mortar, since the mortar cannot undergo an elongation of a tenth of a millimètre without breaking; but M. Considère has arrived at the conclusion that mortar armed with an iron core can undergo without rupture an elongation twenty times as great as would be possible without the aid of a core. Tests were made with various mortars and concretes, using prisms of square section 60 cm. long and 6 cm. in the side, in which were embedded rods or wires of iron. M. Considère is of opinion that injury to buildings by the settling of foundations, unequal expansions, and shocks is much less liable to occur when cores are used, and finds that wrought-iron and hard steel of the kind used for rails is capable of strengthening mortar and concrete to a much greater extent than is the iron usually employed for cores.

**The Alternate Current Arc.**

THE paper by Messrs. Duddell and Marchant describing "Experiments on Alternate Current Arcs," published in the *Journal* of the Institution of Electrical Engineers, is a very valuable contribution to our electrical knowledge. The problem which they have solved was to find out the effect of introducing an alternate current arc into an electrical circuit. In order to do this they solved the difficult problem of getting a simultaneous record of all the cycle of changes that take place in the current, the pressure across the carbons, and the pressure at the dynamo terminals in the hundredth part of a second. This was done by the help of instruments called "oscillographs," the mirrors on which respond instantaneously to the slightest change of pressure or current, and the rays of light reflected from the mirrors are all recorded on a rapidly moving photographic plate. They have obtained over a thousand photographs showing the instantaneous values of the cycles of the electrical quantities concerned in a great variety of important cases. The result is that, for testing purposes, we may now consider that the alternate current arc is a known quantity. They have shown that there is no mystery about its action. They prove conclusively that M. Blondel was right in saying that it does not act like a choking coil, as there is absolutely no time lag between the current and the pressure at the carbons. It merely acts as a variable resistance. It is extraordinary that the explanation of the phenomena should, after all, be in accordance with the most simple and common sense electrical principles. Some of the experiments recorded, especially those with carbons cored with foreign substances, have an important bearing on present electrical practice, and may lead to new developments. The paper, which occupies over a hundred pages of the *Journal*, is well and clearly written, and we consider that the authors have proved the twenty propositions with which they conclude. It will be discussed with Mrs. Ayrton's paper at the meeting of the Institution next week.

**Health Exhibition at Lincoln.**

THE announcement of a special Health Exhibition at Lincoln in August (3rd to 19th), in connexion with the Annual Provincial Meeting of the Sanitary Inspectors' Association to be held in that city, may not be of any special interest to our readers generally, many of whom know by experience that one Health Exhibition is pretty much like another, and that it is rather unusual to come upon anything that is at once new and useful. But in regard to the locality the announcement is of some interest. The Eastern Counties are probably among the most backward portions of England in regard to sanitary knowledge and practice, and indeed it is mentioned in the circular sent to us that this will be the first exhibition of the kind ever held within the county of Lincoln. From that point of view the event is of some importance, and the results may be very beneficial. The exhibition, of which Mr. Henry Chaplin is President, will be held in the Drill Hall and the Old Grey Friars buildings. It is proposed to limit the exhibits to "such as seem to be distinctly useful and interesting." The sections are to be under the following heads: —*(a)* Ventilation, lighting, heating, cleaning, and smoke prevention; *(b)* water supply, plumbing, &c.; *(c)* drainage, removal and disposal of sewage; *(d)* materials, construction and decoration of dwellings; *(e)* foods and cooking, dairies, mineral waters, clothing and laundry; *(f)* disinfectants, disinfection and bacteriology; *(g)* hospitals, nursing and ambulance; *(h)* gymnastics, school-fittings, &c.; and *(j)* fire-engines and escapes, machinery in motion.[*]

**St. Thomas the Apostle School Board.**

A CORRESPONDENT draws our attention to the terms of the advertisement of the St. Thomas School Board for competition designs for a school to be built at St. Thomas (near Exeter), which appeared in our last two issues. Our correspondent (an architect) writes :—

> "In the advertisement there is no date given by when the plans are to be in, nor is there any mention of the premiums, or if the architect whose plans are placed first is to carry out the work. No name is given of an assessor, nor is there any mention if the Board are going to employ one. One guinea is asked for the conditions. I was not going to present the Board with this amount without knowing the above, so I wrote sending my cheque and asking for the conditions on the understanding that if they were returned at once my cheque would be returned. The clerk returned my cheque and would not even give me the date when the plans had to be in by. How are we to know from the advertisement that the date fixed is possible to get the plans in by, or that the premium may not be 10s.?"

Our correspondent is perfectly right. Even in a case where more information is given the demand for the deposit of money for the conditions, as we have before pointed out, is unreasonable, as an architect can never known, before obtaining the conditions, whether they may not contain stipulations which would prevent him from competing. But to give a mere blank statement like this, that plans are invited, without stating even the general terms offered, and expect architects to put down a guinea to find them out, is perfectly absurd, and we hope no architects who respect themselves will apply for the conditions on those terms.

**Huntingdon Grammar School.**

THE Governors of this ancient foundation have resolved to celebrate the approaching tercentenary of Oliver Cromwell's birth by raising a fund for an enlargement of the school in which he had his education, before he proceeded, in 1616, to Sidney Sussex College, Cambridge. From an inquisition taken in 1570 it appears that St. John's Hospital, Huntingdon, was founded for the relief and maintenance of certain poor townsfolk and the support of a free grammar school. The hospital was established *temp.* Henry II., by David, Earl of Huntingdon (afterwards King of Scotland), who had married Maud, daughter and heir of Waldeof, Earl of Northumberland and Huntingdon (by his wife Judith, niece of William I.), and widow of Simon de St. Liz, Earl of Huntingdon and Northampton. In 26 Henry VIII. the hospital was valued at 9*l.* 4s. yearly (confer. Tanner's "Notitia Monastica"); in a return made in 1824 the net annual value of the charity is given as 520*l.* 2s. 6d., including 90*l.* for the school premises. The hospital buildings stood within All Saints' parish, and what is believed to have been the original chapel—opposite the east end of All Saints' church—has long served as the schoolhouse. The schoolmaster's house was rebuilt in 1561; about twenty-five years ago the schoolhouse was stripped of its shell, and restored by the late Dion Boucicault (in memory of his son) under Mr. Hutchinson's supervision. The roll of its more famous pupils includes the names of Professor Michael Foster, Samuel Pepys, and—in Dr. Beard's time—Oliver Cromwell. The last-named was born on April 25, 1599, in a house that had been built upon the site, and out of the materials, of the house of Augustine Friars founded, in St. John's parish, *temp.* Edward I. After the Suppression the Friary was granted to Thomas Ardern, and ultimately passing to the Cromwell family, became the property of Robert, father of the Protector. In May, 1631, just before removing to St. Ives, Oliver, with his widowed mother and his uncle, Sir Oliver, of Hinchingbrooke, sold the paternal estate in the town of Huntingdon for 1,800*l.*; the conveyance cites "all that capital messuage and tenements belonging to it called the Augustin Fryers." The house, built of stone, was pulled down shortly after the purchase of the property by James Rust in 1810. St. John's parish register contains the entry of Cromwell's baptism, the parish was united to that of All Saints in 1668, since which period All Saints' church, restored and re-roofed by the late Sir G. G. Scott, has served for the united parishes.

**Herr Fritz Thaulow's Pictures.**

A SMALL collection of the works of Herr Fritz Thaulow, the Norwegian painter, is on view at the Goupil Gallery. Herr Thaulow is a very clever mannerist with a broad style, his specialities being snow effects and water effects. In this exhibition there is one snow scene on a large scale, and remarkable for its realistic effect from the illusory point of view. From the artistic point of view we prefer such works as Dieppe Harbour and "A Side Canal, Venice;" in the latter the water is treated with great richness and transparency of effect. In "Village by Night" there is too much colour for real night effect; and there seems to be rather too strong a riot of red on the brick houses in "Washington Place," but it is at all events a bright effective work.

## AN ENGLISH MUNICIPAL ENGINEER'S VISIT TO AMERICA.[*]

To arrive at a clear conception of municipal life and problems in America is no easy matter for a visitor from this side of the Atlantic—especially one who has been in close professional contact with municipal work in his own country—until he grasps as a central idea the important part which politics play in municipal affairs in the United States. Here, indeed, is to be found the essential point of view, the starting point from which the civic life of the Great Republic must be judged. What has been the effect of the political factor in the municipal life of America? To describe it as the curse of municipal government is not using language too strong. A victory at the polls, the mere turning of the political wheel, may be the signal for the discharge of admirable public servants, endowed with the best qualifications of the ideal municipal officer and animated with a lofty conception of his duties and responsibilities. Such an official may conceivably have been in office just long enough to enable him to learn the needs of his district and the best means of meeting them and of remedying defects, when some sudden political change deprives him of office, perhaps to see his place filled by a man whose sole claim to the position is based on adherence to the successful political ticket. Nor is this all. An official, no matter how admirable he may have been in the discharge of his duties, how much initiative he may have shown, or how great the public improvements he may have effected during his tenure of office, may ultimately be rewarded only by opprobrium and abuse if he should happen to be associated with the unpopular political party. . . . Such a state of affairs is to us so strange as to be scarcely conceivable, and is only cited as a significant illustration of the divergence in municipal government here and there. Naturally the effects of the system are sometimes disastrous in the extreme. . . .

New York may appropriately and conveniently be taken as typical of all other American cities, except—if the seeming paradox may be allowed—in those respects in which it may differ from them. The first characteristic that strikes the stranger is the block system on which the city is built, and the ease with which it may be traversed when once the central idea of locating oneself has been mastered. As some one has epigrammatically said, "Living in New York is like being a unit in a big sum in addition."

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[*] The Hon. Secretaries for the exhibition are Mr. R. A. MacBrair, the City Engineer, and Mr. W. H. Curtin, the Sanitary Inspector; Corporation Offices, Lincoln.

[*] A paper read before a meeting of the Incorporated Association of Municipal and County Engineers, held in London on January 20, by Mr. Geo. Livingstone, C.E., Surveyor to the Vestry of St. George, Hanover-square. We have omitted a few of the less important paragraphs here and there.

Broadway runs straight through the city from north to south, dividing it into east and west. All the avenues run parallel to it, while the streets cross it from east to west, so many houses constituting a block. Bearing this in mind, it is easy to calculate where 56 E. 24th-street or 177 W. 102nd-street may lie. All the avenues up to Fifth-avenue lie west of Broadway, then run up to Ninth-avenue on the east side. The system of numbering the streets has at least the negative merit of relieving the municipal authorities from the onus of naming them. The author's remaining remarks may, for the sake of clearness, be conveniently grouped under the following heads :—Traffic, paving, cleansing, dust removal, water supply, baths and wash-houses, public libraries, buildings, &c.

*Traffic.*

As the writer has already indicated, his remarks will refer particularly to New York, but will apply to American cities generally, of which New York may be taken as the type. Of America more than any country in the world, it may truly be said that time is money, and it may be taken for granted that no one walks any distance in America if he can possibly help it. Indeed, the national dislike to waste time and energy in walking has resulted in a wonderful example of supply following demand, for in spite of the multitude of surface cars, elevated railroads, tramways and ferries, new means of locomotion are ever being devised.

In New York the system of elevated railroads, which carry cars drawn by steam locomotives, now consists of four main double-track lines and a few short branches, all converging together at the southern extremity of the island in a terminal station. Two lines run on the east of Broadway and two on the west. Trains run at intervals of two minutes during the day and at intervals of seven to fifteen minutes from sunset to sunrise. Stations marked "up town" and "down town" are situated every five blocks in the "down town" or business district, and at intervals of half a mile apart in the "up town" portions of the city. The fare on all lines and for all distances is 5 cents, which is equivalent to 2½d. of our money, or, taking into consideration the relative values of the two moneys, is equal to about 1d. The noise and rumble of these cars is deafening and interminable. As the conductor's "All aboard !" penetrates to the streets below, and one whizzes past second - floor windows, one gets a glimpse of business houses and domestic interiors, and wonders how such an unsightly structure as an elevated railway was ever permitted to go down some of the principal streets of New York. Overlooking the railway are not only stores, warehouses, and offices in which business in carried on, but dwelling-houses. It may be questioned, however, if any of the occupiers and dwellers are acutely conscious of the fact of an elevated railway so close to them, so much are we the creatures of use and habit. It is strange, too, how the noise of New York, which to the stranger is at first one indistinguishable clamour, gradually detaches itself, as the ear gets accustomed to it, into separate and well-defined sounds. Whatever advantages the elevated railroad may possess as a means of lightening transit and of cheap locomotion, these are more than counterbalanced by its disadvantages as a dirt distributor and noise producer. Cinders, ashes, dust, and water silt down on to the roadway below, and the state of Third, Sixth, and Ninth Avenues would strike a London surveyor with dismay. Neither on this line nor on any other in America, with the exception of long-distance trains on the main lines, are there any class distinctions in connexion with the carriages, nor is there, as with us, any limit to the number of passengers carried. During the busy hours people crowd into the cars and hang on by the leather straps overhead until the cars are filled to suffocation, and an early morning train is a somewhat painful illustration of the equality of the sexes and of the principle of "every man for himself and the devil take the hindmost." Seated men and swaying women are rather the rule than the exception.

The tramways, or "street cars" as they are called in America, seem to do as large a business as the elevated cars. As they run through nearly every street and avenue, the city has almost been converted into a network of lines. The system of interchange tickets enables passengers, at a great saving of time and money, to go the whole length of the city, from north to south or from east to west, as the case may be, on one ticket and for one fare. The electric tram-car system is by no means confined to New York, but is the almost universal means of locomotion in the cities and towns of the United States. With the exception of New York, where the underground conduit system is adopted, all the tramway cars are run on the overhead trolly system. In Washington, Buffalo, Baltimore, and Philadelphia, for example, the latter system still prevails. It strikes one as a monopoly of the roadway, and has many other disadvantages. The chief advantage in the eyes of the promotors is its economy. It has been found from experience, the author believes, that the overhead wire system has a very injurious effect upon gas and water pipes. It is usual for companies introducing tram-cars to pay something by way of a tax to the municipal authorities for the privilege ; the amount varies in different cities according to circumstances. In Baltimore the municipal revenue from this source is so considerable that the authorities are able to defray the expense of maintaining their great public park, probably the largest and finest of its kind in the world. These electric tramways are certainly a saving in street wear and tear, to say nothing of the saving in trouble and expense in connexion with street cleaning. It is to be hoped that the progress they have made in America will become contagious, and that our great cities will rise to the occasion and emulate the enterprise across the water. In England, as every one knows, we are very much behind, though this state of affairs was no doubt very largely due to the Locomotives Acts. There is no need to point out how immense an advantage the extension of electric tramways would be in England. The author does not suppose they are ever likely to be popular in the centre and West End of London, but in the suburbs of the metropolis and in provincial towns and cities there is great scope for them, and the sooner people wake up to the fact the better.

Cabs, as a means of locomotion, play a very small part in New York City. No person ever dreams of taking a cab, except under circumstances which render it absolutely necessary. For one thing, the price is prohibitive, as the cabmen plying for hire seem to charge just what they please and the shortest distance cannot be accomplished under a dollar. There are rules and regulations governing the charges, but for some reason or other they are not enforced by the authorities. There is little reason, however, for using cabs, especially as there is an admirable system of baggage delivery, which enables a new arrival to despatch his baggage directly to his destination and follow it by rail or street car at a small cost. A few more words may be said about the general transit arrangements of the city. The outlying islands are connected by an admirable system of tramways and ferries. There are fourteen to Brooklyn City alone, and seven to Jersey—not counting the magnificent bridge as a means of approach. The bridge proper carries two drives, a broad free footwalk, a double-track railroad, and an electric loopline. Seats are scattered along the promenade and on the balconies of the towers where one may rest and enjoy the splendid view.

Although perhaps it may not be hoped for in the immediate future, the time will no doubt come when we shall be able to travel about, if not in trams, at all events in motor-'busses propelled by steam, electricity, or other form of mechanical traction. In America they do not seem to have made very much headway in connexion with motor cars, and this is perhaps due to the fact that there is not the same necessity for them as there would be if they had not so admirable an equipment of electric cars. The author only saw, and that in New York, one or two motor cars. They were of the most unsightly pattern, and reminded him of nothing so much as miniature steam rollers without funnels. He has, however, had the pleasure in New England of riding in a motor car, which was an ordinary American buggy driven by steam. This car had travelled a good many thousand miles, and was rather the worse for wear. The gentleman who drove it was the owner of the machine. He was in no sense a mechanic, and was quite a novice at the work, yet the machine was perfectly under his control. It can be driven backwards or forwards, or turned to the right or the left at any speed with the greatest ease, simply by a turn of the wrist guiding the lever. Its principal features were the boiler, and the gear and other mechanism, which were the invention of a very clever American mechanic. The author believes patent rights have been taken out both in Europe and America for this boiler, which can be adapted to almost any form of vehicle. He was very much impressed by the machine, for though driven by steam it made very little noise. If the vehicle, when it is perfected, as the author understands it is about to be, will only perform half as much as the inventor claims for it, there should be a great future for it in this and other countries. Of course, we all know that steam is the cheapest form of motive power, and it is stated that a machine working on the principle of this boiler will not cost more than ¼d. per mile. The tank from which the boiler is supplied has a holding capacity sufficient to take the car a distance of 50 miles, and enough oil can be carried to enable a distance of 100 miles to be covered. A motor car of this description will, no doubt, be introduced into this country at an early date.

In concluding this section of his remarks, the author may sum up by saying that, leaving motor cars for the present out of the question, the United States are *facile princeps* in developing what over there would be called "street transportation." This pre-eminence is no doubt chiefly due to the unique temperament of the American. This peculiar temperament, as compared with that of other nationalities, was well illustrated by General Collis on one occasion when (in a paper dealing with municipal problems) speaking of formalities that sometimes necessitate a wait of fifteen minutes on Parisian omnibus routes, he said, "To the Frenchman this is not a serious matter, whereas an American would chafe under it and perhaps go crazy."

*Paving.*

In 1895 New York had the unenviable reputation of being the worst paved city in the world. As has been already indicated, the transformation effected is due to the foresight and energy of General Collis, who introduced asphalt paving and brought about a marvellous improvement at a comparatively small cost. By means of asphalt, Fifth Avenue has been transformed into a delightfully smooth and noiseless thoroughfare, and Park-avenue—useless for a quarter of a century as a means of vehicular traffic—has been converted into a useful and pleasant roadway. The author may here mention a few of the chief differences between the professional practice in regard to street management prevailing in America, and that which obtains in England. In this country, as his readers are aware, the municipality repairs the footways, but in New York owners of property have to do it themselves, the municipal authorities merely calling upon them to affect the needful repairs. This procedure often leads to delay and evasion, the footway, meanwhile, remaining unrepaired. The system is also tolerably general in other cities, with the exception of Washington, where the householder defrays one-half the cost of repair, and the municipality the other. In spite of what was done by General Collis to improve New York in connexion with paving, street lighting, and sanitary matters, much still remains to be done. His exertions were confined chiefly to the residential part of the city and to the outskirts. Wherever the new pavements were laid they are undoubtedly excellent ; but many of the busy thoroughfares are in a shocking condition. The author yet ventures to question if there is in any city or town of any rank in Europe, a thoroughfare of the size and importance of Broadway in so deplorably defective a condition. The condition of the roadway and sidewalks of this and adjoining streets is a danger to man and beast. That such a state of affairs is tolerated in so practical and so advanced a community can only be explained by the fact that everything is subordinated to politics, and the municipal officers, as a rule, are merely pawns on the political chess-board. In New York, Baltimore, and Philadelphia the author saw many important residential streets and business thoroughfares in which neither roadway nor footway had been repaired for years. The fact that many of the streets are composed of worn cobble stones may possibly explain to some extent the American distaste for walking. All the more recent paving work is put down under contract, and maintained free of expense for five years by the contractor. Subsequently they are maintained by the municipality usually in a slipshod way. For example, the author has seen streets in which openings had been made in connexion with gas or water mains, and had not been filled in for weeks, and even, in some cases, for months. Such cases, which would not be tolerated in London for forty-eight hours, are of common occurrence in American cities. Incidentally it may be mentioned that street refuges are unknown, and, naturally, crossing at the intersections of the busiest thoroughfares is no easy matter. Personally, the author found the policemen on duty at these crossings very civil and obliging, but he was told that this opinion is not shared by Americans themselves. In the suburbs of New York and other cities, when land changes hands for building purposes, the roads are at once laid out, paved and sewered by the city authorities at the expense of the abutting property owners. The object of this prompt action is to improve the property and prevent it from lying idle for any length of time, as the owner is rated for the land whether he builds upon it or not. It must be remembered, of course, that land in America is mostly freehold.

In regard to paving materials, the first thing noticed is the singular coincidence that, though wood paving was introduced into this country from America and has been so largely used here, not only in London but in provincial cities and towns, not a single yard of this form of pavement is now to be found in any cities the writer visited in the United States. The pavement of to-day and of the future in America is undoubtedly asphalt in one of two forms—either sheet asphalt, similar as regards surface to what we in this country know as asphalt, or asphalt blocks, both being composed for the most part of Trinidad asphalt. Trinidad Lake sheet asphalt calls for very little description. Asphalt block paving is composed of 90 per cent. of suitable pulverised stone and 10 per cent of steam refined Trinidad asphalt. The stone is heated to a high degree of temperature, and mixed with the requisite proportion of steam refined asphalt. The mixture in a heated state is subjected to immense pressure and melted into a homogeneous block. For street pavements the blocks are commonly laid 12 in. by 4 in. by 5 in., and weigh from 22 lb. to 24 lb., according to the specific gravity of the stone employed. It is claimed for both these forms of asphalt pavement that they offer the maximum amount of safe foothold for horses. No doubt smoothness of surface with safety of traffic are the features which chiefly commend them.

The City of Washington—the seat of Government and largely residential—possesses fine wide streets, and has the reputation of being the best-paved city in the United States. Here, as in most American cities, the paving consists of granite blocks, stone cobbles, sheet asphalt, and asphalt blocks. Wherever the two former are found, the streets are in a very bad condition. The footways are generally in keeping with the roadways, for they are composed of almost every conceivable kind of material—stone, concrete, brick, or asphalt—according to the fancy of the property owner, who is supposed to keep them in repair, except in case of complete renewal. In the latter case, the city shares the cost with the owner. Fortunately the great majority of the carriageways in Washington are paved with sheet asphalt and asphalt blocks. There are, in fact, about 300 miles of the former pavement and 200 of the latter. It is not the author's purpose to express an opinion as to the relative merits of these two forms of pavement, but he may mention that he was informed by Captain Beach, the Government Engineer officer of the city, that the asphalt blocks—many of which had been laid for ten or twelve years, and some even as long as fifteen years, and which were in excellent condition—had not cost one farthing to maintain, though laid on a foundation of gravel only. This pavement is now being extensively used in New York, Baltimore, Washington and many other cities. Samples of both the sheet and the block asphalt have been laid in London and Paris, and those who are interested in the matter can see lengths in King's-road, Chelsea, where Mr. T. W. E. Higgins, Surveyor to the Vestry, has laid a specimen of the former, and in Carlos-place, in the author's own parish, where he has laid 1,200 yards of the block asphalt paving. The author may add, however, that under no circumstances has he seen either of these pavements laid in any city in America under such conditions of traffic as those to which the busy London thoroughfares are subject. He can safely say that every surveyor and every Local Authority in this country would welcome any pavement that could be relied upon to be non-slippery, durable, and which had a smooth surface. At the same time it should be remembered that climatic conditions constitute important factors in connexion with the different forms of paving and their respective degrees of cleanliness. While speaking of Washington, it may be mentioned that there, as in New York, the electric tram-car is the chief means of locomotion, lines being laid even in the most fashionable thoroughfares. In another respect also, besides that of locomotion, American cities have a distinct advantage over our own. Generally speaking, they are better lighted—of course entirely by electricity. All things considered, the cost is rather less than with us. If the author has any adverse criticism to make in connexion with the method of lighting, it is that the clear globe in use in America is a mistake, as it tends to make the light of an unpleasantly glaring nature.

### *Street Cleaning.*

In connexion with street cleaning in New York, the first consideration to be remembered is that the tramways and elevated cars largely diminish the traffic, while the comparative absence of the horse obviously tends to keep the main thoroughfares much cleaner and sweeter than they would otherwise be. It is well known that the cleansing of the New York streets was vastly improved by the late Colonel Waring, who, as Commissioner of Street Cleaning, was a colleague of General Collis, under the administration of Mayor Strong. The cleansing is done chiefly at night by means of horse sweepers, as with ourselves. Such cleansing as is required during the daytime is done by a method somewhat similar to our own; the main streets being placed under the charge of beatsmen or district roadmen, whose duty it is to keep a certain area cleansed. All the New York sweepers wear a uniform which in summer is made of white linen, and white helmets resembling the familiar pith helmets. This outfit naturally gives them a somewhat military and certainly distinctive appearance. The method adopted during the daytime is to collect the sweepings in bags, which are deposited at the street corners and there left until the "dump" carts call to collect the contents and take them to the depôt. The author is disposed to the opinion that, generally speaking, in the better paved streets of New York, the cleansing is superior to that of the London streets, but it should be remembered that this is no doubt largely due to the small amount of horse traffic. The streets there are not turned into stable-yards as in London, where the street traffic is practically all done by means of horses. It is a peculiar fact that in Paris horses create much less nuisance than in London; but the author is not prepared to say whether this is due to habit (method of feeding), or climate, or to a combination of these causes.

The author was informed that in the case of a fall of snow, the plan adopted is simply to make a track down the centre of the street, piling up the snow on each side. At intervals along this track gaps are cut to admit of foot passengers crossing from one side of the street to another, but in the event of a heavy snowfall no attempt whatever is made to remove the snow. Thus it would appear that in New York they have not solved the problem of snow removal any more than we have.

The recent death of Colonel Waring, from yellow fever, after his return from Havana, whither he had been sent to report on sanitary conditions with a view to devising a scheme of improvements, will be regretted by all who have come in contact with him or were familiar with the work he had accomplished. In 1857 he was drainage engineer of Central Park, New York City, and afterwards, like so many of his countrymen, he turned soldier during the continuance of the Civil War. Subsequently he carried on a general consulting practice in connexion with the sanitation of dwellings and institutions, but his name first became prominent in connexion with city sanitation and sewerage when, in 1878, to quote the words of an American paper, "he designed and constructed at Memphis, Jersey, the well-known 'separate system' of sewerage which has since been inseparably associated with his name, and which he introduced into various other American cities." But without doubt his greatest reputation, at all events so far as regards the general public, was gained in connexion with the work to which I have already referred. Those who wish to peruse a full record of the revolution effected by Colonel Waring in purifying a corrupt department and in devising systematic and business-like methods for securing the cleansing of the hitherto vile streets of the American metropolis, will find it set forth without ostentation in his remarkable book on "Street Cleaning and the Disposal of a City's Wastes." His death is a distinct loss to his country, but it is some satisfaction to know that the system of street-cleaning which he established still remains in force in the department which he put on so efficient a basis. It might, however, be held with some reason that the results obtained were due not so much to the system as to the manner in which it was carried out. The system remains, but whether it will continue to be carried out by Colonel Waring's successors with the same efficiency and conscientiousness as by himself has yet to be seen.

It is worth noting that street watering is conspicuous by its absence. What little is done is in the older thoroughfares, which are generally the busiest, the dirtiest, and worst paved, granite and cobble-stones being still the materials used. In the better paved streets there is practically no necessity for watering, as they are mostly of asphalt. Other factors in the case are the climate and the elimination of the horse, and the reduction of street traffic consequent on the extension of electric tramways and the elevated railway.

### *Dust Removal.*

A few words may now be said on the vexed question of the disposal of house refuse. In New York each householder has to provide two movable receptacles, one to contain dust and ashes, and the other garbage. Every morning these are placed on the sidewalk in front of the house, and the effect can scarcely be said to enhance the beauty of the city's morning aspect. The authorities arrange for the removal of the contents under two contracts—one for the dust and the other for the garbage, the collections being made at the sweet will of the contractors. The contents, when collected by these conscientious gentlemen, are removed to depôts on the other side of the river, and the privilege of sorting them for the separation of such materials as are saleable is granted—chiefly to Italians. The residuum is then dumped in specially constructed barges and taken out to sea. Many of the residents in the better class neighbourhoods consider the system so objectionable that they make private contracts for the removal of dust and garbage rather than have the unsightly receptacles in front of their premises until it occurs to contractor number one to remove the dust, and contractor number two to remove the garbage.

In Washington the municipal authorities are in the unique position of not being responsible for the carrying out of this work. Each householder is obliged by law to get rid of his own dust and ashes, the authorities confining their efforts to the disposal of the garbage. How the work is accomplished the author has no knowledge, nor did he find any one to enlighten him on the point. When he ventured to express an opinion that the arrangement was open to grave objection, as dilatory people might neglect their obligations in regard to removal and so cause a nuisance to their neighbours, he was told that the medical officer of health was empowered to order the removal of the dust heap within a given time. In case of non-compliance the authorities would remove the dust and recover the expense from the defaulting occupiers. Whatever objection there may be to such a system from the point of view of advanced sanitation, there is no doubt that it is an ideally happy one in conducing to the peace of mind of the municipal officers, who are free from the possibility of complaints regarding the non-removal of dust. On the other hand, whether under such circumstances a conscientious medical officer can properly safeguard the health of the city is open to question. It can safely be said, therefore, that the dust problem is as far removed from solution among our go-ahead American cousins as it is among ourselves, and on the whole he is inclined to the opinion that our own methods for the collection, removal, and disposal of house refuse are, in spite of the worry they cause officials, superior to the methods in vogue on the other side of the Atlantic.

### *Water Supply—Baths and Wash-houses.*

The author does not think it is an exaggeration to say that the inhabitants of New York enjoy the finest water supply in the world. It is as free as air. A few details may be of interest to many readers. The main source of supply is the Croton River, and a group of lakes, some forty miles to the north. The water is conveyed by the Croton aqueduct, a conduit of brick and stone, completed in 1842, and able to deliver 96,000,000 gallons a day. An additional 16,000,000 gallons a day is derived from the Broux River. The Croton aqueduct crosses the Harlem River upon the viaduct known as High Bridge. In Central Park, four miles below High Bridge, is the retaining reservoir, capable of holding 1,030,000,000 gallons; and just below that is the receiving reservoir, which holds 150,000,000 gallons more. Besides these there are three "high service" reservoirs, one having a holding capacity of 11,000,000 gallons. The distributing mains have a total length of about 660 miles, and feed 8,420 fire hydrants, in addition to the private supply pipes. A new aqueduct for the provision of an increased supply has been in course of construction for several years past. The Croton watershed is also the source of the new supply, but new retaining reservoirs have been or will be built to store as much of the 400,000,000 gallons of water, now running to waste, as may be thought desirable. The new aqueduct is a tunnel 14 ft. in diameter and over thirty miles in length, carried through solid rock at an average depth of 500 ft. below the surface. It leads to the above-mentioned reservoir in Central Park. No addition will be necessary to the present system of distributing mains. When the system of storage reservoirs has been completed, the carrying capacity of the aqueduct will be 300,000,000 gallons daily. The Croton water is perfectly pure and wholesome, and New Yorkers show their appreciation of it in one way; for it is doubtful if the same amount of water per head is used in any other city in the world.

Public baths and wash-houses, as understood in England, are unknown in American cities, but the result of this practically unlimited water supply is that in every hotel and private house of any size there is a bath and water-closet attached to each bedroom. Whatever we in England may think of such an arrangement from a sanitary point of view, there can be no question as to its comfort. In passing, the author may express the opinion that in America they are ahead of us in all matters connected with plumbing, alike in regard to appearance, workmanship, and details. Hot, cold, or shower baths can be obtained at any of the large hairdressers' shops for twenty-five cents, inclusive of soap and towels. In New York there are cheap salt swimming-baths along each of the rivers, and along the East River front some free baths for the poor are maintained by the city. Many Russian, Turkish, and medicated baths are to be found, and some of the cheaper ones are kept open all night.

The difference between London and New York in regard to the provision of public baths suggests a few general reflections. While these establishments are no doubt very useful and meet a great want in England, the author is not quite sure that they always benefit the class for whom they are chiefly intended, namely, the artisan and working-class. His own view, and the one that he would like to see put into practice, is that every working-man's house should be provided with a bath, which, in his opinion, is from a sanitary point of view, almost as essential as a water-closet. When the London artisan reaches home in the evening, more or less tired, the nearest public bath is probably some considerable distance away, and in these circumstances there is very little inducement for him to take advantage of the facilities provided. In addition, the price is often prohibitive. In many cases the public baths are closed on the only day, namely Sunday, on which the artisan has sufficient time at his disposal to avail himself of the luxury of a bath. In the author's opinion, it is infinitely more desirable that the working-man should have the privilege of a bath for himself, his wife and his family in the privacy of his own home.

### *General Sanitation.*

New York, built as it is on a long narrow island, enjoys an unrivalled geographical position in regard to the disposal of sewage. There is a good system of drainage, and every householder has to pay a fee of $9 for making a connexion with the main sewer, in addition to the cost of laying the drain to the line of building. In Baltimore, on the other hand, a prosperous business city, with a population of 600,000 inhabitants, there is no sewerage system in any proper sense of the term. There are some cesspools, and the drainage has to find an outlet as it best can. Undoubtedly there is in many parts of America a fine field for sanitary engineers. It seems strange to the visitor when he finds that there are no public conveniences in America. Two were constructed in New York under the administration of General Collis, but they had not been opened at the time of the author's visit. On making inquiries he found that the absence of public conveniences is not so serious a disadvantage as it at first sight appears. Every man has free access to the rear of saloons and hairdressers' shops, and it is a general custom for well-dressed men to go into the big hotels and use them just as if they were residents. Ample accommodation is provided for women in all stores, hotels, &c. As no complaints are heard, the existing arrangements would seem to give satisfaction, but there is something free and easy about them that would not commend itself to our more conventional ideas.

### *Buildings and Elevators.*

The great height of the buildings in New York necessitates an almost universal use of lifts, but to such a pitch of excellence have they been brought that it is really of little consequence how high the buildings are. "Express" elevators are found in every public building, and in consequence it makes little difference whether a man carries on his business on the third floor or on the thirteenth. These elevators ascend and descend with a swiftness unknown in this country. Indeed, until one becomes accustomed to it the sensation produced is very similar to incipient sea-sickness. In New York there are many extremely handsome buildings, built of brick and of various kinds of stone found in the vicinity, marble being lavishly used as a medium of decoration. The bricks used for building purposes are extremely beautiful and varied in colour, a result which is attributed to the fact that they are burnt with wood instead of dust and ashes as in England. The regulations in regard to building operations in America are very different from those which prevail in England. Here, as we are all aware, the builder has to enclose the site with a close boarded fence or hoarding, and is also bound to provide a properly constructed and suitable temporary footway and handrail for the safety and convenience of the general public. But in New York and most of the other American cities the builder is allowed the whole of the footway and a third of the roadway for the purpose of his building operations, and he is by no means backward in availing himself of his privileges, for he will deposit his plant and materials without taking any protective measures in the interests of the community unless perhaps the placing of lights at night. Such a state of affairs can scarcely fail to be a source of danger in connexion with vehicular traffic. At all events it is certainly an unsightly method of working, and an exceedingly inconvenient one for the general public. Before leaving the subject of buildings the author may remind his readers that while the great height of the "sky scrapers" makes these erections very unsightly, they are the outcome of the needs of the community. New York being an island, its area is necessarily circumscribed, and hence arises the virtual impossibility of avoiding high buildings.

### *Libraries.*

Nearly every city in the United States has its public library, more or less magnificent. As a rule it is the gift of some wealthy, generous, and philanthropic citizen. New York—or indeed any other city in the United States with the exception of Boston and Cincinnati—has no public library in our sense of the phrase, that is to say, an institution maintained out of the rates. What is known as the New York Public Library consists of the Astor, Lenox, and Tilden foundations, under a board of trustees, but the quarters are inadequate pending the erection of a suitable building by the city authorities. There are, of course, libraries accessible to students, but as they either belong to private individuals or are in connexion with some institute, their use is limited by various restrictions. The Astor Library was founded by the will of John Jacob Astor, who died in 1848, leaving $400,000 for the purpose. His son, William B. Astor, added $550,000 to the endowment, and his son, John Jacob Astor, gave some $700,000 more. Among the best class of students and scientific men this is the most popular consulting library in the city. It is open from 9 a.m. to 6 p.m., and is used by some 75,000 readers annually.

The Cooper Institute has a library and reading-room, and is patronised by a somewhat different class of readers, as the library consists largely of books of an extremely practical nature. Its opening in the evening is a decided advantage to readers of the artisan class. The library possesses a complete set of the old and new Patent Reports, which are consulted annually by some 2,000 inquirers. Upwards of 460 newspapers are taken in, and in the evening the tables are thronged with men and boys.

Some mention, however imperfect, should be made of the magnificent Library of Congress in Washington. All that America could provide in the way of art and skilled craftsmanship was enlisted for the adornment of this superb building. The library grounds adjoin the Capitol, and cover an area of 10 acres, equivalent to three city blocks. The outer walls have a frontage upon four streets, and this, combined with the spacious courts and nearly 2,000 windows, makes the library one of the best lighted in the world. Apart from the wonderful sculptures and wall paintings, which are symbolical of the whole field of human knowledge and culture, the building is unquestionably the handsomest of its kind in the world.

### *Railway Travelling.*

A few notes on some points not included under any of the preceding heads will bring me to the end of this brief record of my impressions. Englishmen, when visiting the States for the first time, cannot fail to institute a comparison between railway travelling there and in England. Having heard so much from Americans, and read so much as to the superiority of the American system, and the magnificence of the cars, the author had perhaps formed rather exaggerated notions, but he must confess that his experience was somewhat disappointing. On the lines on which he had occasion to travel he did not find much superiority either in comfort or elegance to what we have at home. There are no distinctions of class, and the sleeping cars, frankly speaking, are detestable. On some lines it is possible to have a parlour car by paying an extra fee. The Pullman cars are in no way superior to those in England, if indeed they are so good. The trains, as a rule, are overrun by boys shrieking out the latest news or the respective merits of candy, matches, or chewing-gum, and the noise of these precocious pedlars and the incessant passing to and fro of the passengers add a fatiguing element to the irksomeness of the long journey necessary to visit most of the big cities in the States. A distinctive feature of American trains, and one with which we are unfamiliar in this country, is the cow-catcher attached to the front of the train for the purpose of removing obstacles from the line. To an Englishman there is a feeling of strangeness in seeing trains running through the streets of large towns. In Syracuse, for example, the "Empire" express dashes through one of the main streets. No protection whatever is afforded to the shops and footways on each side. There are no raised platforms, and a large bell is fixed to the engine. Certainly the arrangement seems a somewhat dangerous one, but there are apparently not many accidents. "I guess," said an American friend, "the kids and things have grown to know." Possibly this is the explanation.

### *Parks.*

The Americans are justly proud of their fine public parks, and they are, as a rule, charmingly laid out and well maintained. They are not directly under the supervision of the municipal authorities, but are maintained by a board of specially appointed commissioners, who are chosen by the mayor. The commission are also entrusted with the laying out and improvement of the streets and drives adjoining the annexed district. The park police, who are clothed in grey uniform and are on duty in all the parks and public squares, are under the control of the commission, and are quite distinct from the blue-coated city force. The latter, indeed, regard themselves as a somewhat superior order, and have bestowed on the despised park police the disdainful title of "sparrow chasers." The Central Park, New York City, contains a fine zoological collection, a meteorological observatory, and many beautiful driving tracks.

*Telephone Service.*

In the United States the telephone as a means of communication has been brought to great perfection. The telephone system in New York is probably the best in the world. There is no delay, the number is switched on at once, and one can make an appointment or ask a man to dinner within five minutes of application. This the author proved by personal experience. As the usual record is something like 30,000 calls a day, it has been found convenient to divide the city into numerous districts, each with a central office; but at frequent and convenient intervals one finds located in telegraph and messenger offices, hotels, drug stores, or ferries, branch offices known as "pay stations," in which the use of a telephone can be had for a small fee. A blue ticket is displayed to indicate the location of one of these stations. Some of them are known as "long distance" stations, in which communication can be had with places as distant as Chicago. Most of the private houses have a telephone connexion as well as "call buttons" for police, fire brigade, and for district messengers. Allowing for the difference in money values the charges in New York are more moderate than those prevailing in London. This fact, combined with the great convenience afforded, brings the use of the telephone within the reach of practically every householder. Excellent systems are found in other American cities, and the rates are even cheaper than in New York. In England not a few municipal authorities, including the London County Council, are anxious to add a telephone service to their already numerous responsibilities, while many people, with greater reason, advocate that the entire undertaking, like the telegraph and postal services, should be controlled by the State. If the present service, which is carried on under considerable difficulties, were organised with anything like the completeness of the American system, the agitation against it would probably not have assumed such serious dimensions.

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*Conclusion.*

For those who are interested in municipal matters there is plenty to observe and study in American cities, and a visit will repay the time, trouble, and money expended. If a perusal of this paper should induce any brother municipal engineers or other readers to take the trip, its preparation will be justified. The whole journey can be made in a month, and still allow of some sixteen or seventeen days being spent in the States. The trip is not a particularly expensive one, though the cost of living in America would seem to the author to be somewhat greater than here. From his own experience the author came to the conclusion that the dollar was about equal to our shilling in purchasing value. Any visitor who has the advantage, as the author had, of a general letter of introduction from the American Minister, which he obtained through the kindness of Colonel Sir Howard Vincent, C.B., M.P., will find himself provided with a passport sufficient to ensure the heartiest reception from every one, including public officials and others whom it is a pleasure to meet. Personally, the author received the greatest kindness and hospitality from all, and had the *entrée* to the best clubs in New York and Baltimore. The well-to-do American is a genial companion and a charming host, and one could wish to meet no more agreeable men than the gentlemen whom it was the author's privilege to know on the other side of the water.

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NEW THEATRE OF VARIETIES, HASTINGS.—The Empire Palace of Varieties, Hastings, has just been completed and opened. Messrs. Ernest Runtz & Co. were the architects, Mr. P. Jenkins was the contractor, and Messrs. Doulton & Co. supplied the terra-cotta. The site is that of the old Marine Hotel, with some of the adjoining property. The theatre has a frontage of 130 ft., and a depth of 70 ft. Accommodation is provided for an audience of 1,500, with promenade and lounge space for 500 more.

## NOTES IN BRUGES.

THE occasional visitor to Bruges notes from interval to interval a continued activity in building operations. At the present time they are chiefly devoted to restoration work; though, to tell the truth, the line of distinction between "restoration" and rebuilding is sometimes hard to find. Works of this class, however, were amply noticed some time back in these columns, and it need merely be mentioned in passing, as an evidence of good will and public spirit on the part of the authorities, that the town subsidises private undertakings of this kind, provided they are carried out on traditional lines.

A like regard for ancient precedent inspires, broadly speaking, the design of new erections, which have been, during late years, both many and important. Apart from some unfortunate ventures along the modernised ramparts (a modernisation which nothing can compensate for), and here and there within the town, these new works are consistently designed in old Flemish style. A great railway station, a large County Council house and post-office, a vast hospital, an extensive training college, with a number of lesser and private buildings, have been carried out in this spirit. In no city of the same size, probably, and in the same space of time, has so much been done in one uniform style. Such activity quite belies the popular notion of a city in decline.

Those, however, who are jealous of the architectural traditions of Bruges will note in this interesting Mediæval movement, and among much praiseworthy and excellent work, a certain excess of zeal, a fault of over-embellishment, a straining after effect, and a consequent restlessness. The plainer buildings are invariably the best. Moreover, in Gothic palaces traceried, crocketted, and pinnacled, one scarcely recognises the work-a-day purpose which most of them are meant to serve. Now if there is here a certain departure from propriety, there is also, we think, a wandering from local precedent. Let us instance, in witness, the great Mediæval hospital of St. John. Standing in the shadow of the likewise early and austere Church of Notre Dame, it is a model (however impaired) of breadth, of simplicity, and of repose. Enrichment is sparingly introduced, and is always carefully focussed. The whole pile bespeaks a practical purpose. Again, the vanished "Waterhalle" (like the railway station, a purely utilitarian building) is known to us by old views as a vast unbroken fabric of absolutely simple outline. And, after all, an impressive simplicity is perhaps the highest reach of art. Rich and sumptuous edifices undoubtedly there were of yore, and the bygone Brugians loved especially to crown their dwellings with light, fantastic turrets. But how artfully were these elegancies contrived to contrast with the massive bulk and relatively plain forms of the main building. We need only name the "House of Seven Turrets" and that of the "Orientals," as they existed in their completeness, to make good this point.

In the many Mediæval buildings still standing, in the ample pictorial records of those which have unhappily perished, and in the admirable Museum of Antiquities developed of late, the present-day architect and craftsman have to hand exceptional means for carrying on their remarkable revival with faithfulness and intelligence.

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## MAGAZINES AND REVIEWS.

THE *Art Journal* contains an illustrated article by Mr. Radford on the works of Mr. Elihu Vedder, the American artist of whom we hear a great deal at present, and some of whose designs are to be on view at Messrs. Dowdeswell's next week. Mr. Vedder is an artist who has apparently been a good deal influenced by Blake—as to spirit though not as to manner; there is a great deal of poetic and mystic suggestion in his designs; it is possible that their serious feeling has led to their being considered more remarkable than they would be on the mere ground of power of design. The number also contains an article on the Italian sculptor Francesco Jerace, whose "Beethoven" and "Germanicus" are far too melodramatic (after the tendency of modern Italian sculpture); his bust of Madame Vigée-Lebrun, and his chimney-piece at the Meuricoffre Salon at Naples are, however, very charming and delicate work.

The "Easter Annual" of the *Art Journal* is devoted to the work of William Morris, and is in itself a very interesting collection of decorative designs; the essay, written by Mr. Lewis F. Day, is, while thoroughly sympathetic, moderate in its tone, and recognises Morris's limitations.

The *Studio* (March 15) devotes an illustrated article to the works of M. La Touche, the French painter, who has no doubt made a style of his own, but whose importance is we think a little overrated by contemporary critics. As Dr. Johnson comprehensively said, "nothing odd will last long." A collection of his works will be on view in London next week, at the Fine Art Society's Galleries, so the article (perhaps intentionally) comes apropos. The illustrations of Mr. Baillie Scott's designs for the decoration and furniture of the Palace at Darmstadt are very interesting.

Among the articles in the *Engineering Magazine* we find "Electric Traction in Great Britain" and "The Merits and Permanence of the Masonry Arched Bridge," by Mr. Albert W. Buel, an article which gives welcome evidence of the beginning of a reaction in favour of solid-built bridges. As the author says, "no bridge of modern times surpasses the Pont du Gard in beauty and grandeur, and it is a safe prediction that it will remain a monument to its builders long after our great modern steel bridges have turned to dust."

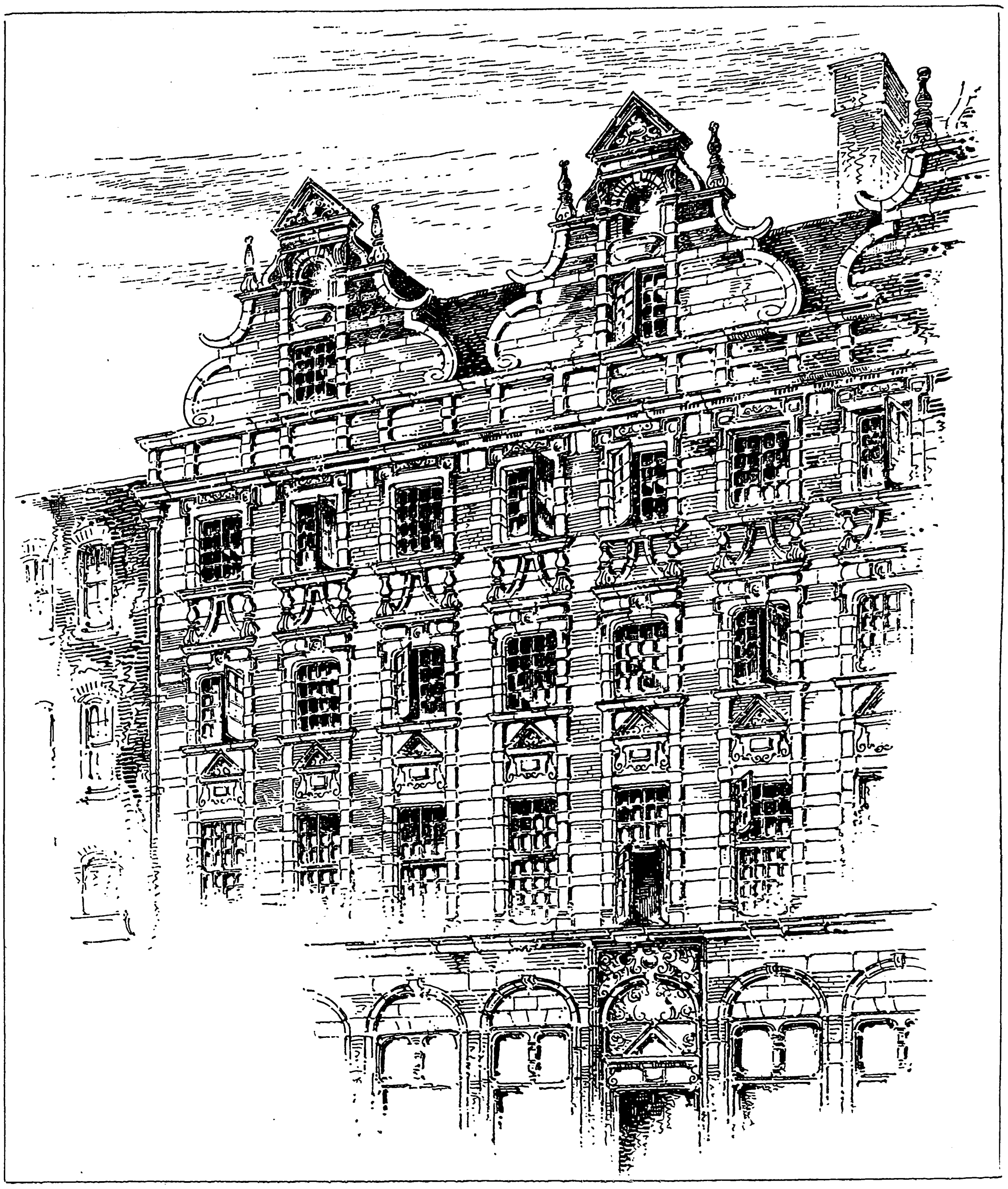
The *Technology Review*, of which the first number reaches us, is apparently a periodical started in connexion with the Massachusetts Institute of Technology. It contains an article on "The Function of the Laboratory," and one, with plans and photographic illustrations, of the new Pierce building in connexion with the Institute, which may be of interest to our readers. The remainder of the issue is occupied by news of special relation to the Institute and its members.

To the *Contemporary* Dr. Collins contributes a criticism on the London Government Bill, which is naturally written from the point of view of the London County Council, but we are inclined to think he is right in most of his criticism. His argument is either that the Act would give to the new Corporations the name and outward show of municipal dignity without its powers; or that powers worth exercising can only be given them at the cost of the breaking up and disuniting of authority in London. "The disintegration of the growing unity of London into a conglomerate of sham municipalities under the hegemony of Greater Westminster, though it may enliven and embellish local government in the Metropolis, can scarcely fail to raise the rates, while it will postpone indefinitely that unity, simplicity and equality of treatment which are the cardinal principles of the reformation of London."

In the *Fortnightly* Mr. Samuel Howe ("of New York") writes an attack on the decorative work going on at St. Paul's which contains some truth coupled with a great deal of exaggeration and an apparent determination to find fault with everything done by Sir W. Richmond, who, though we think he is making some serious mistakes, has a claim to be treated with more respect than this; nor do we know what are the claims of Mr. Howe of New York to sit in judgment upon him.

In the *Westminster Review* Mr. H. G. Reeve writes a very short article on a very large question—no less than "What is Art?" The article is really a criticism on Tolstoi, who has lately propounded the view that art has nothing to do with enjoyment; that its only business is to find out what is right and recommend it to mankind. That was Carlyle's view also. Mr. Reeve takes the saner view that the object of art is to please rather than to teach, and supports it by the example of Shakespeare—sufficient in itself.

In the *Century* is a short article of some interest on "American Discoveries at Corinth," by Mr. Richardson, the Director of the American School at Athens. The Director rejoices that the American School, starting with no knowledge of the locality of any object mentioned by Pausanias, have discovered in the past year the theatre, and in the second year the fountain of Pirene, of which illustrations are given. There can, we think, be no reasonable doubt of the reality of the find, and the American School may be congratulated. The number includes an article by M. Tissot, the painter, entitled "Round about Jerusalem," with sketches of typical heads; and one on "Abso-



*Sketches of London Street Architecture. XXXI.—Business Premises, Wigmore-street. Messrs. Ernest George & Peto, Architects.*

lute Zero (liquid air)" by Mr. W. Clark Peckham.

*Harper* contains the second instalment of Mr. Russell Sturgis's admirable essay on "The Equipment of the Modern City House." This article deals mainly with the accessories in a house—closets and cupboards, stairs, lifts, gas-pipes, and electric conduits. It ought to receive the attention of architects, as it not only throws light on the way things are done in the States, but contains a great deal of really useful and sensible suggestion on minor practical matters.

The *Pall Mall Magazine* contains an article on Kensington Palace, with some good illustrations of the interior, and one on "The Queen's Furniture at Windsor," showing some very fine examples of French and English Renaissance furniture, though the illustrations are not on a large enough scale to be of value to artists.

The *Genealogical Magazine* contains an article by Mr. J. Gale Pedrick on the seals of the Diocese of Bath and Wells, pointing out the interest attaching to the subject, from the fact that for ten centuries the employment of seals to authenticate their proceedings has been continuous among English Church dignitaries. There are, it appears, no less than ten seals, having different significations, in official use in connexion with this diocese, which are described. It is a pity we could not also have had illustrations of them.

In the *Antiquary* Miss (or Mrs.) Isabel Robson writes an article on embroidery under the heading "England's Oldest Handicrafts;" and Miss H. A. Heaton traces out the antique history and development of the myth of St. George and the Dragon, with some illustrations; the article leads us into a curious field of antiquarian research.

In *Knowledge*, Mr. Grenville A. J. Cole, Professor of Geology in the Royal College of Science for Ireland, is writing a series of articles on "Secrets of the Earth's Crust," the second of which appears this month.

The *Quarry* includes an article on "The New Sanitary Law in France as Applied to Contractors and Builders," which will be of some interest to those connected with building work in England.

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THE INSTITUTE OF BUILDERS (INCORPORATED).—Mr. Joseph Randall (of Messrs. Kirk & Randall, Woolwich) has been elected President of this Institute for the ensuing year.

HIBERNIAN BANK PREMISES, DUBLIN.—New premises intended for the North City branch of the Hibernian Bank are in course of erection in Dorset-street, Dublin. The premises are being erected by Mr. Kevin Toole, from plans prepared by Mr. W. H. Byrne, both of Dublin.

## LONDON STREET ARCHITECTURE.—
## No. XXXI

THE illustration represents Messrs. Daniell's business premises in Wigmore-street. It shows a flat front depending for effect on three gables and on the contrast of the materials employed, which are red brick and buff terra-cotta; the latter is used in bands and cornices and for the pediments and architraves of the windows. The roof is covered with red tiles. Messrs. Ernest George & Peto are the architects.

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## INSTITUTE OF BRITISH DECORATORS.

THE recently-incorporated Institute of British Decorators held their first annual general meeting at Painters' Hall, Little Trinity-lane, E.C., on the 23rd ult. Members from all parts of Great Britain and Ireland attended this meeting, the primary object of which was to formally elect the General Council, in which is vested the management of the business and affairs of the Institute.

Mr. J. D. Crace, of London, was duly elected President of the Institute; Messrs. Thomas Bonnar (Edinburgh), George G. Laidler (Newcastle), Alexander G. White (Liverpool), J. C. M. Vaughan (Hereford), Robert J. Bennett (Glasgow), and Henry Gibson (Dublin), were appointed Vice-Presidents of the Institute; and Messrs. William Allon (South Shields), William Brown (Dundee), Charles Carlton (Glasgow), James Clark (Edinburgh), M. Cowtan Cowtan (London), M. E. Dockrell (Dublin), Isaac H. Donaldson (London), David Laing (London), John McIntyre (Dublin), Thomas Preston (Burnley), John Ratcliffe (Bolton), John Scott (Glasgow), James Sibthorpe (Dublin), John Smith (Sheffield), William G. Sutherland (Manchester), John Taylor (Birmingham), and John Whyte (Aberdeen), were appointed members of the General Council.

Mr. I. Hunter Donaldson, the present Master of the Company of Painter-Stainers, in whose hall the Institute have their headquarters for the time being, at the opening of the proceedings addressed in the name of the Painters' Company a few words of welcome to the members of the Institute.

Mr. J. D. Crace, the President, then addressed the meeting as to the progress made by the Institute since the meeting of the Provisional Council in February last, and it was stated that 174 decorators had become members of the Institute, and that in addition upwards of sixty applications for membership had been received by the secretary and would be brought up for consideration and election at the meeting of the General Council, to be held at the close of the annual general meeting.

Several matters of interest were brought to the notice of the meeting by the President, including the question of the admission of women, if duly qualified, as members of the Institute; and it was the general opinion of the meeting that, if qualified, they ought to be admitted. A further question of sub-dividing the Institute into a larger number of districts than at present was also considered, but it was thought that further inquiry should be made, and reports were invited from the various local Associations.

The President then invited the members present to express their views as to the expediency of compelling applicants for admission as members of the Institute to submit to an examination before being admitted to membership, and pointed out that, in his opinion, to insist upon such a test would be to kill the Institute at the very start; for it was obvious that men who had been in business for many years and who were of established reputation would not submit themselves to examination as a condition of admittance to an Institute only in its infancy. The President further stated that all applications for admission to membership of the Institute would have to come before the General Council for election, and every applicant would have to be nominated by two existing Fellows of the Institute, and that every care would be taken both by the General Council and by the Fellows nominating that no unsuitable persons should be elected; and that, at any rate for the present, this should afford the Institute a sufficient protection against the admission of unsuitable members.

Several members present expressed themselves as of this view.

At a meeting of the General Council which was subsequently held new members were elected to the number of fifty-six, of whom forty-four were elected as Fellows and twelve as Associates. Several of the leading decorators in London have applied for admission to the Institute since the meeting was held.

## Books.

*English Cathedrals.* Illustrated. By FRANCIS BOND, M.A., F.G.S., Hon. A.R.I.B.A. London: George Newnes, Limited.

WE are sorry this book has been written. It is evidently intended to be a popular handbook; and its airy, conversational style and positiveness of assertion admirably fit it for such a purpose. But there was no necessity at the present time for the production of another popular book on the English Cathedrals, while the author's original theories and criticisms, interesting and suggestive as many of them are, must be subjected to a good deal of examination and discussion before they can properly find a place in such a work. Had Mr. Bond done himself and others justice by giving in greater detail his reasons for setting aside generally accepted opinions, his book might not have been a popular one, but it might have been a valuable contribution to an interesting study; he would at least have given us a chance of agreeing with him; and, in any case, of respecting his views. As it is, we can but hope, for the sake of those he so lightly undertakes to instruct, that they will examine his opinions more carefully than he himself appears to have done. Mr. Bond tells us, in his introduction, that in his chronology he has "relied rather on architectural than on documentary evidence," a system which, if we remember rightly, he defended lately at the Institute. But, as was then pointed out, the architectural evidence must rest primarily on the documentary, and, though the latter may often be open to suspicion, especially if it was not contemporary with the work it professes to describe, neither is the former a perfectly reliable guide, as is shown by the early Perpendicular work at Gloucester, in the case of which even Mr. Bond is obliged to accept the documentary evidence, though it flatly contradicts what, without it, would be taken as the conclusive evidence of the architecture. The book is well illustrated by small photographic views, but there are no plans of the buildings. The author is good enough to refer readers to the "valuable plans, on a large scale," published by the *Builder*, a recommendation for which we are duly grateful; but if it was worth while to publish the book at all, surely a series of ground plans was a *sine quâ non.*

*Beverley Minster: An Illustrated Account of its History and Fabric.* By CHARLES HIATT. London: George Bell & Sons.

ALTHOUGH Beverley Minster does not rank as a cathedral, Messrs. Bell's series could not have been considered complete without a volume devoted to this building. It must be classed with the cathedrals architecturally, and from an architectural standpoint is, indeed, far more worthy of the title than some of the "glorified parish churches" which have been raised to that rank in this century. Excepting the colour of the binding, which is a pleasant blue instead of a rather crude green, this book is in every respect uniform with the volumes on the cathedrals, and is written by the author of that on Chester, who, justifiably, displays a good deal more enthusiasm for his present subject than for the former one. Possibly some of his eulogies may seem to those of cooler judgment a little overdone; but in presence of the structure admiration is apt to assert itself above criticism. The unity of design, the fine sense of loftiness, the masculine vigour of the choir, and the grace of the flowing tracery in the nave windows and of the late west towers, are all exceptional, if not unique, and rarely fail to appeal even to those who are least sensitive to beauty of form. Professor Freeman has severely criticised the form of the vaulting, the transverse ribs of which are of compound curvature, and the west gable, which he calls a sham. But the authority of these criticisms is tainted by the fact that he wrote them at a time when all three and four centred arches were condemned as a matter of course, and every deviation in design from what was held to be—sometimes on very insufficient grounds—the logical treatment of construction was called a sham. The curious makeshift design of the piers of the eastern transept are an admitted blot on the architecture of the minster; and they and the masonry above the western arch of that transept at one time led to some controversy. But Mr. Bilson has satisfactorily shown that the masonry in question is the commencement of a lantern over the crossing, abandoned after it had been commenced. One wonders how it could ever have been supposed that the four massive piers were designed with any other object than the support of a lantern. Mr. Bilson finds a simple and reasonable explanation of their peculiar form in supposing them to have been originally designed symmetrically, but altered in execution to give greater width to the high transept arches, and to avoid encroaching on the floor space of the sanctuary. The only difficulty this leaves is in the fact that the piers return to their normal section a few feet from the summit. Is it not more likely that the piers were actually built as designed, and that it was only after some of the arches had been turned, and the lantern commenced, that the narrow proportions of the openings to the transept and the encroachment on the sanctuary were recognised as a mistake, that the piers were then pared down and altered, and, as a consequence of this reduction of their strength, the lantern was abandoned? This volume is better illustrated, so far as the number, scale, and choice of the illustrations goes, than most of those of the cathedral series, and particularly than the earlier volumes. But the plan is a very poor one, and the views are rather indistinct.

*The Cornish See and Cathedral. Historical and Architectural Notes.* Published by the authority of the Dean and Chapter of Truro. Truro: Heard & Sons; London: Hamilton, Adams, & Co.

THIS book cannot be said to have the interest for architects that its title might lead one to expect, and that a writer competent to describe and criticise our only nineteenth-century cathedral would have given it. Frankly, the subject is treated in the manner of the average local guide-book which delights chiefly in recording the names of benefactors, the value of their gifts and their subscriptions to this fund and that, the names of the "polished" marbles used in the pavements and fittings, lists of the monuments, the subjects represented in the sculpture and stained glass, the gold and silver vessels, and so forth. Descriptions of the architecture are short and confused for want of knowledge of the necessary terms, and criticism resolves itself mainly into repetitions of "handsome," "elegant," and similar non-committal adjectives. It is certainly recorded in one place that Mr. Pearson "was selected as architect," and in another that he "was instructed to prepare designs for the various internal fittings;" but his name is mentioned with less appreciation than is accorded to that of the clerk of the works, and as if it were of no particular importance who supplied the brains for the undertaking. It is to be supposed that the details with which the book deals interest a good many people, since a second edition has been called for; but to us it seems that one of the main subjects, the cathedral itself, is treated without any sign that the writer or those who commissioned the book have the slightest appreciation of its fine character and unique position among modern architectural works.

*The Testing of Materials of Construction.* By WILLIAM CAWTHORNE UNWIN, F.R.S., M.Inst.C.E. Second Edition. London: Longmans, Green, & Co. 1899.

IN the *Builder* for June 9, 1888, we reviewed at some length the first edition of this book, and are glad to see that a second edition of such a useful work has been called for. This new edition, while retaining the same general arrangement as before, has been brought very thoroughly up to date. Many records of recent tests have been added, and new testing machinery described.

In the introduction, the author shows how much more useful information may be obtained from accurate tests of the materials used than from experiments on the completed structure, because no load can, in practice, be applied likely to injure the work unless it has been very badly proportioned or constructed. We often hear that such and such a steel and concrete floor, for instance, has safely carried a load of so many cwts. per square foot. Information like this is of very little value, as it fails to show what factor of safety there is. But accurate tests of the component parts, combined with good design and careful inspection, will tell us at once what loads may be applied with any margin of safety that circumstances require. From this book we find out what tests should be made, how to make them, and what results we may expect from previous experiments.

Chapters I. to III. deal with the mechanical properties of bodies acted on by stresses, the plasticity and hardness of materials, and with stress-strain diagrams. The various kinds of testing machines used, and the methods of holding test-pieces in them are very fully described in Chapters IV. and V.; measuring instruments in Chapters VI. and VII. Chapter VIII. is an interesting and useful one, as it describes the preparation of test-pieces of various metals and the tests that are or should be applied to them. Chapter IX. deals with elastic constants for metals.

The remaining seven chapters, or 200 out of the 450 pages in the book, contain a mass of information as to actual tests that have been made of metals, timbers, stones, bricks, limes, and cements; the results being tabulated and reduced to common units. This latter part alone makes the book of the greatest use to all engaged in constructional work.

As this work is one that will be principally used for reference, we should have liked to see a fuller index. While, for example, eighteen pages are devoted to timbers and twenty-eight to stones and bricks, and tests of many varieties of these materials are given; the index, apart from the general references to timber, stone, and brick, only refers specially to one kind of timber, and to granite only among the stones. This, however, detracts little from what is probably the most valuable book on tests of materials of construction we have.

*Practical Dictionary of Electrical Engineering and Chemistry in German, English and Spanish; Treating especially of Modern Machine Industry, the Foundry and Metallurgy.* By PAUL HEYNE, assisted by Dr. E. SANCHEZ-ROSAL. Dresden: Published by Gerhard Kühtmann. London: H. Grevel & Co.

THE present development of the electrical and allied industries in Spain and the many States of Central and South America which speak Spanish has created a demand for a dictionary of technical terms. This volume will supply this gap and we can heartily recommend it. To many engineers and contractors as well as scientists it will prove very useful. It contains many words in everyday use by foreign engineers which also appear in foreign technical journals and yet are not to be found in any of the ordinary dictionaries. There are very few omissions, the only important one we noticed was "braze." "Tachometer" is not given but we suppose the hideous word "speedometer" stands for this. Again "infinite" in Spanish is surely "infinito" and not "infinitesimal," which means the exact opposite. It is possible that the Spanish workman mixes up the two. A note to this effect would have been welcome.

A drawback to this dictionary is the occasional use of very doubtful English; although the meaning is nearly always clear, it would have been an improvement if the authors had got an Englishman to revise the proofs. Idioms are often translated directly from the German, as, for example, "from midst to midst" is given as the translation of "von mitte zu mitte," instead of from centre to centre. Borum and phosphor, the German forms, are used instead of boron and phosphorus, the "lecture" of an instrument instead of the "reading," infinit for infinite, apparatuses for apparatus, &c. "Salt of sea" and "salt of petre" sound strange to English ears. We have also noticed the following amusing translations made apparently with the help of a somewhat antiquated dictionary—"water of holy," "salt of bitter purging," and "sensible paper" instead of "distilled water," "sulphate of magnesia" (Epsom salts), and "sensitive paper."

*Small Accumulators: How Made and Used.* The "Model Engineer" Series, No. 1. Edited by PERCIVAL MARSHALL, A.I.Mech.E. London: Dawbarn & Ward.

THIS little book on small accumulators will prove a practical guide to amateurs and students who desire a useful knowledge both of their theory and construction. Those accumulators are now used for so many purposes, such as lighting carriage and cycle lamps, working induction coils for medical and photographic purposes, working motors, &c., that there ought to be a large demand for this trustworthy handbook. If the subsequent books of this series bear out the promise of the first, these sixpenny handbooks will prove most helpful to the class for whom they have been written.

*The Manufacture of Varnishes; Oil-Crushing, Refining, and Boiling, and Kindred Industries.* Translated from the French of Ach. Livache. Greatly extended and adapted to English practice by JOHN GEDDES MCINTOSH. Published by Scott, Greenwood, & Co., London. 1899.

THE publication of this book is evidence of the fact that a new era has commenced in the industrial history of varnish manufacture. Scientific men have long been engaged upon the investigation of the resins, gums, and oils; and, although much yet remains to be discovered the joint results of their researches and of the experiences of men long familiar with commercial varnishes and their constituents have rendered possible the production of the present work, which, while remaining thoroughly practical, discusses at considerable length the chemical properties of the various varnish constituents, and the reactions which occur when they are mixed and used in the form of varnish.

The preparation of varnishes by blind adherence to ancient recipes is an expiring industry, and in future varnish manufacture will be governed by the laws of science and the results of chemical research, as are so many other large industries.

The first portion of the book describes the numerous resins, their behaviour under the action of different solvents, and their physical properties. Section 2 deals with the colouring matters employed in the production of coloured varnishes; and section 3 with alcohol, spirits of turpentine, and other solvents. Sections 4, 5, and 6 describe the cleaning and crushing of resins, the effects of heat upon resin, and the plant and processes used in preparing spirit varnishes; while section 7 discusses oil crushing and refining, and section 8 the manufacture of oil varnishes.

Recipes for all descriptions of varnish are given, together with much useful information regarding their manufacture; but a feature of the book which is especially worthy of notice is the attention which has been devoted to adulterants, and the methods by which they may be detected. Architects in general seldom have samples of oil or varnish chemically examined, and we believe that they by no means fully appreciate the extent to which adulteration is carried on.

The book is clearly printed, and contains a fairly satisfactory index; it will form a very useful work of reference, not only for varnish manufacturers, but for all concerned in the use of varnishes and drying oils.

*The Evolution of the Steam Locomotive.* By G. A. SEKON. London: The Railway Publishing Company, Limited. 1899.

THIS is a popular history of the steam railway locomotive as developed in Great Britain. The author has obtained his information from reliable sources, and has produced a book which is eminently readable. He starts with Trevithick's engine, built in 1803, which seems to have been the first that was a practical success, as it hauled five loaded trucks and seventy passengers a distance of nine miles in about four hours. From this we are introduced, in succession, to almost every type of locomotive that has been used in this country down to engines only just built, so that very interesting comparisons can be made.

The book is very fully illustrated, some one hundred and fifty types being shown. Unfortunately it is printed on glazed paper, which not only has caused both letterpress and illustrations to be somewhat "smudgy," but makes it very trying to the eyes to read.

We are sorry to see that the author uses such words as "scientist" and "location," which, whatever language they may belong to, are certainly not English.

*The Internal Wiring of Buildings.* By H. M. LEAF, A.M.Inst.C.E. Westminster: Archibald Constable & Co. 1899.

THIS book can be recommended to architects and others who possess an elementary knowledge of electricity as it contains a clear and simple account of the modern methods of wiring buildings and yet does not pass over those difficulties like calculating the sizes of cables which often give so much needless labour and worry to the uninitiated. The various systems now used for enclosing cables, wood-casing, metal tubes, concentric conductors, &c., and the general arrangement of the switches and cut-outs in use with these systems are well described, and there is a great deal of interesting information which will be found very useful in practice. The chapter on costs and estimates is well done, and the figures can be commended as giving a very fair idea of the cost of wiring at the present time. An appendix gives the Phœnix Fire Office rules, and the rules of the Institution of Electrical Engineers. The rules of the Westminster Supply Corporation are also given as a sample of the rules of supply companies.

## BOOKS RECEIVED.

THE TESTING STATION OF THE BRITISH FIRE PREVENTION COMMITTEE. (Published by the Committee.)

THE ART OF REPOUSSÉ. By Gawthorp. (B. T. Batsford.)

SPON'S ARCHITECTS AND BUILDERS' PRICE-BOOK, 1899. By W. Young. (E. & F. N. Spon.)

HISTORIC MAP OF BATH. (*Bath Chronicle* Office.)

## THE BUILDING TRADE DISPUTE.

ON the 30th ult. Mr. J. A. S. Hassall, the Secretary of the National Association of Master Builders, forwarded a letter to Mr. M. Deller, the General Secretary of the Plasterers' Union, in which he stated that his committee were satisfied with the assurance given by the union that beyond claiming the right and privilege to persuade any plasterer working at the trade to join their organisation they had no desire to coerce foremen who did not actually use the plasterers' tools into joining their ranks as ordinary members. Mr. Hassall further added that, although the officials of the Plasterers' Society had not communicated to the Masters' Association their proposals for a settlement of the dispute, the employers had agreed to meet the union in conference, and he proposed that twelve men representing the union should be appointed to meet twelve members of the National Association of Master Builders at the London offices on April 6.

The difficulty in regard to foremen being compelled to join the union as ordinary members having now been removed, the chief points to be settled between the masters and men are: (1) The union's practice of "blacklisting" certain firms; (2) The refusal to work with non-unionists; (3) the limitation of apprentices; and (4) the refusal of the men to accept the decision of the employers as to which workmen shall do certain work in cases of dispute.

At Birmingham, on the 3rd inst., a meeting was held of all the branches of the building trade, except the masons, in England and Scotland, to consider the plasterers' dispute. Four hundred thousand men were represented. The proceedings were private, but it was understood that the discussion turned chiefly upon the course of action to be taken at the conference with the employers. Though not conceding plenary powers to the delegates who will attend to settle, such authority was given as was thought would lead to a settlement. A hope was expressed that reason would be brought to bear upon the deliberations.

On Wednesday both the Plasterers' Union and the Masters' Association held meetings, at which the final arrangements for the conference were discussed.

The employers are to be represented by Messrs. W. Holdsworth (Huddersfield), R. Neil (Manchester), T. F. Rider (London), B. J. Greenwood (London), J. Bowen (Birmingham), W. Symonds (Cardiff), W. Lowry (Newcastle-on-Tyne), W. Nicholson (Leeds), J. Higson (Manchester), W. Blake (Plymouth), John Rule (Sunderland), and G. Nichols (Leicester).

The Union will send its President (Mr. Mark Jones), the general secretary (Mr. M. Deller), and delegates from Cardiff, Birmingham, Bristol, London, Leeds, Liverpool, Manchester, Newcastle-on-Tyne, and Nottingham.

We are informed, just as we go to press that the masters broke up the conference, as the representatives of the men refused to forego the right of coercion.

POST-OFFICE, WISHAW.—New Post-office buildings are in course of erection at Hill-street, Wishaw. The architect is Mr. Alex. Cullen, Motherwell. The various contractors are:—Masonry, Messrs. Loudon & Inglis, Cleland; joinery, Messrs. D. & W. Nimmo, Wishaw; plumber, J. Waterson, Wishaw; slater and plasterer, Mr. Wm. Black, Wishaw.

BATHS, ROTHERHAM.—On the 29th ult. a new swimming bath, provided by the Rotherham Corporation in Market-street, was opened. Mr. W. Eckersley, a local engineer, was engaged to prepare a scheme, and it has now been carried out, at a cost approaching 5,000*l.* The bath is the largest in the district, measuring 26 yds. by 12 yds., and has a depth ranging from 5 ft. 8 in. to 3 ft. 8 in. There are fifty dressing boxes. Mr. Richard Snell, of Rotherham, has been the contractor for the building; Mr. Johnson, of Tinsley, has supplied the tubes and girders; and Messrs. Newton, Chambers, & Co. (Limited), Thorncliffe, have been responsible for the ironwork for the roof.—*Sheffield Telegraph.*

## Illustrations.

### BEVERLEY MINSTER: TOWERS AND WROUGHT-IRON SCREEN.

These drawings are a portion of those for which their author, Mr. Hervey Rutherford, was awarded the Pugin Studentship this year. Mr. Rutherford sends us the following comments on the work:—

"The sketch shows the western towers of Beverley Minster from the north-east. They are built of Tadcaster stone, as is the rest of this magnificent pile, and form one of the finest examples of their kind in England. Their slender proportions at once attract the eye, and coming direct to Beverley from York, where one had been accustomed to the vastly different proportions of the western towers there, one had some difficulty in appreciating those of Beverley to the full extent at first.

The Queen's Diamond Jubilee, which is responsible for so many of our buildings now in progress, has not been allowed to pass here without evidence, which one regrets to say does not tend to enhance Beverley Minster. They are at present busily engaged in filling the niches of the western towers with statuary at something like an average of 20*l.* for each group, so one can imagine what the effect of such statuary must be on towers such as these.

The wrought-iron screen is situated in the north aisle of the choir and is of very good workmanship. There has been another screen in the south aisle of a slightly different and, I think, inferior design, but that is now relegated to the lumber portion of Beverley Minster."

### DESIGNS FOR CHAPELS AND CREMATORIUM, NOTTINGHAM.

In this design, which was exhibited at the Royal Academy of last year, the authors, Messrs. Nicholson & Corlette, have placed the Anglican and Nonconformist chapels at opposite sides of the crematorium, each being separated from it by a carriage-way.

By this method service might be read in either chapel without interference with the other, and the cortège could then pass on to the cemetery. If the body was to be cremated it could be carried to the chapel first and then to the crematorium hall after service, or else direct to the hall. The coffin was to be lowered as into a grave by passing it by a lift through the floor of the cremating chamber on to the bearers which carried it direct to the furnace in the basement. Provision was made in the hall for the disposal of the cremated bodies similar to the methods adopted by those who used this custom among the Romans. The cloisters and waiting-rooms were arranged separately for the use of those attending either chapel, so that the wings should protect the open ambulatories. The aspect selected for these was to the south, so as to make the general arrangement as cheerful and comfortable as possible. The flue for the furnaces was treated as an angle feature in the design of the central and bell tower, which was used also as a means of ventilation for the whole scheme, access to the upper stage being provided by a turret staircase on the south-east corner of the central group. The attendants and engineer's offices were placed immediately at the rear of the cremating chamber.

The design obtained the second premium in the competition in which it was submitted.

### ROBINSON MEMORIAL TOWER.

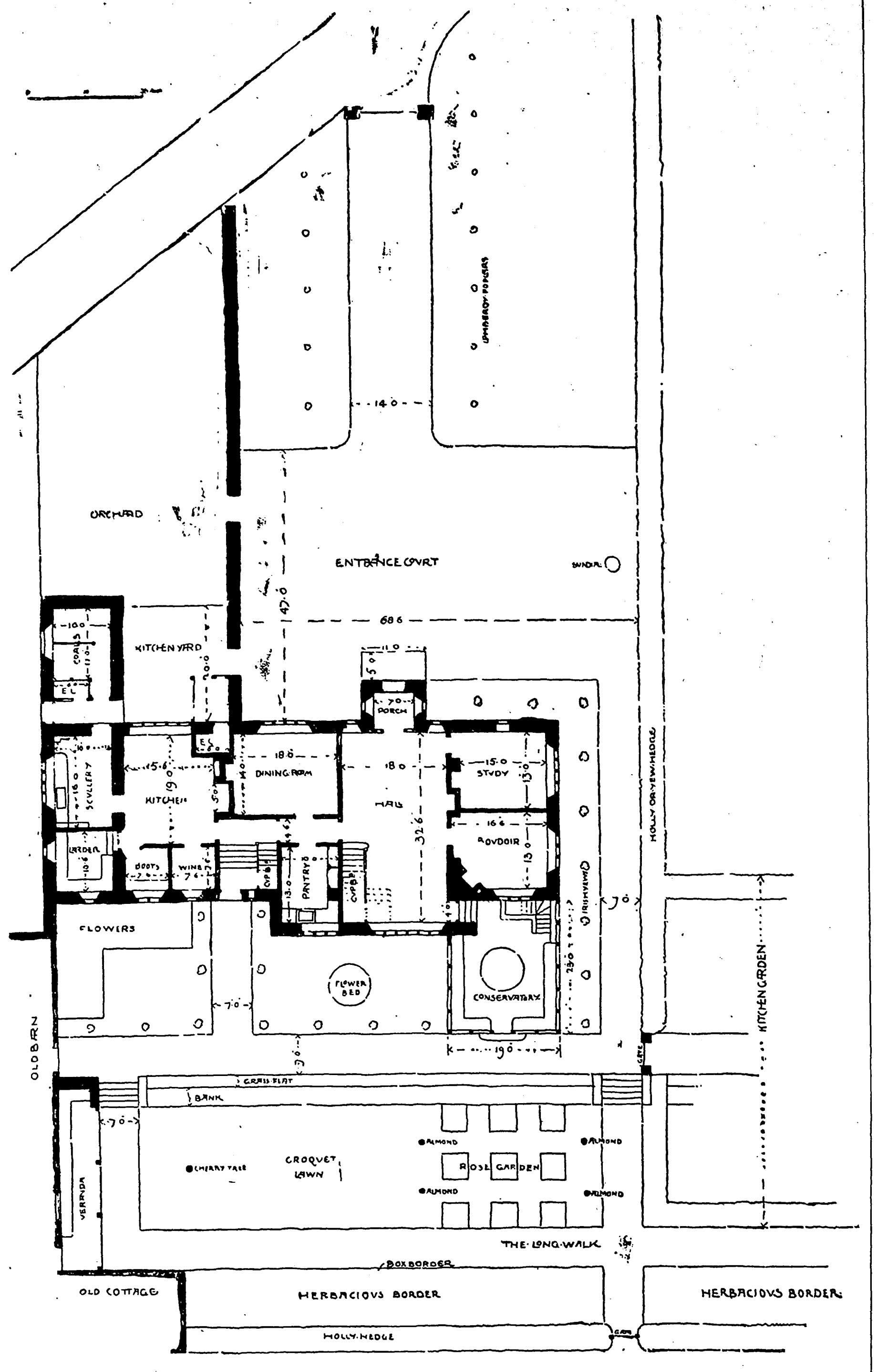
This tower was built as a memorial to the late Alfred Robinson, M.A., for many years Fellow and Bursar of New College, to whom the present size and prosperity of the College is very largely due. The College at the same time completed the adjoining College buildings to the east, a portion of which had been built some thirteen years earlier.

The material is Clipsham stone. The contractors were Messrs. Benfield & Loxley; the carver, Mr. Bridgeman, of Lichfield. The memorial figure is by Signor Lucchesi.

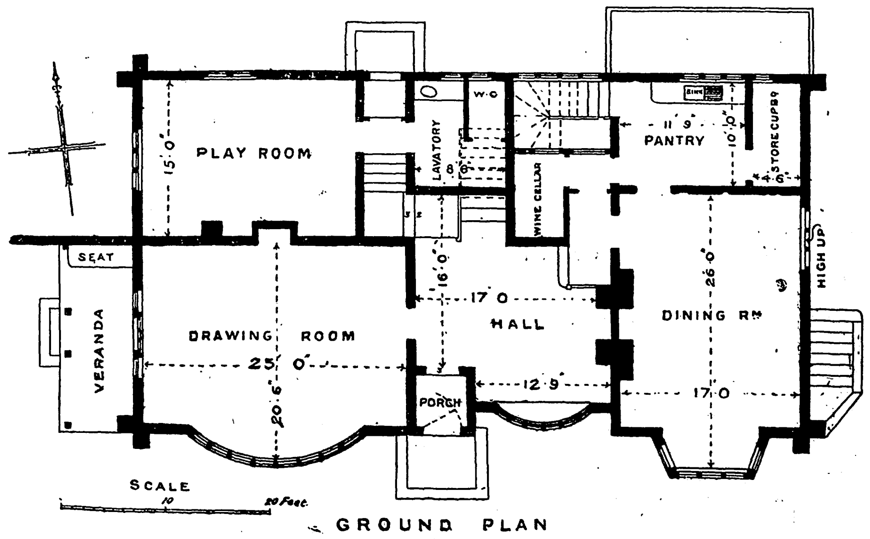
The architect is Mr. Basil Champneys, and Mr. W. Simpson acted as clerk of works. The drawing was exhibited at the Royal Academy of last year.

### HOUSES; THORPE MANDEVILLE AND LIMPSFIELD.

Of these two houses, designed by Mr. Voysey, that for a site at Limpsfield, though


ORCHARD
ENTRANCE COURT
SUNDIAL
14·0
47·0
68·6
KITCHEN YARD
COALS
E.L.
11·0
PORCH
SCULLERY
KITCHEN
15·6
DINING ROOM
18·6
HALL
18·0
32·6
STUDY
15·0
13·0
BOUDOIR
16·6
LARDER
BOOTS
WINE
PANTRYS
CUPD
FLOWERS
FLOWER BED
CONSERVATORY
19·0
7·0
7·6
OLD BARN
GRASS FLAT
BANK
VERANDA
CHERRY TREE
CROQUET LAWN
ALMOND
ROSE GARDEN
THE LONG WALK
BOX BORDER
OLD COTTAGE
HERBACIOUS BORDER
HOLLY HEDGE
HOLLY OR YEW HEDGE
KITCHEN GARDEN
LOMBARDY POPLARS

*House at Thorpe Mandeville. Plan.*


PLAY ROOM
15·0
LAVATORY
W.C.
8·6
SINK
PANTRY
11'9
10'0
STORE CUPBD
4·6
WINE CELLAR
HIGH UP
16·0
17 0
HALL
DINING RM
26'0
17'0
SEAT
VERANDA
DRAWING ROOM
25' 0
20·6
12·9
PORCH
SCALE
10
20 Feet
GROUND PLAN

*House for a site at Limpsfield. Plan.*

planned for a special situation and for a client who was about to build, owing to various circumstances has not so far been proceeded with.

The house at Thorpe Mandeville is now being carried out, the contractors being Messrs. W. H. & T. Hawkins of Brackley. The exterior materials are brick and cement roughcast. The contract price was 2,190*l*.

## DESIGNS FOR WALL-PAPERS AND TEXTILES.

THESE designs, by Mr. C. F. A. Voysey described generally on the plate as designs for wall-papers, were not in fact all designed with that object, one or two of them having been designed for textiles. The following are Mr. Voysey's explanatory notes on them :—

"No. 1. This design was made for wall-paper or woven silk, but never considered good enough by the manufacturers to be produced.

No. 2 has been produced in silk and wool by Messrs. Alex. Moxon & Co. with great taste.

No. 3 was designed for wall-paper, and is printed by Messrs. Essex & Co.

No. 4 was designed for a wall-paper, and is printed by Messrs. Essex & Co. It has also been produced in tapestry by Messrs. Alex. Moxon, but with the substitution of an evil-looking harp for the V.R.

No. 5 was designed for fabric but never executed. It is supposed to symbolise purity, being a sort of lily and a sort of vulture, the last-named useful scavenger of battlefields.

No. 6 has been executed as a carpet by Messrs. Tomkinson & Adam.

No. 7 is a design for a wall-paper, being a drop pattern, each tree being placed in diamond form so that all bands or lines are avoided."

◆

## Correspondence.

*To the Editor of* THE BUILDER.

### THE CRYPT AT HEXHAM.

SIR,—Thanks to the *Builder* and that careful, able, and accurate authority, Mr. C. C. Hodges, of Hexham, we are at last supplied with an accurate and understandable plan of the Abbey Church and the singular vaults below ; plans which, when backed by the letterpress, fairly seem to point out that the crypts there found (and at Ripon) are neither of Wilfrid's period nor would have been assigned to him had it not been for the fashionable excitement imported even into the consideration of dry architectural questions.

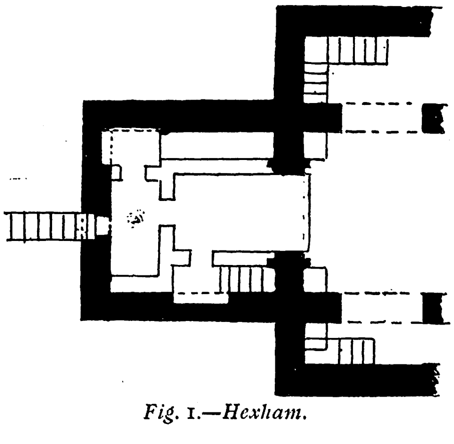


*Fig.* 1.—*Hexham.*

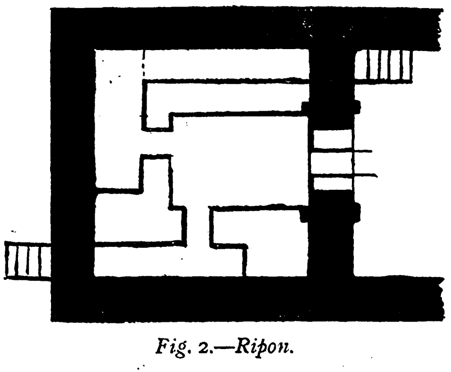


*Fig.* 2.—*Ripon.*

The Hexham and Ripon crypts (figs. 1 and 2) appear to be merely the transference of the plan of such vaults under choirs (fig. 3) sent westwards to parts there covered by stone structures, with the priest's house of less durable materials still further west again. It thus seems probable that these two cases are actually of very late date, if allowed to be of Saxon parentage. That of Ripon is situated under the west tower of an aisleless church, that of Hexham under the west tower of one which then received a north chantry aisle, a very narrow south one being then added also for access to the stairs of descent on that side. The review of the historical evidence given in the letterpress much assists such view. It attributes the church to Wilfrid, about 679 ; states that it became the seat of a bishop's See in 681 (Wilfrid then preaching in Sussex) and "so remained until 821, when, no doubt owing to the Scandinavian inroads, it was allowed to lapse" (*i.e.*, 140 years). Wilfrid visited Ripon and Hexham in 706, and, after a stormy life, died in 709. His monastery at Oundle (of wood) was so thoroughly burnt at the time of his death as left no place for his body during the night to be placed in.

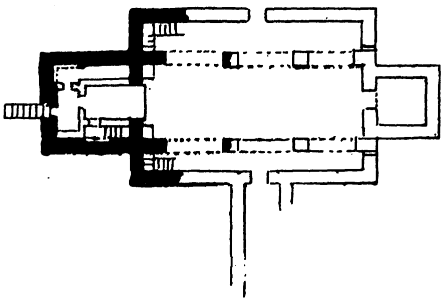


*Fig.* 3.

Hexham, we are told, "maintained its monastic character until its overthrow under Halfdane, the Dane, in 875 ; it then remained in a ruinous condition, and was practically abandoned by its priest until 1083." Northumbrian history may fairly suggest hope of an earlier date, about 1043 (or thereabout). Much faith is required to accept Wilfrid's work as unchanged during the first 140 years. But the call is excessive which demands preservation during the abandonment from 875 to even about 1043 ; a special 168 of miraculous providence years at least. It is not, therefore, strange if Prior Richard's account may possibly be of that which he saw in his time, but certainly could not be of work earlier than 1040. He himself is stated to have died in 1175, 466 years after Wilfrid's death and 300 years after its ruin by Halfdane.

Mr. Hodges would make a most valuable contribution to the history of architectural art in Northumbria if he would describe and illustrate the many stones found about the church during its late maltreatment, thus throwing light on the history of its changes, even be they several hundred years later than Wilfrid's death in 709. J. T. IRVINE.

SIR,—Mr. Hodges is mistaken in saying that the crypt at Hexham was "a place of refuge and resort where religious rites could be carried on in times of danger, and also, perhaps, as a place of sepulture for those held in special veneration." If he will compare his own admirable plan and section with the plan and section of the crypt under the west end of the ruined basilica at Pompeii, given in Lange's "Haus and Halle" (Leipzig, 1885) he will see that the crypt at Hexham is almost an exact copy of that under the basilica.

The crypt at Hexham was originally under the west end of a Roman basilica. The two staircases at Hexham correspond exactly to the two staircases at Pompeii, and are in the same position. Both crypts have a mysterious hole in the roof. The crypt at Pompeii has a "cellar window" in its west wall. So had the crypt at Hexham, for the steps on the west side, shown in Mr. Hodges' plan, led down to the old "cellar window" of the Roman basilica.

All this is consistent with ancient chronicles, which speak of Hexham as having been the most splendid basilica on this side of the Alps.

The crypts at Hexham, Ripon, Repton, and everywhere else, were connected with the business of the law courts, as I have shown in my recent book on "The Evolution of the English House."

S. O. ADDY.

### WOODEN WATER-PIPES.

SIR,—I observed at the Marble Arch the other day some old wooden water-pipes being unearthed. I happened last autumn to meet an engineer who, if I rightly understood him, said he had been taking up in some district in London quite recently similar wooden pipes, which, I gathered, had been in use up to the time of his substituting iron pipes for them. Are any of these still in use, and can you say at what date they may have been laid and by what water company, and is it commonly known by what process they were bored and fitted ? Those I saw to-day were apparently spiggotted one into the other. It is to be presumed that they are not so ancient but that the manner in which they were made is known ; also how the connexions with them were made and whether they were subjected to any process of seasoning or induration ?

LEONARD REDMAYNE.

### STRENGTH OF STEEL GIRDERS

SIR,—Will some reader of the *Builder* kindly inform me of the best formula (modern) for calculating strengths of steel girders and joists ?

G. F. LAKE.

◆

## The Student's Column.

### ARCHITECTURAL HYGIENE:

#### XIII.—WATER SUPPLY AND POLLUTION.

WE may consider this subject under the following headings :—

1. *Sources.*
2. *Physical properties.*
3. *Consumption of water.*
4. *Impurities.*
5. *Examination of water.*
6. *Storage of water.*
7. *Hardness of water.*
8. *Distribution of water.*

1. *Sources.*—The origin of all sources of water supply must be the rainfall, though the actual method of supply may be by (*a*) *rain water*, (*b*) *lake water*, (*c*) *river water*, (*d*) *spring water*, (*e*) *well water*.

(*a*.) *Rain water* itself is pure, and where it comes but little in contact with injurious gases and matter it is the best form of supply. This, however, but seldom happens, except in sparsely populated and rocky districts. The amount of rainfall varies in different districts from under 25 in. to over 80 in. in the British Isles ; the lowest average fall being about the South Eastern Counties of England and the highest being the Western part of Scotland. Part of the rainfall sinks into the ground, part is evaporated, and part is carried along the surface of the ground and fills the rivers and lakes, &c., in the neighbourhood. Rainwater should never be allowed to run to waste, as it is most agreeable for washing purposes, and, in some instances, it has to be used for dietetic requirements, notably in Holland, where collecting areas are specially prepared.

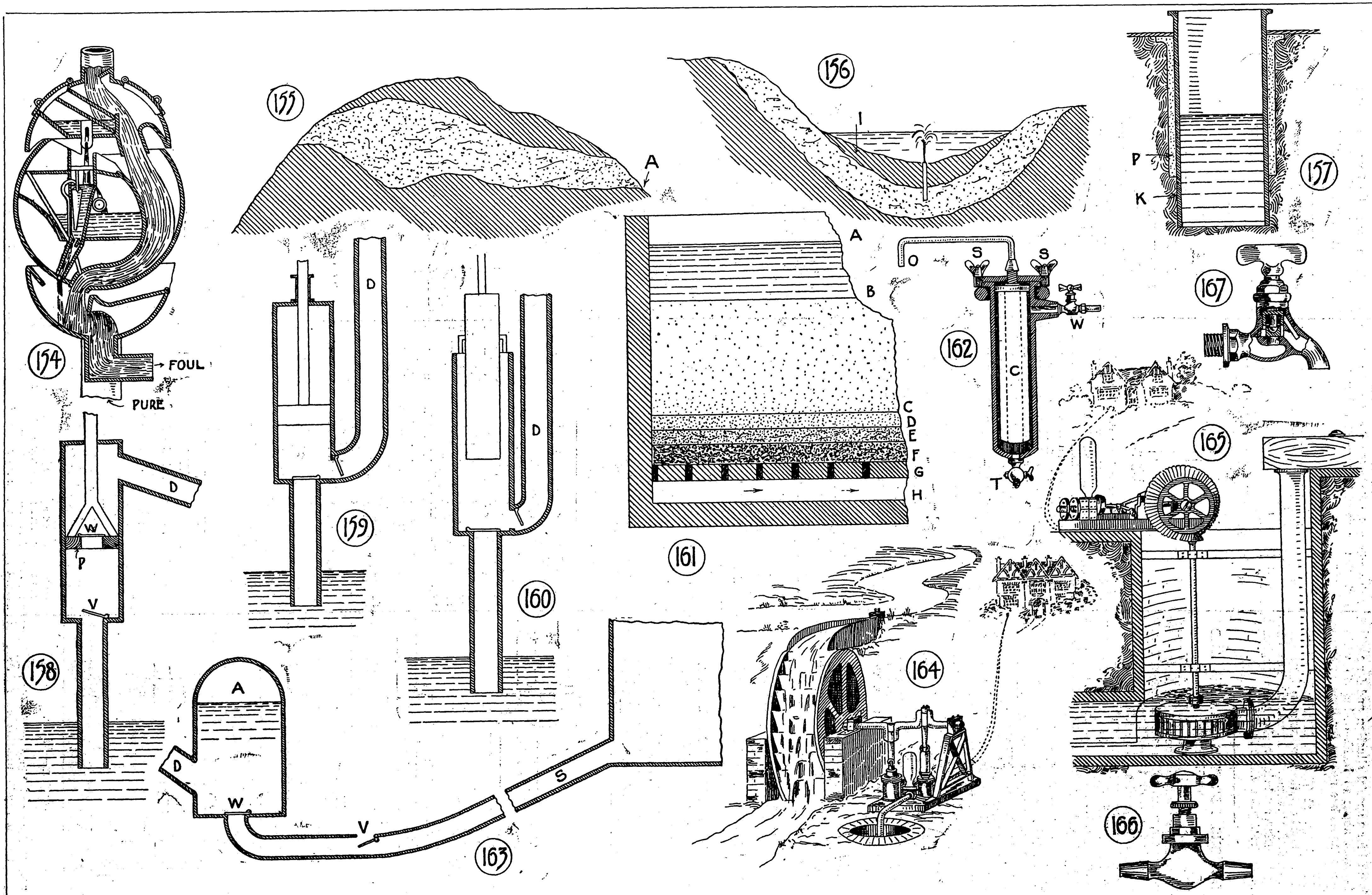
Fig. 154 shows the section of *Roberts' Rain-water Separator*, which runs the foul water to waste, and when the roof has ceased to deliver foul water the canter is overbalanced and the clear water runs to storage.

(*b*.) *Lake Water* derives its source of supply from the surface water previously mentioned, and also from springs, and is liable to have foreign matters in suspension and solution.

(*c*.) *River Water* is derived from the same sources as lake water. Rivers are very liable to pollution, owing to the drainage from manured farm land, and to animal and vegetable impurities being washed into them. When, in addition to these, sewage from towns and villages and trade effluents are added, the danger of this form of supply may be realised.

(*d*.) *Spring Water* is generally found where an impervious bed underlies porous strata, and an outlet is obtained as at A in fig. 155. The condition of this water depends upon the nature of the soil through which it has passed.

(*e*.) *Well Water* may be either from shallow or deep wells, that from the former being very liable to pollution from organic matter washed through the soil. An impervious lining (steining) should always be used as deep as practicable to minimise this risk, as shown at K in fig. 157, the lining also being taken above the surface to prevent any matter flowing in from the top. A cover should also be provided. The water should be drawn up by a pump if possible ; three forms of the latter are shown in figs. 158, 159, and 160, and not by a bucket and rope, as these are liable to become foul and to taint the water. Fig. 158 illustrates a section of an ordinary *lifting pump*. As the piston P is raised, the valve V is opened and water is drawn up into the cylinder, and at the next stroke it is drawn through the valve W and is conducted to the delivery pipe D. Fig 159 is a section through a *force pump*, and it will be noticed that the piston is solid, and the water after being raised in the cylinder is forced up the delivery pipe. Fig. 160 is a force-pump with a plunger in lieu of a piston, and is generally preferred because the packing is easily renewed. Deep wells are often made by an artesian boring, which consists in forcing an iron tube of small diameter through the impervious strata, as shown in fig. 156. This was first done at Artois, in France, hence the


154
FOUL
PURE
155
A
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I
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P
K
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D
W
P
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D
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A
B
C
D
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G
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162
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W
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163
A
D
W
V
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166
167

Illustrations to Student's Column.

name *artesian*. Water derived from this source is generally palatable and good. It will be seen that in this sketch the impervious strata I extends above the level of the sinking, and consequently the water will not only rise in the pipe but will be forced up to overflowing.

2. *Physical Properties.*—A cubic foot of water may be taken as weighing 62·5 lb., and a gallon as weighing 10 lbs. A fundamental property of the fluid is that the pressure exerted by it on any plane is always in a direction at right angles to that plane, and pressure exerted anywhere on water is transmitted equally and undiminished in every direction. Liquids maintain their level even though the continuity of the surface be interrupted, or in more popular phraseology, they find their own level. Water may be taken for practical purposes to be incompressible. Advantage is taken of the latter and of the power of transmittability of pressure in the hydraulic lift and ram, &c.

3. *Consumption of Water.*—The ancient Romans must have used over 300 gallons per head per day, owing to their elaborate public baths. From about 35 to 50 is now usually considered sufficient for towns and from 20 to 25 for rural districts. However, it is hoped that the supply will be looked upon in a more generous light in the future, as the health of a community must depend to a large extent upon its water supply and its facilities for taking baths. The following table gives the daily average number of gallons per head in several cities :—

| | | | |
|---|---|---|---|
| Washington ........ | 158 | Chicago .............. | 75 |
| Middlesbrough-on-Tees. ............... | 140 | Montreal.............. | 55 |
| Karlsruhe (Germany) ........... | 130 | Glasgow .............. | 50 |
| New York........... | 100 | London .............. | 35 |
| | | Paris..................... | 28 |

4. *Impurities.*—Water nearly always contains foreign matter in suspension and solution, absorbed gases, microbes, and other living organisms. Water for dietetic purposes must not contain more than a certain percentage of these impurities. Matters in suspension may be removed by filtration and settlement, those in solution by distillation, aëration, precipitation, and nitrifying organisms. Absorbed gases may be expelled by boiling and distillation, living organisms may be reduced by filtration and settlement, &c.

*Distillation* is effected by evaporating water and condensing the steam. Distilled water is unpalatable, but on aëration it becomes less unpleasant; this latter may be accomplished by exposing it to the air in thin streams.

*Boiling* removes temporary hardness and destroys microbes, but the water requires aëration afterwards, as it is unpleasantly flat.

*Nitrification* is the process by which, owing to the action of microbes, nitrogenous organic matter is oxidised with a formation of nitrates.

*Filtration* is resorted to to get rid of suspended matters and to oxidise organic substances. Dr. Percy Frankland has shown that over 95 per cent. of microbes were removed from Thames water by sand filtration. These sand filters are mostly used by the larger water Companies. A section is shown in fig. 161 of one that is sometimes employed. C represents a bed of clean sharp sand about 3 ft. 6 in. thick, D is another layer of sand coarser than C and about 4 in. deep, E is another layer of sand coarser than C and about 3 in. thick, F is a bed of gravel about 6 in. deep, G represents a course of bricks laid with open joints to allow the water to pass through to the trough H, which conveys it to the storage reservoir. Magnetic carbide of iron covered with a layer of sand has also been successfully utilised for filters, but this must be used on the intermittent principle, to allow of aëration. The *Pasteur Chamberland* filter is made of porous porcelain, through which the water is forced under pressure. The residue left on the outside of the tubes can be easily removed, and by heating them periodically they may be sterilised. At Darjeeling 9,500 of these tubes are in use in thirty-eight cells in the municipal waterworks, and supply 150,000 gals. a day.

*Household filters*, until quite lately, were almost solely designed for the purposes of removing suspended matters, to lessen hardness, and to reduce the danger of organic matter. In recent years, however, the removal of micro-organisms has been found to be essential, and it was then discovered that most of the old filters were simply breeding-places for these germs, so that, instead of removing them, they were actually increased to an enormous extent. The Berlin Inquiry of 1886 did much to remedy this evil; and the inquiry for the German War Office, in 1895, by Dr. Plagge gave great prominence to the *Pasteur Chamberland* and *Berkefield* filters. These latter have now sealed the fate of the older forms of filters, and this type of porcelain candle is now recognised as being the one on which future developments must be based. They require pressure to work efficiently, and consequently are termed "pressure filters." Fig. 162 shows a section of the *Berkefield*. The water supply is connected by the tap W, and flows into the outer covering, which is of enamelled iron, and through the hollow cylinder C (of porcelain or kieselguhr), and from the interior of which it is delivered to the outlet pipe O. By means of the thumb-screws SS the candle of porcelain may be removed for cleansing or may be sterilised by boiling.

5. *Examination of Water.*—The following simple tests may be made by any one. Samples should be collected in long tubes, 2 in. or 3 in. in diameter, which latter have previously been well rinsed out with a little acid and then several times with the water which it is desired to examine. If river or lake water is the subject of the inquiry the samples should be taken at various points and beneath the surface, and a note should be made in each instance of the exact locality from whence they are taken. The tubes should be well stoppered and placed in the light, but an inch or two should be left from the surface of the water to the underside of the stopper. They should stand for twenty-four hours, and then be examined to see if vegetation is encouraged; this can be detected by the smell. If this is not apparent, slightly warm the tubes and test them again. A similar tube should be filled with distilled water and be placed alongside the others on a sheet of white paper, and the colour compared. If a drop of Condy's fluid (permanganate of potassium) be placed in the water, and it becomes bleached in a short time, it is a sign of the presence of organic matter. A portion of the water may be evaporated, and the residue burnt; if it blackens it indicates the existence of animal organic matter. If a sample of water is put on a gelatine film resting on a plate, organisms multiply rapidly and are easily discernible under the microscope.

6. *Storage of Water.*—This is best accomplished, if it can be so arranged, in underground tanks, in which there must be no liability to pollution. It is thus rendered more palatable by its power of assimilating carbonic acid gas under the ground. Domestic cisterns of lead are to be avoided, owing to the danger of the water carrying away the soluble oxide of lead due to the presence of oxygen. Hard water, however, forms a protecting surface on the lead, and there is little danger in using this metal for its storage. Galvanised iron is simply iron covered with a coating of zinc, and most waters will dissolve this; it should not, therefore, be used if it can be avoided. Slate and earthenware cisterns, therefore, should be used where possible. Provision should be made so that cisterns may be cleaned out regularly, for it must be remembered that they become a depositing ground for impurities in the supply. All cisterns should be covered to prevent their pollution by dust, dirt, and possibly dead birds, and they should be ventilated, and have an overflow pipe, with its open end, as far from any sewer or drain as possible.

7. *Hardness of Water.*—This may be either temporary or permanent. *Temporary hardness* is due to the presence of calcic and magnesic carbonates and may be overcome by boiling, which expels the carbonic acid and precipitates the carbonates. *Permanent hardness* is due to calcic and magnesic sulphates, which boiling does not effect. Hard water will not dissolve soap but precipitate it; hence the soap test is now usually employed for determining the hardness of water. Every grain of calcic carbonate or its equivalent in one gallon of water constitutes one degree of hardness.

The effect of hard and soft water on the health is a much debated point, but from an economic point of view, soft water is much preferable, and it is said that in Glasgow, since the soft water supply from Loch Katrine was introduced, that a saving of over 30,000*l.* in soap was effected per annum. Hard water also causes lime deposits in boilers, kettles, and hot-water pipes; it is unpleasant for domestic use as it produces roughness of the skin. Dyspepsia, gravel and stone in the bladder, and swellings of the glands have also been attributed to its use. The late Sir Douglas Galton suggested that 10 deg. of hardness would satisfy the general requirements of a town supply. Dr. Clark's process for removing temporary hardness consists in the addition of lime, by which means the bicarbonate of lime in the water is reduced to a carbonate, which latter is precipitated. A Luton Hoo the hardness of the water is reduced from 18½ deg. to 4 deg. by this process, and 70,000 gallons can be softened per diem. Permanent hardness of water at Penarth is reduced from 18 deg. to 6 deg. by the addition of 22·5 lbs. of lime, 5 lbs. of soda, and 1 lb. of alum to every 10,000 gallons of water. Clark's process consists in the addition of 1 oz. of quicklime to every 100 gallons. The Porter-Clark system is a modification of this, the precipitated calcic carbonate being removed by cloth filtration under pressure, thus avoiding the delay of slow subsidence.

8. *Distribution of Water.*—This is effected either on the constant or intermittent principles. Every water company should be compelled by the legislature to provide a constant supply, as it is not only more conducive to health, but in the case of outbreaks of fire the lack of water is a very serious matter. Even with the constant supply, however, it is wise to have a small supply cistern, as the water is sometimes necessarily cut off for repairs to mains and other causes. Water mains are frequently not laid sufficiently deep below the surface, and consequently are liable to be affected by heat and by frost; they should not be less than 4 ft. below the ground level. The pipe mains are usually of iron, coated with bitumen, magnetic oxide, or some preservative solution. The best method is to have a glazed lining, but this is, of course, somewhat costly. Lead pipes are most often used inside the house owing to their preference by the water companies; but, as previously mentioned, the lead is liable to be dissolved by the water if the latter is of a soft description. If possible, it is always best to use pipes lined with either glass or tin. Stopcocks should be arranged so that any branch supply may be cut off from the main, and all pipes should be run so that there is no danger of frost affecting the water-supply. If, in any case, it is found necessary to have them outside the building, they should be covered with asbestos, felt, or other non-conducting material.

All water for drinking purposes should be drawn direct from the main supply pipe.

In country houses it frequently happens that no spring or supply exists above the level of the house, and, consequently, the water has to be raised by mechanical means. One method often employed is the *Hydraulic Ram*, whose action is as follows:—A supply pipe, S in fig. 163, is taken from the reservoir to the air vessel A (or *ram*). A finely-balanced valve is fixed at V, whose weight is a little greater than the water pressure from the reservoir. Hence when the water is at rest in the supply pipe the valve V opens downwards and water runs to waste. As the velocity of the water increases, the valve V is closed, and the momentum opens the valve W, and water is thus forced into the air vessel; the air in the latter is compressed, and by its reaction the water is forced up the delivery pipe D. The pressure in the supply pipe is thus diminished, and both valves therefore fall and the water escapes at V until this valve is again closed by the impact of the water due to the increased velocity, more water enters the ram and is raised higher in the delivery pipe. This action is continually repeated while the supply in the reservoir is maintained. It is estimated that about one-eighth of the water is wasted. The following formula and notes on the hydraulic ram may be of use.

When :—

$Q$ = quantity of water used in cubic feet per second.

$h$ = head of water in feet (*i.e.*, difference in level of reservoir and ram).

$P$ = effective horse-power.

Then $Q = \frac{14{\cdot}7\,P}{h}$

and $P = {\cdot}068\,Q\,h$.

The length of the supply pipe should not be less than three-quarters of the height to which the water is to be raised.

The diameter of the supply pipe should be equal to $1.45\sqrt{Q}$, and the diameter of the rising pipe should equal $75\sqrt{Q}$.

The contents of the air vessel should be the same as the contents of the rising tube. One-seventh of the water may be raised to four times the head of the reservoir, or one-fourteenth eight times, or one-twenty-eighth sixteen times, &c.

A greater fall than 10 ft. is to be avoided as it involves too much wear and tear on the valves. *Water wheel* driving pumps, both over-shot and under-shot, may be used for this purpose of raising water, and fig. 164 shows a sketch of one used by Messrs. Merryweather & Sons. *Turbine* driving pumps are also used, as shown in fig. 165. Arrangements may also be made when fixing this latter for driving electric lighting, laundry, and refrigerating machinery.

## *GENERAL BUILDING NEWS.*

Congregational Church, Hessle, Yorkshire.—The foundation-stone has just been laid of a new Congregational church at Hessle. The architect is Mr. Percy T. Runton, of Hull and Hessle. The building will be in the Gothic style, comprising nave, aisles, chancel, organ transept, ministers' vestry, heating vault, &c. It will be built of red brick and stone, with tracery windows and dressings. The floor will be of maple blocks upon concrete. The interior will be finished in plaster, and the nave arches carried upon granite shafts. The length of the nave is 75 ft., and into the chancel 87 ft., the width across nave and aisles being 50 ft.

Church, Kirkcaldy.—A church which has been built by the Kirkcaldy Unitarian congregation has just been opened. The church, which is situated in Hunter-street, in a central part of the town, is seated for 200 persons, and at the back are a committee-room, a vestry, and other offices. The architect was Mr. Arnold S. Taylor, of Westminster, the cost of the building, including the site, being about 1,100*l*.

Mountpottinger Unitarian Church, Belfast.—On the 26th ult. the Unitarian Church at Mountpottinger was reopened after alterations. By the alterations to the building the accommodation has now been doubled, while a side entrance has also been added. Three memorial windows have been placed in the building. The work has been carried out by Mr. Robert Corry, builder, under the supervision of Messrs. Young & Mackenzie, architects.

Primitive Methodist Church, Oswestry.—A new Primitive Methodist church has just been opened at Oswestry at the corner of Chapel and Castle streets. Perpendicular Gothic in style, the walls are of Ruabon red bricks, with white sandstone dressings, and a tower, with spire, marks the angle formed by the streets, the principal front being in Chapel-street. The internal fittings are of pitch pine, and the seating accommodation, which is designed to provide accommodation for 425, is arranged in amphitheatrical form. The architect is Mr. J. D. Mould, of Manchester, and the contractor Mr. Jabez Higgins, of Oswestry; the cost of the new building is close on 2,000*l*. Mr. Evans, of Manchester, was responsible for the electric light installation, and Messrs. John Minshall & Co., of Oswestry, supplied and fixed the heating apparatus.

New Church of Ballintubber, Co. Roscommon.—The dedication of the new Church of St. James, Ballintubber, will take place on the 9th inst. The new church consists of chancel, nave, transepts, and sacristy, and is of cruciform shape. In length it is 100 ft. long, the nave 31 ft. wide, and 67 ft. on the transepts. Mr. J. L. Scallan is the architect. The contractor is Mr. John Whelan, Strokestown.

Welsh Wesleyan Chapel, Ferndale, Glamorganshire.—The foundation-stones of a new Welsh Wesleyan Chapel, Ferndale, on the site of the building which was entirely demolished by fire in June last, were laid recently. The contractor is Mr. Howell Lewis, Ferndale, and the architect Mr. A. O. Evans, Pontypridd.

Board School, Hotwells, Bristol. — An infants' school is being erected at the corner of Albemarle-row and Joy Hill, Hotwells. It is planned on the central-hall system. Surrounding the hall and entered from it are four class-rooms, each for fifty children, a teachers' room, and a children's cloak-room and lavatory. The floors are laid with maple blocks. The whole building is heated with hot water, and under a portion of the school is a covered playground. Red brick with freestone dressings has been used, and the roofs are tiled. The general contract has been carried out by Mr. G. Humphreys, the heating work has been executed by Messrs. Skinner, Board, & Co., and the plumbing by Mr. A. Scull. The architects are Messrs. La Trobe and Weston.

School, Deskford, Banffshire.—A new Board School is to be erected at Deskford, from plans by Mr. John Fowlie, Cullen. The building will provide accommodation for 150 pupils.

New Theatre, Doncaster.—A new theatre was opened at Doncaster on the 27th ult. The new building will seat 1,500 persons. The stage is on the street level, and can be driven upon therefrom. It is 75 ft. wide by 32 ft. deep. Mr. Chapman, the manager, drew the plans; and Mr. J. P. Briggs, of London, was consulting architect. The builders and contractors were Messrs. H. Arnold & Son, of Doncaster. The seating and decorations were by Messrs. Deans, of Birmingham; the electric installation by Messrs. Fisher & Allison, of Doncaster; Messrs. E. Oldroyd & Co., of Leeds, fixed the heating apparatus and fireproof curtain; and the fire hydrants and Grinnell sprinkler installation were fixed by Messrs. Dowson, Taylor, & Co., of Leeds and Manchester.—*Yorkshire Post.*

New Lodge, Beaulands Park.—The erection of a large new lodge will shortly be commenced for Sir R. G. Graham at the south entrance to Beaulands Park, Cumberland. Dressed local red stone will be used, and green slates on steep pitched roofs with four gables. The contractor is Mr. W. Wright, of Warwick Bridge, who will execute all the work from plans prepared by Mr. T. Taylor Scott, architect, of Carlisle.

Memorial Hall, Belfast.—The George Thomson Memorial Hall, which has been erected by the Broadway Presbyterian Church, has just been opened. The new buildings occupy a site adjoining the rear of the church itself. A minor hall, about 30 ft. by 26 ft., with vestry and committee rooms, forms the principal portion of the ground floor. A ladies' parlour is also placed on this level. The first floor is taken up with a lecture hall 64 ft. long by 32 ft. wide, with a platform at one end, having a separate staircase. All the walling is of red brick, with Dumfries sandstone sills and coping. The contractor for the work was Mr. Thomas M'Millen, and the architects were Messrs. Young & Mackenzie, Belfast.

Isolation Hospital, Leicester.—The foundation-stone has just been laid of the administrative block of the new Isolation Hospital on the Gilroes Estate, near Leicester. The architects are Messrs. Blackwell & Thomson, of Leicester, whose plans were selected in competition. The work has been in progress for six months, and several of the scarlet fever pavilions are in a forward state. The hospital, when completed, will consist of four separate one-storied pavilions for the treatment of scarlet fever, giving accommodation for twenty-six beds each; a similar pavilion for typhoid fever containing twenty-eight beds; two isolation pavilions—one a two-story building — containing twenty-eight beds, making accommodation for 160 adult patients. The other buildings comprise the administration block, discharging block and mortuary. The total number of beds, if the full extension were carried out, would be 240. The several buildings are connected by macadam roads without covered ways, the ambulance vans thus being able to drive up to the door of each block. The four scarlet fever pavilions are all arranged alike, and consist of two main wards, 72 ft. long and 26 ft. wide, to contain twelve beds each. In the central portion is provided a separation ward of two beds leading out of the ward corridor, and having its own lavatory and water-closet. The nurses' kitchen is centrally placed, and can overlook the beds in the two main wards by means of observation windows. The ward linen store-room is approached from the nurses' kitchen, and the coal store for the wards is placed outside, near the entrance to the pavilions. At the outer end of each main ward is placed on one side the sanitary tower, disconnected by a ventilated lobby, and on the other side the bath-room. The typhoid pavilion is similar in plan to the scarlet fever pavilions with this exception—as the block will be used for two sexes it is necessary to provide two separation wards instead of one, as in the scarlet fever blocks. The one-story isolation block provides for a total of twelve beds. The two-story pavilion is arranged on two floors. On both floors in each half two two-bed wards are provided, leading on to the verandah, with nurses' kitchen and larder. The sanitary towers are approached from the verandahs. A bath on wheels is provided, placed outside the nurses' kitchen. The first floor in each half is approached by an open stone staircase at the extreme end of the verandahs. The floors are of fireproof construction. The administrative block contains on the right of the front main entrance committee-room, doctor's sitting-room, lavatory, &c., dispensary, laboratory, store, waiting-room, and telephone enclosure; and on the left of the entrance, matron's sitting-room office, nurses' mess-room, sitting-room, sewing-room, household linen-room, dry goods store, lavatory, &c., servants' hall. The servants' hall and nurses' mess-room are placed in close proximity to the kitchen. The main corridor is 7 ft. wide. At the west end of the administrative block, and leading at right angles from the main corridor, is another corridor out of which lead the kitchen and stores, &c. The first floor contains the nurses' and matron's bedrooms, with bathrooms, &c., and linen store. The doctor's bedroom and bathroom are also on this floor, and are approached by a separate staircase. Twenty bedrooms for nurses are provided on this floor. The second floor contains ten bedrooms for servants, a bathroom, &c. The porter's lodge is situated on the right hand side of the main entrance from Groby-road, and stands 15 ft. back. At the rear of the porter's lodge, on the right hand side of the entrance roadway, is the discharging block, which is arranged in duplicate for male and female patients. The mortuary consists of a post-mortem room, mortuary, and viewing chamber. Heating is to be by low pressure steam, with auxiliary heating arrangements consisting of stoves and grates. The facings to all the buildings are Ellistown brick, with stone dressings, and the roofs are covered with green slates. Between all the buildings there will be telephonic communication. Messrs. J. Johnson, are the contractors for the building, with Mr. John Clifton as clerk of the works.

Extension of the Birkenhead Borough Hospital.—It is intended to proceed at once with the extension wing of the Birkenhead Borough Hospital. The designs of the new building have been prepared by Mr. E. Kirby, and the contract has been given to Mr. Richard Allen, of Birkenhead. There will be a separate entrance to the new wing, which will be connected with the present building by a covered bridge. It will provide accommodation for a woman's ward with twelve beds for surgical cases, an isolation ward for erysipelas, a waiting-room for patients, and surgical and consulting rooms.

Lord's Cricket Ground.—Further provision of spectators' seats is being made, and upon an extensive scale, along the south and east sides of the match-ground. On the site of the old billiard-room and tennis and racquet-courts and of an adjacent house, Messrs. J. Simpson & Son, contractors, are erecting a lofty tier of seats, supported by iron and wooden columns, which is carried upon brick arches in the form of an amphitheatre round the south-east corner of the ground to about half-way up the "Nursery end" (opposite the members' pavilion). The new structure, a quarter of a circle in shape, will give room for, it is estimated, 10,000 persons. New dressing-rooms for the ground bowlers are also being built at the Nursery end, and the members' luncheon-room next, westwards, to the tavern has been enlarged. Messrs. Walter Holt & Son, of Croydon, are the contractors for the new tennis and racquet courts, upon ground recently acquired by the M.C.C. at the rear of the pavilion. The progress of the latter works has been delayed, pending an arrangement with the owners of some adjoining property.

Isolation Hospital, Gosport.—An isolation hospital has just been erected at Gosport. Early last year plans were prepared by Mr. G. E. Bolshaw, architect, of Southport, and the construction was commenced by Mr. John Croad, builder, of Gosport, under the supervision of Mr. H. Frost (Surveyor to to the Council), assisted by Mr. A. E. Dixon. The hospital stands in the centre of a field of two acres. There are three distinct buildings, the hospital itself being quite apart from the administrative and laundry blocks. Internally there are two distinct hospitals, each having an entrance of its own. At the western end scarlet fever patients will be treated; cases of typhoid fever being allotted to the eastern end. There is room for sixteen beds. Separate wards for men, women, and children are provided at both ends of the building, that at the western end for women being 36 ft. in length by 22 ft., and containing five beds; while that for men is 24 ft. by 16 ft., and contains two beds. The eastern end is of a similar design. Nurses' rooms are also provided, and a verandah, 40 ft. long by 10 ft., surmounts the necessary offices.

New Accident Hospital for Alloa.—On the 30th ult. the Earl of Mar and Kellie opened the new accident hospital which has been provided for Alloa and district. The new building has been erected from plans by Mr. R. A. Bryden, architect, Glasgow, and is situated to the west of the old hospital in the Sunnyside district of Alloa. The main building consists of a central administrative block and two wings —one containing wards for males and the other for females. Each of the wings contains one ward for six beds, one ward for three beds, and two private wards for one bed each. The wards are approached from the central part of the building by wide corridors. From these corridors the latrines enter at the back; ward sculleries are also provided, entering off the corridors. The floor of the wards is of pitch pine, and all corners are rounded. The lower walls of the corridors are lined with tiles, and each corridor has an exit porch for convalescent patients obtaining access to the grounds in rear of the buildings. The central part of the building contains toward the front the entrance vestibule, doctors' room, and men and women's day-room, behind which are placed the operating-room, doctors' store, kitchen and scullery, service pantry, and matron's store-room, &c. The central building is two stories in height, and on the upper floor contains matron's rooms and seven bedrooms. To the rear of the main building is the probationary ward, as also the washing-house, laundry, and drying-room. In the laundry is a hydraulic washing-machine—both these machines being fitted up by Messrs. Watson, Laidlaw, & Co., Glasgow. The boiler-house is at the east end of the building, the high-pressure boiler being supplied by Messrs. Marshall & Co., Motherwell. Adjoining this is a pumping-room, containing a hydraulic engine to be utilised for pumping purposes. There is likewise a fumigating-room in this part of the building. The whole of the apartments are fitted up with electric bells.

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Reredos, St. Mary's Scottish Episcopal Church, Montrose.—A reredos, which has been erected in this church in memory of the late Rev. John Woodward, was unveiled on the 1st inst. The three central arches of the reredos have been filled with mosaic work by Messrs. Powell & Sons. The sculpture work was executed by Mr. Alexander Neilson; the architects were Messrs. Ross & Macbeth, of Inverness.

## *SANITARY AND ENGINEERING NEWS.*

Lincoln.—At the last meeting of the Lincoln Corporation it was decided to make application to the Local Government Board for loans amounting to upwards of 10,000*l.* for additions and alterations to the markets and for building a model abattoir. Plans are also in hand for a City Isolation Hospital, the site of which has already been secured. Many of the leading sanitary engineering firms have also already responded to the invitation of the local committee to exhibit at the Health Exhibition to be held in the Drill Hall, Lincoln, from August 3 to 19. This exhibition, the first of its kind ever held in the county of Lincoln, is being arranged in conjunction with the annual provincial meeting of the Sanitary Inspectors' Association.

Sewerage Works, Ealing.—At the Council Chamber, Victoria Hall, Ealing, recently, Major-General Darley Crozier, R.E., Local Government Board Inspector, held an inquiry into the application of the District Council for sanction to borrow 10,150*l.* for works of sewerage and sewage disposal, and 350*l.* for providing scavenging plant. Mr. Charles Jones, surveyor, produced and explained the plans.

Burley-in-Wharfedale Water Supply Bill.—This Bill has passed the Commons Committee. Its object is to acquire a catchground of 300 acres on Burley Moor. The moor is common land, and a clause has been inserted in the Bill to meet the wishes of the Commons Preservation Society. The scheme provides for a reservoir holding 15½ millions of gallons, to impound Carr Beck, and also for the purchase of the water rights of Mrs. Crofton, the Lady of the Manor of Burley. The dam will be about 400 yds. long and 31 ft. in height. The Bill was grouped with the Horsforth Water Company's Bill to acquire the same catchground, and the Horsforth District Council's Bill to acquire the company's undertaking, the Council strenuously objecting to take over the Company's Burley Moor scheme as costly and improvident. Thus the Burley scheme was opposed by the Horsforth Company, while the latter's scheme was opposed by both the Burley and Horsforth Councils. After hearing the evidence for the Horsforth Council and the Company, the Committee passed the former's bill to acquire the Company's undertaking; but before deciding the fate of the Company's bill, called upon the Burley Council to submit evidence. Their engineer, Mr. Malcolm Paterson, C.E., was then called, and after a long cross-examination the Committee passed the Burley Bill without further evidence. The engineer's evidence chiefly turned upon the needs of Burley, which is a growing residential district adjacent to Ilkley, the suitability of the proposed catchground, and the defects of the alternative scheme set up by the Horsforth Company. He objected to the reservoir site as dangerous, owing to the sandstone rock underlying it. By gaugings he had proved that the bulk of the dry weather flow of the Rushy Beck escaped, issuing in springs below the site proposed, and would be lost. The reservoir would not supply the highest houses in the district, and, further, the catchground was insufficient in area as a permanent source. A series of clauses for insertion in the Bill were submitted on behalf of Mrs. Crofton, but the committee rejected the whole, allowing only the usual sporting rights clauses as offered by Burley. Mr. James Mansergh, C.E., and Mr. E. J. Silcock, C.E., gave evidence on behalf of the Horsforth Council, and Mr. H. A. Johnson, C.E., on behalf of the Horsforth Waterworks Company.

The London, Walthamstow and Epping Forest Railway.—The railway company will promote a Bill during the current Session for making a line from the site of Cazenoves House, Upper Clapton-road, to pass thence eastwards across and underneath the Avenue and Mount Pleasant-lane, and to terminate by a junction with the Cambridge line of the Great Eastern Railway where it crosses the river Lea, and for amending their Act of 1894 so as to provide for a less amount of lands being purchased by them and substituted for a lessened amount of commonable lands, Walthamstow Marshes, to be taken under that Act for railway purposes.

## *STAINED GLASS AND DECORATION.*

Window, Ockbrook Parish Church, Derby.—A stained-glass window, by Mr. A. O. Hemming, of St. Margaret's-street, Cavendish-square, W., has been placed in Ockbrook Parish Church, Derbyshire, to the memory of the Ven. Melville Horne Scott, Archdeacon of Stafford, Canon of Lichfield, and twenty-one years Vicar of Ockbrook, and brother of Sir Gilbert Scott.

Memorial Window, Holy Trinity Church, Batley Carr.—Stained glass has been inserted into the east window of this church by Mr. George Fox, to the memory of his father. The window is designed to portray in some measure the three Persons of the Trinity. Messrs. Powell Brothers, of Leeds, have carried out the work.

Halberton, near Tiverton, Devon.—The parish Church of St. Andrew has been reseated with open oak benches, for the Rev. Prebendary Gregory, R.D. They have traceried ends with square flowers and other carvings, and have been carried out by Mr. Rogers, carver, of Exeter, from the designs and detailed drawings prepared by Mr. E. Swinfen Harris, architect, of London and Stony Stratford, under whose care the work here, extending over more than twelve years, and comprising new reredos, eagle lectern, works in chancel, painted decoration, stained glass, tiled pavements, altar cloths, &c. have been carried out.

## *FOREIGN.*

France.—The jury in the competition for the best designs for façades of Paris houses have awarded premiums to M. Marquet, for his houses in the Rue de Grenelle; to M. Debrie, for a house in the Rue Roi de Sicile; to M. Guimard, for the "Castel Béranger," Rue Lafontaine (Auteuil); to M. Rabier for his house in the Boulevard de la Villette, and to M. Breffendille for a house in the Rue des Petits Champs.——The twenty-seventh Congress of Architects will be held this year at Tours and at Paris, and will include excursions to Poitiers and Angoulême.——Some new casts after the monuments found at Delphi and Delos have been placed in the colonnade gallery of the Louvre.——A new Art Society under the title "L'Estampe Originale en Couleurs" has been started in Paris under the presidency of M. Rafaelli, the painter.——The Municipal Council of Paris has authorised the purchase of the Hôtel de Lauzun, on the Quai d'Anjou, at a cost of 300,000 francs.——M. Dubois has just completed the model of his statute of the late Duc d'Aumale, whose figure is represented reclining on a tomb holding in one hand a sword and with the other pressing a flag to his heart. The bronze statue of Cardinal Lavigerie by M. Falguière is to be erected shortly on a public place in Carthage, and a copy of it at Bayonne. M. Falguière is now commissioned to execute the statue of Daudet to be erected at Nimes, while M. de Saint-Marceaux is to carry out that which is intended for the Luxembourg Garden.——A museum of art is to be formed at Cherbourg.——The jury of the competition opened for the erection of a museum at Valenciennes has awarded the first premium to M. Dusart, the second to M. Armbrustér, and the third to M. Lemaire.——M. Benjamin Leroux, a member of the Société Centrale des Architectes, has just died at the age of fifty-four. He was "architecte-voyer" at Courbevoie, and architect of a number of buildings in Paris and at Neuilly, among which may be mentioned the English Church in the Boulevard Bineau.——The death is also announced, at the age of seventy-eight, of the Marquis de Chennevières, member of the Académie des Beaux-Arts, formerly Curator of the Luxembourg Museum, and, in 1873, Directeur des Beaux-Arts. He was the author of some highly-esteemed works on French art.

Cologne.—With the recent retirement of the well-known City Engineer of Cologne, Herr Stuebben, the transitional period through which the old cathedral city may be said to have passed during the last fifteen years has come to an end, and any one who has not visited the town since the early eighties would be surprised at the remarkable change which has been wrought. The new boulevards are now complete in every way, *i.e.*, they are lined on both sides with new buildings, and what was formerly a skeleton has become full of life. The suburbs of Cologne have also rapidly developed, and a very large number of excellent villas are now to be found on the outskirts of the city proper. As regards the general arrangement of the boulevard, a broad thoroughfare has been formed showing a three-quarter circle in plan, broken from time to time either by squares or widened out to take the form of double avenues. The so-called "German" Ring has a width of quite 400 ft., whilst the average boulevard width may be taken as slightly over 100 ft. The city is now rapidly extending to a second line of fortifications, so that in another twenty years' time the formation of a second or outer boulevard is by no means improbable.

Building Industry in the Colonies.—The April Circulars of the Emigrants' Information Office state that in Canada the demand for mechanics is not good, but a competent man, who lands with a little money, is fairly certain, except at Toronto or in British Columbia, to obtain work before long. In New South Wales, at Uralla and Grafton in the far north, there is a fair demand for farm labourers and carpenters. At Sydney the building trade is now better than it has been for a long time, and carpenters and joiners have had their wages raised 1s. a day. In Victoria, local labour is generally sufficient, but the building trade in the Colony has revived and shows more activity than it has for some years. A skilled mechanic who lands with sufficient money to provide for himself and family during the first few weeks would have a reasonable prospect of finding remunerative employment, especially in country districts. Carpenters, joiners, and bricklayers have all received an advance of 1s. a day in Melbourne; but the demand for them is not brisk, as—owing to the large number of vacant shops and houses—few new buildings are being erected. There is a good demand for a limited number of thoroughly skilled plumbers on the Melbourne drainage works, which will take years to complete. In Queensland there is a general demand throughout the Colony for ploughmen and other farm labourers, but not for mechanics, though for them also work has been more plentiful lately. The iron foundries at Ipswich and elsewhere have been especially busy, and skilled labour has been difficult to obtain at times. In Tasmania, mechanics at Zeehan and Queenstown, on the west coast, and in the surrounding districts, have been well employed; good mechanics (especially first-class fitters) can always get work, but there is no demand whatever for inexperienced men. In other parts of the Colony there is no general demand for more mechanics. In New Zealand there has been plenty of work lately. The places which seem to have been especially busy are Napier, Wanganui, Otaki, Masterton, Ashburton, Timaru, Oamaru, Dunedin (except in the boot trade), and Invercargill. At Wellington, however, trades, except the clothing trade, have been slack, and at Christchurch a number of stonemasons and carpenters have been out of work. In Cape Colony there is practically no demand for more labour, except in parts for a few skilled mechanics. In the Transvaal, at Johannesburg, there is no demand for labour, but in Pretoria there is a fair opening for skilled mechanics.

## *MISCELLANEOUS.*

Professional and Business Announcement.—Messrs. John Hall & Co., Stourbridge, have disposed of the glazed brick branch of their business to a private company, who will trade as "John Hall's Glazed Brick Co., Ltd." The original firm will carry on their fire-clay, fire-brick, and retort works as before.

Alleged Jerry-building in Aberdeen.—On Tuesday, March 28, a public meeting, under the auspices of the Operative Masons and Granite Cutters' Union, was held in the Trades' Hall, Aberdeen, for the purpose of calling attention to the alleged prevalence of jerry-building in Aberdeen. Resolutions were adopted protesting against jerry-building, and urging on the Town Council "to take steps to safeguard the workmen as well as the interests of the community by having fully-qualified inspectors or architects to supervise all work to which its Plans Committee gives sanction."

London County Council.—The Money Bill which the Council will introduce during the current Session relates to their annual capital expenditure April 1, 1899, to March 31, 1900, and the following six months. Amongst the various objects for which the amounts are to be defined during that time are the following—sites for stations, buildings, river-piers, new float, &c., for purposes of the Fire Brigade Act, 1875; sites and buildings for Council chamber and offices, weights and measures and gas-meter stations, coroners' courts, lunatic asylums, industrial dwellings, technical schools, and workshops; parks, gardens, and open spaces; purchase of White House, Hackney Marsh, and Fairseat House, Waterlow Park; removal of certain gates, bars, or other obstructions in streets; electric lighting on Westminster Bridge and Victoria Embankment; reconstruction of the Isle of Dogs, Rosemary Branch, and certain county bridges; extensions of and precipitation and other works at pumping stations and out falls, new pumping stations, sewerage works, and main and relief sewers; purchase of tramways and equipment of lines for electrical working; Tower Bridge (southern), Wandsworth Bridge (southern) and Lambeth Bridge (eastern) approaches; Evelyn-street, Deptford, Roehampton-street, Westminster, Long-lane, Southwark, Old-street and Goswell-road, Holloway-road, and other street improvements; Highgate Archway and Vauxhall Bridge; and a new street between Tabard-street and High-street, Borough.

Open Spaces.—On the 30th ult. was opened to the public the disused burial-ground, about three-quarters of an acre in extent, in Kipling, formerly Nelson, street, Bermondsey (Snow's Fields), that had belonged to Guy's Hospital, which bought the ground in 1789. The ground, which in times past lay amidst the ditches and watercourses of Southwark, and was a favourite haunt of "resurrection men," has latterly been used as a builder's yard. Towards its purchase, for 4,600*l.*, from the hospital authorities, the London County Council contributed 2,300*l.* The remainder has been subscribed by the Metropolitan Public Gardens Association (500*l.*), Guinness's Buildings Trustees (150*l.*), Bermondsey and St. George-the-Martyr Vestries (1,186*l* and 164*l.*), and St. Olave District Board of Works (300*l.*) The London County Council made a further grant of 890*l.* towards the cost of laying-out and enclosing the ground, and providing a gymnasium, the Association contributing to the same purpose a sum of 500*l.*, derived, *ad hoc*, from the Trustees of the London Parochial Charities.—It is stated that the General Purposes Committee of the Middlesex County Council recommend subscriptions of 2,000*l.* towards the proposed laying-out of the Chestnuts Estate (eleven acres) at Tottenham, and 10,000*l.* towards the purchase of the Manor House property, at Ealing.—The Metropolitan Public Gardens Association will shortly be enabled to lay out the churchyard of St. Mary, Plaistow, which has been transferred to the Corporation of West Ham; and in response to their representations the City Corporation have undertaken to consider the question of maintaining many of the city churchyards provided that the Association will re-instate and adapt them for public resort.—The Richmond Town Council have entered into negotiations with Sir Charles Rugge-Price, who lately bought for 100*l.* from the Crown the manorial and other rights over he whole of the Pest House Common, about 3½ acres in extent, which has formed a public recreation and playground for longer than a century. Sir Charles Rugge-Price intends to cut roads across the Common for developing his property that lies beyond, and the Council are not satisfied, thus far, with the proposals he makes in respect of the restricted use, for recreative purposes, of the remaining portions of the land.

Lord Kelvin on Refuse Destruction.—Lord Kelvin has just prepared a report on some interesting investigations made by Professor Archibald Barr and himself in Edinburgh, Bradford, and Oldham, on the subject of the destruction of town refuse. In one instance he experimented on damp ash-pit refuse, containing a large proportion of night-soil and vegetable matter from markets and shops. This was consumed without the slightest trace of smoke. In addition to this solution of the smoke difficulty the residual products proved to be of great commercial value. In another case the steam produced by the process of destruction was utilised for the driving of electric lighting machinery and other power purposes. No coal or coke whatever was employed, and in this instance also there was an entire absence of smoke. Lord Kelvin's report demonstrates that our public bodies have no longer any excuse for referring to "waste products," but have within their reach the means of turning the most unpromising kinds of refuse to a highly profitable account.—*Times.*

Proposed Thames Tunnel.—The Bridges Committee of the London County Council have formulated a scheme for the construction of a tunnel beneath the Thames, from Shadwell to Rotherhithe. The total length of the tunnel and its approaches, between Union-road, Rotherhithe, and Commercial-road East, Shadwell, will be 6,825 ft., with thoroughfares in the tunnel of 17 ft. in width for the carriage-way, and 4 ft. 2 in. for each of two footpaths. The total cost of the project is estimated to be 2,198,250*l.*, but of that amount 798,250*l.* is apportioned to the acquisition of property, and the cost of acquiring sites for the rehousing of the industrial classes displaced in carrying out the works.

Alloys of Iron and Nickel.—At the meeting of the Institution of Civil Engineers, on Tuesday, March 28, a paper was read on "Alloys of Iron and Nickel," by Mr. R. A. Hadfield, M.Inst.C.E. The paper dealt first with the physical data relating to nickel and iron. The effect upon iron of gradually increasing amounts of certain added foreign elements had already been investigated by the author in experiments upon the mechanical and physical properties of alloys of iron and manganese, silicon, aluminium, and chromium, both in the cast and forged conditions. In the present paper were given the results of a similar investigation of the alloys of iron and nickel. In a research of this nature it was important to avoid as far as possible the disturbing influences of a second foreign element, especially carbon, and this had been done as far as possible. The addition of nickel, either by conferring greater homogeneity or by some particular combination with the iron or carbon present, or both, appeared to confer properties upon the alloy equivalent to an annealing, or, if annealing be employed, to reduce the stress produced by forging; it did this even in the annealed material without injuring or seriously lowering the elastic limit. In this respect, therefore, its presence was of considerable practical utility. The well-known Russian metallurgist, Chernoff, had stated that steel was composed of crystals of metallic iron cemented by carbide of iron, the result being that in the case of nickel-iron alloys the inter-crystalline spaces (a subject which had been fully and carefully investigated by Mr. T. Andrews, F.R.S., as regards ordinary steel) were much more completely filled, and the cohesion consequently rendered more powerful. The points of solidification of the cement and crystals were nearer, thus producing or maintaining a more intimate interweaving of the elements. In support of this theory might be cited the fact that without doubt nickel-iron alloys showed less tendency to segregation, which apparently showed that the combinations formed at high temperature were more intimately maintained when the alloy cooled and became solidified than was the case with ordinary steel.

Newcastle Society of Antiquaries.—At the recent monthly meeting of the Society of Antiquaries of Newcastle-on-Tyne, Mr. Sherriton Holmes (treasurer), on behalf of Mr. G. B. Harris, presented to the Society "sundry plans, papers, and designs for the Newcastle Central buildings, which came from the office of the late Mr. Richard Grainger." Notes explanatory of the papers were read. Mr. Oswald, on behalf of the Northern Architectural Association, exhibited plans for courts of justice, with accommodation for judges and for the Mayor of the city, which Mr. Grainger had proposed to erect in Grey-street on the site now occupied by Messrs. Lambton's Bank. Mr. Dotchin presented a framed copy of the print of speeches delivered at the opening of the new markets in 1835. The Rev. Canon Greenwell, the Chairman, observed that Newcastle, through the whole of its career, had always possessed a number of great and eminent citizens, but to no one had the city been more indebted than to Richard Grainger. He was emphatically a man before his time, and his projects were all directed towards the making of a great and noble town. It was a most lamentable thing that his scheme for the erection of the proposed courts and public buildings was not carried out. The present Corporation buildings were of the meanest and most contemptible character, but he hoped to live to see them swept away and replaced by buildings more worthy of Newcastle. The name of the late Mr. Dobson had also come before them in connexion with that of Mr. Grainger. He was an architect of very great attainments and artistic faculties, and a man of whom Newcastle had reason to be proud. If he had been enabled to carry out in their entirety his designs for the Central Station, it would have been twice as fine a building as the present one. There, again, they had to lament the shortsightedness of a public body, for they were entitled to look upon the railway company as such, though it pleased the company on occasion to consider itself a private concern. The donors of the various exhibits were accorded the thanks of the meeting. A paper on "The Reopening of St. Cuthbert's Tomb in Durham Cathedral Church" was contributed by the Rev. E. J. Taylor, F.S.A., who described what took place on March 1, when the tomb of the saint was reopened.

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## *CAPITAL AND LABOUR.*

Aberdeen Masons.—The Aberdeen Master Masons' Association having considered the proposed compromise, namely, to grant an increase of ½d. per hour in the wages of the operatives all round, resolved to offer trowel men a rise from 8d. to 8½d. per hour, but to decline to increase hewers' wages, which are at present at the rate of 8d. per hour.

Aberdeen Plumbers.—It has, after considerable negotiation, been agreed that the standard rate of wages for operatives be advanced from 7½d. to 8d. an hour, and that the radius for city work be increased from one and a half to two miles from Union Bridge. Beyond this area the extra rate of 6d. per day for suburban work will apply.

The Darlington Building Trade.—A meeting of the Darlington building trade, called by the branch of the Amalgamated Society of the Carpenters and Joiners, was held recently to consider the wages question. It was decided to give notice for an advance of ½d. per hour, such notice to expire on June 30. It was pointed out that two years ago application was made for an increase of 1d. per hour, but only ½d. was conceded, making the rate of wages 8d. per hour. It was thought, therefore, that they should now make application for the other ½d. It appears from statements made that Darlington is the least paid town in the county of Durham, Stockton being the nearest at 8¾d. per hour. At Middlesbrough the rate of wages is 9d., whilst on Tyneside it is 9½d.

Building Trade Strike at Leicester.—The Leicester building trade is about to be completely paralysed by a general strike of bricklayers' labourers. In November the men gave notice of a demand for an advance of 1d. per hour to 7d., to commence on Saturday, on the ground that three years had elapsed since the previous advance, and that most of the Midland towns are paying the desired amount. But the employers refuse it, contending that only a dozen other towns are giving more than Leicester. The men refused to resume work on Wednesday.

Bricklayers' Strike at Felixstowe.—About six months ago the Operative Bricklayers' Society gave notice to the master builders at Felixstowe of their request for one penny per hour rise in wages and a revision of working rules, on and after April 1. During the last few weeks a meeting between the Master Builders' Association and the Operative Bricklayers' Society has been held in Ipswich, but, as no agreement could then be arrived at, the matter was left over, and has not yet been decided. The men, therefore, came out on strike in the whole of the district on Saturday. The Felixstowe builders held a meeting at the Orwell Hotel on Saturday to consider the terms to be offered to the men now on strike, and who had demanded 1½d. per hour advance. The masters decided to offer ½d. per hour.

Strike and Lock-out at Scarborough.—The secretary of the Labourers' Union recently wrote to Mr. Moore, a builder at Scarborough, notifying that unless a non-union labourer in his employ was discharged the union men would strike. The letter was referred to the Master Builders' Association, who informed the union that if Mr. Moore's men struck all the union labourers in Scarborough would be locked out. The men struck work on Wednesday.

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## *LEGAL.*

### BUILDERS AND DRAINAGE.

Last week, before his Honour Judge Edge and a jury, at Clerkenwell County Court, Thomas Wm. Kingsland, builder, Beechholme-road, High-road, Clapton, sued Maurice Miroy, agent, of Anson-road, Tufnell Park, for 52*l.* 5s., for work done and materials provided; and there was a counter-claim for 50*l.* damages alleged in respect of the plaintiff's negligent and defective execution of drainage work—viz., his omission to provide for the drainage of the cellars and basement at "Ellengowan," 40, Anson-road, Tufnell Park, and failure to lay drain pipes to the depth shown on the plan prepared by the plaintiff, approved by the defendant, and lodged with and passed by the Islington Vestry.

Mr. Whateley, barrister, appeared for the plaintiff, and Mr. Innes was counsel for the defendant.

It was stated that Mr. Miroy received notice from the Islington Vestry, specifying certain nuisances upon his premises which required remedying. The matter was put in the hands of Mr. Kingsland, who carried out a system of drainage. Previously, for no less than nine years the cellars, it was stated, had been perfectly dry; and it was submitted, on behalf of the defendant, that, after the execution of the work, the cellars were flooded after a downfall of rain to such an extent that it took two men six hours each to bale them out, Further, it was said, an outlay of 50*l.* would be required to put the cellar right again.

The jury retired at the close of the evidence, and found a verdict on the counter-claim for 52*l.* 10s., the plaintiff's claim being allowed by consent.

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## MEETINGS.

Saturday, April 8.

*Sanitary Inspectors' Association.*—Mr. D. Balfour, M.Inst.C.E., on "Sewage Disposal by the various Methods up to date, viz.: Tidal, Land, Chemical, and Bacteriological." 6 p.m.

*St. Paul's Ecclesiological Society.*—Visit to the Dutch Church, Austin Friars (turning from Old Broad-street, E.C.). 3 p.m.

*Edinburgh Architectural Association.*—Visit to Woodhouselee.

Monday, April 10.

*Royal Institute of British Architects.*—A paper to be read, arranged for by the Art Standing Committee, on "The Application of Colour to Interior Ornament in Relief." 8 p.m.

*Society of Engineers.*—Mr. E. C. Amos on "Machine Tools." 7.30 p.m.

*Sanitary Institute (Lectures for Sanitary Officers).*—Mr. Edwin T. Hall on "Sanitary Building Construction." 8 p.m.

*Bristol Society of Architects.*—Mr. Herbert Singer on "Iron and Bronze Work."

Tuesday, April 11.

*Institution of Civil Engineers.*—(1) Paper to be further discussed: "Alloys of Iron and Nickel," by Mr. R. A. Hadfield. (2, time permitting) Mr. J. M. Dobson on "Buenos Ayres Harbour Works." 8 p.m.

*Builders' Clerks' Benevolent Institution.*—Annual dinner, King's Hall, Holborn Restaurant. 6 p.m.

*Sheffield Society of Architects.*—Annual meeting: Eelection of officers and council, &c.

Wednesday, April 12.

*Sanitary Institute.*—Miss Alice Ravenhill on "Practical Hygiene Teaching in Elementary Schools." 8 p.m.

*Sanitary Institute (Demonstrations for Sanitary Officers).*—Inspection at Disinfecting Station, Lot's-road, Chelsea. 3 p.m.

*Society of Arts.*—Mr. John Gavey on "Telephones." 8 p.m.

*Liverpool Engineering Society.*—Mr. Malcolm Blair on "The Difficulties that Manufacturing Engineers have to Undergo in Estimating and Working to Civil Engineers' Specifications." 8 p.m.

*Edinburgh Architectural Society.*—Mr. J. Fairweather on "Minor Points in Practice." 8 p.m.

Thursday, April 13.

*Royal Institution.*—Professor Dewar on "The Atmosphere." I. 3 p.m.

*Sanitary Institute (Lectures for Sanitary Officers).*—Mr. W. C. Tyndale on "House Drainage." 8 p.m.

*Institution of Electrical Engineers.*—(1) "The Hissing of the Electric Arc," by Mrs. Ayrton (conclusion of discussion). (2) "Experiments on Alternate Current Arcs by aid of Oscillographs," by Messrs. W. Duddell and E. W. Marchant (discussion, to be opened by the authors with an exhibition of experiments). 8 p.m.

*Society of Antiquaries.*—8.30 p.m.

*Society for the Encouragement of the Fine Arts.*—Mrs. Philip H. Newman on "Some Goldsmiths and their Work."

Friday, April 14.

*Architectural Association.*—Mr. F. W. Pomeroy on "Modelling as Applied to Architecture," with practical demonstrations. 7.30 p.m.

*Royal Institution.*—Professor A. W. Rücker on "Earth Currents and Electric Traction." 9 p.m.

*Institution of Junior Engineers (Westminster Palace Hotel).*—Paper to be read and discussed: "Piles and Pile-driving," by Mr. H. C. Reid. 8 p.m.

Saturday, April 15.

*Institution of Junior Engineers.*—Visit to the works of the new Vauxhall Bridge. 3 p.m.

*Sanitary Institute (Demonstrations for Sanitary Officers).*—Inspection at Beddington Sewage Farm. 3 p.m.

*Perth Architectural Association.*—Visit to Free Middle Church, Tay-street. 2.30 p.m.

## RECENT PATENTS:

### ACCEPTED SPECIFICATIONS.

*Open to Opposition until May 29.*

[1898] 4,133, Usill & Browne, Apparatus for the Graphic Demonstration of Trigonometry. 6,695, Crompton & Ashley, Electrical Measuring Apparatus for Use in Regulating Currents. 6,788, Kirtley, Pipe Joints. 6,903, Tanner & Lowcock, Electrical Plug Connectors. 7,237, Richmond, Gas-heated Water Heaters or Boilers. 7,268, Geiser, Instrument for Ascertaining the Radius or the Centre of a Circle to which the Sides of an Angle are Tangential. 7,798, Nunns, 19,972, Hooper, and [1899] 2,325, Fürer, Electrical Switches. 7,965, Macdonald, Smoke Testing and Fumigating Appliances for Drains, &c. 8,764, Jones, Miners' Safety Lamps. 9,174, Stanley, Mining Surveying Instruments. 9,210, Winter, Stove Regulator. 9,280, Pease, Structural Arrangements for Combining Strength with Rigidity for Roofing, Walling, and similar Structural Purposes. 9,319, Javal, Production of Acetylene Gas. 9,450, Morgan, Air-inlet for the Ventilation of Sewers. 9,888, Barger, Thresholds and Weather Strips therefor. 10,556, Boydell, Gulleys and Traps for Streets and Similar Places. 10,684, Barltrop, Acetylene Lamps. 10,814, Hepburn, Vegetable Glues or Sizings. 10,908, Kien, Window Sashes. 11,172, Lacombe, Telemetrical Telescopes or Telemeters. 11,347, Böhle, Registering Apparatus for Use with Cranes, Lifts, &c. 11,397, Törner, Oil Stoves, &c. 11,573, Glover & Glover, Means for Increasing the Initial Velocity of Bunsen Flames for Heating, Soldering, Brazing, and other useful purposes. 11,673, Killip, Ladders. 11,750, Willocks, Disinfectants and their use. 11,929, Bull, Beam Compasses. 12,047, Cordeaux, Wheelbarrows and Handcarts. 12,254, Sjöstrand, Instrument for Reproducing Drawings. 12,552, J. Duckett & Son, Ltd., and Duckett, Water-closets. 14,184, Stamm, Material for Impregnating Incandescent Mantles. 16,552-3, Bremer, Electrodes for Arc Lamps, and Electrical Arc Lamps. 21,044, Cox, Prepayment Electrical Motors and Meters. 24,293, Goodson, Gas Governors. 24,849, Moore, Burial Caskets. 26,785, Brockie, Automatical Lathes. [1899] 334, Rigby & Taylor, Automatical Opening, Closing, Locking, and Unlocking the Doors of Hoists, Lifts, &c. 1,028, Shaw, Tumbler Locks. 1,683, Melzer, Haffner, & Koch, and 2,971, Bagley, Arc Lamps. 1,745, Ross, Composition for Flooring, Roofing, &c. 2,056, Brown, Chimney and Ventilating Shaft Tops. 2,449, Caro & Saulmann, Incandescent Mantles. 2,460, Steinhoff, Gas or Oil Heaters or Stoves. 2,719, Davis and others, Method of, and Apparatus for Applying Paint, Lacquer, and other Coatings. 2,733, Marchand, Oval-cutting Machine. 2,764, Lapp, Deep-boring Apparatus. 2,862, McKenna, Straightening and Cutting Rails, &c. 2,997, Hutcheson, Gulley Traps or Cesspools. 3,231, Walsh, Means for Opening Windows in Case of Fire or Emergency. 3,468, Palazzi, Blow-pipe Lamps. 3,630, Legge, Means of Attachment between the Knobs and Bolts of Night Latches and other Drawback Latches. 3,785, Stewart, Wrenches or Spanners. 3,973, Kimber, Machines for Sharpening Rock-drills, Rock-drilling Machine Bits, &c. 4,074, Geary, Manufacture of Wood-block and Parquet Flooring.

### ABSTRACTS OF PATENTED INVENTIONS.

27,616.—Joiners' Cramps and Bench Fittings: *H. White.*—The invention relates to means for securing window-sashes and similar woodwork to a joiner's bench, a wooden block is secured by bolts to the bench, and sliding bars, which can be locked in position with screws, carry other screws which secure the sash-frame's lower member, whilst the frame's top bar is held by screws which pass through nuts attached to the bench.

27,632.—An Appliance for Windows: *J. W. Merry.*—To carry off water arising from condensation, troughs, made of bent sheet-metal are fastened to the inside of the window's bottom rail, the trough's edge has a V-shaped groove in the rail, and the moisture is drained from the trough through holes in the sash-bar.

27,639.—Calcium Carbide: *W. J. H. Lazarus.*—Calcium carbide, to be used for making acetylene gas, is made in the shape of cartridges, for convenience of packing and transport; lumps of raw carbide are first impregnated with from five to twenty-five per cent. of paraffin, stearine wax, and similar substances, then ground into a powder, the powder is pressed into metal containers which are closed at one end with a damp-proof material which is also rendered insoluble with formaldehyde or potassium bichromate. It is claimed that the impregnating material and the calcium hydroxide form a pasty mass which keeps the carbide dry when it is taken out of the water, but allows water to soak through it, and acetylene to easily escape, when it is immersed.

27,652.—Gas Ignition: *M. Bernstein.*—Certain fibres, filaments, or other combustible organic materials, combined with various inorganic substances (such as calcium, barium, strontium, aluminium, beryllium, erbium, thorium, and so on), are saturated with a solution of palladium or platinum, or of both, and then incinerated; the gas is automatically lighted by means of the palladium or platinum black, which is placed, in its finely-divided state, within a porous support.

27,698.—Screw Wall-Sockets: *C. Udall & F. H. Royce & Co.*—The inventors' object is to facilitate the finding of the place where the hole must be made in the wood-casing (for telephone wires, &c.); to that end a sharply pointed loose plug is inserted within the metal screw socket after the latter has been driven into the wall, and the casing is then placed against it in position; or sharp points may be formed upon the edge of the socket.

27,720.—Gas Nozzle Valves: *M. Seiler.*—A valve for regulating the flow of the gas is provided underneath the outlet of the nozzle of a Bunsen or similar burner, after the kind used for incandescent lights. The valve has a narrow rib which, when disposed slantwise, causes two gas currents to flow out at various distances from the top of the nozzle, whereby a complete expansion of the gas and mixing thereof with the air are ensured.

27,727.—Water Waste Preventers: *T. & J. H. Claughton.*—The starting lever is mounted upon a removable stud by means of bearings upon a bridge piece, which is bolted at its either end to the top of the tank. There are stops—or set screws may be substituted—for regulating the stroke of the lever.

27,767.—Generation of Acetylene Gas: *J. H. Schülke.*—Perforated carbide holders are placed within floating vessels, each of which is covered with a bell attached thereto by springs; a pipe on the bells covers another pipe through which the gas passes to a common pipe beneath, and thence through a condensing coil into the holder, and so to a pressure regulator and to the service pipes; each of the floating vessels has a hole for the passage of water to a perforated pipe that conveys the water to the bottom of the vessel, thus the carbide is operated upon from beneath it, and the upper layers of carbide dry the gas; a reduction of gas pressure gives the water access to the lowest hole, whilst an excess of pressure lifts the bell and carbide holder, and so arrests generation of gas; after the first vessel is exhausted all the vessels fall until the next vessel comes into play.

27,813.—Lavatory Supply and other Fittings: *J. Shanks.*—The basin has an extension to be built into the supporting wall, a conical-headed bolt, wedged into a recess, secures to the basin a bracket which carries the discharge pipe: for discharge, a conical recess, formed at the bottom of the basin, is fitted with a heavy valve having a rubber flange, the valve-stem passes up through a grating fastened by screws that engage with the heads of the bolts which secure the flange of the discharge pipe; the water passes from the hot-and-cold mixing chamber either directly into the basin, or to an overhead spray, provision being made for stopping the one form of supply when the other is required, as well as for a single jet or a spray delivery.

27,817.—Moulding Tiles: *A. Roberts, E. T. Ball, & W. H. Bangham.*—Dove-tail slides form under-cut recesses in the tile, being forced outwards by stationary wedges, when pressure upon the plastic material within the mould forces the die plate downwards; springs force the slides together when the die plate rises upon removal of the pressure.

27,860.—Man-holes for Sewers: *H. E. Stilgoe.*—The bottoms or inverts of the man-holes, cast in one piece or more, extend above the subsoil water level, the ends of each invert are bolted to the pocketed flanged ends of the sewer pipes, and have channels and pockets, the invert may be bedded upon concrete, and the pockets may be filled with cement when the joints are made, branch pipes can be similarly fitted to the bottom.

27,884.—Fireproof and Waterproof Roofs.—*R. Glendinning.*—When a flooring has been nailed to the rafters, arranged approximately horizontally, a number of layers of overlapping sheets of asphalt are applied in turn with an adhesive compound of pitch, tar, resin and Trinidad asphalt. The surface is then coated with the compound, to which gravel, stone chippings, sand, &c., may be added, or a layer of cement instead. The roofing may be laid on stone, concrete, or other surfaces.

28,055.—Extinguishing Fire: *C. B. Shaw.*—For a sprinkler nozzle, with valve, distributor, and so on, volatile liquid is poured into an expansible chamber, which, when sufficiently heated, expands and forces a key or plate outwards, and releases a block attached to the head of a strut, whereupon the compound strut collapses, and, opening a valve, allows a jet of water to be discharged against a toothed spreader.

28,140.—Ties for Scaffolding Poles: *W. & A. Hunnable.*—In one shape, a forked bracket, having two pivotted hooks, is secured to an upright pole by means of a spiked band and chain, and supports a horizontal pole, the bracket knuckles bear against the upright pole to form a lever fulcrum, whilst the weight of the staging forces spikes into the pole; in another form, two segmental bands are pivotted together and joined to a chain by a screwed hook and a hook; a nut on the screwed hook tightens the bands and chain round the pole, and a segmental socket, fixed upon the band, supports a horizontal or inclined pole.

28,179.—Flushing Valves: *J. G. Connell.*—In order to provide a flush and after flush, a hollow sealed valve works within an inverted cup, perforated at its sides, which slides in the valve-body; the cup and valve-body are normally full of water discharged when the stem lifts the collar from its seat, continued motion lifts the valve to the cup's top, and the cup to the valve-body's top, when a flush ensues; when the stem is left free the cup falls down to its seat, and then the valve falls, the rate at which water enters the valve and cup determining the time of closure.

28,246.—Electrical Cut-Outs: *H. C. Gover & W. Müller.*—Slots for receiving sliding inverted T-pieces which carry the terminals are formed in the base of the instrument. The wires are secured with screws, and the fuse-wire is threaded through a tunnel and fastened with screws. Slots are cut in the screw thread and communicate with a groove, which also is in communication with the exterior.

28,289.—Sash Fastenings: *C. Russom.*—On the arm of an ordinary fastener is a spring knob, and on the knob is a pin that holds the arm in a locking position by engagement with a plate on the inner meeting rail. When the knob is raised and the arm is turned (to unfasten the sashes) the knob is turned relatively to the socket, whereupon a lug on the knob passes out of a notch in the socket, holding the knob raised until the sashes are fastened again.

## SOME RECENT SALES OF PROPERTY:

### ESTATE EXCHANGE REPORT.

| | |
|---|---|
| March 22.—By Simmons & Sons (at Basingstoke). | |
| Wootton St. Lawrence, Hants.—Upper Wootton Farm, 413a. 1r., f. | £10,000 |
| By Hepper & Sons (at Bramley). | |
| Bramley, Yorks.—The Green Hill House Estate, 46a. 2r. 30p., f. (in lots) | 5,820 |
| March 23.—By Baxter, Payne, & Lepper (at Bromley). | |
| Bromley, Kent.—30, High-st., f., e.r. 60*l.* | 800 |
| By W. Martin & Co. | |
| Hampton, Middx.—Hanworth-rd., Glenthorne, u.t. 83 yrs., g.r. 12*l.* 10s., r. 35*l.* | 220 |
| Dulwich.—88, Melbourne-grove, u.t. 77 yrs., g.r. 6*l.* 10s. | 275 |
| 46, Ashbourne-grove, u.t. 71 yrs., g.r. 6*l.*, r. 28*l.* | 310 |
| 2A and 2, Chesterfield-grove, u.t. 71 yrs., g.r. 7*l.* 10s. | 450 |
| By C. C. & T. Moore. | |
| Stepney.—60, Heath-st., f., r. 26*l.* | 320 |
| 26, Smith-st., u.t. 14½ yrs., g.r. 2*l.* 10s., r. 30*l.* | 165 |
| 31, Stepney-causeway, f. | 535 |
| Limehouse.—33, Church-row, f., r. 26*l.* | 400 |
| 80, 82, and 84, Salmon-lane, c., r. 74*l.* 8s. | 825 |
| 40, 41, 42, 43, and 44, Dalgleish-st., c. | 1,160 |
| Hackney.—222, Mare-st., f. | 2,720 |
| 1, Darnley-rd., f., e.r. 55*l.* | 800 |
| By Newbon, Edwards, & Shephard. | |
| Brixton.—Brandon-rd., f.g.r. 12*l.*, reversion in 56 yrs. | 330 |
| Harringay.—12, 14, and 16, Umfreville-rd., f., r. 107*l.* | 1,775 |
| By W. Stevens. | |
| Hackney.—35, Rendlesham-rd., f., r. 30*l.* | 485 |
| Stoke Newington.—68, Newington Green-rd., u.t. 52½ yrs., g.r. 4*l.*, e.r. 36*l.* | 370 |
| De Beauvoir Town.—31, Church-rd., u.t. 19½ yrs., g.r. 7s., e.r. 42*l.* | 325 |
| Ball's Pond.—21 and 23, Kingsbury-rd., u.t. 53 yrs., g.r. 12*l.* 12s., r. 76*l.* | £700 |
| Tottenham.—268 and 270, St. Ann's-rd., u.t. 60 yrs., g.r. 8*l.* | 320 |
| By Drivers (Holloway). | |
| Finsbury Park.—23, 25, 27, and 31, Alexandra-rd., u.t. 59 yrs., g.r. 50*l.* 8s., e.r. 178*l.* | 1,720 |
| 3, 10, 11, and 12, Alexandra-rd., u.t. 74½ yrs., g.r. 50*l.* 8s., r. 196*l.* | 1,750 |
| 37, Gloucester-rd., u.t. 60 yrs., g.r. 13*l.* 13s., r. 65*l.* | 715 |
| Stamford Hill.—133, St. Ann's-rd., f., r. 32*l.* | 505 |
| Holloway.—A reversionary lease to the front portion of 44, Seven Sisters'-rd., expectant in 1905, for a term of 61 yrs. | 255 |
| By Stimson & Sons. | |
| Catford.—1 to 5, Balmoral-ter., f., r. 175*l.* | 2,000 |
| Brixton.—131, Acre-lane, u.t. 24 yrs., g.r. nil, e.r. 55*l.* | 415 |
| Camberwell.—1 to 4, Rust's-sq., u.t. 59 yrs., g.r. 25*l.* 4s. | 1,370 |
| Walworth.—52, Olney-st., u.t. 16½ yrs., g.r. 4*l.* 10s., r. 34*l.* | 185 |
| Charlton, Kent.—61 and 63, Maryon-rd., u.t. 23½ yrs., g.r. 14*l.*, e.r. 91*l.* | 310 |
| Kennington.—67, St. Agnes-pl., u.t. 69 yrs., g.r. 6*l.* 6s., r. 40*l.* | 425 |
| 2, Hanover-gdns., u.t. 46 yrs., g.r. 7*l.* 4s., r. 34*l.* | 340 |
| Dulwich.—291 to 303 (odd), 307, 309, and 315, Underhill-rd., f. | 4,285 |
| Landells-rd., a plot of land with buildings thereon, f., r. 40*l.* | 550 |
| By Boyton, Pegram, & Buckmaster (at Walham Green). | |
| Fulham.—2a, 4a, 37, 39, 43, 45, 47, 61 to 71 (odd), Burnfoot-av., u.t. 92 yrs., g.r. 54*l.*, r. 443*l.* 18s. (in lots) | 4,345 |
| 53, Waldemar-av., u.t. 86 yrs., g.r. 6*l.* 10s., e.r. 40*l.* | 335 |
| March 24.—By A. G. Olley (at Walham Green). | |
| Fulham.—50, 75, and 77, Horder-rd., f. | 1,000 |
| 32, Waterford-rd., u.t. 60½ yrs., g.r. 6*l.*, r. 32*l.* | 305 |
| Wandsworth.—31, Lebanon-gardens, u.t. 78½ yrs., g.r. 6*l.* 10s., r. 28*l.* | 300 |
| By Henry Hendriks (at Birmingham). | |
| Perry Barr, Staffs.—39 to 49 (odd), Aston-lane, u.t. 75 yrs., g.r. 9*l.* 8s. 2d., r. 117*l.* | 1,600 |
| Small Heath, Worcs.—223, Green-Lane, f., r. 24*l.* | 340 |
| Birmingham, Warwick.—65 to 73 (odd), Goodrick-st., u.t. 93 yrs., g.r. 12*l.* 10s. | 785 |
| By Walter Hall. | |
| South Norwood.—Lincoln-rd., f.g.r. 72*l.*, reversion in 79 yrs. | 1,940 |
| Willesden.—Cooper-rd., f.g.r. 53*l.* 11s., reversion in 91 yrs. | 1,490 |
| Brownlow-rd., f.g.r. 13*l.*, reversion in 86 yrs. | 370 |
| By Herring, Son, & Daw. | |
| Brixton.—38, St. James'-rd., u.t. 24 yrs., g.r. 10*l.* 10s. | 900 |
| By A. J. Sheffield. | |
| Hastings.—2, White Rock-gardens, u.t. 79 yrs., g.r. 20*l.*, r. 130*l.* | 1,500 |
| Upton Pk.—101 and 103, Neville-rd., f. | 630 |
| Canning Town.—32 and 34, Seaton-st., u.t. 68 yrs., g.r. 5*l.* | 150 |
| 59 and 61, Vincent-st., u.t. 66 yrs., g.r. 7*l.* | 115 |
| 12, 14, and 16, Outram-st., u.t. 68 yrs., g.r. 7*l.* 10s. | 135 |
| By T. B. Westacott. | |
| St. Pancras.—17 and 19, Leigh-st., u.t. 7¼ yrs., g.r. 42*l.* | 180 |
| 31, 32, and 33, Sandwich-st., u.t. 7½ yrs., g.r. 25*l.* 4s. | 235 |
| Camden Town.—19, Chalk Farm-rd., u.t. 31¾ yrs., g.r. 10*l.*, r. 80*l.* | 940 |
| By Stimson & Sons. | |
| South Lambeth.—Fentiman-rd., f.g.r.'s 32*l.* 10s., reversion in 26½ yrs. | 1,345 |
| Claylands-rd., f.g.r.'s 85*l.* 10s., reversions in 24½, 24½, and 25½ yrs. | 4,520 |
| Church-st., f.g.r. 16*l.*, reversion in 24½ yrs. | 705 |
| Meadow-rd., f.g.r. 10*l.* 10s., reversion in 20¼ yrs. | 605 |
| Hartington-rd., f.g.r.'s 15*l.* 10s., reversion in 61 yrs. | 490 |
| Brixton.—Horsford-rd., f.g.r. 19*l.*, reversion in 77 yrs. | 565 |
| Camberwell.—Denmark Hill, f.g.r.'s 26*l.*, rever- in 63 yrs. | 745 |
| Daneville-rd., f.g.r.'s 19*l.* 5s., reversion in 63 yrs. | 590 |
| Cuthill-rd., f.g.r. 22*l.*, reversion in 63 yrs. | 685 |
| Stoke Newington.—Allen-rd., f.g.r. 5*l.*, reversion in 61 yrs. | 140 |
| Paddington.—Grittleton-rd., &c., i.g.r. 104*l.*, u.t. 64 yrs., g.r. 2*l.* | 2,060 |
| South Lambeth.—Fentiman-rd., i.g.r. 60*l.*, u.t. 39 64 yrs., g.r. 8*l.* | 815 |
| Richmond-ter., i.g.r. 45*l.*, u.t. 29¼ yrs., g.r. 6*l.* | 515 |
| Richmond-ter., i.g.r. 68*l.*, u.t. 39 yrs., g.r. 8*l.* | 915 |
| Meadow-rd., &c., i.g.r. 34*l.*, u.t. 39 yrs., g.r. 5*l.* | 460 |
| Kennington.—14, Kennington Pk.-rd., c., r. 62*l.* | 620 |
| South Lambeth.—100 and 102, Fentiman-rd., f., r. 100*l.* | 2,240 |
| Kennington.—13, 13A, and 15, Lower Kennington-lane, f. | 1,685 |
| 17, Lower Kennington-lane, area 2,934 ft., f., r. 60*l.* | 1,230 |
| Hounslow.—Grosvenor-rd., a plot of building land, f. | 320 |
| Wellington-rd. North, two houses and shops, with land and stabling adjoining, u.t. 61¾ yrs., g.r. 10*l.*, r. 48*l.* | 640 |
| Chiswick.—28 and 30, Cambridge-rd., u.t. 62 yrs., g.r. 6*l.*, r. 61*l.* | 600 |
| 48 and 50, Cambridge-rd., u.t. 67½ yrs., g.r. 12*l.*, r. 70*l.* | 600 |
| South Lambeth.—27 and 29, Claylands-rd., u.t. 24¼ yrs., g.r. 7*l.* 12s., r. 72*l.* | 510 |
| 30 to 48 (even), Claylands-rd., with stabling, &c., adjoining, u.t. 24 yrs., g.r. 67*l.*, r. 367*l.* | 2,000 |
| 21 and 57, Trigon-rd., u.t. 25½ yrs., g.r. 9*l.* 10s., r. 70*l.* | 515 |
| Battersea.—303 and 305, York-rd., with timber-yard in rear, u.t. 38 yrs., g.r. 5*l.*, r. 58*l.* 10s. | 750 |
| March 25.—By J. Carter Jonas & Sons (at Wisbech). | |
| Wisbech, Cambs.—The Leverington Estate, 240 acres, f. | 14,000 |
| March 27.—By Nokes & Nokes. | |
| Tottenham.—1 and 3, High Cross-rd., u.t. 81 yrs., g.r. 12*l.* | 445 |

# COMPETITIONS, CONTRACTS, AND PUBLIC APPOINTMENTS.

## COMPETITIONS.

| Nature of Work. | By whom Advertised. | Premiums. | Designs to be delivered. |
|---|---|---|---|
| *Laying-out Site of Barracks | Salford Corp. | 30*l*.; 20*l*.; and 10*l*. | May 9 |
| *Public Baths | Fulham Baths Comrs. | 150; 75; and 50 guineas premiums | No date |

## CONTRACTS.

| Nature of Work or Materials. | By whom Required. | Forms of Tender, &c. Supplied by | Tenders to be delivered. |
|---|---|---|---|
| Road Metal | Staffs. C.C. | J. Moncur, Surv. County Buildings, Stafford | April 11 |
| Alterations to Club House | Annan (N.B.) Conservative Association | F. J. C. Carruthers, Archt. Dumfries | do. |
| Houses, Craigievar Estate, Aberdeen | | A. Stronach, Junr. 20, Belmont-st. Aberdeen | do. |
| Granite | Lutterworth R.D.C. | J. C. Coates, Surv. Bitteswell, Lutterworth | do. |
| Boundary Wall, &c. Northcote-lane | Cardiff Corp. | W. Harpur, C.E. Town Hall | do. |
| Additions to Grammar School, Wigton | | J. Graham, Archt. Bank-st. Carlisle | do. |
| Paving Alexandra road | Bedford Corp. | Boro Surv. Town Hall | do. |
| Five Houses, Linthwaite, Huddersfield | G. Haigh | J. Berry, Archt. 9, Queen-st. Huddersfield | do. |
| *10-ton Steam Road Roller | Cty. Boro. West Ham | Lewis Angell, Town Hall, Stratford | do. |
| *Clinker Mill and a Mortar Mill | Poplar B. of W. | The Surveyor, 117, High-st. Poplar, E | do. |
| *Road Making and Paving | Hammersmith Vestry | H. Mair, Town Hall, Hammersmith, W. | April 12 |
| Malting, Frome | E. Baily & Son, Ltd. | W. G. Brown, Archt. Park-rd. Frome | do. |
| Mortuary, Tividale | Rowley Regis U.D.C. | D. Wright, Council Offices, Old Hill, Staffs. | do. |
| Twelve Houses and Shop, Agnes-road, Barnsley | | Wade & Turner, Archt. 10, Pitt-st. Barnsley | do. |
| House and Shop, Winchester-street, Salisbury | Municipal Charities Trustees | J. Harding & Son, Archt. Salisbury | do. |
| Alterations to Station, Clegg-street, Oldham | | Engineer, London-road Station, Manchester | do. |
| Sewers | Rawtenstall (Lancs.) Corp. | A. W. Lawson, C.E. Municipal Offices | do. |
| Sixteen Houses, Gibbet-lane, Halifax | Halifax Indus. Soc. Ltd. | W. C. Williams, Archt. 29, Southgate, Halifax | do. |
| Roads, Southwold, Suffolk | Coast Development Co. Ltd. | H. Miller, 16, Museum-st. Ipswich | do. |
| Sewerage Works | Brightlingsea (Essex) U.D.C. | J. J. Taylor, 1, Victoria-st. Westminster, S.W. | do. |
| *Constructing and Sinking Well | Rochford R.D.C. | J. Mansergh, 5, Victoria-st. S.W. | April 13 |
| House, Skegness, Lincs | | J. Green, 25, Lumley-rd. Skegness | do. |
| House, Lindale-in-Cartmell | | J. Stalker, Archt. 57, Highgate, Kendal | do. |
| Granite Setts (3,000 tons) | Blackburn Corp. | W. Stubbs, C.E. Municipal Offices | do. |
| Additions to Workhouse | Ipswich Union | A. F. Vulliamy, Union Offices, Tower-st. | do. |
| Rebuilding Forester's Arms Inn, Gateshead | R. Newton | A. G. Kyle, Archt. 145, Pilgrim-st. Newcastle-on-Tyne | do. |
| *Painting at Schools | St. George's in the East Guardians | G. A. Wilson, Vestry Hall, Cable-st. E. | April 14 |
| *Converting Lifts to Hydraulic Lifts | do. | do. | do. |
| *Wood Paving and Concrete Foundations | Brighton Corp. | F. J. C. May, Town Hall | do. |
| School, &c. Botcherby, Carlisle | St. Cuthbert Without Sch. Bd. | A. W. Johnston, Archt. 81 Castle-st Carlisle | do. |
| Paving Works, Miller-road | Preston Corp. | Borough Engr. Town Hall, Preston | do. |
| *Alterations and Additions to Factory | B. Morris & Sons, Ltd. | C. Stranger & Sons, 21, Finsbury-pavement, E.C. | do. |
| Forty Houses, Aber, Bargoed | Powell Duffryn Steam Coal Co. Ltd. | E. M. Ham, Aberaman, Aberdare | April 15 |
| Additions to St. George Hotel, Aberystwyth | Allsopp & Sons | Hipkiss & Bassett, Archt. Terrace-rd. Aberystwyth | do. |
| Alterations to Police Station, Lanchester | Durham Standing Joint Committee | W. Crozier, C.E. Shire Hall, Durham | do. |
| House and Forge, Westgate, Halifax | | C. F. L. Horsfall & Son, Archt. Halifax | do. |
| Additions to Union Offices | Hunslet Union | W. E. Richardson, Archt. Bond-st. Leeds | April 17 |
| Additions to Forest Hospital, Mansfield | | R. F. Vallance, Boro Surv. Town Hall | do. |
| Piers, Abutments, &c. Ashton | Bristol Corp. | Engr. Cumberland-basin, Bristol | do. |
| Drainage Works, &c. Main-street | Cockermouth U.D.C. | J. Fearon, Council Offices, Cockermouth | do. |
| Flint Road Metal | Henley R.D.C. | C. Harper, Surv. Cane End, Reading | do. |
| *Concrete, &c. Tank and Filter Bed, Laying Pipes, &c. | Chayader R.D.C. | G. M. Jarman, Council Offices, Rhayader | April 18 |
| Police Station, St. Andrew's-st. | Cambridge T.C. | J. Morley, Archt. 22, St. Andrew's-st. Cambridge | do. |

## CONTRACTS—*Continued.*

| Nature of Work or Materials. | By whom Required. | Forms of Tender, &c. Supplied by | Tenders to be delivered. |
|---|---|---|---|
| Stables, Cardiff | G. W. Ry. Co. | G. K. Mills, Paddington Station, W. | April 18 |
| *Stone Paving | Tottenham U.D.C. | P. E. Murphy, 712, High-rd. Tottenham | do. |
| *Sluice Valve Hydrants | do. | do. | do. |
| *Brick and Pipe Sewers | do. | do | do. |
| *Road Making | Brentford U.D.C. | Nowell Parr, Clifden House, Boston-road, Brentford | do. |
| School and House, Johnstown | Ruabon (U.D.) Sch. Bd | J. Morison & Son, Archt. King-st. Wrexham | April 19 |
| Schools, Llanfyllin, Wales | | H. Teather, Archt. 83, Wyle-cop, Shrewsbury | April 20 |
| Hospital and Dispensary, Abergavenny | | E. A. Johnson, Archt. Abergavenny | do. |
| Bridge, Aireworth | Keighley Corp. | W. H. Hopkinson, C.E. Town Hall | do. |
| Additions, St. John's Church, Golcar | | J. Kirk & Sons, Archts Huddersfield | do. |
| *Iron Arched Roof | Newcastle-on-Tyne Corp. | Town Hall | do. |
| *Two Shops, Melksham | Henry White | H. Brakspear, High-st. Corsham, Wilts. | April 22 |
| Hospital, &c. Chinley, Chapel-en-le-Frith | High Peak Hospital Committee | W. R. Bryden, Archt. 1, George-st. Buxton | do. |
| Three Cottages, Bexhill | East Sussex C.C. | F. J. Wood, C.E. County Hall, Lewes | do. |
| Sewers, Croston | | F. E. Dixon, C.E. 49, Lune st Preston | April 24 |
| *Public Library | Croydon and Lambeth Joint Libraries | E. Haslehurst, 7A, Lawrence Pountney Hill, E.C. | do. |
| Additions to Gasworks | Oldham Corp. | A. Andrew, Gas Offices, Greaves-st | April 25 |
| *Enlargement of Workshop at School | Walthamstow Sch. Bd. | W. A. Longmore, Bridge Chambers, Hoe-street, Walthamstow | do. |
| *Alterations Boiler and Engine House, and Erecting Chimney Shaft | Metropolitan Asylums Bd. | Office, Norfolk House, Norfolk-st. Strand, W.C. | April 26 |
| *Enlarging School Premises | Weybourne (U.D.) Sch. Bd. | F. Andrews, Offices, Holt, Norfolk | April 27 |
| *Erecting School and Alterations to a Building | Barrow-in-Furness Corp. | Boro. Engineer | April 28 |
| Schools, Sunnyside | Halifax Sch. Bd. | W. C. Williams, Archt. 29 Southgate, Halifax | April 29 |
| Substructure of Bridge over River Avon, Breamore | Hants C.C. | W. J. Taylor, County Surv. The Castle, Winchester | May 1 |
| *Removal and Reconstruction of Bridge | Paddington Vestry | G. Weston, Vestry Hall, Harrow-rd. W. | do. |
| *Naval Reserve Buildings, Altcar, nr. Liverpool | Admiralty | Director of Works, 21, Northumberland-av. W.C | May 5 |
| *Villa | | G. Dirgley, 69, Coleman-st. E.C. | No date |
| Houses and Shop, Hillstown, Bolsover | | Vallance & Westwick, Archt. White Hart-chambers, Mansfield | do. |
| Additions to Imperial Hotel, Exmouth | H. W. Hayward | P. Kerley, Archt. Exmouth | do. |
| High Chimney, Brigg Mills, Meltham, nr. Huddersfield | Meltham Spinning Co. Ltd. | W. Carter, Archt. Meltham | do. |
| Chimney Shaft, Boiler House, &c. Bishopstone | Newhaven & Seaford Water Co. | H. C. Card, Surv. 10, North-st. Lewes | do. |
| Additions to Stores, Scotswood | Blaydon Co-op. Soc. | W. Glover, Archt. 16, Market-st. Newcastle-on-Tyne | do. |
| Sixteen Houses, Ravennook, Carlisle | J. Graham | J. & J. W. Hayton, Surv. Bank-st. Carlisle | do. |
| Additions to Business Premises, Leeds-road, Bradford | | Empsall & Clarkson, Archt. 7, Exchange, Bradford | do. |
| Additions to Schools, Clowbridge, nr. Burnley | | T. Bell, Archt. 14, Grimshawe-st. Burnley | do. |
| Additions to Business Premises, High-street, Dudley | | A. Ramsell, Archt. 7, Priory-st. Dudley | do |
| Ten Cottages, Greenhead Station Carlisle | | Thompson & Sons, Kirkhouse, Brampton Junctn. Cumberland | do. |
| Additions to Laundry Buildings | Carlisle Steam Laundry Co. | Johnstone Bros. Archt. 39, Lowther-st. Carlisle | do. |
| Eight Houses, Harehills, Leeds | | J. W. Watson, 21, New Station-st. Leeds | do. |
| Block of Cottages, Ilkley | | Isitt & Co. Archt. Prudential-buildings, Bradford | do. |
| Business Premises, Hereford | King & Sons | W. W. Robinson, Archt. 10, King-st. Hereford | do. |
| *New Roofs, &c. at Church | | Messrs. Chancellor, Archt. Chelmsford | do. |

## PUBLIC APPOINTMENTS.

| Nature of Appointment. | By whom Advertised. | Salary. | Application to be in. |
|---|---|---|---|
| *Architectural Draughtsman (2) | Scarboro. Corp. | | April 10 |
| *Assistant Surveyor | Margate Corp. | 150*l*. per annum | do. |
| *Surveyor's Assistant | Hammersmith Vestry | 150*l*. per annum | April 12 |
| *Clerk of Works | Hastings Union | 4*l*. 4s. per week | April 13 |
| *Architectural Assistant | West Bromwich Corp. | 100*l*. rising to 120*l*. per ann. | April 15 |
| *Building Inspector | Tottenham U.D.C. | 150*l*. per annum | April 17 |

*Those marked with an asterisk (*) are advertised in this Number.* *Competitions, p.* iv. *Contracts, pp.* iv. vi. viii. x. & xxii. *Public Appointments, pp.* xix. & xxii.

| | |
|---|---|
| 1, Lincoln-rd., u.t. 79 yrs., g.r. 6*l*. 10s. | £245 |
| Holloway.—47 and 49, Hampden-rd., u.t. 48 yrs., g.r. 10*l*. | 400 |
| By E. Pennington. | |
| Teddington.—Twickenham-rd., two plots of land, f. | 350 |
| Twickenham-rd., &c., Cranley and Lyddisdale, f., e.r., 140*l*. | 2,250 |
| By Prickett & Ellis. | |
| Kew Bridge.—Station-ter., f.g.r., 44*l*., reversion in 76 yrs. | 1,360 |
| By W. W. Saunders. | |
| Brixton.—11, Barrington-rd., u.t. 24 yrs., g.r. 8*l*., r. 50*l*. | 445 |
| March 28.—By Beale & Capps. | |
| North Kensington.—77 and 81, St. Quintin-av., u.t. 80 yrs., g.r. 20*l*., r. 105*l*. | 915 |
| By Dolman & Pearce. | |
| Hampstead.—51 and 53, England's-lane, u.t. 66 yrs., g.r. 4*l*., r. 160*l*. | 2,410 |
| By Saunders & Son. | |
| St. John's Wood.—1, St. Ann's-ter., u.t., 20½ yrs., g.r. 6*l*., r. 50*l*. | 385 |
| By Debenham, Tewson, & Co. | |
| South Kensington.—19, 21, and 23, Lexham-gardens, u.t. 73 yrs., g.r. 45*l*. | 3,400 |
| Chislehurst Hill, Kent.—The Mount, u.t. 87 yrs., g.r. 25*l*. | 600 |
| 4 and 5, Summer Hill-villas, f. | 1,650 |
| Herne Hill.—26, Norwood-rd., u.t. 59 yrs., g.r. 16*l*. 16s., r. 50*l*. | £500 |
| Chiswick.—4, 12, 18, 40, and 42, Devonshire-rd., u.t. 80 yrs., g.r. 38*l*. 2s. 6d., r. 186*l*. | 1,940 |
| Sydenham.—6 and 7, Border-cres., u.t. 84 yrs., g.r. 70*l*. | 1,100 |
| Brixton.—74, Elm Park, u.t. 77 yrs., g.r. 7*l*. 10s., r. 30*l*. | 400 |
| By Fleuret, Sons, & Adams (at Masons' Hall Tavern). | |
| Poplar.—Cotall-st., "The Prince of Wales" p.-h., u.t. 44 yrs., g.r. 35*l*., r. 100*l*. | 1,250 |
| March 29.—By Fortescue & Co. | |
| Wandsworth.—3 and 5, East Hill, f., r. 82*l*. | 1,360 |
| 19 and 21, Tonsley Hill, u.t. 63 yrs., g.r. 8*l*., r. 50*l*. 10s. | 405 |
| 31, Tonsley Hill, and 29, Tonsley-pl., u.t. 63 yrs., g.r. 8*l*., r. 46*l*. | 435 |
| Fulham.—39, Bishop's-rd., u.t. 91 yrs., g.r. 6*l*. 6s., r. 34*l*. | 400 |
| By Harman Bros. | |
| King's Cross.—15, Tiber-st., u.t. 43 yrs., g.r. 4*l*. | 245 |
| De Beauvoir Town.—196 and 198, Southgate-rd., u.t. 23 yrs., g.r. 3*l*., r. 68*l*. | 580 |
| By F. Jolly & Co. | |
| Kingsland.—102 to 110 (even), Wilmer-gdns., u.t. 63 yrs., g.r. 105*l*. | 1,155 |
| Dalston.—32, Navarino-rd., u.t. 53 yrs., g.r. 6*l*. 5s., e.r. 55*l*. | 550 |
| Clapton.—155a, Rushmore-rd. and plot of land in rear, f.; also 57, Overbury-st., u.t. 79 yrs., g.r. nil | £545 |
| By Tillett & Yeoman. | |
| Wimbledon.—16, 18, and 20, Balfour-rd., f., e.r. 80*l*. 16s. | 1,120 |
| By C. Sparrow & Son. | |
| North Finchley.—Dale-gr., Fernside, f., r. 36 | 500 |
| 9, Alexandra-gr., f., r. 60*l*. | 980 |
| Whetstone.—Green-rd., a block of freehold land | 400 |
| By R. Tidey & Son. | |
| De Beauvoir Town.—40, Southgate-rd. u.t. 20 yrs., g.r. 4*l*. 10s., r. 40*l*. | 305 |
| 211, Southgate-rd., u.t. 30 yrs., g.r. 5*l*., r. 48*l*. | 440 |
| Hoxton, 267, New North-rd., u.t. 28 yrs., g.r. 6*l*. 6s., r. 45*l*. | 285 |
| Canonbury.—1, Canonbury-rd., u.t. 19½ yrs., g.r. 7*l*., r. 45*l*. | 265 |
| Islington.—17, Noel-st., f., e.r., 50*l*. | 790 |
| Stoke Newington.—73, Aden-grove, u.t. 72½ yrs., g.r. 5*l*. | 375 |

*Contractions used in these lists.*—F.g.r. for freehold ground-rent; l.g.r. for leasehold ground-rent; i.g.r. for improved ground-rent; g.r. for ground-rent; r. for rent; f. for freehold; c. for copyhold; l. for leasehold; e.r. for estimated rental; u.t. for unexpired term; p.a. for per annum; yrs. for years; st. for street; rd. for road; sq. for square; pl. for place; ter. for terrace; cres. for crescent; yd. for yard, &c.

## PRICES CURRENT OF MATERIALS.

### TIMBER.

| | | | | | | |
|---|---|---|---|---|---|---|
| Greenheart, B.G. ............ton | £8 | 0 | 0 | 0 | 0 | 0 |
| Teak, E.I. ..................load | 10 | 10 | 0 | 15 | 10 | 0 |
| Sequoia, U.S., ft. cube........... | 1 | 9 | 0 | 2 | 0 | 0 |
| Ash, Canada, load............... | 3 | 17 | 6 | 5 | 5 | 0 |
| Birch, do ........................ | 3 | 0 | 0 | 5 | 0 | 0 |
| Elm, do ......................... | 4 | 12 | 6 | 5 | 15 | 0 |
| Fir, Dantsic, &c. ............... | 1 | 10 | 0 | 3 | 10 | 0 |
| Oak, do ......................... | 3 | 5 | 0 | 3 | 15 | 0 |
| Canada .......................... | 4 | 0 | 0 | 6 | 0 | 0 |
| Pine, Canada red ............... | 0 | 0 | 0 | 0 | 0 | 0 |
| Do, yellow ..................... | 4 | 7 | 6 | 6 | 5 | 0 |
| Lath, Dantsic, fathom ......... | 4 | 10 | 0 | 5 | 10 | 0 |
| St. Petersburg ................ | 4 | 0 | 0 | 6 | 10 | 0 |
| Wainscot, Riga, &c., log......... | 3 | 15 | 0 | 6 | 5 | 0 |
| Odessa, crown ................. | 3 | 15 | 0 | 6 | 5 | 0 |
| Deals, Finland, 2nd and 1st std. 100 | 9 | 15 | 0 | 10 | 5 | 0 |
| Do., 4th and 3rd ............. | 9 | 15 | 0 | 10 | 5 | 0 |
| Do., Riga....................... | 8 | 5 | 0 | 9 | 5 | 0 |
| St. Petersburg, 1st yellow ...... | 11 | 15 | 0 | 14 | 5 | 0 |
| Do., 2nd yellow ............... | 10 | 15 | 0 | 12 | 5 | 0 |
| Do., white ..................... | 9 | 15 | 0 | 11 | 15 | 0 |
| Swedish ........................ | 9 | 15 | 0 | 16 | 15 | 0 |
| White Sea ...................... | 10 | 15 | 0 | 18 | 0 | 0 |
| Canada Pine, 1st ............... | 18 | 15 | 0 | 25 | 5 | 0 |
| Do., do., 2nd .................. | 13 | 15 | 0 | 17 | 0 | 0 |
| Do., do., 3rd, &c. .............. | 6 | 15 | 0 | 10 | 0 | 0 |
| Do. Spruce, 1st.................. | 8 | 5 | 0 | 10 | 5 | 0 |
| Do., do., 3rd and 2nd .......... | 7 | 0 | 0 | 8 | 5 | 0 |
| New Brunswick .................. | 7 | 0 | 0 | 7 | 15 | 0 |
| Battens, all kinds .............. | 5 | 0 | 0 | 16 | 0 | 0 |
| Flooring boards, sq., 1 in., prep., 1st | 0 | 9 | 0 | 0 | 15 | 3 |
| Do., 2nd ........................ | 0 | 7 | 0 | 0 | 12 | 3 |
| Other qualities ................. | 0 | 5 | 3 | 0 | 6 | 6 |
| Cedar, Cuba, ft................... | 0 | 0 | 4 | 0 | 0 | 4½ |
| Honduras, &c. .................. | 0 | 0 | 4 | 0 | 0 | 4½ |
| Mahogany, Cuba ................. | 0 | 0 | 5½ | 0 | 0 | 7½ |
| St. Domingo, cargo av. ......... | 0 | 0 | 5 | 0 | 1 | 3 |
| Mexican do., do. ............... | 0 | 0 | 3½ | 0 | 0 | 4 |
| Tabasco, do., do ............... | 0 | 0 | 4 | 0 | 0 | 6½ |
| Honduras, do.................... | 0 | 0 | 4½ | 0 | 0 | 6 |
| Box, Turkey, ton ............... | 6 | 0 | 0 | 15 | 0 | 0 |
| Rose, Rio ...................... | 7 | 0 | 0 | 16 | 0 | 0 |
| Bahia ........................ | 6 | 0 | 0 | 14 | 0 | 0 |
| Satin, St. Domingo, ft. ......... | 0 | 0 | 6 | 0 | 1 | 0 |
| Porto Rico .................... | 0 | 0 | 9 | 0 | 2 | 0 |
| Walnut, Italian ................. | 0 | 0 | 3 | 0 | 0 | 7½ |

### METALS.

| | | | | | | |
|---|---|---|---|---|---|---|
| IRON—Pig, in Scotland ...... ton | 2 | 15 | 0½ | 0 | 0 | 0 |
| Bar, Welsh, in London ........ | 6 | 0 | 0 | 6 | 5 | 0 |
| Do. do. at works in Wales...... | 5 | 15 | 0 | 5 | 17 | 6 |
| Do. Staffordshire, in London.... | 6 | 5 | 0 | 7 | 10 | 0 |
| COPPER—British cake and ingot .. | 75 | 10 | 0 | 76 | 0 | 0 |
| Best selected ................. | 76 | 0 | 0 | 76 | 10 | 0 |
| Sheets, strong.................. | 79 | 0 | 0 | 81 | 0 | 0 |
| Chili bars..................... | 71 | 10 | 0 | 0 | 0 | 0 |
| YELLOW METAL ..............lb. | 6½d. | | | 7d. | | |
| LEAD—Pig | | | | | | |
| Spanish ......................ton | 14 | 5 | 0 | 0 | 0 | 0 |
| English Com. Brands .......... | 14 | 10 | 0 | 0 | 0 | 0 |
| Sheet, English, 6 lbs. per sq. ft. and upwards .............. | 15 | 10 | 0 | 0 | 0 | 0 |
| Pipe ........................... | 16 | 0 | 0 | 0 | 0 | 0 |
| ZINC—English sheet ..........ton | 30 | 0 | 0 | 0 | 0 | 0 |
| Vieille Montagne .............. | 31 | 0 | 0 | 0 | 0 | 0 |
| Spelter ........................ | 27 | 12 | 6 | 27 | 15 | 0 |
| TIN—Straits .................... | 111 | 2 | 6 | 0 | 0 | 0 |
| Australian ..................... | 111 | 5 | 0 | 111 | 15 | 0 |
| English Ingots ................. | 114 | 0 | 0 | 115 | 0 | 0 |
| Banca .......................... | 0 | 0 | 0 | 0 | 0 | 0 |
| Billiton ........................ | 0 | 0 | 0 | 0 | 0 | 0 |

### OILS.

| | | | | | | |
|---|---|---|---|---|---|---|
| Linseed ......................ton | 18 | 0 | 0 | 0 | 0 | 0 |
| Cocoanut, Cochin ............... | 29 | 10 | 0 | 0 | 0 | 0 |
| Do. Ceylon ..................... | 25 | 15 | 0 | 0 | 0 | 0 |
| Palm, Lagos .................... | 24 | 10 | 0 | 0 | 0 | 0 |
| Rapeseed, English, pale ......... | 22 | 15 | 0 | 0 | 0 | 0 |
| Do. Brown ...................... | 21 | 5 | 0 | 0 | 0 | 0 |
| Cottonseed ref. ................. | 16 | 10 | 0 | 17 | 0 | 0 |
| Oleine ......................... | 17 | 0 | 0 | 19 | 0 | 0 |
| Lubricating U.S. ............... | 0 | 5 | 3 | 0 | 7 | 6 |
| Do. Black ...................... | 0 | 5 | 0 | 0 | 6 | 6 |
| TAR—Stockholm............barrel | 1 | 6 | 6 | 0 | 0 | 0 |
| Archangel...................... | 0 | 18 | 0 | 0 | 0 | 0 |
| Turpentine ..................... | 32 | 0 | 0 | 0 | 0 | 0 |

## TO CORRESPONDENTS.

J. F. B. (below our limit).

NOTE.—The responsibility of signed articles, letters, and papers read at public meetings, rests, of course, with the authors.

*We cannot undertake to return rejected communications.*

Letters or communications (beyond mere news items) which have been duplicated for other journals are NOT DESIRED.

We are compelled to decline pointing out books and giving addresses.

Any commission to a contributor to write an article is given subject to the approval of the article, when written, by the Editor, who retains the right to reject it if unsatisfactory. The receipt by the author of a proof of an article in type does not necessarily imply its acceptance.

All communications regarding literary and artistic matters should be addressed to THE EDITOR; those relating to advertisements and other exclusively business matters should be addressed to THE PUBLISHER, and *not* to the Editor

## TENDERS.

[Communications for insertion under this heading should be addressed to "The Editor," and must reach us *not later than* 10 *a.m. on Thursdays*. N.B.—We cannot publish Tenders unless authenticated by the name and address of the sender; and we cannot publish announcements of Tenders accepted unless the amount of the Tender is given, nor any list in which the lowest Tender is under £100, unless in some exceptional cases and for special reasons.]

* Denotes *accepted.* † Denotes *provisionally accepted.*

BOSTON (Lincolnshire).—For erecting a house on Spilsby-road, Boston, for Mr. B. J. Kent. Mr. Jas. Rowell, architect, Boston. Quantities by the architect :—

| | | | |
|---|---|---|---|
| J. Lucas .......... | £740 0 | W. Greenfield .... | £608 10 |
| Parker & Son .... | 675 0 | C. Jessop* ........ | 568 10 |
| J. W. Pinder...... | 666 0 | [All of Boston.] | |

BERWICK-UPON-TWEED.—For the erection of a police-station, Church-street, for the Town Council. Mr. R. Burns Dick, architect, 55, Northumberland-street, Newcastle :—

| | |
|---|---|
| *Excavating, Masonry, &c.*—Elliot & Son, Berwick* ................ | £2,694 10 3 |
| *Carpentry and Joinery.*—Jno. Burn, Spittal* ........................ | 965 19 8 |
| *Slating and Plastering.*—Rule & Sons, Tweedmouth*.............. | 460 13 4 |
| *Cementing.*—Turner & Son, Berwick* | 269 0 0 |
| *Plumbing, &c.*—Geo. McAdam, Berwick*......................... | 469 6 9 |
| *Smithing.*—Elliot & Sons (subcontract)* ....................... | 100 2 0 |
| *Painting.* — Richardson & Co., Berwick*.......................... | 82 0 0 |
| | £5,041 12 0 |

BRIDLINGTON QUAY.—For the erection of buildings at back of Beverley House, Quay-road, for Messrs. Neal & Son. Mr. S. Dyer, architect, Bridlington Quay :—

| | | | |
|---|---|---|---|
| E. Corner ............ | £275 | W. Barnes, Travis-street, Bridlington Quay* ............ | £240 |
| T. Weldon .......... | 250 | | |
| J. Spink.............. | 245 | | |

CARDIFF.—For the erection of a pavilion, Cathay's Park, for the Committee of the National Eisteddfod. Mr. G. Thomas, architect, Queen's-chambers, Cardiff. Quantities by the architect :—

| | | | |
|---|---|---|---|
| W. H. Ingleson .... | £1,974 | Jones Bros., Cardiff* | £1,860 |
| Geo. Martin ........ | 1,900 | | |

ELGIN, N.B.—For the erection of a public school, Deskford, for Deskford School Board. Mr. Fowlie, architect, Cullen House, Cullen, N.B. :—

*Masonry.*

| | |
|---|---|
| Cruickshank.............................. | £299 0 |
| Stewart, Keith, N.B.*.................. | 296 5 |
| Gray .................................... | 290 15 |

*Carpentry.*

| | | | |
|---|---|---|---|
| Arthur Duffus ........ | £247 | Gordon, Deskford, Cullen*............... | £198 |
| Davidson ............ | 236 | | |

*Slating.*

| | | | |
|---|---|---|---|
| Rumbles ........ | £74 14 6 | Mitchell ........ | £68 15 0 |
| Desson.......... | 74 4 6 | Macdonald, Portsoy, N.B.*.... | 54 14 0 |
| Taylor .......... | 73 4 6 | | |

*Plastering.*

Ingram, Cullen, N.B.*........................ £38

*Plumbing.*

| | | | |
|---|---|---|---|
| Armand ............ | £79 15 | Beveridge .......... | £48 15 |

LEVEN, N.B.—For the erection of twenty-four houses, Lumphinnans, for the Fife Coal Company, Limited. Mr. J. Houston, architect, Dunfermline. Quantities by the architect :—

| | |
|---|---|
| *Building.*—Wm. B. Street................ | £1,100 |
| *Joinery.*—Thomas Laing .............. | 792 |
| *Plumbing.*—Binning & Sons ............ | 101 |
| *Plastering.*—Paul & Sons ............... | 350 |
| *Slating.*—Paul & Sons ................. | 250 |

LONDON.—For alterations, additions, and fittings at the "Crooked Billet" public-house, King David-lane, Shadwell, E., for Messrs. Erbach Bros. Mr. Fred. A. Ashton, architect, 177, Romford-road, Stratford, E. :—

| | Alterations, &c. | Fittings. | Total. |
|---|---|---|---|
| W. Harper ...... | £1,001 | .... £938 | .... £1,939 |
| Wall & Co....... | 948 | .... 905 | .... 1,853 |
| J. & H. Cocks .. | 900 | .... 899 | .... 1,799 |
| Williams & Sons . | 827 | .... 900 | .... 1,727 |
| W. G. Maddison . | 835 | .... 804 | .... 1,639 |
| A. E. Symes .... | 786 | .... 761 | .... 1,547 |

LONDON.—For building mineral water factory, for Mr. D. Sterry, at Narrow-street, Limehouse, E. Mr. J. G. Needham, architect, 18, Lower Clapton-road :—

T. H. Jackson* ............................ £450

LONDON.—For alterations to "Woolsack" public-house, Ida-street, Bromley, E., for Mr. Sam Waller. Mr. J. G. Needham, architect, 18, Lower Clapton-road :—

| | |
|---|---|
| W. J. Maddison ......................... | £630 |
| T. H. Jackson (after reducing)*............. | 544 |

LUTON. — For the erection of Wesleyan Schools, Waller-street. Messrs. J. R. Brown & Son, architects, 17, Market-hill, Luton :—

| | | | |
|---|---|---|---|
| George Smart ...... | £4,800 | T. & E. Neville, Castle-street* .... | £4,190 |
| W. G. Dunham .... | 4,498 | [All of Luton.] | |
| G. W. Pryer ........ | 4,350 | | |

MORECAMBE.— For the erection of five houses, Lancaster-road, for Mr. J. Bond. Messrs. Marshall Bros., architects, Back-crescent, Morecambe :—

*All trades except Plumbing, Glazing, and Painting.*

W. Pool .............................. £1,770 10

*Plumbing and Glazing.*

J. P. McNair ....................... £164 12 6

PRUDHOE-ON-TYNE.—For rebuilding the "Dr. Syntax" Hotel. Mr. R. B. Dick, architect, 55, Northumberland-street, Newcastle :—

| | | | |
|---|---|---|---|
| N. Maughan | £4,206 9 3 | Armstrong .. | £3,511 11 5 |
| Smithson & Son | 4,170 0 0 | S. Sheriff, S. Shields*.... | 3,473 0 0 |
| J. & W. Lowry | 4,082 17 0 | | |
| T. & R. Lamb | 3,791 3 3 | | |

RUSHDEN.—For erecting two houses on Rushden-hill for Mr. Garner, of Higham Ferrers. Mr. H. Knight, architect, Rushden :—

| | | | |
|---|---|---|---|
| F. Henson............ | £789 | T. Willmott .......... | £756 |
| T. Swindall .......... | 784 | W. Packwood ........ | 745 |
| T. & C. Berrill ...... | 772 | Dickens Bros. ........ | 703 |
| E. Mitchell .......... | 760 | Hacksley Bros.† ...... | 703 |
| H. Sparrow .......... | 759 | | |

SOOTHILL (Yorks).—For the erection of two blocks of cottages, Leeds-road, for Mr. Thomas Newsome, Dewsbury. Mr. H. H. Hall, architect, Shaw Cross, near Dewsbury. Quantities by architect :—

| | |
|---|---|
| *Masonry.*—Ellis & Sons, Ossett* .......... | £810 |
| *Joinery.*—Albert Day, Hangingheaton* .... | 231 |
| *Plumbing.*—B. Scott, Leeds-road* ........ | 36 |
| *Plastering.*—Wm. Parker, Heckmondwike* | 70 |
| *Slating.*—W. H. Thompson, Batley* ...... | 65 |

STAINCLIFFE (Yorks).—For altering four buildings into cottages, Highfield, for the Batley Corporation. Mr. J. C. Barrowclough, engineer, Town Hall, Batley :—

*Masonry.*—H. Crosland, Staincliffe.*
*Joinery.*—T. Illingworth, Batley.*
*Plumbing.*—E. Walker & Co., Heckmondwike.*
*Plastering.*—W. Parker, Heckmondwike.*
*Painting.*—S. Waller, Batley-Carr.*
[Schedule.]

STAPLEFORD.—For the erection of a chapel. Mr. Hy. Harper, architect, 8, Beastmarket Hill, Nottingham. Quantities by the architect :—

C. Moult, Stapleford .............. £1,700 0 0

WORKINGTON (Cumberland).—For extensions to Vulcan's-lane Stores, Workington, for the Bee Hive Co-operative Society, Ltd.. Workington. Messrs. W. G. Scott & Co., architects, Victoria-buildings, Workington :—

| | |
|---|---|
| *Masonry.*—G. Mann*................ | £689 0 0 |
| *Joinery.*—J. Steel* .................... | 620 0 0 |
| *Slating.*—Lythgoe & Sons* .......... | 77 7 6 |
| *Plastering.*—G. Mann*.............. | 176 0 0 |
| *Plumbing.*—D. M. Walker* ........ | 122 0 0 |
| *Painting.*—W. T. Sherwood* ........ | 65 0 0 |
| | £1,749 7 6 |

[All of Workington.]

## LONDON SCHOOL BOARD TENDERS.

* Denotes accepted.

*Exterior Painting. The Work at the Following Schools will be Executed between April 8 and May 6, 1899.*

ADDINGTON-STREET :—

| | | | |
|---|---|---|---|
| Edwards & Medway | £155 16 | B. E. Nightingale | £120 0 |
| Hooper & Son .... | 150 0 | G. Brittain........ | 118 0 |
| H. Brown ........ | 148 0 | E. Triggs* ........ | 105 0 |

BASNETT-ROAD :—

| | | | |
|---|---|---|---|
| H. Brown...... | £193 0 0 | Garrett & Son.. | £149 0 0 |
| C. Gurling .... | 166 0 0 | E. B. Tucker . | 137 17 6 |
| Holloway Bros.. | 154 0 0 | Bulled & Co. .. | 120 0 0 |
| Johnson & Co... | 150 0 0 | E. Triggs* .... | 103 0 0 |

HIGH-STREET (except new offices) :—

| | | | |
|---|---|---|---|
| Collis Willmott ...... | £145 | Chessum & Sons...... | £111 |
| A. W. Derby ........ | 129 | G. Wales ............ | 105 |
| Snewin Bros. & Co. .. | 124 | Silk & Son .......... | 97 |
| W. Shurmur.......... | 115 | S. H. Corfield* ...... | 89 |

HITHER GREEN :—

| | | | |
|---|---|---|---|
| C. S. Jones .... | £145 10 0 | W. Hornett .... | £120 0 0 |
| Hayter & Son .. | 135 0 0 | W. Banks* .... | 117 12 6 |
| C. G. Jones .... | 125 0 0 | | |

JAMES-STREET :—

| | | | |
|---|---|---|---|
| B. E. Nightingale.. | £105 0 | Bristow & Eatwell.. | £77 15 |
| Lathey Bros. ...... | 96 0 | T. Cruwys ........ | 73 15 |
| G. Foxley ........ | 95 0 | W. Chappell* ...... | 65 0 |

NAPIER-STREET :—

| | | | |
|---|---|---|---|
| Silk & Son ........ | £316 0 | G. Barker ........ | £159 0 |
| J. F. Holliday .... | 185 0 | G. Wales ........ | 158 16 |
| Marchant & Hirst.. | 185 0 | A. W. Derby...... | 149 0 |
| Johnson & Co. .... | 174 0 | S. H. Corfield*.... | 147 0 |

RANDALL-PLACE :—

| | | | |
|---|---|---|---|
| S. Musgrove.... | £174 12 0 | C. Foreman .... | £144 0 0 |
| Somerford & Son | 159 0 0 | Jones & Groves | 138 10 0 |
| W. Banks...... | 151 12 6 | E Proctor* .... | 120 0 0 |

SAFFRON HILL :—

| | | | |
|---|---|---|---|
| W. Bunce........... | £247 | G. Foxley............ | £190 |
| Wall & Co. .......... | 225 | J. Kybett ............ | 170 |
| Wagstaff & Sons...... | 217 | E. Flood ............ | 152 |
| T. Cruwys .......... | 198 | W. Chappell* ........ | 115 |

STATION-ROAD :—

| | | | |
|---|---|---|---|
| F. Britton............ | £215 | C. & W. Hunnings .. | £125 |
| Grover & Son ........ | 162 | Gardner & Hazell .... | 103 |
| McCormick & Sons .. | 147 | Stevens Bros.* ...... | 98 |

SUMNER-ROAD :—

| | | | |
|---|---|---|---|
| Freeman & Son .. | £342 15 | Akers & Co. ...... | £197 7 |
| Martin, Wells, & Co. | 324 10 | G. Kemp ........ | 185 0 |
| J. F. Ford ........ | 275 0 | H. Line .......... | 171 0 |
| Hooper & Son .... | 230 0 | Rice & Son* ...... | 163 0 |
| W. V. Goad ...... | 218 0 | | |

TOWNSEND-STREET :—

| | | | |
|---|---|---|---|
| W. V. Goad .......... | £279 | E. Triggs ............ | £187 |
| H. J. Williams ...... | 268 | E. Proctor .......... | 170 |
| White & Co.......... | 249 | Johnson & Co.* ...... | 168 |
| Holliday & Greenwood | 187 | | |

VICTORIA (Old School) :—

| | | | |
|---|---|---|---|
| S. Polden ........ | £167 0 | W. Brown ........ | £102 0 |
| G. Neal .......... | 148 0 | R. S. Buckeridge .. | 93 0 |
| W. Hornett ...... | 139 18 | Bristow & Eatwell.. | 82 3 |
| W. Hammond .... | 114 0 | F. T. Chinchen .... | 78 19 |
| H. C. Clifton...... | 110 0 | W. R. & A. Hide* | 75 10 |

[See also next page.

WOOD'S-ROAD :—

| | | | | | |
|---|---|---|---|---|---|
| Freeman & Son .... | £660 | 10 | Garrett & Son .... | £224 | 0 |
| Martin, Wells & Co. | 302 | 10 | Akers & Co. ...... | 217 | 19 |
| J. F. Ford ........ | 283 | 10 | G. Kemp.......... | 215 | 0 |
| H. Line .......... | 225 | 0 | Rice & Son* ...... | 193 | 0 |

*Painting (between May 6 and June 3, 1899) the exteriors of the following schools :—*

AMBERLEY-ROAD :—

| | | | | | |
|---|---|---|---|---|---|
| T. Cruwys ........ | £213 | 0 | Bristow & Eatwell | £121 | 15 |
| Marchant & Hirst | 198 | 0 | F. T. Chinchen.... | 114 | 10 |
| H. C. Clifton...... | 163 | 0 | W. Chappell* .... | 105 | 0 |

BELLEVILLE-ROAD :—

| | | | | | |
|---|---|---|---|---|---|
| Bulled & Co....... | £161 | 0 | E. B. Tucker...... | £133 | 6 |
| Williams & Sons .. | 149 | 10 | H. Brown ........ | 126 | 10 |
| Johnson & Co., Ltd. | 144 | 10 | E. Flood* ........ | 124 | 0 |
| R. S. Ronald...... | 138 | 0 | | | |

DULWICH HAMLET :—

| | | | | | |
|---|---|---|---|---|---|
| J. & C Bowyer .. | £128 | 0 | Mitchell & Sons.... | £97 | 10 |
| C. S Jones ...... | 120 | 0 | J. F. Ford ........ | 94 | 0 |
| Jones & Groves .. | 112 | 0 | H. Line*.......... | 91 | 0 |

HOLLAND-STREET :—

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Lathey Bros .. | £107 | 0 | 0 | B. E. Nightingale | £74 | 0 | 0 |
| Spencer, Santo, & Co., Lim... | 103 | 15 | 0 | Holliday & Greenwood.......... | 69 | 0 | 0 |
| W. Hornett.... | 90 | 0 | 0 | E. Flood* ...... | 66 | 16 | 6 |

JESSOP-ROAD :—

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Hooper & Son .. | £167 | 2 | 6 | Somerford & Son | £113 | 0 | 0 |
| Heinemann & Brown ...... | 160 | 1 | 6 | Garrett & Son.. | 105 | 0 | 0 |
| F. R. Blaxton.. | 142 | 0 | 0 | Rice & Son .... | 95 | 0 | 0 |
| Holloway Bros. | 129 | 0 | 0 | Holliday & Greenwood*........ | 89 | 15 | 0 |
| Akers & Co..... | 126 | 13 | 0 | | | | |

MAIDSTONE-STREET :—

| | | | |
|---|---|---|---|
| Collis Willmott ...... | £183 | J. Kybett ............ | £157 |
| J. Haydon .......... | 182 | G. Barker............ | 141 |
| Snewin Bros. & Co. .. | 175 | G. Wales ............ | 112 |
| W. Shurmur.......... | 168 | A. W. Derby*........ | 107 |

MAWBEY-ROAD :—

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| W. V. Goad.... | £288 | 0 | 0 | Johnson & Co... | £222 | 0 | 0 |
| W. Banks...... | 237 | 10 | 6 | G. Kemp ...... | 219 | 0 | 0 |
| E. Proctor .... | 230 | 0 | 0 | H. J. Williams* | 193 | 0 | 0 |

ST. PAUL'S-ROAD :—

| | | | | | |
|---|---|---|---|---|---|
| T. H. Jackson .... | £191 | 0 | J. F. Holliday .... | £148 | 10 |
| Johnson & Co. .... | 189 | 0 | A. W. Derby * .... | 121 | 0 |
| J. Kybett ........ | 163 | 0 | | | |

SCAWFELL-STREET :—

| | | | |
|---|---|---|---|
| W. Shurmur ........ | £148 | Marchant & Hirst .... | £124 |
| J. Haydon .......... | 143 | G. Barker............ | 122 |
| J. Kybett .......... | 139 | G. Wales*............ | 117 |
| S. H. Corfield........ | 130 | | |

WATERLOO-STREET :—

| | | | | | |
|---|---|---|---|---|---|
| G. H. Sealey...... | £290 | 10 | W. Brown.......... | £99 | 10 |
| Martin, Wells, & Co. | 205 | 0 | R. S. Buckeridge .. | 99 | 0 |
| S. Polden ........ | 127 | 6 | F. F. Chinchen .... | 96 | 13 |
| C. Gurling ........ | 113 | 0 | W. R. & A. Hide .. | 95 | 15 |
| Bristow & Eatwell | 109 | 17 | F. Chidley* ........ | 94 | 0 |

WEBB-STREET :—

| | | | | | |
|---|---|---|---|---|---|
| Hayter & Son...... | £250 | 0 | Bulled & Co. ...... | £205 | 0 |
| Spencer, Santo, & Co., Lim. ...... | 245 | 10 | E. Triggs.......... | 190 | 0 |
| White & Co. ...... | 240 | 0 | H. J. Williams .... | 185 | 0 |
| W. Hornett ...... | 220 | 0 | Johnson & Co.*.... | 184 | 0 |

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YERBURY-ROAD :—

| | | | | | |
|---|---|---|---|---|---|
| F. Britton ........ | £332 | 0 | Stevens Bros. .... | £242 | 0 |
| Wall & Co. ...... | 321 | 0 | C. & W. Hunnings | 221 | 15 |
| McCormick & Sons | 296 | 0 | Gardner & Hazell. . | 187 | 0 |
| Grover & Son .... | 259 | 0 | R. S. Buckeridge* | 182 | 10 |

VITTORIA-PLACE.—Painting interior (during the Midsummer holidays) :—

| | | | | | |
|---|---|---|---|---|---|
| Gardner & Hazell .. | £647 | 0 | F. Britton ........ | £503 | 10 |
| T. Cruwys ........ | 556 | 0 | Marchant & Hirst.. | 495 | 0 |
| A. W. Derby ...... | 536 | 0 | G. Barker ........ | 395 | 0 |
| Stevens Bros....... | 514 | 0 | W. Bunce* ........ | 359 | 0 |

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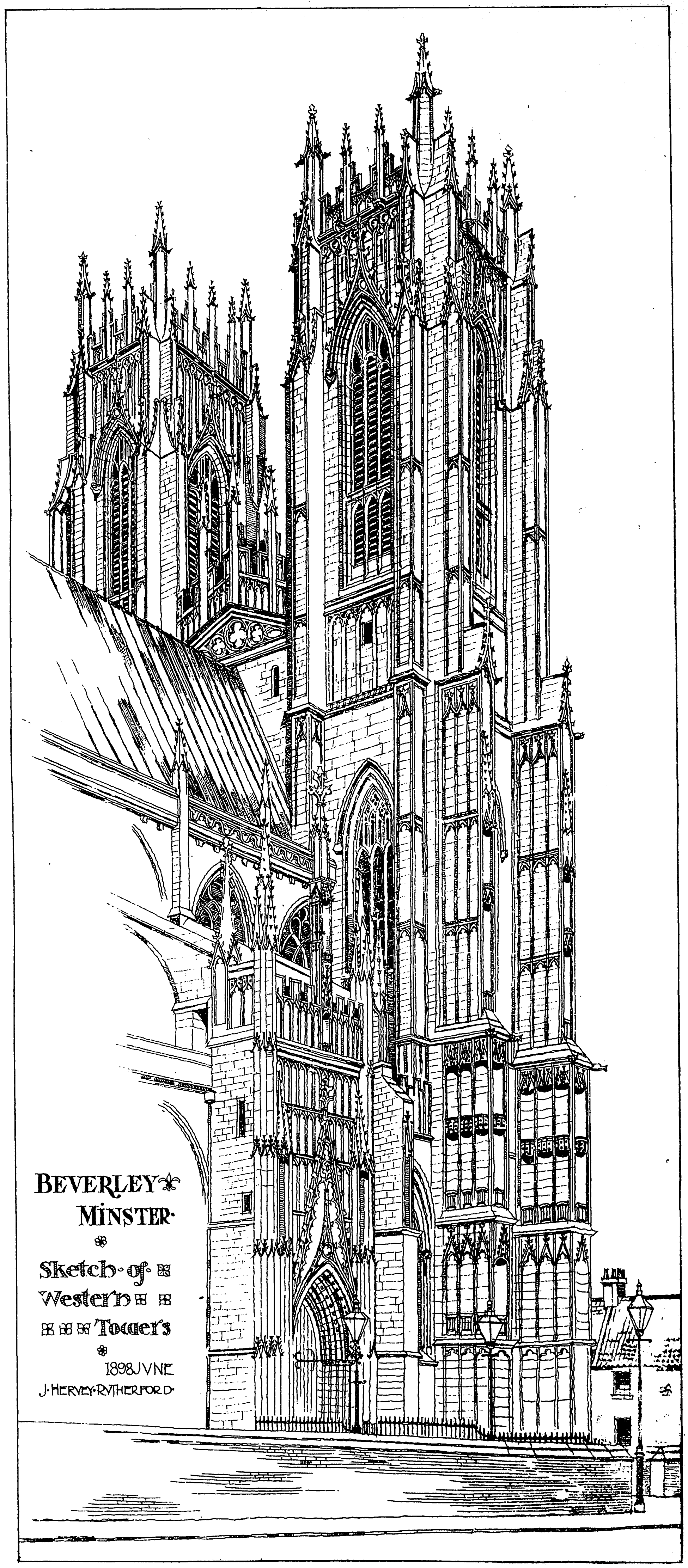
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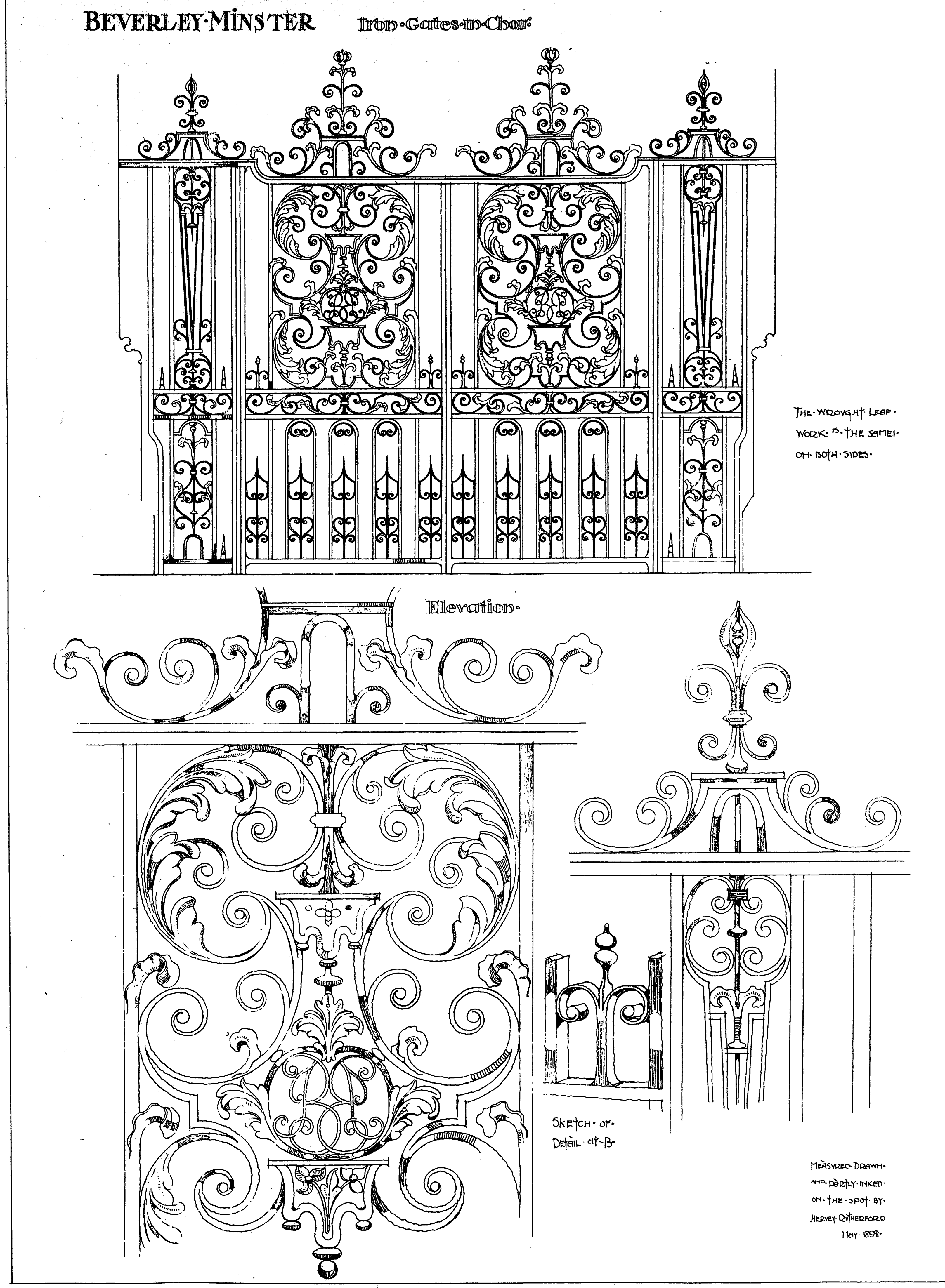
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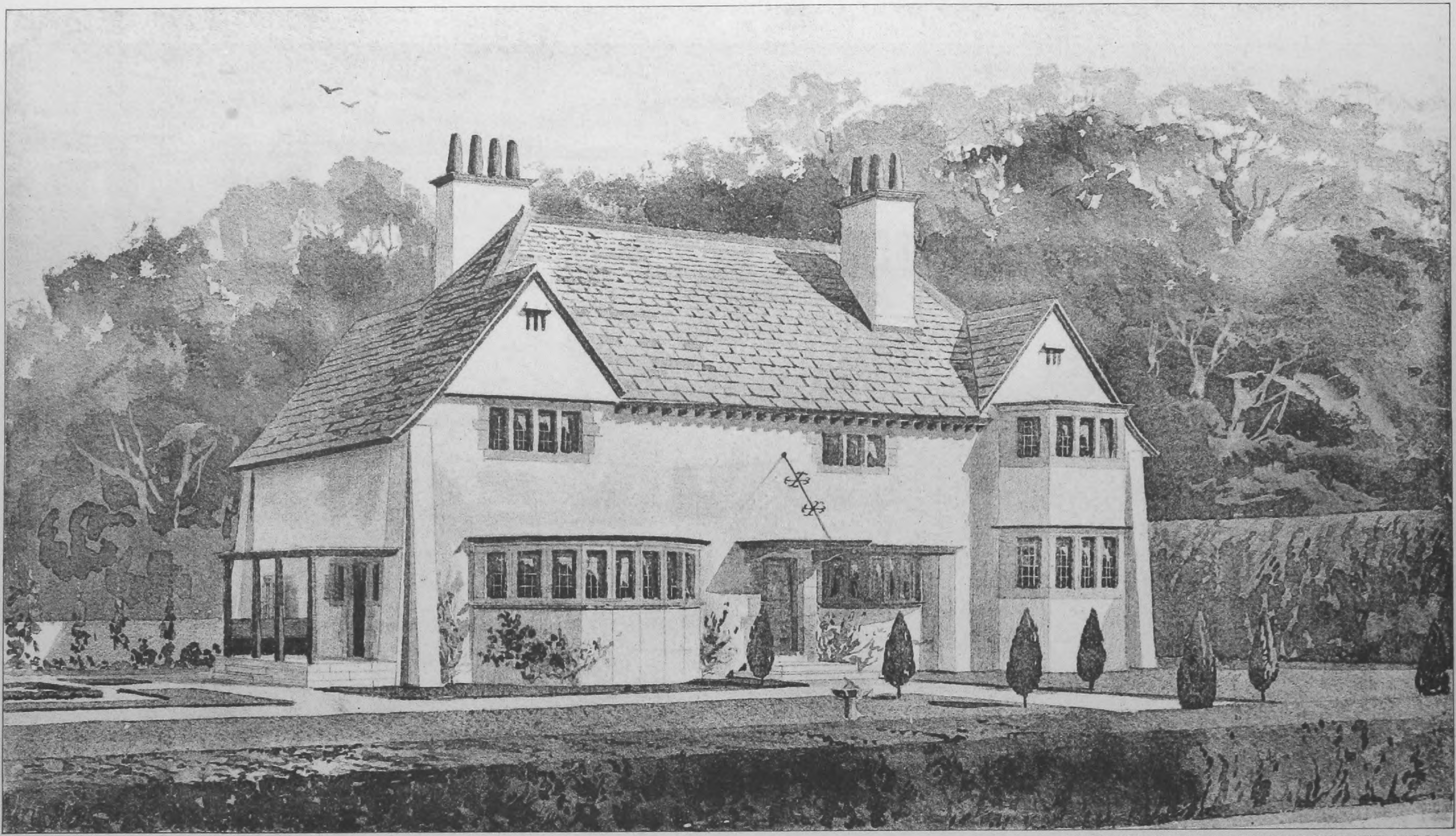

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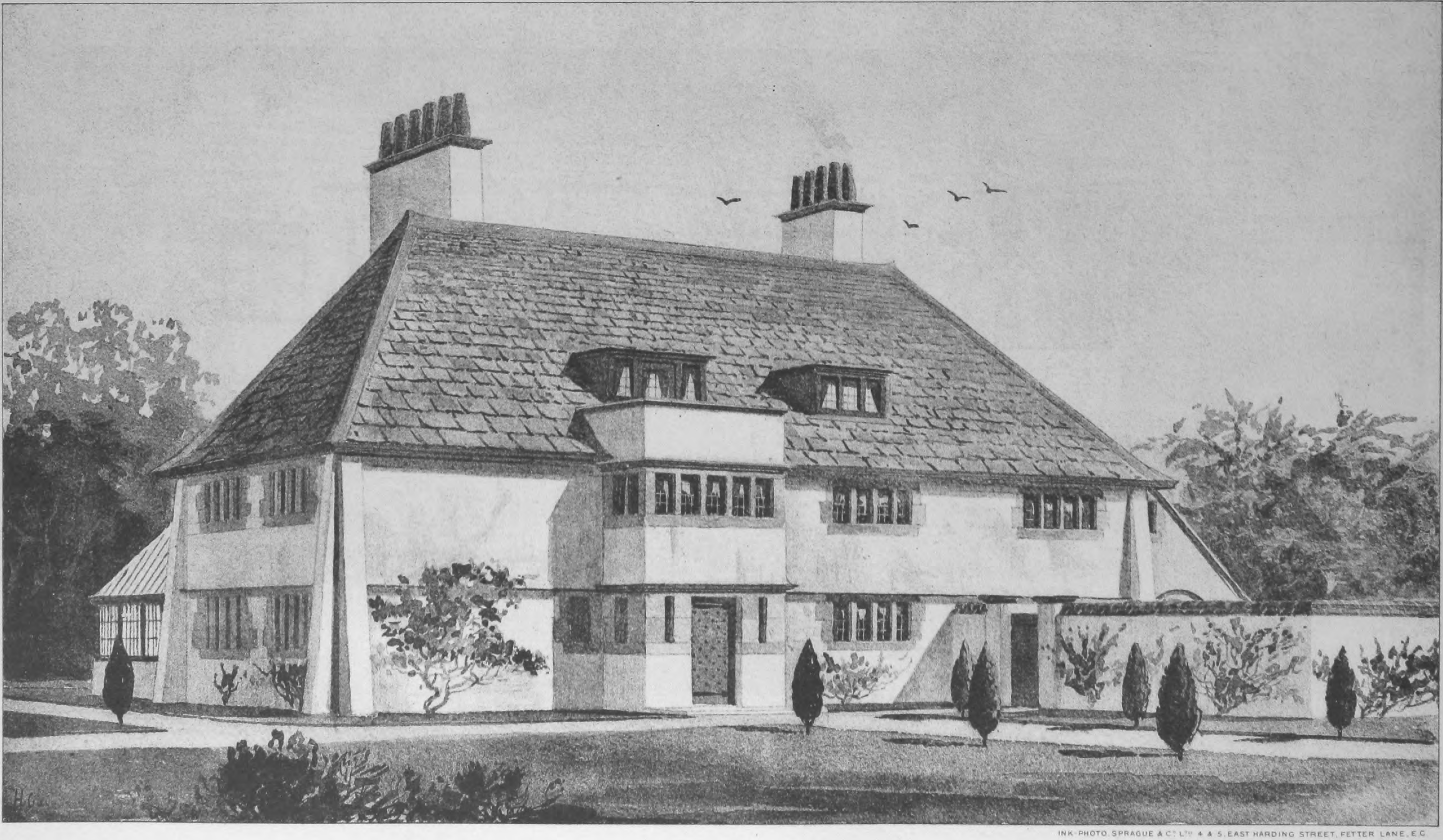

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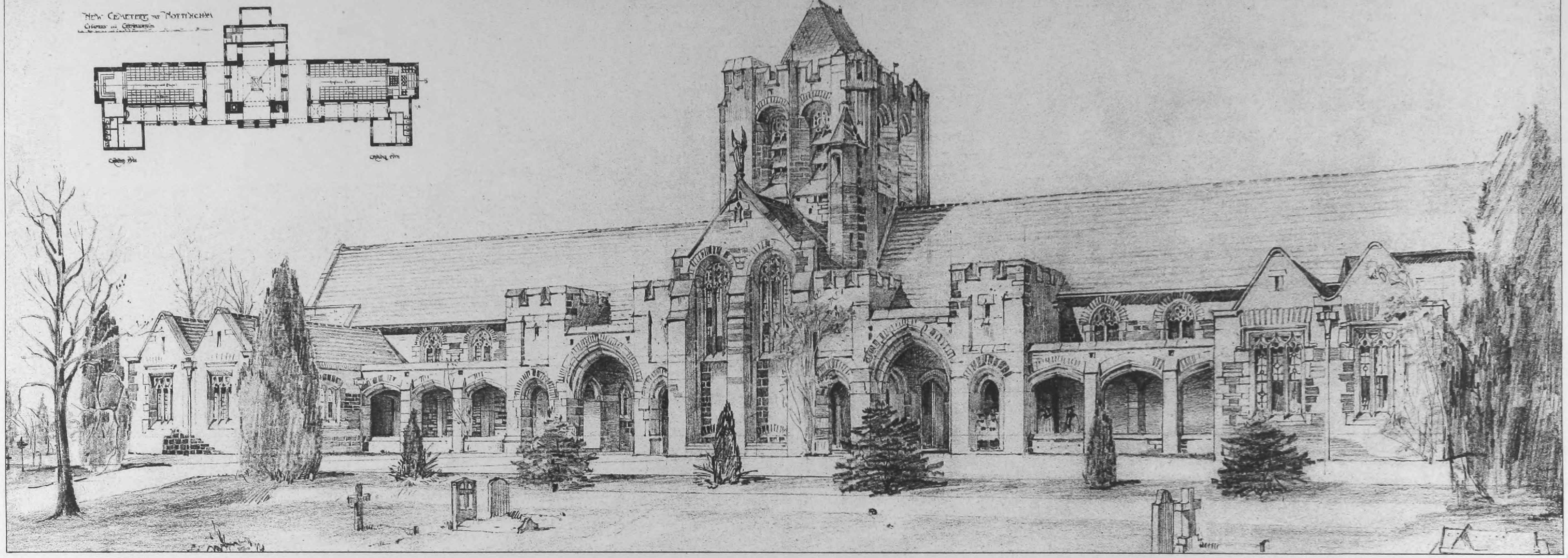
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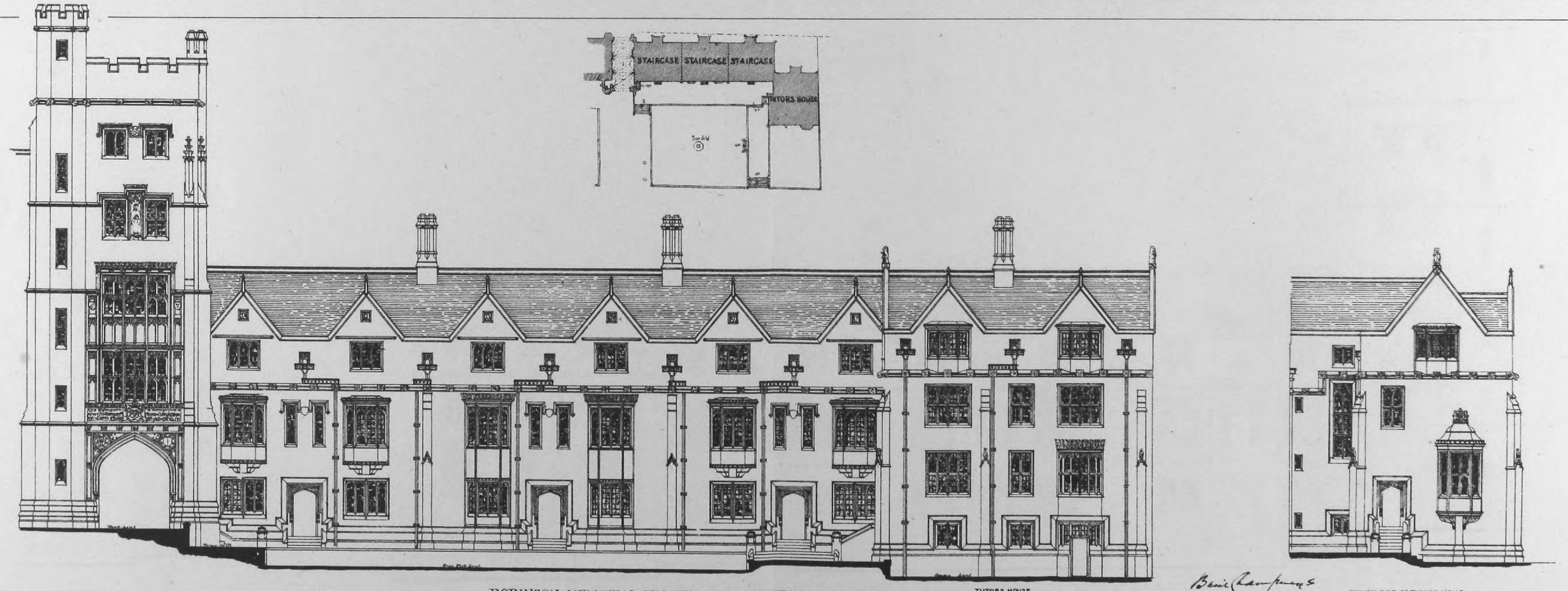
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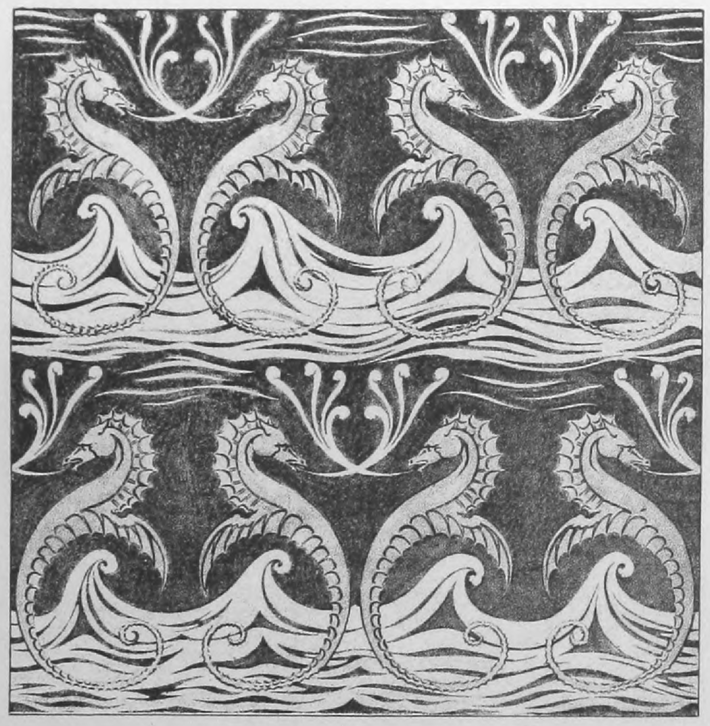

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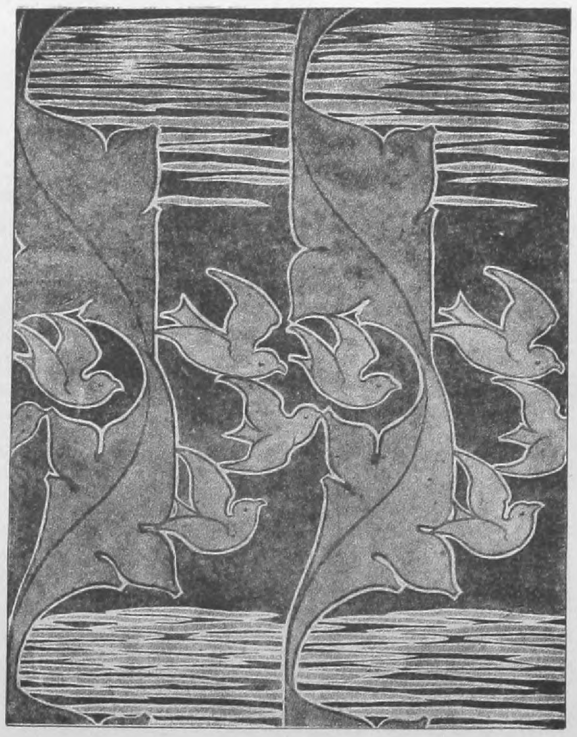

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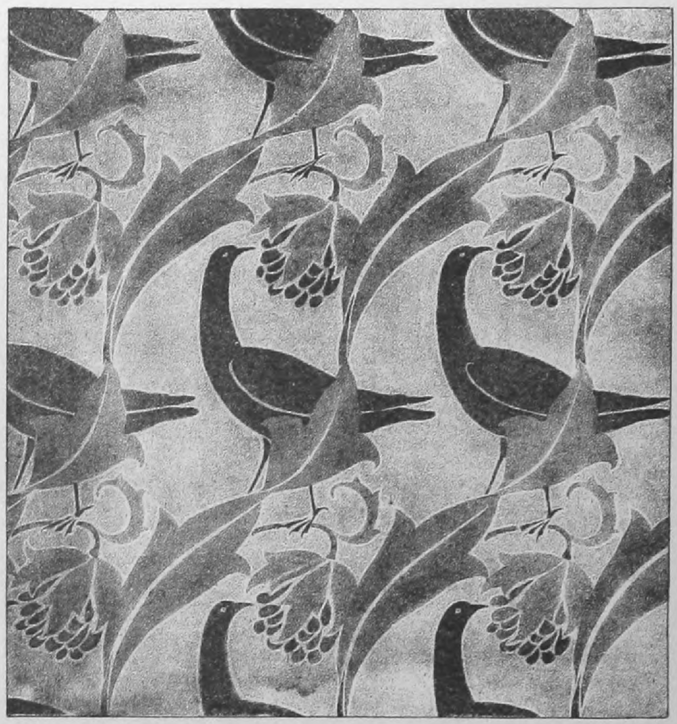

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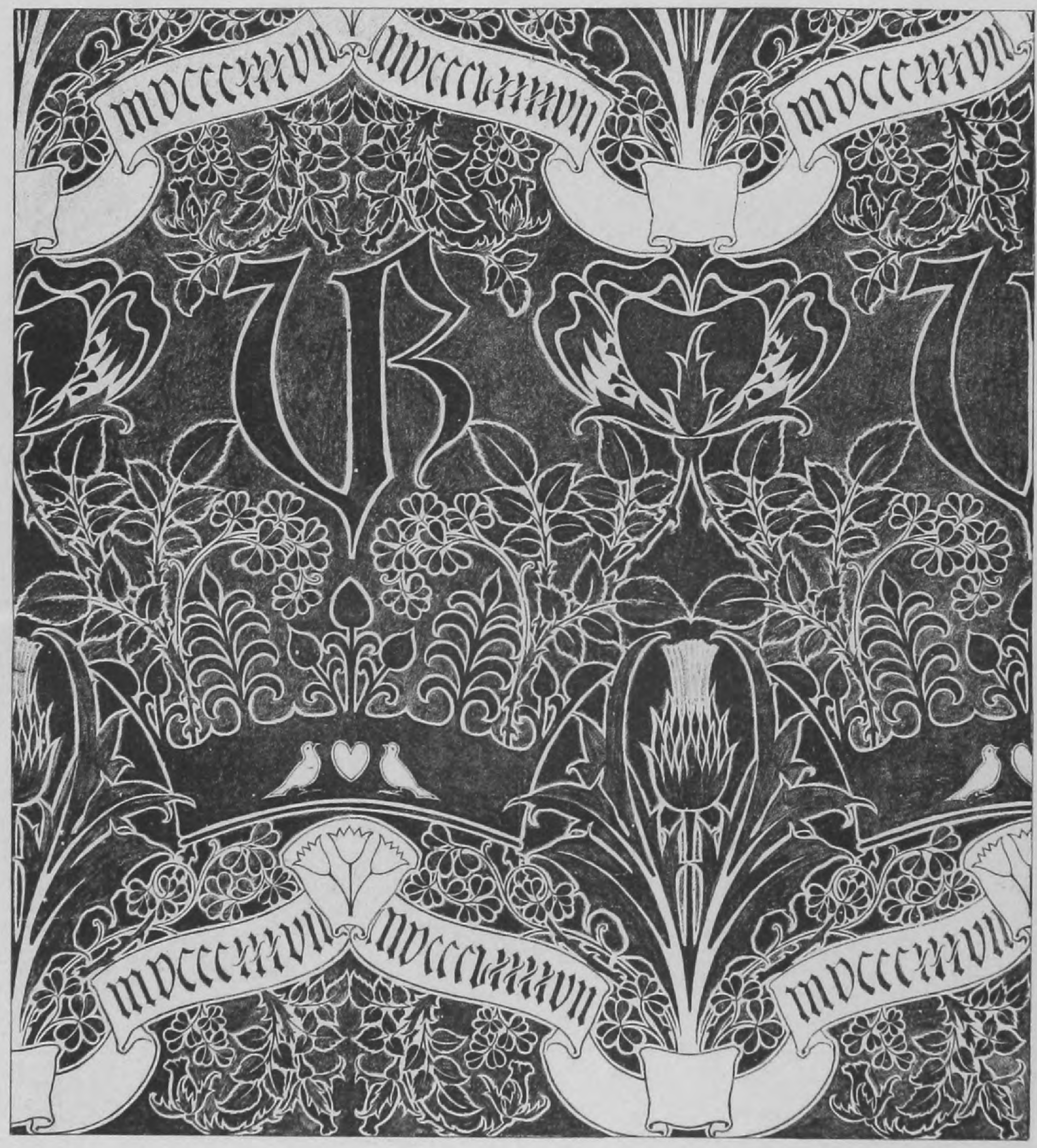

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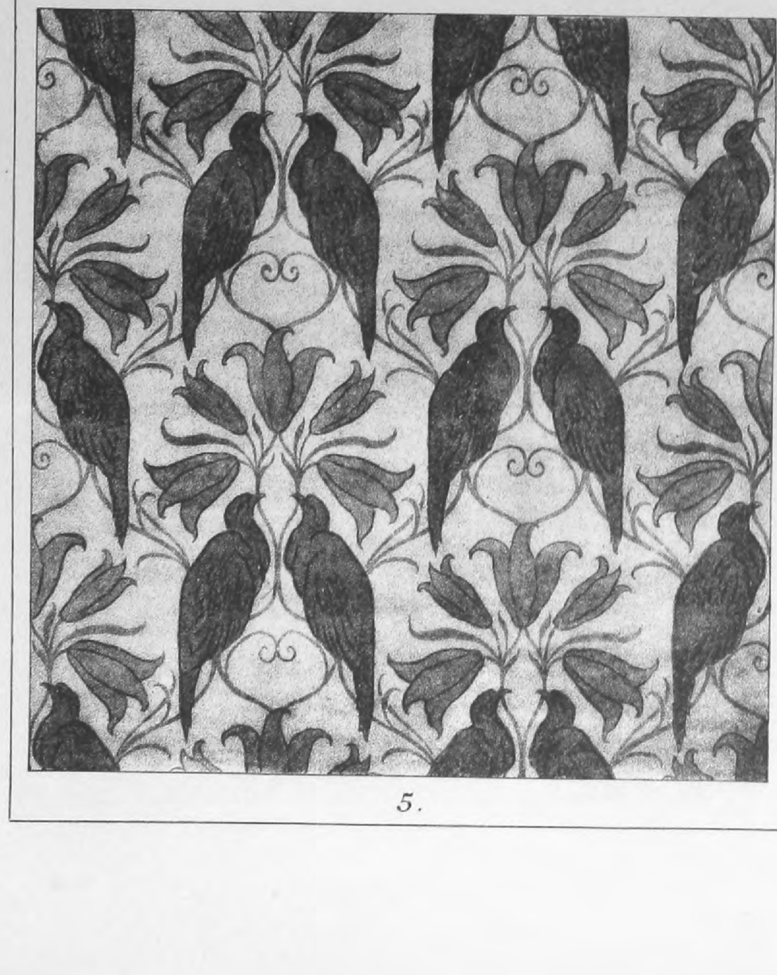

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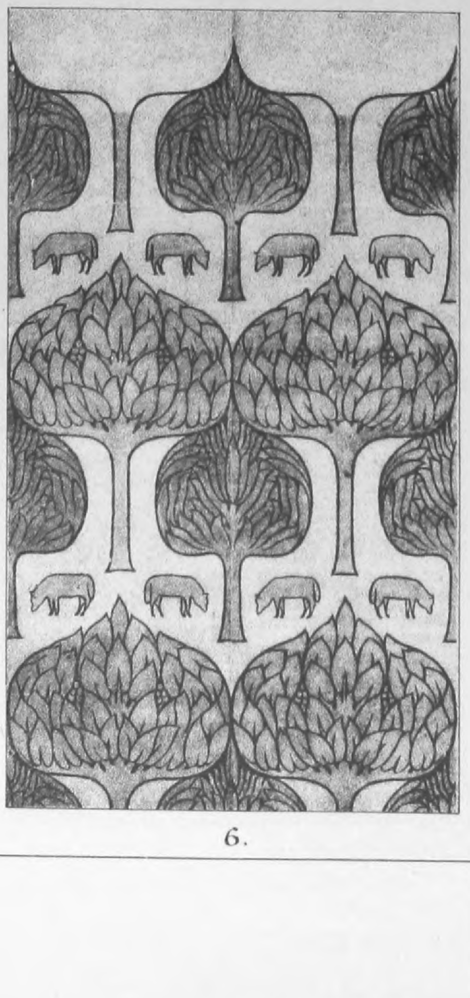

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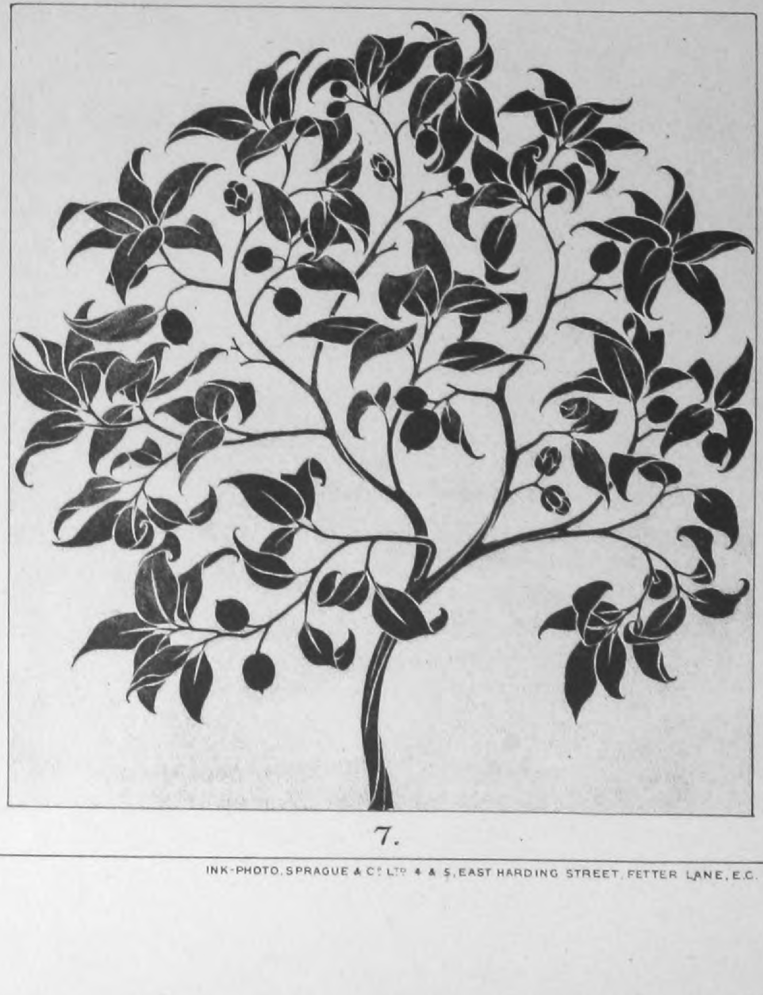

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# The Builder.

VOL. LXXVI. No. 2932. APRIL 15, 1899.

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Marine Palace of Varieties, Hastings.—Mr. Ernest Runtz, architect ........ *Double-Page Ink-Photo.*
New Sedilia, Choir Stalls, &c., St. Brelade's Church, Jersey.—Messrs. Rogers, Bone, & Cole, architects ........ *Single-Page Ink-Photo.*
Tower, St. Michael's, Woolwich.—Mr. W. D. Caröe, F.R.I.B.A., architect ........ *Single-Page Ink-Photo.*
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### *The Millbank Competition.*

THIS competition was promoted by the London County Council with the object, no doubt, of seeing if it were possible to obtain any fresh light from outside upon a difficult and hitherto unsolved problem. The question of providing soundly constructed, healthy, and sufficiently spacious homes for working-class families at rents within their means is no new one; both public bodies and well-known philanthropic organisations have for many years past attempted to deal with it. The claim is sometimes made that they have been successful, but such success is obviously only partial when it has to be acknowledged that the rents necessarily charged, if the other conditions are fulfilled, are beyond the means of classes below the comparatively well-paid mechanic. In so far as rehousing the thriftless slum populations disturbed by public improvements, the particular task imposed upon the County Council by law and elementary justice, is concerned, the effort has resulted in what can only be called absolute failure. Add to this that the problem becomes every year both more pressing and more difficult to solve; the increase in the value of land, the cost of building and our ideas of what are reasonably comfortable and healthy conditions of living more than counterbalancing the increase in the rate of wages; and it is no wonder that the Council, while having every faith in its own Architect's department, should wish to see if it could get any hints from the experience of others. Though no large measure of success could reasonably have been expected, the trial was worth making; indeed, it was obviously right it should be made. Many outside architects have experience of such buildings, and there was always the chance that one of the selected sixteen who accepted the invitation might, by applying his mind to the subject, become inspired with some happy thought that would throw fresh and valuable light upon it.

We have not seen the conditions and particulars supplied to the competitors; but the great variety of treatment in the seventeen designs submitted (Messrs. N. Joseph, Son, & Smithem sent two) shows that considerable latitude was allowed; and the fact that Mr. W. D. Caröe, who, if he has ever had experience of such buildings, is better known in other ways, and unlikely to have any fads or narrow or prejudiced opinions, was chosen as assessor, may be taken as evidence that the Council wished to give every chance to fresh ideas. It must, however, be confessed that a careful scrutiny of the drawings exhibited last week at the offices in Spring-gardens leads to the conclusion that those Councillors who had the most modest expectations are least likely to be disappointed. Not that any large number of the designs are other than good ones, but they exhibit no fresh ideas of any important or far-reaching description in the desired direction. The principal suggestions they seem to us to make are for a better and more architectural treatment of the exterior of such buildings, the abandonment of any attempt to make one stairway serve for more than two tenements on each floor, and the widening of the customary open-air passage or balcony to the water-closets into something more like a little open yard. This last suggestion is made by Messrs. Spalding & Cross, to whom the highest premium of 150*l.* has been awarded, the second premium going to one of Messrs. Joseph, Son, & Smithem's designs, and three smaller ones to Messrs. Howgate, Leeds and Keith, Mr. Dobb, and Messrs. Gibson & Russell, respectively.

The site is a shallow corner one with a long frontage to Earl-street on the west and a shorter one to a new street on the south. The north end is irregular, sharply inclined, so as to leave the back boundary much shorter than the frontage, and flanked, as we gather from Mr. Caröe's report, by high buildings which shut out light on that side. Most of the competitors have chosen the immediately obvious plan of putting a long range of buildings on the front, generally with a return wing on the south. Two at least have also added a short wing returned at an angle of about forty-five degrees at the north end, and two have suggested blocks at right angles to the long front. With one or two exceptions all make their buildings five stories high; but the amount of accommodation obtained is amazingly diverse, ranging from a minimum of thirty dwellings to a maximum of seventy. It need hardly be said that in the latter case, though great ingenuity has been displayed in the planning, the site is far too crowded and light and air deficient. Most of the plans provide, chiefly, three and two room dwellings, with a small scullery and cupboard for food, and an open "balcony" giving access to a water-closet, and generally also to the food cupboard and coal store. Most of the "balconies" are mere open passages from which, in many cases, the scullery obtains its only light and air. Some competitors have provided a proportion of single room and four roomed dwellings; five rooms even occur in a few plans, but in these cases the designs generally are better adapted to blocks of small flats of a superior class than to workmen's dwellings. Several competitors have tried to economise by making one staircase serve for three or four dwellings on each floor, and no doubt the economy is an important one; but the result has always been to complicate the planning or necessitate long, ill-ventilated passages. The provision of washhouse accommodation has received various solutions; some appear to have omitted it altogether, others provide it in the yard at the back of the site or elsewhere, others again put a small washhouse close to each staircase on every floor, and one puts a washhouse and a drying-room to each stairway on the roof, which is asphalted for use as a drying-ground. Whether the smuts from the surrounding chimneys would not make it a very undesirable place for hanging wet linen seems a question worth consideration.

Messrs. Spalding & Cross propose a long

block facing Earl-street, with six three-room dwellings and one two-room one on each of the five floors, separated by a passage 12 ft. 6 in. wide from a shorter one on the south front, containing four two-room dwellings on each floor, altogether fifty-five dwellings; and they show on flaps how to provide one more two-roomed dwelling on each floor at the north end of the long block if desired. This addition would be objectionable, as tending seriously to interfere with the otherwise admirable provision for the circulation of air round the blocks, but the assessor thinks even the fifty-five dwellings too many to put upon the site, and suggests their reduction to forty by omitting half the short block and the two-roomed dwellings in the long one. The simplicity and directness of the planning, and the provision of direct cross-ventilation everywhere are admirable. In the three-roomed dwellings the staircase, which serves only two on each floor, is on the front, next to it a bedroom with a passage beyond, and then the living-room of the depth of bedroom and passage combined. The second bedroom is at the back of the living-room and of the same width, which leaves the width of the first bedroom and half the staircase to be divided between the scullery and open balcony at the back. This is so arranged that both the stair and passage can be ventilated from the balcony, from which both the scullery and water-closet are entered. The latter is cut out of the corner of the former, and each gets a small window. The food cupboard, with a coal-box beneath it, is placed in a recess in the back wall of the balcony, well away from the water-closet. The door to the first bedroom opposite the passage window, and the door between the living-room and second bedroom, secure direct cross ventilation to all the rooms. The assessor objects to there being only an open iron railing between adjoining balconies, probably because the water-closet doors face each other; but, on the other hand, it has a great advantage over a solid wall in affording more light and air. The two-roomed dwellings are planned with equal simplicity and care in other respects, but it was apparently found impossible to make the balcony anything more than the usual open passage. Some objection might be taken on the score of economy of space to the long, narrow shape of the living rooms (16 ft. by 10 ft.) in both classes, but they are, after all, good, useful rooms, and the defect cannot reasonably be allowed to outweigh the other excellencies of the plan. The architects have allowed themselves one little extravagance in the shape of tile hearths to all the rooms. The elevations show quite an architectural treatment, very different from the usual commonplace, institution-like aspect of block dwellings. One's pleasure in them is somewhat marred on recognising that the party-wall runs up behind the middle of the unnecessary gable, and across the window shown in it; and we are probably still far from the day when such magnificent porches can be considered reasonable adjuncts to buildings erected with a view to strict economy; but both are mere incidents easily modified; the banishment of the fidgety little stripes of red bricks, the concrete lintels with their huge chamfers or roll mouldings, the heavy string courses, and all the coarse commonplaces associated in the mind with such structures, is much to be thankful for.

The design by Messrs. Joseph, Son, & Smithem, to which the second premium is awarded, is one of the two that have small blocks arranged at right-angles to the frontage, the other, which was sent in in an incomplete state, being, we believe, by Messrs. Archer & Hooper. In the former there are three symmetrical and rectangular blocks, and a smaller one of irregular plan filling the north angle of the site, all being four stories high only. The southernmost block contains twelve three-room dwellings, and the others together twenty-four two-roomed ones, making thirty-six in all. The number of rooms is thus very considerably less than in the first premiated design, namely, eighty-four against the 140 shown, or 110 if the assessor's suggested restriction were carried out. The air space round the buildings is excellent, and there is good cross ventilation within; but the planning in detail is less simple and straightforward than in Messrs. Spalding & Cross's design; the open balconies are all of the narrow type, and the sculleries and food stores get their only ventilation from the inner end of these balconies, on the outer ends of which the water-closets open. The external elevation of this design, though plain, is very satisfactory; the ends of the blocks have simple pediments, and the buildings are connected along the front by opened arched screens of good character. The assessor, however, very justly remarks upon the strange contrast between the architectural character of this design and that of the other submitted by the same architects. Messrs. Howgate, Leeds, & Keith appear to have obtained their small premium for their suggestion of washing and ironing rooms on the roof already referred to, and which appear as towers or turrets in the elevations. Mr. Dobb also seems to have gained his for the arrangement of his washhouses, which are entered from the half landings of the staircases and form projections in the rear of the block. He seems to have forgotten the necessity for cross ventilation in his dwellings. Messrs. Gibson & Russell's plan shows great ingenuity; an ingenuity chiefly brought out by the difficulties they have got themselves into in their attempt to make one staircase serve for four dwellings on a floor, and which they have nevertheless not successfully conquered. Their premium is a recognition of some charming external elevations.

Among the suggestions made by some unsuccessful competitors is one for a "common room," for the use of the tenants of the blocks, which is shown in the incomplete design before referred to, and one for "play-rooms" or covered playgrounds for children. The latter seems to have arisen from one of the competitors having originally planned three or four rooms which he afterwards found would not get direct light, and for which he had to find a use; but it seems worth noting. The only design which strikes out an entirely new line is that numbered four, which shows a long block of building with a corridor down the middle of it from end to end on each floor, and dwellings entered from it on both sides. The corridor and the rooms alike are insufficiently lighted and ventilated, and the sculleries, open to the air, with the water-closets opening from them, as well as other details of the plan, are very weak. The whole design is unhesitatingly condemned by Mr. Caröe, and as it stands no doubt rightly; but we do not feel quite sure that it may not contain the germ of a useful idea.

◆

## AUTOMATIC TELEPHONE EXCHANGES.

The automatic telephone exchange which has been on exhibition at the offices of "The Direct Telephone Exchange Syndicate, Limited," 84, Winchester House, Old Broad-street, London, E.C., during the last few months, has perhaps not received the attention it deserves from the technical Press. One reason for this is that, owing to the necessarily very complicated electrical and mechanical apparatus employed to do the work of a manual operator, the details of the system are by no means easy to understand even with the help of elaborate diagrams, so that many engineers have been content to wait and see how the installations on this system, which are already in operation, will stand the test of every-day work.

We have received from the company a pamphlet containing a technical description of "The Direct Telephone Exchange," which explains very clearly the electrical part of their system. It is, however, too complicated for reproduction here, but we can recommend it to any one who has the time and ability to master the details of this marvellously ingenious system. The mechanical devices employed can only be properly appreciated by actually seeing them in action, as it is very difficult to tell from diagrams whether a mechanical appliance will act with certainty.

We will describe briefly the system as applied to a small exchange of one hundred subscribers; such an exchange, for example, as would be used for a small town or in a large office or hotel. The subscribers would be numbered from 101 to 199.

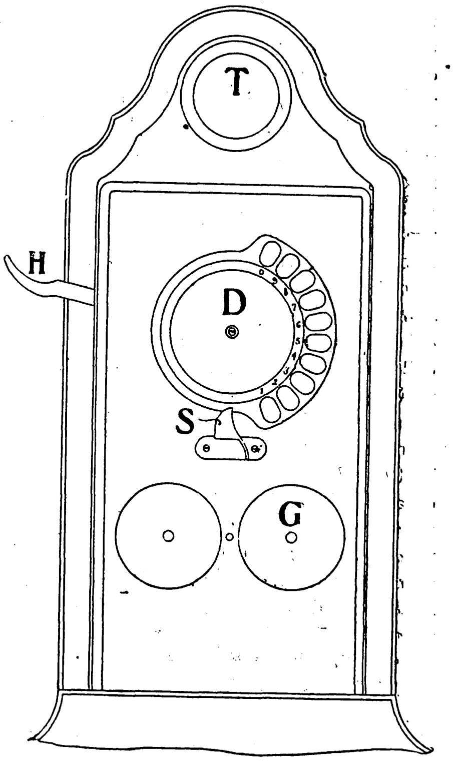

*Fig. 1.*

The instrument (fig. 1) which each subscriber has is very similar to an ordinary telephone set. In front there is a rotating disc D provided with holes numbered 1, 2, . . . . 0. Suppose that a subscriber wants to make connexion with No. 139. He inserts the tip of his finger in 1 and pulls the dial round until his finger reaches the stop S; he then lets it go, and it automatically rotates back to its original position. He next does the same operation at 3 and then at 9. This makes connexion between his telephone and that of No. 139. He now rings his magneto bell in the ordinary way, and if his own bell G rings at the same time, he knows that No. 139 is not engaged; if, on the other hand, his own bell does not ring, he knows that it is engaged. In the former case he takes his telephone off the hook H and talks into the transmitter T. Whilst he is talking with No. 139 it is impossible for any one else to ring either of them up. When the conversation is finished the mere act of hanging up the telephone on H moves their switches at the exchange back to the normal position and so leaves them both ready to be called up by any other subscriber.

It will be seen that all the exchange work is done by the subscriber himself, the time required to do it being only from three to five seconds. Again, as they are not at the mercy of the exchange girl, the conversation is absolutely secret, and cannot be interrupted except at the option of those talking.

From each subscriber's telephone two wires go to the central station, and the electric impulses that are sent along them operate the apparatus at the exchange. The mechanism of the dial on each telephone is not unlike that of the apparatus used in messenger call systems. Turning round the dial winds up a spring, which, as it runs down, operates a toothed wheel, and so sends a definite number of electric impulses along the line. The tension of the spring admits of easy adjustment, and there is a governing arrangement to regulate the speed. At the exchange there is an elaborate switch for each subscriber, which he alone can operate by his dial, and only when this switch is in its normal position can he be called up. Although highly elaborate, the design of this switch is sound, and occasional attention from a mechanician would be sufficient to keep it in thorough working order. Part of it consists of a concave surface (fig. 2) formed of plaster of Paris in which is embedded a number of contact pins corresponding to the number of subscribers, each of which is in connexion with a subscriber's wire. In the figure part of one of the hundred switches in a hundred exchange is shown. It will be seen that there are ten rows, and ten contact points in each row. The arrangement of the contact pins in the insulating material is also shown. In the axis of the cylinder of which this surface is a portion there is a rotating axle carrying a radial contact piece or wiper, which can be made to have contact with any of the contact pins. The first current impulse sent over the line brings the wiper into position, one tooth behind the first pin. The second series of impulses raises the rotating axle so that the wiper comes opposite the required tens line. In the case supposed it would be raised so that it was opposite the third row. The third series of impulses rotates the shaft bodily, so that the wiper comes in connexion with the ninth pin on the third row. The subscriber is now through to No. 139. The fact that these two are in talking connexion does not interfere with the other subscribers, except in so far that neither of them can be called up by any one until they have finished their conversation. It would be quite possible for ten or twenty different calls to be accomplished at the same time, as the action of each switch is practically independent, and the accumulators at the central station can supply a large current.

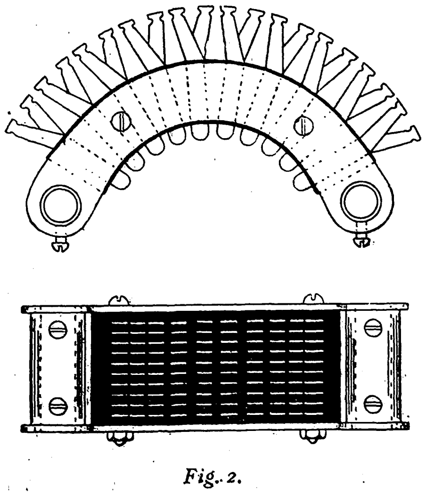

*Fig. 2.*

The automatic exchanges are built in three sizes; the first includes the 100 and 400 system in which only a single switch is used for each subscriber. The second and third, which are for 1,000 and 10,000 subscribers respectively, need two switches per subscriber. In the larger exchanges the "bridging system" is used. In this the electro-magnets do not form part of the talking circuit, and so they can be made of relatively high resistance and consequently can be operated by a smaller current. In the ordinary exchange each subscriber takes about 0·5 of an ampere to operate his switch, but when the bridging system is used 0·2 of an ampere is ample. To give an idea of the size of each switch, it may be mentioned that in a 200 exchange each switch occupies a lineal space of 12 in. by 4 in. and projects 6 in. from its base. It is stated that a room 40 by 45 ft. in floor space is large enough for a 5,000 exchange. It is also stated that one man can look after a thousand instruments. When it is remembered that in an ordinary manual exchange one operator can only attend from 50 to 100 subscribers, there is an obvious economy in labour.

We are inclined to think that there is an immediate future for this system for exchanges for small towns or large establishments. It is in use at the White House in Washington, and in some of the Government buildings in America. At Berlin, also, the German Postmaster-General is making an installation of 400 in the public telephone system. It is said that the cost of an automatic exchange is not much greater than that of an ordinary exchange fitted with manual boards, and for large exchanges that it is even less. Some exchanges in America have been in operation nearly five years, and some are in process of erection having a capacity of 5,000. It is time, therefore, that some data as to the cost of repairs and maintenance were forthcoming.

Besides the saving in wages there are other advantages in an automatic exchange. It is open night and day, and equal facilities are given to all, so that there could be no grumbling amongst the subscribers about unfair preferences. The question also has an economic aspect. In the near future there will probably be a large increase in the number of telephone exchanges in this country. As a large exchange often employs a hundred or more girls, the adoption of automatic exchanges would be a great hardship to many of them who are expert manual operators, and would deprive thousands of them of a livelihood. It is all the more necessary, then, that this automatic system should be thoroughly considered at this transition stage of the telephone industry.

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## THE GENIUS OF TURNER.

THE fine collection of works by Turner which was opened on Monday last at the Guildhall Galleries affords a very good summary, as it were, of the main characteristics of his genius, as the paintings in the large gallery, though only thirty-eight in number, include works representing both his later and earlier styles, and have been arranged as far as possible in chronological order.

The result is striking even in its general optical effect. On the one wall we see dark hill sides, foregrounds with no certainty of colour, and seas which in many cases have neither the colour, the movement, nor the consistency of sea-water. On the other wall is an iridescence of bright colour; calm waters bathed in rainbow hues, or storm scenes in which form and even distinct intention are almost lost in the whirl of the brush. Yet widely as these two phases of Turner's art, the early and the late, differ in aspect and in apparent aim, they have one quality at all events in common. None of them are really like nature; in other words, Turner was no realist—never any painter less so; although he has been falsely placed in that category. Whether in his early "brown" pictures or his later purple and golden ones his object was the same—to translate the poetry of nature into the poetry of art; to create a work of art out of the materials of nature. Turner was so far from being a realist, in spite of Ruskin's exaggerated statements about his extreme accuracy in details (statements which the same critic completely contradicts in other passages of his writings) that he continually altered the scenes which were the professed subjects of his landscapes, in order to produce from them what he considered a more striking picture than the original scene afforded: and he was right. His colour, too, is very seldom that of nature; it is a colour scheme of his own, worked out with regard to unity of pictorial effect. In regard to the works of his later period few persons would deny this; few can pretend that they ever see in nature such prismatic effects as Turner showed in these works; though Turner's reply to the objector who said that he never saw them—"Don't you wish you could?" is not without its point. But this arbitrary choice of colour for purposes of effect is really quite as recognisable in the early works of the "brown" period as in the later works of the prismatic period. Look at the grand picture of "Conway Castle," for instance (No. 6 in the Guildhall collection); of what material is the foreground? We know it is meant for an expanse of sea-shore; but it has neither the colour nor the consistency of an expanse of shore as seen in nature. It is a foreground tone which suited Turner's scheme. What is called "local colour" he constantly either ignored, or treated just as it suited the general scheme of his work. Look again at the rather later middle period work, "Somer Hill," a lovely scene in a watered park with the house at the top of a rising lawn beyond; it is an ideal expression of the calm and repose of such a scene on a warm summer day; it conveys fully the sentiment of the subject. But compare it with nature. Is the lawn opposite the colour of a grass lawn? Does the water present the contrast of colour with it, which would be presented by calm water under a calm sky? Certainly not; the tones of lawn and water are assimilated; Turner wanted artistic unity, and the local colour of nature is sacrificed to it, as is the case over and over again, in the works of his earlier period especially. In the later works the process was a different one; it was not a subtraction of natural colour but an addition of more colour than really existed in the scene; but the object was the same, the achievement of the pictorial effect desired. In the later works he produced what may be called brilliant coruscations of effect; in the earlier ones he produced unity of scheme for the picture; he sacrificed some of the details of nature, but he secured the quality of breadth.

In the popular estimate we are inclined to think that the works of the earlier period are under-estimated by comparison with the later ones. People are in the habit of thinking of Turner as a painter of wonderful rainbow-like sunlight effects, but many of the soberly-coloured paintings of the earlier period are grander and more complete in style than most of the later ones. In the water-colour gallery at the Guildhall there is a striking contrast between the "Falls of the Clyde" (125), a large water-colour of 1802, and the "Swan's Nest" (124) a work of about the same size painted in 1816, and hung above the previously-named drawing. This is the middle period, but it foreshadows a good many of the characteristics of the later period—the love of warm and brilliant contrasts of colour, of reflected lights in water, &c. The Clyde picture is a work in what one may call a dark key; there are no brilliant contrasts in it, and probably there is hardly any part of it which is really the colour (or the apparent colour) of the natural hills, rocks and water. But its values are all right in their proportions, and the whole forms a grand monumental landscape, a complete pictorial whole in which there is nothing to disturb the unity of effect. No one with any eye for landscape art, we imagine, would hesitate for a moment in ranking it as the far superior work of the two. The "Swan's Nest" is a charming and seductive work; the "Clyde" is a grand one.

Among these monumental landscapes of the earlier period "Kilgarran Castle," which comes first in the order of hanging, is one of the finest, and one of those which best illustrates Turner's abstract treatment of nature. Is the replica of it (No. 3) really by Turner? It is said to be painted in the same year (1799), but it seems almost impossible that Turner could have painted practically the same picture in the same year in so different a manner. The No. 3 looks to us like No. 1 with the poetry taken out of it. Still it may be argued, no doubt, that a copyist would have tried to copy the tone of the original sky more closely. Among the other early works the "Trout Stream" is remarkable for the grand opposition of the mass of white cloud and the dark hill, as well as for the retreating perspective of the distance. Turner's distances in this sense are among the most remarkable points in his works; they seem to go back and back, in plane after plane, so that one loses sense of the restrictions of the picture-plane. There is no finer example of this than the distance of the "Mercury and Hersé" (20), in every respect one of the greatest works of the middle period.

It cannot be denied, on the other hand, that Turner's seas are mostly bad, sometimes very bad. They have neither the movement nor the colour of sea-water, for the most part. He treated the waves just as he wanted them for the composition; heaping up an arbitrary wave to balance a boat on it, or digging an equally arbitrary hollow in it, as in "Boats carrying out anchors" (8). The worst of the seas in the collection is the "Wreck of *Minotaur*," which is no more like sea than if it had been done by a French painter. And yet, if we compare some of these pictures with Stanfield's large painting in another room at the Guildhall ("The Morning after the Gale"), while Stanfield's sea is much more like sea, one cannot help feeling that the whole thing is prosaic in comparison; there is a demoniacal element in the Turners which is wanting here. Stanfield painted ships better; Turner's boats generally are very bad—almost impossible; he had however a feeling for the majesty of the great sailing men-of-war of his day, and knew how to make them sit on the water, though he could not do so with the row-boats, which always look as if they were sinking. The painting showing the *Victory* tacking up channel, taken (after the manner of the old masters) in three different positions in the same picture, is a striking example of this.

The collection of water-colours at the Guildhall is perhaps a more extraordinary illustration of the variety and intensity of Turner's genius than even the oil paintings. There are a number of landscapes here which deserve the title "sublime" for everything but their size; and the variety of achievement is so wonderful too. That the same artist should have produced the delicate little vignette-like pictures of "Nemi" and "Narni" (111, 112), and the "Snowdon" and "Cader Idris" drawings, with their solemn and almost tragic power, shows an extent of range in which Turner stands alone among landscape painters. The early architectural water-colour drawings, again, such as the Chapter House and the Lady Chapel at Salisbury (105, 109), are no less remarkable for precision in drawing architectural detail and for the perfect knowledge of perspective which they display.

We cannot but regret that the catalogue should have been so full of quotations from Ruskin's exaggerated and untenable statements. It is absolute nonsense to say of the "Ivy Bridge" picture that the "rock foreground is altogether unrivalled and remarkable for its delicacy of detail"; there is little or no detail in the rocks, and nothing of realism; there is as much as Turner intended, no doubt, but not as much as Ruskin implies. It is absurd to say that in the "Ehrenbreitstein" the admitted alteration of Turner of many of the details of the scene "gives a truer impression of the place than could be gained by the most accurate study from a particular point of view." It was not Turner's object to give the topography, but to produce a work of art. It is a pity this kind of nonsense is put in the hands of the uninstructed portion of the public to whom the galleries are open.

The supplementary portion of the collection at the Guildhall includes a very fine portrait group of three boys by Raeburn; one or two good and well-known works by Reynolds; several fine Gainsboroughs; an exceptionally fine example of Linnell's rather restricted genius; a good small Venice picture by Holland, and a large one by David Roberts—careful but hard and unsympathetic; a beautiful Diana and Endymion by Etty—the poetry of the nude; contrasted with the prose of the nude in Mulready's learnedly painted but absurdly vulgar and bourgeois performance "Bathers Alarmed"; the only nude, we believe, that Mulready ever painted as a finished picture, although of course, his chalk life studies are numerous and celebrated. He is an example of the fact that an artist may be a splendid draughtsman of the figure, and yet have no feeling for its capability as a means of poetic expression.

We may thank the Committee, and the owners of the pictures lent, for an exceptionally fine and interesting exhibition.

## NOTES.

**The Building Trade Dispute**

THE result of the conference between the Master Builders' Association and the Operative Plasterers' Association is to be deplored, and the immediate cause of the failure of the parties to settle the dispute is noteworthy. The officials of the Plasterers' Union having expressed a desire to meet the employers to settle the dispute if possible, the masters agreed to the conference, and there appeared to be some reason to hope that an irritating and wasteful dispute would be brought to an end. The representatives of the men, however, appear to have taken up a surprising attitude in regard to coercion—an attitude which, though the men's statement is ambiguous, appears to be practically a withdrawal of their assurance on March 24 that they had no desire to coerce any one into their Society, but merely claimed the right to "persuade." As it was this assurance which induced the masters to accede to the request for a conference, it is not surprising that the conference ended so unsatisfactorily. It is much to be hoped that all employers of plasterers, especially those who may have hesitated to associate themselves with the Masters' Association, will realise what the withdrawal of the assurance of March 24 means. It means, apparently, that the Plasterers' Union is pledged to an outrageous policy of coercion, the end of which is to force all the operatives to join a society in order, presumably, that that society may be better able to dictate terms to the employers. This being so, a settlement of the dispute does not seem to be possible at present; for, apart from other practices complained of, the masters are scarcely likely to give way on this important matter of coercion.

**St. George's Tower, Liverpool.**

As the Birmingham people have just removed the tower which was the central object at the junction of several of their principal streets, so Liverpool seems to wish to remove the tower of St. George's Parish Church, a fairly good tower and spire of the Classic type, which forms the central object at the head of the principal line of street. It appears that the church is no longer required for its purpose, but it is to be hoped that those who advocate the retention of the tower as an architectural object will be listened to. It is a foolish thing for a corporation to recklessly destroy architectural monuments which form part of the character of their city, and which are moreover landmarks of its past history. A Liverpool gentleman, Mr. Henry Peet, proposes to retain the tower and put an arcade or shelter round the lowest story; the sketch of this is published in a Liverpool paper. Having regard to the general character of the erection, it should be a colonnade, not an arcade, and not with a sloping lean-to roof, as shown in the sketch, which would look very bad. With a different treatment a good effect might be produced. We hope the tower will be preserved, at all events.

**King Alfred Memorial at Winchester.**

LORD R. S. GOWER having, in a letter to the *Times* of the 5th inst., proposed the erection of a half circle of pillars on the farmyard near the site of Hyde Abbey, Mr. Alfred Bowker writes to the same paper on the 10th inst. and points out that this farmyard stands upon the site of the Abbots' House and other conventual buildings built centuries after the great King's death. He adds that, although the erection of a cross in the centre of the roadway which now occupies the site of the centre of the Abbey Church would be quite feasible, any erection such as that suggested by Lord Gower would involve the clearance of the small modern houses from the neighbourhood, the purchase of which would probably run into many thousands of pounds. Quite apart from this pecuniary consideration, it is a question whether a "half circle of pillars" would be altogether an appropriate monument to the King. Without discussing the date of Stonehenge or many other "standing stones," of which there appear to have been plenty in Saxon times, such stones are usually connected with pagan heroes, and the allusions to them in Saxon charters seem to imply that their origin and purposes were but imperfectly understood. Alfred should not be confused with our British kings of an earlier period. From an architectural point of view, moreover, pillars should certainly support something. A complete building does not appear to be contemplated, and we cannot help our thoughts recurring to the modern ruin on the hill near another Saxon city in the North. It should be borne in mind, too, that the abbey actually founded by Alfred was not at Hyde, but in the city near the cathedral. It was known as the "New Minster," or St. Grimbald's. In 1110, owing to the flooding of that site, a new abbey was built at Hyde just outside the city walls. This was burnt soon after and rebuilt in about 1180. From this time a new era appears to have commenced, and the monks became one of the wealthiest communities in the county, so that their old designation and site was almost forgotten when allusion was made to the Abbey of Hyde.

**St. Bartholomew's, Moor-lane.**

THE Vestry of St. Giles, Cripplegate, have agreed to a scheme that has been prepared for effecting a union of the benefices of St. Bartholomew, Moor-lane, and St. Giles, Cripplegate. In pursuance of the scheme St. Bartholomew's church, at the corner of Tenter-street, is to be pulled down, and the proceeds of the sale of the materials will be devoted to the formation of a new ecclesiastical district in the metropolitan area, with a church of that dedication, the first incumbent of the united benefices being the present Vicar of St. Giles. The church was built 1849-50 by Professor C. R. Cockerell, R.A., after the sale for 483*l.* 15s., on January 4, 1841, of St. Bartholomew's-by-the-Exchange, which had been rebuilt in 1438, and was repaired by Wren after the Great Fire at a cost of 5,077*l.* The site of the latter was taken for widening Threadneedle-street, concurrently with the erection of the Royal Exchange (by Tite), but a portion of it is occupied by the Sun Fire Insurance Office; it is said that the church's south wall and a small chapel were incorporated in that company's offices, of which, as originally designed by Cockerell, we published a drawing by Mr. J. J. Joass on July 11, 1896. For the church in Moor-lane Cockerell used some of the carved masonry, together with the organ (by Bridge), the pulpit and woodwork, of the former church, and there he re-erected the old tower with the parapet—after a somewhat singular design—added to it by Wren.

**Rolling Loads on Bridges.**

THE March number of the "Proceedings of the American Society of Civil Engineers" (Vol. xxv., No. 3, 1899) contains an elaborate paper, entitled "General Criterion for Position of Loads Causing Maximum Stress in any member of a Bridge Truss." Assuming a train of locomotives, with wheels variously loaded, on a bridge, the object of the paper is to determine in what positions the most heavily loaded wheels should be placed in order to obtain a maximum stress in any member of the main girders. This is one of those papers that are quite impossible to summarise into a Note, with any fairness to the author. It would be necessary to repeat the whole to make it intelligible to our readers, and therefore should be read in the original by those interested in the subject. The methods used by the author to find the desired result seem to be more cumbersome than those generally adopted by engineers in this country. And it is doubtful if the additional accuracy, if any, obtained by the processes suggested is of any practical importance. The only really satisfactory method known to us is to roll a train over the bridge, and from the tabulated results so obtained, pick out the maxima stresses, both direct and alternating, on each and every member of a girder.

**The Moat of Winchester Castle.**

A WRITER to the *Times* of April 10, who signs himself "Indignant," refers to the probable annihilation of a portion of the ancient moat of Winchester Castle at the hands of the speculating builder, and asks if the Corporation can do nothing to save it, adding, "unless they do, I fear we Londoners who take some interest in King Alfred's Millenary will begin to look askance and suspect the apparent love of Winchester for things antique." It is certainly a matter for regret if such an old landmark is likely to be lost, but many lovers of the old Wessex city will probably have recollections of a goodly number of the relics of bygone times which the Wintonians have contrived to preserve, so that the suspicion of "Indignant" may be unfounded. If he had followed the course of the moat a few hundred yards southward from the part to which he alludes he would have seen the west gate, dating from thirteenth century, which has been carefully preserved and quite lately converted into a museum and opened free to the public by the Corporation, in striking contrast to the Corporation of Southampton, which was only prevented by public opinion aroused all over the country from destroying their somewhat similar Bargate. If the Corporation of Winchester had themselves sold the site to the builder they would most certainly be blameworthy; but probably the only way to save such relics is to purchase them, and auditors of corporation accounts are not generally credited with antiquarian sympathies.

**Little Cairnie Hospital Competition.**

THE instructions to architects for a competition for a new infectious diseases hospital to be built at Little Cairnie, near Arbroath, afford another example of the want of consideration with which architects are treated in these matters. The Committee "reserve the right to obtain the assistance of an architect of standing not a competitor," in adjudicating on the designs, "but do not bind themselves to do so." Following on this is the following reassuring paragraph:—"If the author of any premiated plan is selected and appointed to carry out the erection of the hospital (though the Joint Committee shall not be bound to employ any of them, but may employ any of the other competitors or any outside architect), it is understood that he will receive the usual commission of 5 per cent. on the specified cost, but that this shall include the premium and be in full of all charges and expenses except as may be specially allowed by the Joint Committee." We do not think there will be any good competitors under these conditions.

**Beverley Minster.**

IN reference to a remark in our review of Mr. Hiatt's book on Beverley Minster that the piers of the eastern crossing may have been built as designed, and pared down and altered afterwards, Mr. J. Bilson writes that "considering the projection of the ordinary clustered pier in the choir, any 'paring down' would have cut into the rough centre of the wall, and show in the work as left, which it does not; so that if 'pared down,' the piers must also have been refaced, in which case the jointing of the masonry would have shown traces of the process, which it does not." Mr. Bilson, who has special knowledge of Beverley Minster, also wishes to correct Mr. Hervey Rutherford's remark, in connexion with his drawing of the western towers (published in our last issue), that the towers, "like the rest of the structure," are built of Tadcaster stone." Mr. Bilson states that though the nave and western towers are of Tadcaster stone, the eastern arm—choir and transepts—is built of an oolitic stone from Newbold.

**Mr. Elihu Vedder's Exhibition.**

We suggested before that the work of Mr. Elihu Vedder, the American artist, was perhaps regarded as more important, owing to the serious character of the subjects, than it could claim to be on purely artistic grounds. The exhibition of his thoughtful and often exceedingly poetic designs at Messrs. Dowdeswell's Gallery entirely justifies this suspicion. Mr. Vedder, of whom the American magazines speak as if he were a kind of United States Michelangelo (American magazines have that way with them), is a book illustrator, and a black and white artist, not a painter. There is a great deal of imagination and feeling in his conceptions, but they are only works of the illustrative order; the few figures which have been painted on a large scale are hard in style and not beautiful in design. Those who enjoy black and white designs which express original thought will find much to interest them in the exhibition at Messrs. Dowdeswell's. We only object to their author being claimed by his compatriots as a great painter.

**M. La Touche's Exhibition.**

M. La Touche, on the other hand, is emphatically a painter; he composes with colour as a musician does with sounds, but he lies under the restriction that his subjects are mostly only vehicles for colour effect. Occasionally we have a sketch like "Le Ravissement d'une Etoile," which is a really powerful piece of grouping as well as of colour, but in general the figures indicated (and sometimes little more than indicated) in his pictures are of little interest in themselves: they are colour vehicles. In this sense some of the works at present on view at the Fine Art Society's gallery are very beautiful and original. We may mention especially the harmony of colour in "The Swans," which is perfect; but it is a style of painting which is limited in its interest. Those, however, who do not know this artist's work will do well to cultivate what may be called a new sensation in art.

**The New English Art Club.**

The new English Art Club does not seem to advance; even from its own point of view there is no picture of pretension or importance in this exhibition. We notice that Miss Fanner has been promoted from her position by the door to the centre of the top wall, as her talents demanded; and her "Yorkshire Trout Stream" is a landscape with a large style and manner about it. Mr. W. W. Russell's "A Picnic," and one or two others, are good sketches for pictures. If Mr. Wilson Steer's landscapes are worth hanging in an exhibition, there is hope for all of us. Among better landscape sketches are Mr. Rich's "Rye" and Mr. Carter's "Millpond, Swanage," and Mr. Priestman's "Buttercups Bloom." Mr. Tonkin's society subjects are also promising—as studies for pictures: and Mr. Sims's "Love and the Student" is dramatic, if not very serious.

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Alterations, &c., Luddenden Parish Church, Yorks.—A new organ has just been erected in this church. The building has been redecorated throughout by Messrs. Bennett & Son, of Manchester. New heating apparatus has been provided, and the plumbing and glazing work carried out by Messrs. J. Naylor & Son, Halifax. Mr. John Robinson has carried out the plastering and the repairs to the roof. The whole work being executed under the superintendence of Mr. T. L. Patchett, architect, of Halifax.

## THE LONDON GOVERNMENT BILL.

The Council of the Royal Institute of British Architects have addressed the following letter to the First Lord of the Treasury in regard to Clauses 5 and 6 of the London Government Bill:—

"March 28, 1899.

To The Right Hon. A. J. Balfour, M.P., First Lord of the Treasury.

The London Government Bill.

Sir,—The Council of the Royal Institute of British Architects, viewing with some apprehension certain clauses in the London Government Bill which affect the architectural profession, desire most respectfully to draw your attention to various points set out below, of which they would urge your earnest consideration. In the first place, however, they would point out that the Royal Institute is the statutory body for the examination of District Surveyors, and that the Metropolitan Fellows, all practising architects, number 295, whilst further there are 545 Associates, all engaged in the work of designing and building in London, many of these being principals.

On behalf, therefore, of a responsible and representative body, the Council of the Royal Institute most strongly urge:—

1. That architects practising in London on behalf of their clients the public would have great difficulty in complying with the by-laws made by forty different borough corporations, and that wide differences in the administration of any building laws must ensue where there is not one responsible head as at present.

2. That it is of the utmost importance for the proper carrying out of the Building Act that District Surveyors should be independent surveyors, responsible only to a central authority, and not merely officials of a single corporation and, therefore, subject to control. And further, that the supervision of buildings should continue with them, and not be deputed to building inspectors under the control of a borough surveyor or engineer.

3. That architects having to submit their drawings for important and public buildings to the District Surveyors, strongly object to subject themselves to the direction of any one who is not a qualified and experienced architect, and independent of all local influences.

4. That the administration of the London Building Act, 1894, having worked well for so many years, there is no reason for any alteration. For such a purpose London must be treated as a whole, and, therefore, the rules applying to the other town corporations, which are quite apart from, and independent of, each other, cannot apply to these London corporations, which are merely parts of a huge metropolis.

5. That for the above reasons Clause 6 of the Bill be entirely omitted, and the powers under Clause 5 be strictly limited to matters which are local and not general.

6. That architects acting for their clients the public already labour under great difficulties in consequence of the very varied character of the sanitary and other by-laws at present issued and enforced by the Local Authorities in the London area, and that the London County Council, as the central authority, be empowered to issue to each proposed Corporation by-laws as to sanitary and other matters affecting buildings which shall be compulsory throughout the whole London area.

7. That no further splitting up of the laws affecting buildings in the Metropolis be allowed, but that rather all these be made uniform throughout the whole area affected by the Bill.—We have the honour to be, Sir, your most obedient servants,

(Signed) { Wm. Emerson, Hon Sec.
W. J. Locke, Secretary."

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Electric Light, &c., at Grimsby.—An inquiry was held at the Grimsby Town Hall on the 6th inst., before Mr. W. A. Ducat, Local Government Board Inspector, into an application by the Grimsby Town Council for sanction to borrow 43,500*l.* for purposes of electric lighting, and 1,038*l.* for the formation of a new street connecting Guildford-street and Hilda-street. Mr. R. Smith (chief engineer from Professor Kennedy's office, London), the Borough Engineer (Mr. M. Petree), and the Assistant Engineer (Mr. Heap), gave evidence.

London Geological Field Class.—This class, conducted by Professor H. G. Seeley, F.R.S., will commence its annual series of Saturday afternoon excursions on April 22. Full particulars can be obtained from the hon. sec., Mr. R. Herbert Bentley, 43, Gloucester-road, Brownswood Park, N.

## THE ROYAL INSTITUTE OF BRITISH ARCHITECTS:

### THE APPLICATION OF COLOUR TO INTERIOR ORNAMENT IN RELIEF.

An ordinary meeting of this Institute was held on Monday evening at No. 9, Conduit-street, Regent-street, Mr. H. L. Florence, Vice-President, in the chair.

The decease of Mr. Edmond Egan, elected an Associate in 1880, having been announced, papers, under the management of the Art Standing Committee, were read on "The Application of Colour to Interior Ornament in Relief," by Messrs. H. Vaughan Lanchester and F. L. Jenkins.

Mr. Lanchester, who read the first paper, said that the question of form and relief was so frequently of first importance that he should deal with the massing and treatment both of colour and form when applied to internal decoration. Modelled work as a basis for colour treatment gave a solidity and strength that enabled the painting to be kept in a more delicate key than would otherwise be thought satisfactory. The relief also was helpful in connecting the work with the mouldings and forms around it in a way that no flat-painted work could do; and if the design of the whole interior was studied by architect and sculptor in conjunction, the result should be far beyond the very frequent method by which the architect leaves a space, here labelled "sculpture," or a panel there marked "painting." The sculptor naturally asked for as much freedom as possible, while the tendency of the architect's idea was towards formality and symmetry.

Of the spaces the architect usually put at the disposal of the decorator the frieze was the most interesting, and offered the greatest variety in its requirements; it might consist of simple repetition of somewhat severely conventional forms, or it might teem with variety when it illustrated the great events connected with place or people. The freize, however, was not always the most suitable form of decoration to adopt, and its comparatively uniform continuity of colour and modelling was not always what was most to be desired. A certain massing of either or both at intervals might, without cutting it up into disconnected panels, give the desirable suggestion of repetition to the freize, and at the same time suggest a sense of support or connexion between other portions of the whole design. This treatment suggested a greater degree of solidity and higher relief in the supporting or dividing portions, though the same end might be attained by giving them more severity of form. An uninterrupted frieze gave length to the surface on which it was placed by the horizontal stratified effect so obtained, and the more the frieze was cut up into sections, the less would the modification in proportion appear.

Vaults and ceilings gave exceptional opportunities to the sculptor, though he could rarely put into them work having the same human and personal interest that the vertical surface of the wall allowed, as in most cases the decoration must be of a more structural and conventional character.

With a view to suggesting the effects that could best be aimed at in various cases, the author went on to consider the actual methods of executing the work, and the most suitable colours and materials. The combination of relief with colour was not only valuable where the figure formed the basis of the design, but could also deal in an interesting way with decoration based on landscape, architectural, and other forms, varying according to the subject and the dependence placed on the relief and on the colour. If the scheme of decoration was suitable, a delightful effect could be obtained by using colour very sparingly, as mere suggestion—in ceilings for instance, where colouring should always be delicate, unless supported by very strong architectural forms. Interesting effects might be obtained where it is desired to embody existing pictures or sculpture in the decoration, such works giving a note as to treatment and colour.

### *Plaster Relief Work.*

Mr. F. Lynn Jenkins, who read the second paper, observing upon the present craze for lavishly decorated buildings, said that each new hotel, restaurant, or place of amusement has to vie with and, if possible, go one better in point of extravagant decoration than its predecessor, and the architect must often experience the greatest difficulty in complying with his client's demands, and sometimes at the expense of his own natural good judgment and taste. The necessity has arisen for a decorative material which shall above all be durable and easily cleaned, being permanently coloured to any key of brilliancy and enriched with metals. These properties are embodied in the material known generally as coloured plaster relief work, and should prove almost sufficient reason for its production and use.

With regard to the prevalent mode of decorating rooms in private houses, it is becoming more and more apparent how false a notion it is and how extremely difficult to get any satisfactory effect by papering the walls and hanging pictures upon them. The revival of the old method of designing and making such decorations as are required as part and parcel of the scheme of the room is a movement the influence of which is bound to be widespread by reason of its truth of principle, and also because even the unanalytical mind will grow to perceive its advantage without knowing why the use of coloured relief for such purposes would often be found most serviceable.

The author then described the material and method of its production, and the plan adopted in the working of reliefs by Mr. Moira and himself, working in collaboration. The relief work in question can in no respect be considered according to the usual laws governing bas-reliefs, but must be modelled strictly with a view to the reception of colour. The quality of the colour depends so much on the texture of the surface underneath that it requires not a little experience and many experiments to obtain good results. The peculiar properties of the material enables the painter to get a brilliant transparency of colour on some parts to contrast with the density of others, so that there are practically no limitations to handicap him. This plastic material has the additional merit of giving exact reproduction, even to the impression of a thumb-print in the finished cast. The panels are easily removable from the wall without damage to them. When the work is fixed complete in its position, it is carefully reconsidered with relation to its exact surroundings, and alterations can be easily effected if desired. Some special advantage is derived in coloured relief work by the collaboration of painter and sculptor. Each would exercise a wholesome restraint on the other, beneficial to the work, while the joint imagination of two minds should instil a greater degree of interest.

Mr. J. M. Brydon, as a member of the Art Standing Committee, proposed a vote of thanks to the readers of the papers. He said that the proper use of colour applied to ornamental work in the interior of rooms was a very difficult matter. There was not much difficulty, as far as his experience went, in getting good reliefs—good friezes, lunettes, sculpture modelled in low relief in plaster and surrounded with proper decoration; but after that was accomplished, the difficulty commenced when the decoration of a room was commenced to be painted and in some way preserved from dirt or the ravages of time. Mr. Jenkins had urged that in such work it was important for the architect to work in collaboration with the sculptor, or, at all events, with the idea that the interior ornament in relief would be coloured. He (the speaker) agreed that the painter and sculptor should work together; that was very well as far as it went; but architects were frequently called upon to treat and suggest the decoration of actual reliefs that had not been designed in collaboration and with this idea. The Art Committee of the Institute had an idea in view in arranging the subject for that evening, viz., how best to treat in colour an elaborate ceiling, which had elaborate decoration, sculptured panels, or frieze. Of course there was a difficulty, for the simple reason that the beauty of the sculpture depends on its light and shade and delicacy in modelling, which might become lost when one began to colour it. He did not say it was not possible—far from it—to accommodate the colour to such an extent that the delicacy of light and shade would be retained, at all events, to a certain extent; but one ran the risk of losing the delicacy of modelling and light and shade which were got from modelled forms. He did not propose to go into the question of the forms themselves, for that was not the subject of the evening, but he might add that all sculpture applied to architecture must, he thought, be treated conventionally. There must be a severity of form and line. Whenever they approached, or nearly approached, naturalistic figures, the difficulty was increased tenfold, both in modelling and in colour. The flowing lines of some of the examples before him were not, for instance, in strict accordance with architectural lines. Any one who compared the frieze of the Parthenon would see that the forms were not naturalised but conventional, and they accorded with the Greek architectural lines around them. A question for them was: What would they do with the frieze of the Parthenon if they had to colour it? That was the sort of problem, in a way, that they had to deal with every day. Such work was not done in collaboration and the question arose, how to treat it? He had looked at the specimens exhibited that evening and it seemed to him that the treatment of some of them was too restless for an architecturally decorated room: that was what he meant when he said that the lines must be more or less conventionalised. There was one thing which must have struck them in looking at ancient buildings, viz.: the magnificent use of gold, especially in ornament, such as caps, eggs and tongues, of leaves and cornices, &c. No amount of colour could give the same good effect as was got by solidly gilding the whole feature. In that direction ornament in relief should be treated: instead of using a multiplicity of colours, very few should be used, and in that way a broad effect could be obtained—a result which one sought after in decorated sculpture. The object was to get the work very broad, very simple, very stately, very strong in its lines and not at all naturalistic, and not at all confused or jumbled up. He submitted those remarks from an architect's point of view, because decorators were often glad to hear what an architect thought, as architects were glad to hear what decorators thought. He had not been reconciled by what he had heard to the way of treating a frieze such as was shown that evening; the ideal way had not been shown, nor, as he thought, quite indicated. It was interesting to hear an account of the actual production of plaster work, but the difficulty was to obtain a broad and stately effect such as was to be seen in some of the old palaces in Italy.

Mr. H. Rathbone (Della Robbia Pottery, Birkenhead) said there was nothing more objectionable than large masses of glazed coloured tilings, with a perfectly flat surface, though it seemed necessary now to get some material which would defy the dirt and smoke and retain its colour-quality and brilliance. The machine-made tilings of the chief manufacturers of the day were intolerable; and in order to make others with an interesting surface and broken colour the promise of support from the architects was an essential. Permanency in material was also a necessity. Coloured plaster was absolutely certain to suffer from the effects of time, although the surface of this material, so long as it lasted, and the variety and softness of colour which could be obtained, made it among the most attractive of all decorative settings for temporary purposes. Very fine effects might be secured by the utilisation of simple material in combination with richer material, such, for instance, as large surfaces of Candy's glazed ivory bricks, which were made in Devonshire. Such glazed work, used in discreet conjunction with brick, produced in architecture the same delightful sensation which was felt in a lesser degree from the shine and shimmer of porcelain and glass on a material of a different nature, such as the every-day white tablecloth. This difference in texture, and the variety of charming architectural effects of colour and quality, could be obtained by adapting materials of even the same colouring but different textures, such as enamelled terra-cotta used in conjunction with ordinary red brick. Very beautiful permanent effects could also be produced by the use of mosaic, such as Rust's, amid a green or white tiling introduced as panels in a wall, with accents of rich modelled and glazed ware. Adopting this attitude, with the condition that the decorative settings of glazed ware thus introduced yielded the right perspective of architectural, or one might even term it orchestral, effect required for the building in question, depending mainly on the creamy or light silhouetted outlines and masses against the simple coloured grounds; or, on the other hand, adopting the method of clearly mosaicked or patterned colour, there was little limit to the discriminative uses which the Della Robbian treatment, with colouring sympathetically adapted to our less sunless climate, could serve. The designs of leading sculptors working hand in hand with the architects, or simply the architects' own designs or suggestions, could be carefully and wisely interpreted to suit the potter's art, so as to insure the effect demanded by the architectural conditions. As an instance of this he might be pardoned for citing Mr. Collcutt's construction for the fountain in the courtyard of the Savoy Hotel, for which his pottery had supplied the ornamental treatment and colouring in glazed material, with a use of mosaic in the basin. Nothing more telling could be used in this temperate sense for wall-fountains for the street or restaurant, reredoses, friezes, dado bands of colour, mantelpieces, memorial tablets, tympani for internal or external purposes, &c. This was an art which positively had not yet been seriously begun in this country, though the effects to be obtained were rich and delightful and sufficiently economical in comparison with other methods. The work of the Della Robbias was as fresh to-day as it was when it emerged from the oven 400 years ago; but out of many specimens of coloured plaster he (the speaker) had seen, the colour had sunk in and deteriorated sadly within the last ten years. If glazed ware were made use of in a constructive manner, it ought to be of the simplest nature, and in the main undecorated. The examples of modelled ware taken from moulds and dipped into coloured glaze led to the insinuation among us of a machine-made art which must needs be highly distasteful to their artistic sense for its treacly quality over monotonous flat surface, but if the simple material made large use of had an interesting and broken surface, leading to a pleasant play of light, the effect of Venetian-like colour which could be got by judiciously introduced settings was infinite and delightful in its prospect.

Mr. E. W. Mountford, in seconding the vote of thanks, said that they were indebted, not only for the papers which had been read, but for the beautiful specimens of work which had been shown that evening. Perhaps Mr. Rathbone did not know that the frieze which he had criticised was only a model, and that the real thing was three times the size. Every process had its difficulties, and although the high glaze of the pottery would be better avoided if possible, yet, as Mr. Rathbone said, the glaze and permanence were better than no glaze and no permanence. A very considerable amount of conventional treatment was desirable both in modelling and colouring when applied to architecture.

Mr. J. D. Crace said that there was one point worth calling attention to, and that was, that in the works of Luca della Robbia and the great artists of the past the first idea was that their work should be expressive when applied to architecture, and that the ground, whether lighter or darker, should be so maintained and not mixed up with the subject. Whatever artistic merits there might be in some of the specimens to be seen in that room, the colour effect was confused and the relation of the work to architectural lines would be unfortunate. We were apt to concentrate our attention far too much on technicalities of production and to disregard large treatment. That had been the great misfortune in our greatest public building in London; every possible attention had been devoted to the technical method adopted, but the bold and definite treatment of the colour in relation to the expression of the building had been lost sight of. He always felt some regret when that Institute appeared to devote more attention to technical methods—which were comparatively of second-rate importance—rather than to the greater subject of the definite expression of surface and line. The methods of production in relief in fibrous plaster which had been described that evening were not new; they had been in use for the last thirty years. The question was how to find the talent necessary to express, so far as sculpture was concerned, the forms which were agreeable and harmonious in relation to the architecture. So far as the colour was concerned, the method employed should not only express the architecture, but should leave the form sufficiently definite to be recognised at the distance at which it would be ultimately seen.

The Chairman, in putting the vote of thanks to the meeting, said that in a city like London a great deal more study should be given to the use of some sort of glazed material to the exterior: with a less violent and aggressive glaze, there was ground to hope that we should see in our narrow streets and gloomy lines of houses great improvement in this respect, though this would never be done by the use of panels or by a spotty treatment. As to the treatment of interiors, he had not been at all convinced from what he had heard that evening that a glaze of any kind was likely to be successful—still more so if used as it was generally done—in panels. It seemed to him that if a system of raised decoration were used, it should be in large, broad surfaces, so as to give, not a glaring or spotty, or even brilliant effect, except in exceptional cases, but rather an effect of old tapestry ; something quieter and homelike. Sharp reliefs and contrasts might be necessary for restaurants, theatres, and such places, but he did not think people would care to be surrounded all their lives by such work. It was a subject about which there was much diversity of opinion, and he had hoped to have heard some Owen Jones student (and there were several present) give some expression of opinion. There was an invincible shyness about the architect which kept him, as a rule, from expressing his views openly, however deeply he might feel.

The vote of thanks having been put to the meeting and carried heartily,

Messrs. Lanchester and Jenkins briefly replied.

Mr. Jenkins said, in reply to Mr. Crace, that he had a sample there of a material which was obtained by a method which was not quite the old-fashioned method that that gentleman appeared to think.

The Chairman announced that the next meeting would be the sixty-fifth annual general meeting, which would be held on the 4th prox.

The meeting then terminated.

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## SANITARY INSPECTORS' ASSOCIATION:

### SEWAGE DISPOSAL.

At the general meeting of this Association, held on Saturday, the 8th inst., at Carpenters' Hall, London-wall, after the election of new members and the other ordinary business, a paper was read upon "Sewage Disposal," prepared by Mr. D. Balfour, C.E. Mr. T. J. Moss Flower (Chairman of Council) presided. The leading principles of the various processes by which the important problem of disposing of the sewage of large towns had been solved or attempted were set forth in the paper under four categories, viz.—tidal, land, chemical, and bacteriological methods. The tendency of late years had been towards a fairly satisfactory solution of the problem, but there was no one method which could be applied universally because the varied conditions of localities necessitated varied methods of treatment. Towns fortunately situated—small towns on the sea coasts or the estuaries of tidal rivers—could fulfil the requirements of the Rivers Pollution Prevention Act of 1876, which was the Act usually applicable, with comparatively little expense, because it permitted the discharge of crude sewage at extreme low water where there was no danger of a reflux, and where the volume of dry weather flow and the tidal rise in rivers were sufficient. Towns on the upper reaches of rivers were required by the Act to render the sewage harmless by the best means available under the circumstances. London and Glasgow were examples of towns so situated, the sewage in the former case being treated with lime and sulphate of iron at the great Outfall Works at Barking and Crossness, while the resultant sludge is carried out to the open sea to be discharged.

In Glasgow, where, after being treated with lime, alumino-ferrio, and filtered through coke breeze, a good effluent remains, fit to be discharged into the Clyde. The sludge is dried, pressed, and sold for manure. Dublin and Newcastle are examples of towns discharging crude sewage into the tideway at low water. The oldest example of the land or natural treatment is to be found at Edinburgh, where the Craigentinny meadows (an area of 300 acres) have been manured with the town sewage since the middle of last century, or 145 years. In America, France, and Germany very successful land filtration experiments on a large scale have been made, and in these countries, as well as at Edinburgh, the crops raised are good, the effluents are sufficiently pure for fish to thrive in the streams that receive them, and careful observations have revealed no injury to the health of the population in the vicinity. The Local Government Board encourages the land treatment by offering loans at 3 per cent. interest where the plans of a Local Authority are approved. The treatment by chemical methods has been the subject of seventy or eighty patents during the past fifteen years, and a few of these have survived. The newest developments have been in bacteriological methods, in which the object is to liquefy the solids, or sludge, in crude sewage by means of the micro-organisms contained therein, without chemical treatment or direct application to land, but with ample purification of the resultant liquid. Of this class the methods of Dibdin and Thudicum are working successfully at Barking, Sutton, and Hampton, near the metropolis, and at Leeds. At Sutton the resultant liquid is used to nourish mint crops, and at Leeds carp are said to thrive in the effluent. At Exeter and Glasgow the septic-tank system of Mr. Donald Cameron is being successfully carried out. These tanks are intermittent in their action, but Colonel Ducat, R.E. (late Engineer to the Local Government Board) has invented a process of this class which is self-acting and has a continuous flow. This is in successful operation at Hendon, where gold-fish are found to thrive in the effluent. In the "Ducat" tank, instead of solid walls, the sides are formed of open drain pipes built in concrete with alternate layers of through-going pipes, by means of which air is supplied both laterally and vertically, so as to obtain continuous action, the use of valves being thus obviated, and a saving in the cost of supervision being effected. In winter heating arrangements are considered important. Among the most recent methods of this class referred to were those of Whitaker & Bryant, and Mr. Bennett (Borough Engineer), Southampton. The paper avoids comparisons between these various systems, because they are the subject of exhaustive investigation by a Royal Commission, which has paid visits to Exeter, Yeovil, Manchester, Rochdale, Chorley, Sutton, Doncaster, Bradford, and Leeds in search of evidence. They have employed experts of their own, and have just increased their staff of chemists and bacteriologists, among the experts to give evidence being the author of the paper. The opinion is expressed in the conclusion of the paper that, as the outcome of this investigation, public authorities will soon possess ample knowledge on all the means at present existing for the purification of sewage with simplicity, efficiency, and economy. A cordial vote of thanks was given to the author of the paper, who was prevented from attending to deliver his lecture personally through an attack of influenza.

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## BUILDERS' CLERKS' BENEVOLENT INSTITUTION:

### ANNUAL DINNER.

The twenty-first annual dinner of this Institution was held on Tuesday in the King's Hall, Holborn Restaurant. The chair was occupied by the President of the Institution, Mr. Alfred F. Randall, who was supported by Messrs. Tabberer, Pennington, J. Randall, Downs, Foster, Hugman, T. Costigan, Green, and others, the company numbering about 300.

The loyal and patriotic toasts having been honoured (Mr. Downs proposing, and Major Marshall replying for, "The Navy, Army and Reserve Forces"),

The Chairman gave the toast of the evening, "The Builders' Clerks' Benevolent Institution." The Institution, he remarked, had been thirty-three years in existence, having commenced its life in a small but very useful way under the good direction of its founder, the late Mr. Thomas Peto Ward. The object then, as now, was the granting of pensions or temporary relief to decayed or distressed builders' clerks or their widows, and for the maintenance and education of their orphans. This object had been realised in a far greater degree, perhaps, than its founder could have foreseen—for in the first year (1868) that relief was given the amount so expended was 12*l*. 15s., while last year the amount was 504*l*., and to this must be added 102*l*. working expenses. The total amount spent in relief since 1868 was no less a sum than 17,336*l*., and this spoke volumes as to the necessity of such an Institution. Last year saw the largest sum paid in temporary relief, many most distressing cases presenting themselves to the Committee, with whom it was a *sine quâ non* to inquire into without delay the cases before them and to afford relief. The Institution was a most generous one, for it did not offer relief to subscribers alone, but had given to those who had not paid a penny towards the Institution, either to builders' clerks or their widows or orphans. But those clerks who had subscribed were entitled at any election to ten votes for each guinea they had given. He was rather surprised to hear that some clerks preferred to subscribe to the Oddfellows, or kindred societies, the advantage of which he could not see, for from these societies they derived benefit only when they were ill, though friends could draw some 10*l*. or 12*l*. to bury them. In this Institution, however, pensions and relief were given when a man was past his work, and the Committee, under their rules, were empowered to pay out a sum as much as 10*l*. in temporary relief. There were applicants now upon the books for relief and for pensions, and the number was increasing. There were at present twenty-one pensioners, two children at the school, and there was a vacancy for another duly elected builder's clerk's orphan.

Mr. T. Costigan then gave the toast of "The Architects and Surveyors"—two noble and most useful professions which were closely allied to the building trade. It was the hope, he thought, of every person connected with the trade that the ties between the two professions and the building trade should become closer and closer, for the interests of architects, surveyors, and builders were much the same Architects and surveyors would have an opportunity shortly of showing their practical sympathy with builders and those connected with the building trade. As to the three branches of the great trade of building, there was the architect, with his great experience—being often an artist and always a thinker ; the surveyor, who had to go into the details of mathematical calculations ; and the builder, who had to carry into actual fact the schemes of the architect and the surveyor. After hearing the facts which had been put before them, it was to be hoped that the members of those two professions and the builders would do their best to assist in the good work which the Institution was carrying out. The name of Mr. Tabberer was coupled with the toast.

Mr. Tabberer, in response, said that he believed there was a very good feeling existing between the members of the two professions, and builders and their clerks. Architects were very much indebted to builders' clerks for the manner in which they lightened the labours of architects.

Mr. Turnbull Tonkin then briefly proposed the toast of "The Builders," coupled with the name of Mr. W. Downs. Among all the trades of the country, there was none more important than the builder's, and notwithstanding the vicissitudes in that trade, it was interesting to notice how many businesses were handed down from father to son.

Mr. Downs having suitably replied,

Mr. J. Randall, Past-President, proposed "The Merchants." The welfare of the Institution, he said, largely depended on the merchants of London. He would like to see builders' clerks themselves support the Institution more than they did. There were about 4,000 builders' clerks in London, but not a tithe of that number belonged to the Institution. Builders' clerks would do better to join the Institution than any other society.

Mr. R. Barrett, in response, said that most builders' merchants did their very best to support the Institution, and they would continue to do so, as far as it was possible in these competitive times.

The remaining toasts were "The President," proposed by Mr. Costigan ; and "The Past-Presidents," proposed by Mr. E. Brooks, Treasurer, and replied to by Mr. R. C. Foster, Vice-President, both of whom spoke of the great loss the Institution had sustained in the death of the late Secretary, Mr. H. J. Wheatley, who had worked so hard in its interests.

It was announced during the evening that over 200*l*. had been subscribed by the guests towards the funds of the Institution, the Chairman's list amounting to 111*l*.

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Aberdeen Corporation Tramways.—The following contracts for works on the Woodside section have been accepted :—Laying permanent way, Messrs. McAdam & Sons, Aberdeen, 18,085*l*. ; overhead line construction, cars, switch-boards, instruments, &c., Messrs. McCartney, Macelroy, & Co., London and America, 7,793*l*. ; feeder, pilot, and test cases, British Insulated Wire Company, 5,340*l*. ; total, 31,218*l*.

## GLUE TESTING.

BY S. RIDEAL, D.SC.LOND., F.I.C.

### *Chemical Examination.*

THE determination of water and ash is necessary in order to render the other results comparable, and to assist in detecting adulteration. Ordinary glue of good quality contains from 12 to 18 per cent. of water: a low result is generally a bad sign, as overdrying is known to injure the tenacity, while a high percentage diminishes the keeping qualities, besides adding spuriously to the weight. The ash is usually from 1·5 to 3 per cent., and its amount does not discriminate between hide and bone glues. It will obviously be much higher if mineral fillings have been added or the source is impure. The qualitative examination of the ash on the other hand, gives a clue to the origin, as the ash of bone-glue fuses, its solution is neutral, and it contains both phosphoric acid and chlorine, whereas ash of hide-glue does not fuse, because it contains lime; it is alkaline, and nearly or quite free from chloride or phosphate.

After breaking in small pieces, a sufficient quantity of the glue is either reduced to shavings in a machine, or is pounded in a mortar, the pestle passing through a perforated cardboard guard to prevent scattering. One or two grammes of the coarse powder weighed in a platinum dish are dried first in the water oven, then at 110—115 deg. C. till the weight is constant. The loss is water plus a small quantity of other volatile matter. Cautious incineration at a low temperature gives the ash, which should dissolve almost completely on warming with dilute nitric acid, the solution being tested for chlorides and phosphates, and also for other substances if necessary. The presence of more than a small amount of salt deteriorates the quality and appearance of glue. An excess of chlorine may also indicate that chloride of lime has been used as a bleacher in the manufacture. In a number of patents various earthy powders are added to glue during manufacture with the object of increasing its adhesive properties. This is regularly the case with Russian glue. White lead, lead sulphate, zinc oxide, barium sulphate, and even lead chromate have been used. These substances would be found in the ash.

*Reaction of the Glue.*—If acid, about 10 grammes of the powder are dissolved in warm water and divided into two portions; in one the *total acidity* is estimated by standard alkali, the other is evaporated on the water bath, redissolved, and the *fixed acidity* determined. The difference gives the *volatile acids*. As the nature and amount of the acids present in glue is often of importance, a closer examination may be made by distilling 30 grammes in 100 cubic centimetres of water by a current of steam, when the volatile acids will pass over. The distillate should be examined for free sulphurous acid, as it is sometimes present, having been used for preserving or bleaching, and its presence is generally objectionable. In leather glues the volatile acids are about 0·02 per cent., in bone glues from 0 to 0·5, the higher amounts, with a smell of acetic or butyric acid, indicating that the jelly has been soured during the manufacture and that the glue is unsuitable for many purposes. Kissling states that glue solutions which do not alter litmus may yet react with phenolphthalein, "probably owing to an organic acid." He estimated this with soda, but did not ascertain its nature.

Any undue quantity of acid can be roughly detected by the taste. Glues may be *alkaline* from the addition of excess of lime in the manufacture to correct the sourness of the jelly. A large manufacturer informs us that "a little acid or a little lime does not hurt, though it is much better neutral. We find that our customers prefer a glue that shows a little lime, rather than any acid, although an acid-made glue is not nearly so apt to decompose as a lime-made glue." It must be remembered that the bacteria which cause the changes are antagonised by acids. For uses where colours are concerned the glue must be neutral to litmus; for adhesive uses this does not matter, unless it is due to defective preparation. When the solution of glue in hot water rises higher than 100 deg. C., it begins to sour, and loses to some extent its property of forming a jelly. Sulphurous acid and sulphites are said to cause light patches on dyed wool. Kalmann states that the amount of sulphite can be determined in the remains of the acidity titration with soda and phenolphthalein, by means of iodine solution and starch, the organic matter not interfering. He mentions that for woollen manufacturers the glue must not exceed: free acid equal to 1 per cent. $Na_2O$, $SO_2$ 0·5, ash 3, water 15 per cent.

*Insoluble Matters.*—As extraction with water, filtration and weighing is somewhat tedious, a comparative result may be obtained by dissolving 30 grammes, making up to one litre in a graduated cylinder with hot water, allowing to stand in a warm place for twelve hours, then noting the volume of the deposit as "foreign matter," stating the quantities taken. The solution may be used for other tests.

*Determination of Gelatine.*—The organic matters of glue are very complex. Among the nitrogenous matters to be found in it there are probably several varieties of gelatine and chondrine, as analyses of these substances, presumably pure, show differences in elementary composition, in addition to the variations in physical properties. Products of change, such as albumoses and peptones are usually present, with small quantities of bases, sugars, and ill-defined bodies. For this reason the content of nitrogen and the various processes of precipitation by tannin, &c., yield results which have little relation to the commercial value. Gelatine has a greater power of adhesion and gelatinisation than chondrine; the latter, however, is largely employed for size.

The Bisler-Beumat method of tannin titration is briefly as follows:—Two solutions are prepared; (*a*) 10 grms. of pure tannin to the litre; (*b*) 10 grms. of pure isinglass and 20 grms. of alum to the litre. The latter is added to a measured quantity of the former till no further precipitate is produced; the volume used is read off on the burette. The same volume of tannin is then precipitated by a 1 per cent. solution of the glue; the relation between the volumes of glue solution and of isinglass gives the ratio of the glue to the sample of isinglass taken as a standard. Different specimens of isinglass and of tannin themselves show different ratios of precipitation; 42·7 parts of gelatine are said to be equivalent to 57·3 of tannin, but the precipitate is somewhat variable in solubility and composition. Another process is to add tannin in excess, and estimate the amount left in solution by running in standard permanganate as long as decolourised. Stelling precipitates by tannin and evaporates, and weighs the "matters, not glue." This is by no means accurate. The proteids can be more exactly precipitated by chlorine (Rideal & Stewart, *Analyst*, September, 1897), or by bromine (Allen & Searle, *ibid.*, October, 1897).

The presence of chondrine reduces the value of gelatine, especially for photographic emulsions. It may be detected by adding a concentrated solution of chrome alum to the glue or gelatine, dissolved in ten parts of boiling water; if any injurious quantity of chondrine be present the liquid will set while hot.

*Fat* is very objectionable in glue, and for many purposes must be entirely absent. It renders the hot solution turbid, and on standing collects at the top as a greasy film, which may be removed by ether when the jelly cools. A manufacturer's "grease test" is described as follows:—"To a solution of glue add a little lamp-black or Turkish red; thoroughly mix with a brush, and paint it on some pieces of paper; if there is an abundance of grease it will show by little round, white, smooth surfaces on the red or black paint. Specially required for the paper trade and some others."

*Physical Tests.*—Glue should not become damp in ordinary air, or it is liable to turn mouldy. This fault would indicate impurity or adulteration. The author has met with a few instances of weighting with coarse sugar, molasses, or dextrine, in which this peculiarity was conspicuous.

1. The appearance, hardness, and manner of breaking furnish an idea of value which can be learnt by practice. A splintery fracture shows that the glue is not well boiled. Glue from bones presents a milky appearance, due to a little calcium phosphate. Glue without gloss, very much warped, and of a very dark colour, may be excellent in adhesiveness and tenacity.

2. *Drying and Keeping Qualities.*—About ten cubic centimetres of a 20 per cent. solution are placed on a watch-glass in a cool dry place, protected from dust, and observed for several days in comparison with a standard sample.

3. *Smell.*—Varies very much. Leather glue smells least. Some do not smell when cold, but the hot solution is unpleasant. This property is of importance for some uses.

4. *Behaviour with Cold Water.*—Schattenmann in 1845 proposed the absorption of cold water on soaking. Ten grms. of the sample in small pieces are placed in a weighed beaker, and covered with 200 cc. of water, and kept covered at 60 deg. F. for forty-eight hours. The water is then poured off and the remainder weighed. According to my experience good glues will absorb about five and a-half to six times their weight of cold water, and still exhibit a firm jelly. Some will even absorb eight to ten times their weight and still remain fairly firm. The more consistent and elastic in this state the greater the adhesive power, and the more water it absorbs the more economical in use. Bad glues will often become slimy and fluid in less than forty-eight hours. The water poured off should be free from putrid odour, and contain little in solution. The test is specially applicable to bone glue; that from animal offal does not show the same behaviour.

Kissling soaks 100 grms. of the glue (apparently unbroken), supported on fine wire gauze, in cold water, and weighs at intervals of twenty-four hours, draining fifteen minutes before each weighing. In forty-eight hours he obtains numbers from 221 grms. to 332 grms. of water absorbed, his highest figure being 723 grms. in 216 hours. This method seems inferior to the above. Still less can Cadet's method, absorption in damp air, be recommended.

5. *Lipowitz' Method, 1861: Consistency and Bearing Weight of the Jelly.*—A 10 per cent. hot solution (the jelly from the 10 grms. in the preceding process, No. 4, could be made up to 100 grms. with hot water) is allowed to stand twelve hours at 18 deg. C. in a cylinder of uniform width to gelatinise. A metal rod is soldered to the centre of the interior of a small tin cup, and is supported vertically by passing loosely through holes in two horizontal plates, one of which forms the cover of the cylinder, the other being fixed a little higher. The upper end of the rod carries a funnel, which can be loaded with fine shot. The cup is allowed to rest on the jelly, and the funnel is loaded until it sinks a certain distance into the jelly; the weight of shot then gives the Lipowitz number. The cylinder should be surrounded by a water-jacket to maintain a definite temperature. The result is also affected by the diameter of the cylinder and of the cup. Lipowitz gives the following figures:—

| Variety of Glue. | Weight required to force the Saucer down. lbs. |
|---|---|
| Breslau ............... | 3·74 |
| Russian ............... | 3·18 |
| Cologne............... | 2·67 |
| Muhlhausen I. ...... | 1·60 |
| Nördlingen ......... | 1·59 |
| Muhlhausen II....... | 0·85 |

The table from which the above figures are taken also contains the following:—1. Water 9 to 21. 2. The percentage of gelatine by tannin is in the same proportion as the water absorbed. 3. The weight supported by the jelly corresponds neither with the absorption nor content of gelatine, nor with the price.

A commercial form of the above, called the "shot-test," is made by cooling the 10 per cent. solution in an ice-box for three or four hours till firmly set. A tube or small beaker is placed on the jelly and loaded with shot till it sinks. By this method I have found that a 10 per cent. jelly will bear a weight, ranging in different glues, from 64 to 12 grammes, and in bad cases falling to 0, the glue being liquid. Kissling ascertains how many seconds are taken by a glass, a zinc, and a brass rod to sink to a zero mark into a jelly. He finds that skin glues have a higher consistency of jelly, less odour, impurity, and volatile acid than bone glue, the water, ash, breaking strain, and absorption of water being about the same in both classes. But, like other observers, he can find no definite or constant relation between these factors and the price.

6. *Weidenbusch, 1859: Breaking Strain of a Rod made of Glue and Plaster of Paris.*—Sticks of plaster cast of uniform size, saturated with glue and dried thoroughly are placed one by one in a metallic ring having notches to receive them, and a lever with the centre of the stick as the resistance, and a mercury cup on the long arm as a weight. Mercury is poured into the cup till the stick commences to break. The weight required is recorded, and com-

pared with a standard glue gives the "Weidenbusch figure." For special purposes where glue is required as a body this would seem to be a practical method, but it is somewhat uncertain.

7. Karmarsch proposed, and the Artillerie Werkstätte, Spandau, has adopted, the severing strain of two blocks glued together. For the important objects of joinery and cabinet-making this would seem to be an eminently natural process, all the rest, being more or less arbitrary and artificial, except with reference to covering power and economy. But by a large number of experiments it was found that the error in duplicates was often very large, as has also been remarked by other observers. Hence, I undertook an investigation of the causes of inaccuracy. These were found to consist of : (1) Inconstancy of material and surface in the blocks to be severed. The following figures are given for holding power in kilogrammes per square centimetre :—

| Wood. | Cut Across the Grain. | Parallel to the Grain. |
|---|---|---|
| Beech | 155 | 79 |
| Hornbeam | 126·5 | 79 |
| Maple | 88 | 63 |
| Oak | 128 | 55 |
| Fir | 110 | 24 |

The hold on wood cut parallel to the grain being the same whether the fibres are laid parallel or crosswise.

2. Time of heating the glue and temperature of glueing, thickness of glue interposed, pressure used (with occasional obliquity in applying the pressure, therefore inequality in the layer), presence of lumps.

3. Moisture in the atmosphere and temperature while setting, and duration of rest before trial.

4. Temperature, &c., while testing.

5. Possible jerking in applying the weight.

Kissling substituted for wood two vertical solid cylinders of nickel-plated iron, with one end smooth and the other with a hook for applying the strain. But there is a great practical objection to using an absolutely non-porous material for the surfaces to be glued. On examining the fracture it will be found that it usually occurs between the glue and the metal, therefore the measurement is simply that of the adhesion of the glue to the metal; whereas, in practice, if a joint properly made be examined after rupture, it will be found that the parting takes place through the substance of the glue layer itself, about half of which remains attached to each face of the wood, so that the test is a practical measure of the cohesion of the glue. Roughening, lining, or grooving of the metallic surface does not remove this objection.

On the other hand, in severing glued wood it frequently happens that the fracture breaks into the substance of the wood itself, the latter having a lower tenacity than the glue : here the test is obviously valueless.

Bauschinger devised a sliding or lateral test, in which two pieces of red beech wood, a decimètre square, were glued together with their fibres parallel and their surfaces overlapping one centimètre. The pieces were fixed in a Werder's testing-machine and forced in a direction parallel to their surfaces till the glue yielded and the pieces slid over one another. This test is only advisable for special uses, as friction interferes and the wood itself frequently breaks ; moreover, in joinery a slide is usually stopped by a mortise.

Horn determined the resistance to a tearing force of the substance itself, as :—Common glue, 9·6 kilos per square centimètre ; Cologne, 10·6 ; gelatine, 31·5.

By a large number of experiments I was led to adopt the following process and precautions :—

For the testing blocks a hard yet moderately porous biscuit stoneware was found to be a much better material than wood. They were made to our design by Messrs. Doulton, and were of the shape of a truncated wedge fitting the claws of the machine—a glue-tester by Bailey of Salford, with a system of levers, and a weight tub loaded with shot which was afterwards weighed. The opposing planes showed a fine uniform grain ; they were accurately ground to the square inch. After using they were boiled clean and dried for further use.

One part of broken glue soaked in two parts of cold water for six hours, then raised to 70 deg. C., agitated in a covered vessel till dissolved, and rapidly strained through fine muslin. The plane surfaces were soaked in this for thirty minutes at 70 deg. in a covered vessel, joined carefully with light pressure, the pairs mounted in a frame between uprights, each pair being cautiously loaded with a weight of 5 lbs., and the whole kept for five days in a cool and dry room. At the end of that time they were mounted in the machine and tested, the utmost care being taken to avoid jerking, to put on the weight gradually, and to keep the lever horizontal. An improvement on shot would be a hopper with dry sand or mercury flowing through a regulated orifice with an automatic cut-off at the moment of fracture, which is generally sudden. Supports must be placed just underneath the weight tub.

*Example.*—A brown Scotch glue of excellent character gave, with four different pairs of stone blocks, a breaking strain of 675 lbs., 636 lbs., 712 lbs., and 645 lbs. per square inch. The average of all the mahogany blocks (ten experiments) was 331 lbs., but the single experiments varied from 70 lbs. to 668 lbs., showing scarcely any regularity or certainty. The stone, on account of its lower porosity, worked best with 50 per cent. glue, the mahogany with 20 per cent. ; a thin film of glue remained attached to both stone surfaces after rupture. The greatest advantage that stone blocks possess is their *rigidity*, the largest source of error in wood blocks being due to the elasticity and compressibility of the wood, and consequent yielding and slipping during the test, which often brings about the fracture prematurely, and occasions abnormally low results.

A rough method of glue-testing without apparatus is to cut transversely with a fine saw a stick of wood 5 centimètres (1 inch) square, to glue the cut surfaces together and mount them on end with a moderate weight on top. After three days the bar is laid across the supports, and weighted gradually in the middle till fracture ensues. Good glue should sustain a weight of at least 75 kilogrammes.

8. *Viscosity or "Body" Test.*—An American manufacturer sends me the annexed description of this process as practised by their firm :—

"1 oz. of glue is soaked thoroughly in 10 oz. of water, melted in the water-bath, poured into a 'testing tube' kept at a standard temperature, and the time observed that is taken in running through. 'Water requires 37 seconds, while the very weakest glue takes 40 to 43 seconds.' The ratio is the 'body test'—'indicating the consistency of the glue and the amount of surface it will cover, and, therefore, its cheapness in use and good working and water-taking qualities. We attach more importance to this test than to the consistency of the jelly." The above determination would show a ratio in 10 per cent. solution, taking water as a standard, of $\frac{43}{37}$ for the very weakest glue, or in decimals 1·16.

Julius Fels employs Engler's viscosimeter (improved form, *Journ. Soc. Chem. Industry* 1890, p. 654) with a 15 per cent. solution, and subjoins this table.

| No. | Description of Samples. | Per cent. of moisture in original. | Time of efflux of 500 cc. at 30° C. in seconds, water taking 90 seconds. | Viscosity. |
|---|---|---|---|---|
| 1. | Light yellow transparent thick plates. | 16·3 | 149 | 1·65 |
| 2. | Brown transparent glue. | 14·0 | 125 | 1·36 |
| 3. | Sherry-coloured transparent glue | 15·4 | 171 | 1·91 |
| 4. | Light yellow plates, brittle | 18·2 | 150 | 1·60 |
| 5. | Muddy (trüber) glue.. | 15·2 | 199 | 2·21 |

He remarks that "the viscosities found agree with the respective behaviours under water. No. 2 became entirely slimy in a few hours and fused into one lump, whereas No. 5 kept its shape, and on scraping with the finger showed scarcely any gelatinisation. Nos. 3 and 5 in twelve hours gave a thick jelly, while No. 2 in twenty-four hours yielded only a poor and thin result."

The ordinary preference for a dark glue is justified by the above figures. No. 2 seems to have been over-dried. Lighter glues may have been bleached at the sacrifice of tenacity.

In determinations of viscosity I use and prefer an apparatus modified from Slotte's form, which I have described and figured in the *Journal of the Society of Chemical Industry*, 1891, p. 615, as being simpler, cheaper, more manageable, and giving the datum in terms of absolute measurement. The numbers given by different observers have been obtained at different temperatures and with different strengths, hence are not strictly comparable. Thus, Fels worked at 30 deg. C. with a 15 per cent. solution, the Americans with 10 per cent. "at a standard temperature." Therefore conditions should also be stated. I have been accustomed to use a 1 per cent. solution at 18 deg. C., operating in the way mentioned in the above paper. It is essential to pass the solution first through a capillary tube by pressure to remove lumps, which are more frequent in "muddy" glues—some of the high figures found for this class (*e.g.*, the 2·21 in Fels' table) may be due to this feature. Straining through muslin is not sufficient, but should be used as a preliminary. My figures for different varieties (1 per cent. at 18 deg. C.) have ranged from 1·19 to 1·6.

Kissling has recently given the following table of tests for different glues (*Chem. Zeitung*, xxii. [19], 172) :—

| Number. | Description. | Price per cwt. in shillings. | Smell of soaked glue | Consistency of jelly (rod method). | Viscosity of 17 per cent. solution at 25 deg. C. | Non-gelatine percentage (Stelling). |
|---|---|---|---|---|---|---|
| 1 | Skin glue | 44/- | good | over 1,000 | 15 | 7·6 |
| 2 | " | 44/- | " | — | 9 | 8·2 |
| 3 | " | 48/- | very good | 130 | 4 | 8·3 |
| 4 | Bone glue in powder | 36/- | fair | 5 | 4·2 | 14·8 |
| 5 | " " | 36/- | unpleasant | 140 | 5·5 | — |
| 6 | " " | 36/- | fair | 1 | 3·7 | — |
| 7 | " " | 36/- | " | 234 | 7·4 | 15·0 |
| 8 | Mixed glue | 41/- | bad | 1·5 | 2·8 | 13·6 |
| 9 | Bone glue in cakes | 28/- | " | 2·4 | — | 15·4 |
| 10 | " " | 26/- | very bad | — | — | 23·2 |
| 11 | " " | 26/- | rather bad | liquid | 2·8 | 15·6 |
| 12 | " " | 26/- | bad | 120 | 4·4 | 8·75 |

The author remarks that the fluidity alters considerably on standing. "The smell is especially important, as indicative of the keeping properties. (Compare No. 3 and No. 12 above.) In adhesive power, cheap bone glues give almost as good results as the high-priced skin glues. If a glue buyer requires good smell, gelatinising property, and freedom from acidity, a best skin glue must be selected. If only the adhesive properties are to be considered, a cheap bone glue will answer the purpose."

9. *Foam Test.*—A 10 per cent. solution is beaten or stirred vigorously for three or four seconds with a small glass rod, the height of the foam measured in inches, and the rate of its disappearance noted. "Some glues show ½ in. foam, some ¼ in., ⅛ in., and some none at all. It does not necessarily follow that there is anything wrong with the glue, but a great many customers object to foam." For some purposes frothing is a great disadvantage.

### *Valuation of Raw Materials.*

The value of glue-making materials, more especially of tanners' "spetches" (refuse and parings) depends not only on the absolute amount of glue-forming substance, but also on its relation to the non-gelatine. Gantter boils 100 grammes of the sample with 1 litre of water and a few drops of soda till completely extracted, makes up to 2 litres and allows to stand covered in a warm place for ten hours. The insoluble matters settle, while the fat rises to the surface. The residue and ash are determined in 20 c.c. (= 1 gramme of substance). Another 20 c.c. are diluted, neutralised with acetic acid, precipitated by tannin, filtered, and any excess of tannin withdrawn by hide-powder ; the liquid evaporated, dried, and its ash deducted, gives the organic non-glue-making material.

It may be said in conclusion that a careful inspection of the results of the scientific examinations of a glue or of raw materials gives frequently a better criterion of its value for a definite purpose than the price, as the latter is often determined by hand tests and by artificial considerations.

## ARCHITECTURAL SOCIETIES.

EDINBURGH ARCHITECTURAL ASSOCIATION.—A meeting of this Association was held on the 5th inst. in the Royal Institution, Princes-street, Mr. Thomas Ross, President, in the chair. After the minutes had been read, Mr. James Bruce, W.S., referred to the honour recently conferred upon Mr. M'Gibbon, an ex-President of the Association, by the University of St. Andrews, and moved that they express the sense of their high satisfaction that St. Andrew's University had seen fit to confer the degree of LL.D. on Mr. M'Gibbon. The motion, which was seconded by Mr. Kerr, architect, was cordially agreed to. Mr. Campbell Irons then read a paper on the "Architectural Antiquities of Leith." In the course of his lecture, which was illustrated with limelight views, Mr. Irons said one of the difficulties he had had to contend with was the paucity of architectural features in Leith. The origin of Leith was wrapped in mystery. The first reliable mention of the port was in the foundation charter of the Abbey of Holyrood House, granted by David I. in 1128, in which it was stated that the first house built in Leith was erected in the twelfth century. The lecturer proceeded to give descriptions of such old buildings as Leith possessed, or still possesses, and related various anecdotes referring to the owners and occupiers of these. By means of the lantern a large number of illustrations of the antiquities of the port were shown.

DUNDEE INSTITUTE OF ARCHITECTURE.—Mr. T. Delgaty Dunn delivered a lecture to the Students' Section of the Dundee Institute of Architecture in the Technical Institute on the 1st inst. Mr. Kennedy presided. The lecturer at the outset referred to the difficulty of defining exactly what was meant by ornament in architecture. After examining some of the more common theories, he said for the purposes of his lecture he desired to include in the definition, in addition to the panels, foliage or isolated ornaments, the varying and often subtle means whereby the architect gives an elegant, strong, or reposeful character to his edifices. In illustration of this a comparison was made between the typical buildings of the Egyptians and Greeks. It was shown by lantern illustrations how the shape of the walls, towers, and columns of the Egyptians suggested weight and mass, and how the ornament confirmed and intensified the suggestion. In contrast to this it was pointed out how the Greek ideal entirely differed in its architectural expression; how every detail suggested the carrying power with ease and grace. The value of capitals, &c., as stop or pause points in architecture was next referred to. The importance of a thorough study of the architectural effect of mouldings was considered at length, and the lecturer dwelt on the absurdity of using a delicate set of Greek mouldings, originally designed for white marble, to be seen in a pure atmosphere, under a sunny sky, copied in dull grey sandstone exposed to a smoke-laden atmosphere under different climatic conditions. To expect such mouldings to be classic in feeling and effect indicated either a complete disregard of first principles or an equally complete ignorance of them. In this connexion it was shown how the Romans adapted classic forms to the different conditions of their employment. An interesting part of the lecture was an analysis of the theory of light and shade, and the different effects produced by different stone dressing. It was shown that rough stone expressed stability better than smooth, because the nature of its crystalisation was betrayed; while in stone which had been carefully tooled or rubbed down the natural grain was obliterated, and an artificial one substituted, resembling the grain of some other material, not stone, which was known to resist pressure indifferently. The effects of polishing, as in granite, were explained, and the manner in which artificial texture could be given to stone by different ornamental treatment, and the necessity for the ornament to keep step with the mechanical function of the various parts of a building. Following up this principle, the lecturer showed how carved ornament on structural parts could be made to accentuate the function requirements of the structure. Regret was expressed that the object of using carved ornament for other than the purely æsthetic one was not better understood by public boards as well as private clients, who would thus appreciate the reason why architects would introduce carving. It was only fair to say, however, that architects did not always put the ornament in the places where its peculiar functions would be best and most economically illustrated. Consideration was then given to ornament in its narrower sense, as well as to the laws governing density, texture, and colour, where the latter as a means of architectural expression was employed. The artistic function of the spire, as apart from its use as a belfry, as well as other features of Gothic architecture, were entered into at some length, and explained by the aid of slides. In conclusion, Mr. Dunn urged the expenditure of care in the choice of appropriate ornament, and the study of fitness and function in architecture. The adoption of a caprice was not to be justified by antiquity, nor was the hackneyed repetition of old and ill-understood forms the more commendable for the same reason. While the Corinthian capital might have been a very admirable one, there was no reason why it should be the stock piece of architects to all eternity. A thorough knowledge of the principles on which ornament was formed was necessary to all architects, not only to prevent the common error of introducing it without a reason, but to ensure its suitability where it was desirable to use it. The very permanence of architectural forms was the strongest argument in favour of the best being done.—The designs in the students' competition were submitted to the Council of the Perth Architectural Society for decision as to order of merit. Messrs. Young, Buttar, Menart, and Stewart have issued their award, and the drawings are now on exhibition in Gallery No. 4, Albert Institute. In Section I., for assistants, there were two competitors for a design of a Presbyterian church, and the first place is awarded to Mr. John M. Mathers (under motto "Norwood"), assistant to Mr. T. Martin Cappon; the second being Mr. D. B. Campbell, Blairgowrie. In Section II., for pupils over two and a half years' pupilage, there were seven entries for a design for a gate lodge to a public park or mansion, the first place being awarded to Mr. D. S. Cullen, pupil with Mr. Cappon (his motto being "Pantile"); the second place to Mr. Archibald Soutar, Arbroath (motto "S."); third ("Koh-i-Nor"), Mr. David Harvey, St. Andrews, this last being specially commended for showing the constructive lines. In Section III., for pupils under two and a half years' pupilage, there were four competitors for a design of a traceried window, Mr. John C. Soutar (motto "Spider"), pupil with Mr. Cappon, being placed first, and Mr. Allan Robertson, jun. ("Never Venture Never Win"), second, the drawings by the former being distinguished for draughtsmanship and construction. The assessors comment favourably on the thoughtful study shown by the competitors, and on the draughtsmanship displayed, especially in the junior section.

GLASGOW AND WEST OF SCOTLAND TECHNICAL COLLEGE: ARCHITECTURAL CRAFTSMAN SOCIETY.—The usual meeting of this Society was held at the Rooms on the 7th inst., Mr. R. W. Horn, A.R.I.B.A., occupying the chair. A paper was read by Mr. Jas. Lochhead, A.R.I.B.A., on "Shop-Fronts, Past and Present." He showed what an important branch of architecture shopbuilding is—how essentially modern; and illustrated by limelight views the evolution of the shop-front, from the fifteenth century up till the present day, from the old-fashioned "rows and bulk shops" to the modern plate glass and colonnaded recessed fronts. He expressed the opinion that 8 ft. above the pavement was sufficient for the display of goods in the average shop windows, and pointed out how the space above lent itself to architectural treatment. The average shop-front was also criticised and improvement suggested. A very good selection of views of shop-fronts, particularly local ones, was shown.

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TRAMP WARDS, &C., BIRMINGHAM WORKHOUSE.—Alterations and additions, including the erection of extra tramp wards, the extension of the old dining room, and the erecting of new stores, are in progress at the workhouse in Western-road. The architect is Mr. W. Ward, and the contractors are Mr. J. Atkinson for the tramp-wards and Messrs. Smith & Pitt for the extensions to the dining-room and the erection of stores.

## ARCHÆOLOGICAL SOCIETIES.

ARCHÆOLOGICAL INSTITUTE. — A general meeting of this Institute was held on the 5th inst., Mr. Emanuel Green, F.S.A., Hon. Director, in the chair. The Worshipful Chancellor Ferguson, F.S.A., exhibited a Persian talisman, made of a circular disc of thin brass 3¾ in. in diameter. The centre is occupied by a circle ⅝ in. in diameter containing a rude human face representing the sun. Ranged round the central sun are twelve cartouches each containing Persian inscriptions signifying various attributes of God. Outside these circles are twelve other circles containing the signs of the Zodiac. Every one of the twelve signs was supposed to have an influence over certain parts of the human body as shown by Chaucer in his "Treatise on the Astrolabe." In it is a diagram which shows the influence of the Zodiacal signs upon the human body. Thus Aries takes the head, and the order of the Zodiacal signs is gone regularly through, descending the human body and ending with Aquarius for the legs below the knee and Pisces for the feet. Hence the talisman seems to have been used by the poorer classes to avert disease, probably, as suggested by Chancellor Ferguson, by consulting the talisman and addressing a prayer to God by the name opposite the sign which has influence over the part of the human body affected.—A paper was read by Mr. J. Lewis André, F.S.A., on the "Ritualistic Ecclesiology of North-east Somerset." He commenced by contrasting Norfolk and Somerset ritualistic ecclesiology, and proceeded to discuss the various fittings of North-east Somerset churches; namely, altar stones and altar accessories, with allusions to the numerous sancte bellcotes, several of which retain the bell itself. Only one Easter Sepulchre and one low side window seemed to exist. Mr. André noticed the stalls and the numerous square bowled fonts of Romanesque design, especial attention being directed to the very curious example at Locking. He further referred to the prominence given to the rood turrets, the peculiar porch galleries, as well as to the interesting stained glass windows.—Mr. J. P. Harrison, M.A., read a paper on the "Influence of Eastern Art on Western Architecture in the Eleventh Century." So little is known of the state of architecture in France and England in the first half of the eleventh century that it seemed well to give some of the information bearing on the subject which has lately been gathered from the works of Baron de Caumont and M. Viollet-le-Duc. The chief information from these authorities is the influence exerted in the centre of France by a colony of Greek merchants, who established an emporium at Limoges, whence Eastern art and architectural ornament were diffused along trade routes in different directions early in the eleventh century, besides the introduction by them of cupolas and vaulting in Aquitaine. A second important improvement in architecture, in this case in Normandy, at Rouen and Bernay, in the time of Duke Richard II., appears to be due to visits from Syrian and Armenian bishops and monks at about the same date. Symeon, the Abbot of St. Catherine's on Mount Sinai, in particular, spent two years at Rouen and built a church there for a Norman nobleman. M. Ruprich-Robert describes the architecture at Bernay as entirely different from the Norman work at Caen, and evidently by a foreign artist. The date of the church is pronounced by M. Robert to be before 1050. Another point of considerable importance on which he throws light is the introduction of a feature, derived from Syrian art, into Western Romanesque. It is the change of a Latin plan of church for an eastern arrangement of pillars, two and two, of different sizes, at St. Etienne at Caen, by Lanfranc, in 1064, with a view of introducing vaulting. Mr. Harrison mentioned that alternate pillars and wall-shafts, like those at Caen, exist in Harold's church at Waltham, believed to have been built at nearly the same time; and that the chevron ornament on nave arches was not a Norman invention.

BRITISH ARCHÆOLOGICAL ASSOCIATION.—The ninth meeting of the session of this Association was held on the 5th inst., when two papers were contributed, one by Dr. Alfred C. Fryer, M.A., on "Ancient Fonts in Gower." The peninsula of Gower is situated at the south-western end of Glamorganshire, and stretches out into the sea for a distance of about twenty miles, being separated from the mainland on the north by the Lougher River, and terminating in the promontory known as Worms Head. The name is thought by some to have been derived from "Gwyr," meaning luxuriant; but this word hardly describes the locality correctly, as at the time the name was given the district would be a dense forest and swampy marsh. The old British word "Go-hir," far, long, outstretching, would denote that this peninsula is a narrow neck of land. It has been thought, however, that the true derivation may be found in the word "Gŵyr," meaning slanting or oblique. The ancient fonts in Gower are some fourteen in number, and are found at Bishopston, Cheriton, Ilston, Llandewi, Llangewydd, Llanmadoc, Nicholaston, Oxwich, Oystermouth, Pennard, Penrice, Porteynen, Reynoldston, and Rhossily. Like the churches, they possess a strong family likeness—nine of them are square or oblong, three cylindrical, and four octagonal. The dates of the Gower fonts are most likely of the same period as the churches, that is about the time of the Norman occupation. The fonts are mostly very plain, but that at Pennard is somewhat more adorned, having an arcade, and that at Oystermouth is scalloped at the base of the square bowl. They were well illustrated by a series of clear photographs specially taken. The second paper was by Mr. H. Syer Cuming, V.P., F.S.A.Scot., on "Pin Lore and the Waxen Image."

Society of Antiquaries of Scotland.—The usual monthly meeting of this Society was held in their library at the museum, Queen-street, on the 10th inst., the Hon. Hew Dalrymple, Vice-President, in the chair. In the first paper Dr. Robert Munro, Secretary, gave an account of a crannog recently discovered at Hyndford, near Lanark, and excavated by Mr. Andrew Smith, F.S.A., Scot., Broompark, Lanark. In the second paper Mr. Thomas Ross, architect, described a series of six paintings of "The Sibyls," found on a wooden partition in taking down the old house of Wester Livilands, near Stirling, the property of Mr. J. M. Drummond. The partition containing the paintings was divided into six compartments by Corinthian pilasters, having frieze and cornice, with the portraits of the sibyls above, in panels about 3 ft. square. The style of the paintings and of the decorations around them is quite in agreement with what is to be found in many old houses in various parts of Scotland erected about the beginning of the seventeenth century, to which period the present examples may be most probably assigned. Beneath each portrait there is a six-line verse inscribed in black-letter, similar to those at Cheyney Court in Herefordshire, which are apparently about the same date. These verses give the names and the nature of the prophecies ascribed to the different sibyls in the scheme of Christian symbolism, of which they form a part. In the third paper Bishop Dowden gave some notes on the inventory of Church plate, vestments, copes, relics, and service-books belonging to the Cathedral of Glasgow in 1432. In the last paper Mr. F. R. Coles, assistant keeper of the museum, described a small prehistoric cemetery at Juniper Green, containing cist and incinerated burials, from which a large cinerary urn and two smaller urns of food-vessel type had been presented to the museum by Messrs. Cowie & Son, builders.—*Glasgow Herald.*

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## *ENGINEERING SOCIETIES.*

The Institution of Civil Engineers.—At the ordinary meeting of this Institution, on the 11th inst., Mr. W. H. Preece, C.B., F.R.S., President, in the chair, it was announced that eight Associate Members had been transferred to the class of Members, and that forty-one candidates had been admitted as Students. The monthly ballot resulted in the election of one Member and of forty Associate Members. The seventh "James Forrest" Lecture, by Professor J. A. Ewing, will be held on Thursday, the subject being "Magnetism." The lecture will be repeated on Friday, April 21, at 4 p.m., for the benefit of members and their friends.

Society of Engineers.—At a meeting of the Society of Engineers, held at the Royal United Service Institution, Whitehall, on the 10th inst., Mr. J. C. Fell, President, in the chair, a paper was read on "Machine Tools," by Mr. E. C. Amos, M.I.Mech.E. In his opening remarks, the author pointed out the importance of engineers being well acquainted with the most modern practice in regard to the construction of machine tools. He further added that, owing to the important part now played by machinery in the world, the progress of this country in relation to others would be largely determined by its capacity to turn out the best and most improved tools. The author then referred to the distinctive features of modern tools, directing particular attention to the fact that it had now become the practice to substitute for one machine doing a great variety of work a number of machines, each dealing with one class of article. Modern practice also called for greater accuracy and more automatic machinery. He observed that ball thrust, hollow spindles, cut toothed gear, and other refinements had now become very general, and resulted in the production of better work at less cost. He then divided his subject into a series of headings, which included, amongst others, lathes, drilling, boring, milling, planing, shaping, slotting, keyway-cutting, punching and shearing, plate bending, metal sawing and forging, and welding machines. Under the lathe section, descriptions were given of some powerful machines by Sir William Armstrong, Whitworth, & Co., Limited, including a 20-ft. faceplate break lathe, weighing 178 tons, also a special lathe for boring out and chambering guns. The author also devoted considerable space to a description of various forms of capstan lathes with wire feeds and chasing apparatus, pointing out what an important tool this had become. Of drilling machines several useful types were described and illustrated, including a semi-radial drill of American design, which is of entirely novel construction. The author's reference to milling machines indicated the importance he attaches to this class of tool, which is now in so much demand in all well-appointed shops, and is made in such a variety of shapes. A number of other tools under the headings enumerated were also described, and in most cases illustrated. The author then described several hydraulic power machines, and under another heading gave a description of a class of tool now coming very much to the front, viz., the pneumatic. Some useful information was given as to their advantages and economy. Some figures and data given in this connexion showed that, in drilling, four times as much could be done as compared with hand drilling, and that they effected a saving of some 50*l.* to 75*l.* per annum per tool, even in a comparatively small drill.

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# Illustrations.

## HOUSE No. 37, HARLEY-STREET.

THIS house is situated at the corner of Queen Anne-street and Harley-street, and has recently been rebuilt. The elevations are of Monk's Park stone and the roofs are covered with Welsh green slates. Messrs. Matthews Bros. were the builders.

Mr. F. E. Schenck, the sculptor, has supplied the interesting series of panels in low relief relating to the arts and labours of life, together with the winged figure surmounting the angle oriel. The plan provides a small central hall on the ground floor, a suite of drawing rooms on the first floor, and the larger bedrooms, with small dressing-rooms attached, on the second floor. The large windows on the third floor were designed for the nurseries. A billiard room is provided in the roof story.

Mr. Beresford Pite is the architect.

## PALACE OF VARIETIES, HASTINGS.

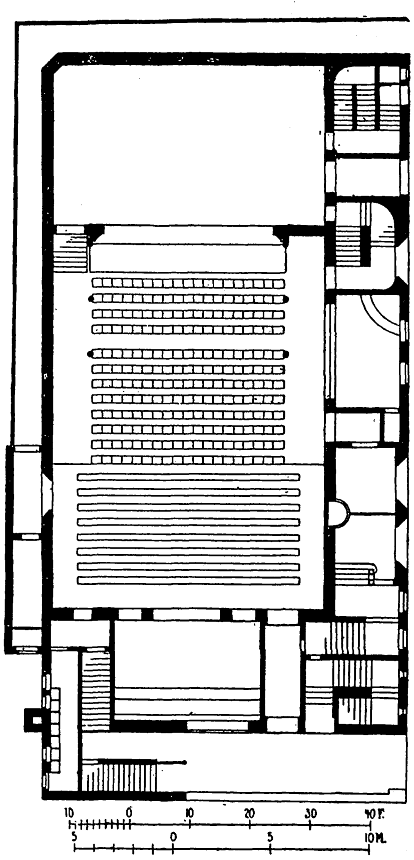
This building, which stands on the sea front at Hastings, is just completed from the designs of Mr. Ernest Runtz.

The building has a frontage of 131 ft. in length. The main approach is from the Marine Parade, through an entrance hall which leads directly into the stalls, and whence the circle is reached by a fire-proof staircase. The pit entrance is approached from the Marine Parade by a right of way on the west side of the theatre, and the gallery entrance is at the end of this right of way. The pit has an emergency exit leading directly into an open passage way on the north side of the building. There are saloons both for pit and stalls, and lavatory accommodation for both sexes has been provided for. The accommodation in the stalls is for seating 228 persons, and in the pit 176 persons, and the gangways for both parts are in accordance with modern regulations.

Besides the access staircase to the grand circle, there is at the south-west corner of the building another fireproof staircase for use in case of emergency, leading directly into the before-mentioned right of way. In connexion with this circle there is a foyer overlooking the sea, provided with four windows, leading on to a balcony. This is not only an advantage for ventilation of the building in hot weather, but is also a means of safety in case of fire. In the rear of the circle a saloon is provided for the accommodation of visitors, raised 4 ft. 6 in. above the back gangway of the circle, so that the stage can be seen from it. Accommodation is provided in this part of the house for 201 persons. The main approach to the second tier has a firerproof exit directly on to the Marine Parade. It is connected with an open loggia over the foyer, for use in the summer months. Accommodation is provided for 395 persons.

The building is lighted by electric light, supplemented by gas. The heating is on the low pressure system by means of radiators, and immediately in the rear, over the gallery, the roof is to be made moveable, to assist in the ventilation of the building. The hall is constructed of local bricks faced with terra-cotta. The respective tiers are constructed of iron and concrete, and the roof principally of iron.

In the internal decoration a scheme has been adopted of terra-cotta red and old gold for the walls and box and circle fronts, the draperies and upholstery being in amber satin and velvet; the carpeting of neutral green. Over the proscenium is a frieze painted by Mr. Buchel, representing Venus rising from the sea; and over the boxes are semi-circular decorative panels representing the four Seasons.



*Palace of Varieties, Hastings. Plan.*

(From Mr. E. O. Sachs's "Modern Opera Houses and Theatres.")

The general contractor is Mr. Peter Jenkins, of Hastings. The following is a list of other firms employed on the building:—Messrs. Doulton & Co. (Parian, faïence, and terra-cotta); Messrs. Dennett & Ingle (constructional steelwork); Messrs. George Jackson & Sons (plastic decorations); Messrs. Wolfe & Hollander (upholstery and furnishing); the Brush Electrical Company (electric light, general contract); Messrs. Bruce & Co. (electric light wiring); Messrs. Carter & Aynsley (electric light fittings); Messrs. Rosser & Russell (heating apparatus); Messrs. Merryweather & Co. (fireproof curtain); Mr. J. N. Lyons (stage laying and fixing); Mr. Edward Bell (decorations); Mr. Charles Buchel (decorative panels); Mr. W. T. Hemsley (scenery); Messrs. Strode & Co. (sunburner); the Falkirk

Iron Company (ornamental ironwork); the St. Pancras Iron Company (ornamental awnings); Messrs. G. Vigor & Co. (saloon fittings); the Elliott Patent Stone Company (fireproof staircases).

The aspect of the main front of the building is very unusual and picturesque; and during its progress, as we had occasion to notice on a visit to Hastings, it attracted a degree of attention and interest which the public do not often bestow on buildings in progress.

## SEDILIA, STALLS, &c., ST. BRELADE'S CHURCH, JERSEY.

THIS church is one of the oldest in the island, and the sketch shows a great change from the arrangement which existed a short time ago, when the chancel was full of pews facing and sloping towards the pulpit.

The sedilia and stalls are to be of oak, the basement or the chancel is to be in three different coloured granites, there being several beautiful varieties of this stone found in the island, and the idea is to suggest waves rolling up towards the altar as the central feature of the church.

The plaster has been removed from the walls, and the warm brown granite, with which they are built, cleaned off and pointed. Some signs of whitewash have been found on the stone under the plaster.

Messrs. Rogers, Bone, & Coles are the architects. The drawing was exhibited at last year's Royal Academy.

## TOWER: ST. MICHAEL'S, WOOLWICH.

THE chancel of this church was erected about eighteen years ago, from the designs of Mr. Walters, who is now practising in America. It is a brick groined structure. The nave is from the design of Mr. Butterfield, and is a striking example of his methods—broad and simple in treatment and marked by two lofty western porches, with side walls extending to the full height of the clearstory, and thus forming western transepts. The tower, which will be at the junction of Mr. Walters' and Mr. Butterfield's work, has been designed to respect both and have at the same time a character of its own. The completion of the church has been stayed by the sudden and untimely death of the vicar, the Rev. Hugh R. Baker, to whose energy the carrying out of the work, so far, has been due. It has been suggested that the tower, which he was most eager to see finished, would form a fitting memorial to his work in the parish.

W. D. CARÖE.

## OLD RENAISSANCE INTERIORS, NUREMBERG.

THESE drawings represent some characteristic interiors in some of the old houses of the late Renaissance date in Nuremberg, and are from drawings by Herr Theodor Eyrich, architect, of Nuremberg, to whom we have been indebted before for some interesting illustrative contributions.

They comprise interiors from three houses known respectively as the Peller, Fembla, and Heerdegen houses; plans of one floor of each are given. Herr Eyrich observes that in the old Nuremberg houses the second floor was the floor of honour for the reception of guests. In the plans the characteristic arrangement of the staircases will be noticed. In the view in the Peller house the extraordinary piece of *rococo* shown is the fire-place or stove-place decoration.

In the hall of the Heerdegen house an interesting feature is the glazed recess (*speisc-schrank*) for the side-board and crockery.

The small ground plan of the Topler house is given as an example of the manner of fitting in the staircase into an irregular plan.

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## *COMPETITIONS.*

FIRE BRIGADE STATION, BRADFORD.—The first premiated design in the competition for a Central Fire Brigade Station at Bradford is by Messrs. Mawson & Hudson, Exchange Buildings, Bradford; the second, by Mr. W. J. Morley, Swan Arcade, Bradford; and the third by Mr. Owen Roberts, Liverpool.

TECHNICAL COLLEGE, WIGAN.—The plans submitted by Messrs. Briggs & Wolstenholme, of Blackburn and Liverpool, have been selected in this competition. The complete scheme will cost about 30,000*l.* The plans provide for a lecture hall to accommodate 700 persons. The structure will be of pressed bricks and terracotta, and the principal entrance will be in Library-street.

SCHOOL, KILBURN.—In the competition for designs for a public elementary school at Salusbury-road, Kilburn, the following architects have been selected to compete:—Mr. E. H. Lingen Barker, Chancery-lane, W.C.; Mr. Charles Bell, Salters' Hall-court, Cannon-street, E.C.; Mr. G. E. T. Lawrence, Queen Victoria-street, E.C., and Mr. Geo. W. Webb, Reading.

HARBOUR, PORTESSIE, BANFFSHIRE.—The plans submitted by Mr. Melville, civil engineer, of Aberdeen, have been selected in this competition. The east pier will extend 369 ft. and the north-west and west pier 730 ft.

COUNTY BUILDINGS, EDINBURGH.—Following up their resolution arrived at some time ago to reconstruct the Edinburgh County Buildings, the Mid-Lothian County Council have now invited architects to submit competitive designs for the new buildings. In their printed conditions of competition the Council offer two premiums—the first of 100*l.* and the second of 50*l.*; and it is declared that if from any cause the buildings are not proceeded with, and no drawings other than the competitive drawings have been prepared, the selected architect shall receive a payment of 200*l.* in full of all claims. It is likewise stated that any design which is estimated to cost more than 40,000*l.* may be disqualified. The available site specified embraces Liberton's Wynd—that is to say, the buildings may be brought forward towards the existing pavement on the east side of Melbourne-place; on the north or High-street side, and, again, on the east or Parliament-square side, the new structure may be brought out as far as the railings which enclose the present building; at the south-east corner the buildings may come out to the lane that skirts the Signet Library at that point; whilst towards the south they may run down as far as the line which divides the County Council site from the low-lying open ground belonging to the Advocates' Library. In regard to the Ionic portico, which is so conspicuous a feature of the Parliament Square elevation of the present building, competing architects are expressly asked to consider whether it is desirable to retain it in its present position, or in any other position in connexion with the new building; and while the Council are entitled to build up to the limits of their ground, competitors who consider it desirable to remove the portico are requested to have regard to the general amenity of Parliament Square in the building line which they may adopt for the east front of the new building. In the statement of accommodation required, mention is made of a Council chamber for forty-one members, two committee rooms, and a County Councillors' writing-room; offices for the different county officials and their assistants, and for the headquarters staff of the county police; a public office for the collection of rates; and a Justice of Peace Court-room, with a floor area of 1,250 square ft. approximately. The designs are to be lodged with the County Clerk by June 27.

HOUSES TO WITHSTAND THE SUBSIDENCES IN THE SALT DISTRICTS.—The Northwich Salt Compensation Board have just completed the adjudication in this competition. They offered premiums of 20*l.*, 10*l.*, and 5*l.* respectively for plans and specifications of buildings best adapted to withstand destruction by subsidence. Thirty designs were received, but none were sufficiently original to merit the first award. The second premium of 10*l.* has been awarded to Mr. J. Cawley, architect, Northwich, and the third to Mr. C. Pickford, London.

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## THE BUILDING TRADE DISPUTE.

As we briefly stated in our last issue, the conference held on Thursday last week between the employers and representatives of the Plasterers' Union broke up without a satisfactory issue. The conference was held in the large room of the offices of the National Association of Master Builders, Bedford-street, between twelve master builders and plasterers, and twelve members of the National Association of Operative Plasterers. The conference was presided over by Mr. Alderman Holdsworth, of Bradford, and lasted from half-past two until five o'clock.

The conference was appointed in consequence of an agreement arrived at in two letters, the one from the masters to the operatives, dated March 18, containing the following clause:—"Will you be good enough to inform them (the masters) definitely whether your Association intends to persist in coercing any men into your Union, and, if so, what men?" To this the Secretary of the Operative Plasterers, in the course of his reply, said:—"In reply to yours of the 18th inst., I have to inform you that we have not any desire, neither have we ever had any desire, to coerce any one into our Association; and we claim the right and privilege to persuade any plasterer working at the trade to become a member."

At the opening of the proceedings, Mr. Deller took the leading part as spokesman for the operatives, and there was a general discussion with reference to the various points set forth in the Employers' Manifesto. As no progress was made, the masters withdrew, and submitted the following four questions in writing to the men, asking for their written answers thereto. These questions and replies were as follow:—

1. "Are you properly authorised to definitely agree to and sign any agreement we may arrive at with reference to the Employers' Circular of February 1?—Yes."

2. "It must be understood that any agreement shall be applicable to the whole of the country?—Agreed."

3. "Are you prepared to enter into a monetary guarantee on both sides for the faithful observance of any agreement arrived at?—We cannot agree to a monetary guarantee."

4. "In your letter of March 24 you state that you have no desire to coerce any one into your Association, and claim the right to persuade only. Do you confirm or withdraw that statement?—We wish to be honest with you, therefore withdraw the word persuade only, as we could not guarantee that our members would agree to such action on our part."

These answers brought the conference to an end, and the chairman announced that, as the assurance previously given by the men on the question of coercion was withdrawn, the employers declined to continue the conference further.

Since the conference the locked-out members of the Plasterers' Union have made renewed preparations for the continuance of the dispute. Special lock-out pay was sent out on Saturday to all the branches of the Union whose members are affected. The locked-out workmen now number about 1,500, and the officials of the Union state that this number is scarcely greater than the ordinary number of unemployed in bad seasons of trade. The membership of the National Association of Operative Plasterers is about 13,800, of which number 3,500 are employed in the London area. It is estimated that the levy of 3s. per week on each of the union members still in work will provide amply for the demands now made by the locked out members of the union's funds. The members of the Amalgamated Society of Engineers have decided by ballot to raise a levy of 2d. per week per member on behalf of the plasterers as long as the lock-out lasts. The general impression among the members of the Plasterers' Union on Saturday last was, it is stated, favourable to the action of the Executive Council in declining to accept the terms of the Masters' Association. The men state that if the proposals of the masters had been accepted their position would have been made worse than it was before the ten weeks' strike of 1896, and the "rights" that they won by that fight would be lost.

Mr. M. Deller, the general secretary of the Plasterers' Union, informed a Press representative that they adhered to the statement made in the letter of March 24, to the effect that the union "claimed the right and privilege to persuade any plasterer working at the trade to become a member. All they objected to was the addition of the word 'only' after persuade. They were prepared to accept the word 'persuade,' but would not pledge themselves to accept the phrase 'persuade only.'"

It is stated that the plasterers locked out in Leeds have all found work. The co-operative society started on behalf of the men has engaged the whole of the hands who had not left the district for jobs offered elsewhere.

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SCHOOL BUILDINGS, WAVERTREE, LIVERPOOL.—The additional buildings in connexion with St. Mary's Schools, Rathbone-road, Wavertree, were opened on the 10th inst. The new buildings, which have cost about 1,000*l.*, will provide seats for 200 more children. Mr. H. L. Beckwith was the architect, and Messrs. Morrison, of Wavertree, were the contractors.

## APPLICATIONS UNDER THE LONDON BUILDING ACT, 1894.

At the meeting of the Building Act Committee of the London County Council held on March 27, being the day before the Council adjourned for the Easter recess, the proceedings were governed by the clause in the order of reference which empowers the Committee at certain seasons to act on behalf of the Council in relation to matters included in the order of reference. The following applications under the London Building Act, 1894, were considered. Those applications to which consent has been given are granted on certain conditions.*

### *Lines of Frontage.*

*Battersea.*—One story shops upon part of the forecourts of Nos. 98 and 100, Lavender Hill, Battersea (Mr. T. J. Evans for Mr. T. Jones).—Consent.

*Clapham.*—That the application of Mr. J. F. Evitt for an extension of the period within which the erection of a mission room with a projecting porch on the north side of Grange-road, Clapham, on a site at the rear of Nos. 24 and 26, Lambourn-road, was required to be commenced, and also for consent to the omission of the basement story, be granted, upon condition that the building referred to be commenced within twelve months from April 4, 1898. —Agreed.

*Greenwich.*—A one-story addition to No. 14, Vanbrugh Park, Blackheath, to abut upon Vanbrugh Park-road (Mr. W. E. Holding).—Consent.

*Hampstead.*—That the application of Mr. W. Wallace for an extension of the periods within which the erection of a one-story hall or parish-room on the north side of Frognal-lane, Hampstead, near its junction with Finchley-road, was required to be commenced and completed, be granted, upon condition that the building referred to be commenced within one year and completed within two years from July 5, 1898.—Agreed.

*Hampstead.*—Porches to four buildings on the east side and six buildings on the west side of Cannon Hill-road, Hampstead (Messrs. Boehmer & Gibbs for Mr. E. J. Cave).—Consent.

*Lewisham.*—Buildings on the east side of Rushey Green and the north side of Sangley-road, Lewisham (Mr. J. Norton for Mr. E. MacF. Patterson).—Consent.

*Marylebone, West.*—A covered staircase, forming an approach to a coal-yard, on the south-west side of Grove-road, St. Marylebone (Mr. E. Wragge for the Great Central Railway Company, Limited).—Consent.

*Norwood.*—Buildings on the western side of Herne Hill, Lambeth, between No. 36 and Rollscourt-avenue (Mr. H. A. Brown, jun.)—Consent.

*St. George, Hanover-square.*—Two iron and glass shelters at the Walsingham House Hotel, Piccadilly (Mr. H. S. Clutton for Lord Walsingham).—Consent.

*Brixton.*—One-story shops in front of Nos. 3A, 5, 7, 9, 11, and 11A, Bedford-road, Clapham (Mr. J. J. Freeland for Mr. W. E. Brooks).—Refused.

*Clapham.*—A coach-house, loose-box, and covered yard in front of the present stabling belonging to a house known as "Elmhurst," Cavendish-road, Clapham Common, to abut upon Trouville-road (Mr. J. F. Palser for Mr. G. B. Cooper).—Refused.

*Dulwich.*—A one-story shop upon part of the forecourt of No. 99, Anerley-road, Anerley (Mr. S. C. Dunk).—Refused.

*Greenwich.*—A one-story addition at the rear of the "Woodman" public-house, Hill-street, Old Charlton, to abut upon Maryon-road (Mr. A. Thompson).—Refused.

*St. George, Hanover-square.*—An iron and glass shelter in front of No. 152, Victoria-street, St. George, Hanover-square (Mr. R. Willey for Mr. G. Odone).—Refused.

*St. Pancras, East.*—A Fire Brigade station on the site of No. 174, Euston-road, and No. 69, Euston-square, St. Pancras (Mr. R. Pearsall for the Fire Brigade Committee of the Council).—Refused.

### *Width of Way.*

*Bermondsey.*—Retention of a four-story building erected on the site of No. 58, Tanner-street, Bermondsey, in the position shown upon the plan submitted with the application of Mr. J. Gale for Messrs. Dunn Brothers.—Consent.

*Finsbury, Central.*—An inclosed porch on the east side of the Wesleyan Methodist Chapel, St. John's-square, Clerkenwell, at less than the prescribed distance from the centre of St. John's-passage (Mr. A. Wakerley for the Rev. J. E. Wakerley).—Consent.

*Islington, East.*—That the application of Mr. R. Midworth for an extension of the period within which the erection of six two-story bulidings on the south side of Road's-place, Hornsey-road, Islington, partly on the site of Nos. 4 and 5, was required to be commenced, be granted, upon condition that the buildings referred to be commenced within nine months from October 4, 1898.—Agreed.

*Hackney, North.*—A one-story addition at the rear of No. 1, Clissold Park-villas, Stoke Newington, at less than the prescribed distance from the centre of the roadway of Park-lane (Mr. F. Parsons for Mr. I. Jones).—Consent.

### *Space at Rear.*

*Marylebone, West.* — The extension, above the diagonal line mentioned in Section 41 of the London Building Act, 1894, of a portion of a building, viz., the "Globe" public-house, which is proposed to be rebuilt on the site of Nos. 43, 45, and 47, Marylebone-road, and No. 21, York-place, with an open space at the rear of the new building (Mr. W. H. Scrymgour for Mr. A. C. Stock).—Refused.

### *Deviation from Certified Plan.*

*Chelsea.* — Certain deviations from the plan certified by the Disrtict Surveyor under Section 43 of the London Building Act, 1894, so far as relates to the proposed rebuilding of the "King's Arms" public-house, No. 51, Sloane-square, Chelsea, at the corner of a roadway leading into Eaton-square (Mr. J. K. Cole and Mr. K. Wood for Mr. J. King).—Refused.

### *Lines of Fronts and Width of Way.*

*Kennington.*—A one-story shop upon part of the forecourt of No. 98, St. Mark's-road, Kennington, at the corner of Farmer's-road (Mr. A. E. Mullins for Mr. T. A Jones).—Refused.

*Brixton.*—One-story shops in front of Nos. 1 and 3, Bedford-road, Clapham (Mr. J. J. Freeland for Mr. A. Wilson).—Refused.

*Lewisham.*—A one-story water-closet addition to No. 22, Lee-terrace, Lee, to abut upon Dacre Park, (Mr. R. T. Blackaller for Mr. H. M. Gordon).—Refused.

*Wandsworth.*—Two one-story shops on the south side of Greyhound-lane, Streatham, adjoining No. 102 (Mr. J. Johnson for Mr. J. Piggott).—Refused.

### *Lines of Frontage and Construction of Gangway.*

*Rotherhithe.* — Four iron gangways across Morgan's-lane, Tooley-street, Rotherhithe, to connect the first, second, third, and fourth floors respectively of warehouses on each side of the lane (Mr. A. Webb for Messrs. Boord & Son).—Refused.

### *Line of Frontage and Space at Rear.*

*Greenwich.*—The frontage of six houses with one-story shops proposed to be erected on the north side of Humber-road, Westcombe-park, Greenwich, eastward of Halston-road; and the erection of such houses and shops with irregular open spaces at the rear (Mr. J. H. Haire).—Refused.

### *Formation of Streets.*

*Wandsworth.*—That an order be issued to Messrs. Tompkins & Barker sanctioning the formation or laying out of a new street for carriage traffic on the Woodlea estate, on the eastern side of the Bedford Hill-road, Balham. That the name Dornton-road (in continuation) be approved for the new street.—Agreed.

*Brixton.*—That an order be issued to Mr. J. Fasnacht sanctioning the formation or laying out of three new streets for carriage traffic upon the Lambeth Wyke Estate, Hackford-road, Brixton (for Captain T. T. Jennings, R.N.). That the names Liberty-street, Morat-street, and Isabel-street be approved for the new streets. — That Mr. J. Fasnacht be informed that his application for consent to the formation of streets on the abovementioned estate, having been further considered, the Council sees no reason to depart from its decision, not to grant the application.—Agreed.

*Wandsworth.*—That an order be issued to Mr. L. S. Rogers sanctioning the formation or laying out of two new streets for carriage traffic out of Yukon-road, Balham Hill, Clapham (for Mr. J. Jenkins).—That the names Lynn-street and Beira-street be approved for the new streets.—Agreed.

*Peckham.*—That an order be issued to Mr. T. Wilson, refusing to sanction the formation or laying-out of a street 20 ft. wide for foot traffic only in continuation of a way leading out of Elmington-road, Camberwell.—Agreed.

### *Artisans' Dwellings.*

*Bermondsey.*—That the Council do make an order as follows:—Whereas Mr. J. Moore, of 33, Finsbury-square, London, E.C., on the 18th day of March, 1899, under the provisions of Section 42 of the London Building Act, 1894, delivered on behalf of the Improved Industrial Dwellings Company, Limited, at the County Hall, plans of a block of intended dwelling-houses, to be inhabited by persons of the working class and proposed to be erected, not abutting upon a street, between Waleran-buildings, Old Kent-road, and the garden at the rear of No. 155, Old Kent-road, Bermondsey. . . . . Now the Council, in the exercise of its powers under Section 42 of the said Act, but in no way otherwise than under such section, does by this order sanction the said plans. . . . .—Agreed.

### *Means of Escape from the Top of High Buildings.*

*Strand.*—That Messrs. White & Co. be informed that the Council, in the exercise of its powers under Section 63 of the London Building Act, 1894, is prepared to grant a certificate in respect of the means of escape in case of fire to be provided for the persons dwelling or employed on the topmost floor of a building proposed to be erected on the site of Nos. 173 to 179 (inclusive), Strand, and No. 2 Norfolk-street.—Agreed.

### *Buildings for the Supply of Electricity.*

*Southwark, West.*—That the Council do approve of the plan submitted with the application of Mr. F. Bailey on behalf of the City of London Electric Lighting Company, Limited, for the construction of a furnace flue to the western chimney shaft and the consequent alterations to the office building at the company's works, Bankside, Southwark; and that the Council do also authorise the construction of such furnace flue, and the alterations to the office building as shown upon the said plan.—Agreed.

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* Names of applicants are given in brackets. Buildings are new erections unless otherwise stated.

## TRADE CATALOGUE.

We have received from the Edison & Swan United Electric Light Company, Limited, a supplementary section of their fittings catalogue containing a description of their high voltage lamps and fittings, including switches, fuses, cut-outs, ceiling roses, distributing boards, lamp holders, wall plugs, &c. In the preface to this catalogue they state that the adoption of high voltage supply by the leading Supply Companies and Corporations has rendered necessary an entire change in the design of electrical accessories for use in those circuits. It is satisfactory to find that manufacturers have so soon eliminated all the possible dangers from shock and fire which were so freely prophesied when high voltage was first introduced. In some cases the danger from shock has been eliminated by the use of their patent anti-shock liner in switches and holders, and wherever a metal cover is required, and in other cases by using porcelain covers and handles. The danger of "arcing" in fuse blocks has been avoided by the insertion of porcelain walls between the terminals and in fuse boards by the insertion of an extra long fuse, care being taken also to increase the distances between the fuses so that there is no danger of rupturing the adjoining fuses when a fuse blows. We were specially struck with the excellence of the design of the "Ediswan" anti-shock holder. It merits its title of the "ideal holder for high-voltage circuits." Amongst the lamp novelties we may mention the "queen of lamps." In this lamp the top reflecting part of the bulb is made of opal glass, and this produces a very soft, diffused light, not nearly so trying to the eyes as the light produced by silvered bulbs. Considering the excellence of the fittings supplied the prices are moderate. No electrician can afford to be without this catalogue. We note that the large development of the business carried on by the company has necessitated the opening of a new factory in Walsall for the manufacture of fittings, and one at South Benwell for the manufacture of lamps.

## BOOKS RECEIVED.

Modern Drainage Inspection and Sanitary Surveys. By Gerard J. G. Jensen, C.E. (Sanitary Publishing Company.)

Greenwood's Timber and Stone Calculator. Seventh edition. (Baxendale & Co.)

## Correspondence.

*To the Editor of* THE BUILDER.

### PUBLIC BATHS.

Sir,—I read with considerable interest the report which appeared in your issue of the 11th inst. of the paper of Mr. A. Hessell Tiltman, on "Public Baths and Washhouses," read before the Royal Institute of British Architects, and of the discussion which followed. I have since read the paper and discussion as printed in the *Journal* of the Institute.

The author of the paper, in his introduction, proposes to give his "personal views upon the ordinances which should govern the arrangements of baths and washhouses *in the future*" (the italics are mine), and after drawing attention to the faults of the prevailing systems, proceeds to describe a proposed "system of central and branch establishments"—the central establishment to consist of swimming baths, slipper baths, and hot-air baths, and the branch establishments to be of two given types—(a) consisting of slipper baths and washhouses, and (b) consisting of rain-douche baths, now being so largely adopted in Austria, Germany, and the United States. Now I am sure it will be of interest to your numerous readers, and may prove a stimulus to

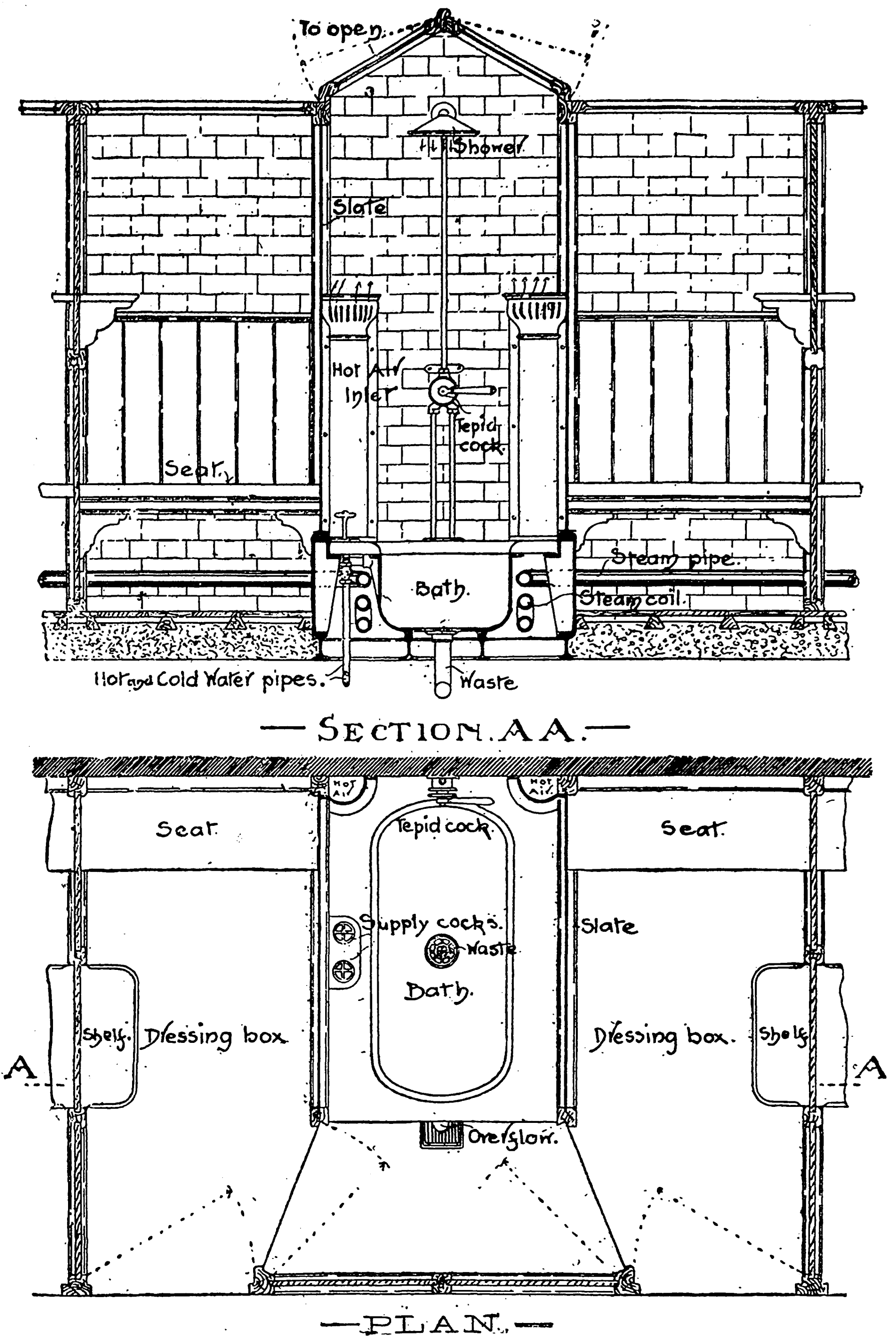

Diagram illustrative of the "Harpur" warm lavatories, which consist of a central closed compartment with a dressing-box on either side. The central compartment is maintained at a temperature of 110 deg. Fahrenheit by means of steam coils placed beneath the bath casing. In this compartment a shallow bath, with hot and cold water laid on, and shower over, are provided. The object of the "Harpur" baths (warm lavatories) is to provide an arrangement by means of which the bather can obtain, for a small payment, the cleansing facilities of the Turkish bath, and, in addition, enjoy the advantage of a dip in the swimming bath.

further exertion in the direction indicated by Mr. Tiltman to know that over six years ago I proposed a similar scheme of central and subsidiary baths to my Council which was adopted, and that for the last three years we have had in operation an establishment, unique in character, and carrying out in a very successful and highly-appreciated manner many of the suggestions now advocated in Mr. Tiltman's paper and the discussion which followed.

I therefore forward you a detail drawing of the warm lavatory I have adopted in lieu of the ordinary slipper bath, the publication of which, I feel sure, would, by comparison and contrast with the former proposals, open the way to further discussion of a subject the importance of which, I think, is not overestimated in Mr. Tiltman's paper, and which I am convinced is far from having received a satisfactory solution.

One thing that has struck me in the perusal of Mr. Tiltman's paper is the fact that, while he comments very largely on the advances made in Continental countries and the United States, and recommends the adoption of some of the practices of these countries instead of an "obstinate perseverance in our present somewhat blundering system," no mention is made of the attempts of our own countrymen, who have not only advocated the proposed departure from our older system, but have done pioneer work in the endeavour to introduce a more rational way of bathing.

The successes in a few cases, and more generally the failure of these efforts, are very instructive, and their careful consideration will save further experimenting, with its consequent waste of the public money. In illustration, I shall only refer to two points one in connexion with the swimming-bath and one as to the washing-bath :—First, as to the swimming-bath. Mr. Tiltman mentions the necessity of all bathers, without any reference to position in life or habits, undergoing a cleansing process in a douche-room specially provided for the purpose before entering the swimming-pond, and it is asserted that "every bather in Germany and Austria certainly observes this rule." But the experiment has already been tried in this country, with most discouraging results; and here I refer not to places where there is merely "a cold shower apparatus or two placed among our dressing-boxes," but where a conveniently arranged room has been provided that was inviting and not repulsive in any sense of the word. One naturally asks for an explanation, and I believe it is to be found partly in the conceit and prejudices of the people themselves; for where is the average Englishman that does not flatter himself that he belongs to the cleanest nation on the face of the earth; and that he himself can be dirty is the last fact that he will admit, even to himself, much less to others; and, consequently, I have known all sorts of tricks to be resorted to, rather than submit to what is thought to be the humiliating compulsory wash.

And then one cannot shut one's eyes to the fact that there is a strong objection, especially among the working and lower classes, to washing all over in public. And it is this consideration which, I understand, has induced Mr. Tiltman to prefer the German to the Austrian arrangement of rain-douche baths. I shall, therefore, look forward with much interest for the result of the introduction of improved douche-rooms in the projected baths.

Secondly, as to the washing baths. In 1889 Mr. C. C. Walker read a paper on "Baths for the People" before the Worcester meeting of the Sanitary Institute,* in which he detailed the arrangement of a "Soap and Spray" bath that he had erected for his workpeople at Donnington, near Newport, Shropshire, and which had proved an unqualified success; and Mr. T. Roger Smith, in a paper read at Brighton in 1890,† referred to these baths and intimated that he was providing similar baths in a bathing establishment in the east of London, which he had every reason to hope would be as successful as in Mr. Walker's own establishment, adding that "though as a novelty they may at first be distrusted, my belief is that they can hardly fail to become liked, for I know of nothing so well adapted to the requirements of working men." In 1893 I visited these baths, and was not only surprised but disappointed in finding that the spray-bath, after undergoing a modification by substituting side sprays for the overhead shower was scarcely ever used, and it was only by being very persistent that I induced the attendant to show me the same. My own observations have led me to conclude that the failure of these baths was owing to the fact that the public were offered the choice of two forms of bath, one conformable to their own ideas of what a bath should be, and the other an untried novelty; for, despite all that can be said about "slipper baths and other abominations," the preference of English people is for a bath *in* which they can wash and not *at* or *under*. And when you consider that this habit is the result of the custom of generations, it is not to be wondered at that it cannot be removed in a day. The late Dean Stanley wrote somewhere of the folly of seeking to impose the customs of other countries, and other times upon a people in opposition to their own habits and tastes, and it is this consideration that I would earnestly recommend to those contemplating the designing or providing of "Baths for the People," and which led me to adopt the form of warm lavatories described in my report and illustrated by the accompanying detail drawing.

One point I should strongly urge is that in any attempt to introduce a new form of bath, the old form of slipper bath should be entirely abandoned, otherwise if the two forms of bath are provided in the same establishment the public will invariably ask for the one they are best acquainted with, and the new form will never receive a fair trial.

I would also call attention to the fact that the main difference in Mr. Tiltman's scheme and my own is that in the branch establishments I arrange the washing baths around a small swimming bath or plunge, so that bathers who so desire may follow up their wash with a five or ten minutes' swim, in lieu of the cold shower, thus providing in a very convenient form the suggestion made by Mr. E. Harding Payne (in his contribution to the discussion on Mr. Tiltman's paper) of an easy communication between the first class slipper and swimming baths, so that bathers could have a cold plunge after a warm bath, a luxury which would, he feels sure, prove popular.

Nor do I agree with the proposal to adopt the improved form of bath, for the very poorest only of the three classes of bathers for which the public baths are supposed to exist, still retaining the slipper bath for the central and better class of branch establishments.

Surely this would give the impression that the "rain douche" is something which the poorer classes had to put up with on account of their inability to pay for better appliances. This letter has far outgrown my intentions in taking up my pen to write you, but if it tends to open up discussion and bring the experience of others to bear upon the subject the object I have in view will be gained, with, I trust, manifest advantage to the community at large. W. Harpur, M.Inst.C.E.

*Cardiff*, February 24.

*** The publication of this letter has been unavoidably deferred for want of space.—Ed.

## HARROGATE PUMP ROOM COMPETITION.

Sir,—In your issue of the 18th ult. you commented upon the result of this competition. As the competitor whose designs were placed first in both competitions, viz., the Rebuilding and the Enlargement, I should like to add a few words to what you then said.

In the Harrogate *Advertiser* of the 18th ult. a report of the proceedings of the Town Council is given, and during the discussion upon the Pump Room Committee's report one of the Aldermen admitted that the competition was promoted only to please those members of the Corporation who wished for a new building.

Last week I received a letter from the Borough Surveyor, stating that he is instructed to say "that the Committee consider that they have acted in a perfectly fair and honourable manner."

As you stated in your issue of the 18th ult., the competition was evidently promoted "as a little

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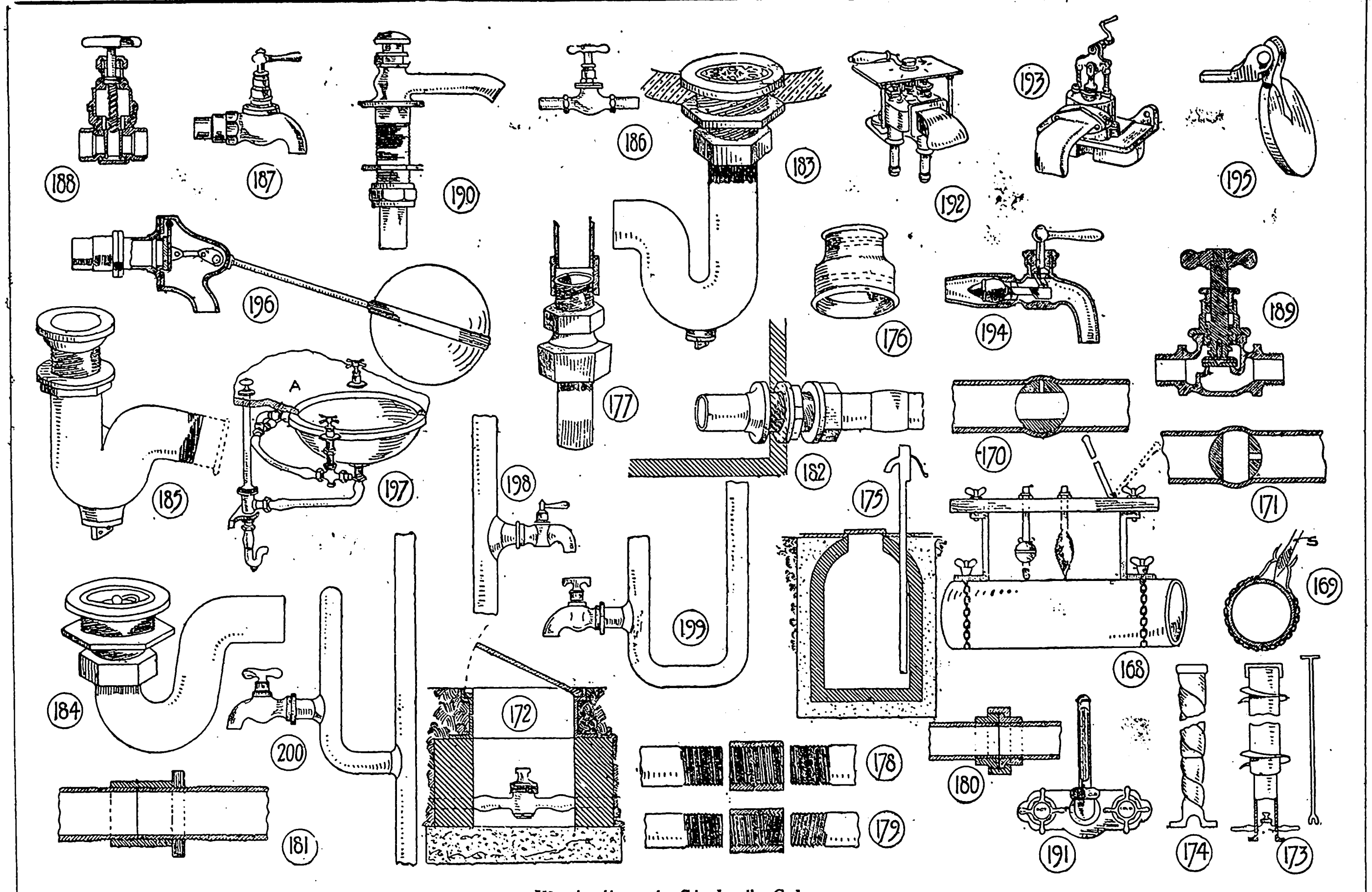
* See the *Builder* for October 12, 1889.—Ed.

† See the *Builder* for September 6, 1890.—Ed



Illustrations to Student's Column.

"amusement," and this is what the Corporation of Harrogate consider "fair and honourable behaviour."

This same Corporation have advertised another competition, inviting designs for a kursaal. I think it is only "fair and honourable" that intending competitors should know what treatment they are likely to receive in return for the labour and expense incurred in preparing their designs. This competition, too, is probably promoted only to please those members of the Corporation who wish for it, and not with any intention of erecting a kursaal. F. ANDERSON.

# The Student's Column.

## ARCHITECTURAL HYGIENE:

### XIV.—WATER SUPPLY, FITTINGS, &c.

WE will now briefly consider the means of connecting and controlling the water-supply to the house under the following headings :—

1. *Connexions to Main.*
2. *Underground Cisterns.*
3. *Unions and Junctions.*
4. *Taps and Fittings.*

1. *Connexion to Main.*—The inconvenience of having to shut off the water supply and empty the main pipes each time a new connexion is required has caused the production of several machines designed to enable a service pipe to be connected to the main while the pressure is unreduced in the latter.

Fig. 168 is a section of such a machine. It is in the form of an oblong box of cast-iron fitted to the curve of a 6-in. pipe. It is held on the main to be "tapped" by two chains drawn very tightly round the main pipe by means of long screw-bolts and nuts. A rubber washer between the flange of the machine and the pipe makes a water-tight joint. It is held down by four fly-nuts on bolts passed through slots, which enable the lid to be moved backwards and forwards by means of a lever. In the lid are two holes fitted with stuffing-boxes. The holes are exactly the same distance apart as the length that the lid can be moved by the lever. Through one hole in the lid is passed the stem of a combined drill and tap, which, being rotated by means of a ratchet and pressed down by a screw, drills a hole through the pipe. The stem of the drill forms the tap, and the hole is drilled and tapped by the one operation.

The arm is then withdrawn, the thumb-screws holding down the lid are eased, the lever drawn over as shown by the dotted lines, and the thumb-screw is tightened. The second hole in the lid is now over the hole in the pipe. Through this hole, before the lid was put on, the stem of a rimer was pressed, which latter was previously wedged into one end of a closed stop-cock. By the movement of the lever this is brought directly over the hole in the pipe. It is pressed in and screwed up, and the machine is taken off, leaving the stop-cock screwed into the water-main. A slight leakage will occur while the thumb-screws are eased and the lid is being moved, but the boxful of water should be all the loss of water that occurs during the operation.

Another method of tapping the main is shown by fig. 169, which is a diagrammatic sketch of a smaller and more portable and altogether more convenient instrument. It is made in two halves, which are joined by a rubber joint longitudinally. It is circular in plan and is held on to the pipe by one chain, tightened up by means of a nut and screw. There is a rubber joint between the machine and the pipe, and there is also a combined drill and tap as in the machine previously described.

The stop-cock is, however, much longer. The machine shown in fig. 168 is used on the top of the pipe, and the service was connected by means of a bent union. This machine is used on the side of the pipe, and the service is connected by means of a straight union. The machine being in position, the drill is passed through the gland shown, the valve is pushed up, the drill held up to the pipe by means of a screw, and rotated by a ratchet. When the hole is drilled and tapped the drill is withdrawn, the valve in the machine falls against the rubber seating, and the pressure of water behind it renders the valve watertight. The stop-cock S, the stem of which must be of the same diameter as the stem of the drill, is pushed through the gland and forces the valve open, and is then screwed into the hole in the main which has already been tapped.

The machine is then taken off by disconnecting the two halves.

Fig. 170 is a sectional plan of a "stop and waste" with the communication open. Fig. 171 is the same with the water shut off and the pipes, at the side on which there is no pressure, are thus allowed to empty themselves. By using a stop-cock of this kind in the roadway the water can be shut off from the house, and the rising main thereto can thus be emptied. Where these stop-cocks are fixed and the water shut off during frost, burst pipes are obviated on account of the water being drawn off. Besides the stop-cocks screwed into the main pipe—where tapping machines are used—there is usually a stop-cock in the road or garden under the control of the water company or corporation. Fig. 172 shows the ordinary method of gaining access to the shutting-off stop-cock in a road. A dry brick well is built to within about 6 in. of the surface, and a strong cast-iron box with hinged lid is bedded in the roadway.

Figs. 173 and 174 are cast-iron telescopic tubes provided with flanges at each side of the arch over the pipe. The lowest part is fixed, and the earth is filled in around it. Fig. 173 has two screws on the outside of the upper tube. When the earth is filled in up to the blades of the screws a turn of the tube one way or the other will raise or lower the upper tube. The two tubes in fig. 174 are cast in a special spiral form. The upper is being passed over the lower, and it can be turned until it is screwed down to the required height.

In fig. 173 the stop-cock, under the key, has a flange threaded on the outside to screw into a 2-in. barrel union, a piece of barrel of the requisite length is screwed on, and a cap on the top keeps out the dirt and affords means of access.

2. *Underground Cisterns.*—Fig. 175 is a section of an underground cistern, circular in plan, and bottle-shaped in section ; it is built of brickwork with puddled clay backing, and is covered with a stone top, and it is also fitted with a pump. The suction pipe of the pump should reach to within about 6 in. from the bottom of the cistern, so as to prevent the raising of the sediments up the pipe. The suction pipe should be made of iron, as the water in the case of lead may dissolve the metal in the pipe. Water stored in these cisterns is found to be colder in summer and warmer in winter than that supplied through ordinary town mains. It should be cleansed at least once a year. The access to the cistern is by means of a ladder from the top.

3. *Unions and Junctions.*—Fig. 176 represents an india-rubber closet joint for connecting the closet end of the flushing pipe with the fitting. This is accomplished by tightly binding round the two ends of the rubber cone with copper wire, as shown by the dotted lines. This is illustrated *in situ* in fig. 197, which shows a similar connexion of the supply pipe to a lavatory basin.

Fig. 177 illustrates an ordinary barrel union with one end formed with a male screw for iron pipe (*note:* a *male* screw is one cut on the outside of a pipe, a *female* screw is one cut on the inside of a pipe) and the other end fitted with a *cap* and *lining*, the latter with a turned end for connecting to a lead pipe.

This joint is used for connecting a lead to an iron pipe. The lining is attached to the lead pipe by means of a wiped soldered joint, the screwed end being attached to the wrought-iron barrel by means of a socket, as shown in this figure. This is further illustrated by figs. 178 and 179. The latter demonstrates the use of right and left hand sockets.

Fig. 180 shows a barrel union for joining two iron pipes. It will be observed that this method obviates the necessity of using left-hand dies and taps for cutting the male and female threads.

Fig. 181 shows a "connector" joint, and is much used in hot-water work. The back nut is screwed on the end of a previously cut long thread, and the socket is then screwed on. The pipe to be connected is then placed in position and the socket is screwed over it (as shown by dotted lines). The back is then screwed close up to the end of the socket very tightly with a packing of red lead and hemp between, so as to prevent leakage.

Fig. 182 shows a boiler screw with *cap* and *lining*. The dotted lines show the outline of a cistern. It will be seen that the fly nut secures the fitting to the cistern. The cap secures the lining to the boiler screw, and the lead pipe is connected to the lining by means of the ordinary wiped solder joint. Inside the cap a leather washer is always used in order to form a perfect joint between the ends of the lining and the boiler screws.

Fig. 183 illustrates the junction of a waste to a bath. It will be seen that this junction is similar in principle to that last described, the hatched portion representing the thickness of the bath.

Fig. 184 represents another form of bath waste, which will be readily understood, the only difference being that a plug is substituted instead of a valve.

Fig. 185 shows a similar fitting for a basin, &c. The dotted lines illustrate how this may be varied, so as to have a head at the extremity of the outlet, which will enable the fillet to be caulked to a cast-iron pipe.

4. *Taps and Fittings.*—The idiosyncrasies of the various water companies render the fittings allowed by them to be varied according to their officials; so that fittings which are permissible and are even recommended in some districts are quite prohibited in others. Sanitary fittings have been previously described. Fig. 166 shows the fitting of a stop-cock for lead pipes, and fig. 167 shows a section of Lord Kelvin's patent bib-tap, which explains itself.

Fig. 186 shows an ordinary screw-down valve, which is shown performing the functions of a stop-cock so as to shut off and regulate the supply. This valve is shown with two unions for connexion to lead pipe. This constitutes a much better arrangement than having merely the ends of the valves *tinned*, as in making the joint the valve does not become unduly heated, and obviates the danger of damage to the sealing.

Fig. 187 shows a quarter-turn bib-valve, which should only be used on a low-pressure system, as otherwise the pressure of the water would tend to open the valve.

Fig. 188 represents a section of a clear-way wheel valve, which is useful in connecting fittings where the pressure is low and it is desirable that the valve should not check the force of the supply. Fig. 189 is a section of a quick-turn full-way valve, the full-way being obtained by the extra sectional area of the body of the tap. Fig. 190 shows a spring valve, which is sometimes used for lavatory basins, where the supply of water is limited and it is desired that no waste shall take place. Fig. 191 shows a bath fitting with a mixing box and thermometer, and is useful in obtaining water at any required heat.

Figs. 192 and 193 illustrate two public bath valves, which are used for the purpose of regulating the supply and temperature of the water to the users of the bath by the attendant outside the bath-rooms. Fig. 194 gives a sectional view of a *Fuller Bib-tap*, which is much used on the American continent. The action is extremely simple; by a half turn of the lever the spindle forces the rubber ball up the supply pipe, and the water is immediately released through the tap. It will be seen that when closed the pressure of the water helps to keep the tap watertight.

Fig. 195 represents an ordinary flap valve, mostly used for the ends of overflow pipes, in order to prevent the ingress of birds and dirt, &c. It is also useful in the prevention of the cold weather affecting the ball valve.

Fig. 196 represents a patent full-way ball valve by Messrs. J. Tylor & Sons, and is to be recommended, owing to its simplicity and to the fact that it acts directly, and a full supply is obtained and would be particularly valuable where only a low pressure is obtainable.

Fig. 197 shows the fittings and connexions to a lavatory-basin in which the taps are placed on either side and the same inlet is used for the hot and cold supply to the basin, which is connected to a flushing rim. This causes the basin to be self-cleansing, which is an advantage; the waste should be carried to the outside of the wall direct and fitted with one of the flap-valves previously described.

Whenever a *Fullet Bib-tap* or a spring self-closing tap is used, they should always be fixed with an air chamber. If these taps are used without air chambers their sudden closing gives rise to the loud knocking sound which is technically known as water hammer. The explanation of this is that when water issues from a tap the whole body of the water in the pipe is in motion. When, however, a screw-down tap is closed the motion of the water is gradually arrested. In the former instances, therefore, the sudden arrest of the motion causes a jarring in the pipe unless air chambers are fixed. When this is done the air in the chamber is compressed and acts as a buffer.

Fig. 198 shows an air chamber when the tap is on an ascending pipe, fig. 199 when the tap is on a descending pipe, and fig. 200 when the tap is on a rising main or on a pipe which also supplies a higher fixture.

## *GENERAL BUILDING NEWS.*

New Church, Rothes, Morayshire. — The foundation-stone of a new Free Church, hall, session-house, and vestry has just been laid by Sir W. Henderson, ex-Lord Provost of Aberdeen. Mr. G. Sutherland is architect.

William Dawson Memorial Chapel, Barwick, Leeds.—The foundation-stones of this building were laid on the 3rd inst. In addition to the chapel there are to be school-room, vestry, and caretaker's cottage. Mr. G. F. Danby, of Leeds, is the architect. The new chapel, which will accommodate a congregation of 220, will be provided with an ornamental turret rising to the height of 60 ft. The school-room is to adjoin the chapel, from which it will be separated by a removable partition. The principal contractors engaged are Mr. J. Richardson, of Chapeltown; whilst Messrs. H. Atkinson & Sons, of Leeds, are responsible for the joiner work. The whole cost of the building is estimated at 2,700*l*.

Memorial Chapel, Newport, near Dundee.—On the 1st inst. the Students' Section of the Dundee Institute of Architecture visited the Vicarsford Cemetery, Newport, and inspected the Memorial Chapel erected there. Mr. T. Martin Cappon, President of the Dundee Institute and architect for the Chapel, met the students, and gave a description of the building.

Congregational Church, Perth.—The new Congregational Church, Perth, is built of red stone and the style is Gothic. The main entrance is from Kinnoull-street, where there is a vestibule with coved ceiling. On each side are stairs leading to the gallery, while on the left and right of the entrance are ladies' and gentlemen's cloakrooms, &c. The interior of the building is about 51 ft. long and 44 ft. wide, with a slight incline upon the floor. The building is seated for 650. At the back of the building are the vestry, session-house, and hall, entrance being got to those premises from Murray-street or by the church. The work has been carried out by the following tradesmen:—Masons, Messrs. Fraser & Morton; joiners, Messrs. Hay & Son; plumbing and heating apparatus, Messrs. Frew & Son; slater, Mr. Chalmers, Pitcairngreen; plasterers, Messrs. Mackay & Son; glazier, Mr. Alexander; painters, Messrs. G. R. Douglas & Son. The architects were Messrs. Steele & Balfour, Glasgow; while Mr. George Henderson, was the clerk of works.

Aberdeen Churches.—Free Greyfriars Church, George-street, is to be reconstructed and enlarged, according to plans by Mr. Alexander Mavor, architect; and alterations are to be made on St. Joseph's Church, Tanfield-walk, from designs by Mr. Victor Mitchell, architect.

Wesleyan Methodist Chapel, Low Bradfield, Yorks.—A new chapel for the Wesleyans has just been opened at Low Bradfield. The exterior is faced with coursed local wallstone, with dressings of Matlock stone. The floor of the porch is tiled, and the chapel, which is 53 ft. by 27 ft. 6 in. inside, will accommodate 190 adults. At the end of the chapel is arranged an octagonal recess, in which is placed the rostrum. There is also vestry and other accommodation. The work has been carried out from the designs and under the supervision of the architect, Mr. W. J. Hall, of Sheffield, by the following contractors: Masons' work, Messrs. J. Fox & Son, Bradfield; joiners' work (except seating), Mr. Frank Marsh, Stannington; plumbing, Mr. G. W. Rustling, Sheffield; tiling, plastering, and painting, Messrs. C. Chadwick & Sons, Sheffield; and the carving by Mr. F. Tory, Sheffield.

Proposed Alterations at Alfreton Parish Church, Derbyshire.—At a social gathering of Church people at Alfreton, recently, the Vicar explained several proposals for structurally improving the parish church. The organ is now placed on the north side of the nave, some distance from the choir in the chancel. This arrangement does not work well. It is proposed to lengthen the chancel, increase the height, and build an organ chamber on the south side of the chancel. The total scheme will involve an outlay of 1,100*l*. The architect is Mr. H. Fowler.

Church Restoration, Knowle, Warwickshire.—Plans and specifications for new vestries, organ chamber, &c., for Knowle Church have been completed by Mr. Chatwin. Messrs. Collins & Godfrey, of Tewkesbury, are the contractors.

Mission Church, Nunney.—A mission church in the parish of Nunney, near Frome, was opened on the 7th inst. It is a building of local stone with Bath stone windows and dressings, the roof being open timbered, boarded below, and covered with dun-coloured angular Bridgewater tiles and a western spirette. It has woodblock floors, and includes nave, chancel, and vestry, and has been erected for 2*l*. 1s. 3d. per sitting; the architect being Mr. E. H. Lingen Barker, of London and Hereford, and the contractor Mr. C. Barnes, of Frome.

Pupil Teachers' Centre, Bristol. — A new pupil-teachers' centre has just been erected by the Bristol School Board on the Broad Weir, and partially in Castle Green, from designs of the architects, Messrs. La Trobe and Weston. The building is in the Renaissance style, and carried out in terra cotta and red brick, the chief elevation being on the Broad Weir, but entrances are provided on both sides, giving access to a wide staircase, which has glazed brick dados. The building is heated by hot water apparatus, supplied by Skinner & Co., and lighted by electricity. The general contractors have been Messrs. Hughes & Weeks, of St. Philip's.

Congregational School, Chesterfield. — The Congregationalists at Brampton have acquired a piece of land almost opposite the chapel in Chatsworth-road, and it is intended to build a new chapel and schools upon it. The foundation-stones were laid on the 3rd inst. of the new schoolroom. The whole scheme, including the chapel, will cost, it is estimated, about 1,200*l*. The architect of the new school is Mr. C. Rollinson, Chesterfield, Mr. Rhodes being the contractor.

Hotel, Joppa, Edinburgh.—The new Queen's Bay Hotel at Joppa has just been opened. The building is lighted throughout by electricity. The architect of the new building was Mr. Peter R. M'Laren, Edinburgh; the builders, Messrs. William Turner & Sons, Edinburgh.

New Wing, Loreto Abbey, Rathfarnham, Dublin.—The new wing at the Loreto Convent, Rathfarnham, has just been completed and opened. The addition was built by Messrs. Michael Meade & Son, from designs prepared by Mr. W. H. Byrne, architect, and under his superintendence. The wing measures 100 ft. in length by 40 ft. in width, and its height is 60 ft. There are four stories. In the upper story is the dormitory, which extends over the width and length of the building. In the basement are the cloak-rooms, bath-rooms, &c. In the other stories are the class-rooms and study halls. There are eight class-rooms and four study halls.

The Criterion Restaurant.—The opening of the newly-constructed east-room of the Criterion was inaugurated on the 6th inst. The present directors recently determined to bring the restaurant thoroughly up-to-date. To this end, an entire reorganisation of the various arrangements has been made, and structural alterations and embellishments have been carried out. The architect under whose direction the alterations have been effected is Mr. Frank T. Verity; Messrs. Waring & Sons, of Oxford-street, are responsible for the decorations; while Messrs. Starkie Gardner & Co. have supplied the wrought-iron work for the minstrels' gallery. The marble and mosaic work in the buffet has been entrusted to Messrs. Bourke & Co., of Newman-street, W. A new entrance has been built in Jermyn-street, giving an approach to the east-room, the banqueting-rooms, and the grill-room.

Liberal Club, Higher Tranmere, Cheshire.—The foundation-stone of a Liberal club in Church-road, Higher Tranmere, was laid on the 8th inst. The building will consist of a reading-room, assembly hall for 500 people, and a billiard-room. Mr. T. T. Rees is the architect, and the builder is Mr. John Lee.

Quay Accommodation, Northcorner, Devonport.—A block of buildings, situated at Northcorner, Devonport, and comprising a warehouse, a waiting-room for the accommodation of traders and passengers, &c., was opened on the 7th inst. The warehouse occupies the north-west side of the building, and at the rear of the warehouse is a store-yard. The waiting-room faces the Hamoaze, and on the Cornwall-street side of the building is a pier-master's office and a smaller warehouse. The materials used were red bricks and terra-cotta, with Portland stone dressings. The work has been carried out by Mr. H. E. Skinner, under the supervision of Mr. J. F. Burns, the Borough Surveyor.

Workhouse Laundry, Leeds.—At the Leeds Workhouse a new laundry has just been erected at a cost, including that of machinery, of about 12,000*l.* It is a brick building, lined in the interior with white glazed bricks, and lighted from skylights in the open iron roof. The structure is divided into several sections, with glass partitions between. The laundry has been designed by Mr. Thomas Winn. The machinery has been supplied by Messrs. Bradford and Messrs. Summerscales, and the ventilation arrangements have been provided by Messrs. W. & R. Legard, of Bradford.

## *FOREIGN.*

France.—MM. Adrien Chancel, Loviot, Ch. Lucas, Newnham, and Poupinel have been elected by the Government members of the French section of the Permanent Committee of the International Congress of Architecture in the 1900 Exhibition. ——The works of the chapel which is being erected on the site of the Charity Bazaar are being carried on with great rapidity, and the architect, M. Guilbert, hopes that it can be inaugurated on May 4, 1900. M. Albert Maignan has been commissioned to paint a large allegorical picture in the cupola of "Christ receiving into his glory the victims of the Charity." The frame of this composition is to be executed by the sculptor Hiolin, who is also to make two funeral monuments with figures of women in long veils, which are to be placed in the annexes on the left and right of the chapel. M. Daillon is to make a figure of the Virgin in leather, gilt.——The Museum at Marseilles has just received seventy drawings of Puvis de Chavannes, given by his heirs.——Four large panels and four smaller pictures, by M. F. Humbert, have been placed in the Panthéon. They represent the apotheosis of the Family, the State, and Humanity.——M. Falguière has just finished a statue of the "Drame Lyrique" which is to be placed in the Opéra Comique as a companion to the "Comédie Lyrique." ——The Paris Municipal Council has a great scheme for building several hospitals, besides enlarging and rebuilding asylums and other hospitals. The cost of this is estimated at 72 millions of francs.——The service of Ponts and Chaussés is going to rebuild the two bridges on the Ile Saint Denis.——M. Bréasson, architect, has just finished the new Mairie at Brunoy, the monumental façade of which faces the Place de la Jeunesse.

Cologne.—The Cathedral at Cologne, which has for so many years been in the hands of the builders for a thorough overhauling, may now be said to have had its repairs completed in every way, and to be in excellent condition. The street improvements around the Cathedral are also almost completed, and an excellent view of the building is now obtainable from all sides. The new squares which have been formed have been well paved and partly laid out as gardens with grass and shrubbery. New buildings are springing up rapidly on all sides. Perhaps the most remarkable feature in the surroundings of Cologne Cathedral is the arrangement of the new railway station, and the large railway viaduct, in such a manner as to scarcely interfere with the general aspect of the Cathedral. Every possible care has been taken, both in the station buildings and in the constructional ironwork, to prevent anything that might be too conspicuous or tend to injure the general effect. It was certainly a dangerous experiment to have a large new station and viaduct within a few yards of a cathedral; but, thanks to the care observed in every direction, the practical modern requirements have been overcome without any detriment to the artistic and archæological interests.

## *MISCELLANEOUS.*

Properties for Sale.—(1) In June next will be offered for sale, by auction, the Grange estate, about forty acres, at Chalfont St. Peter, Bucks. That part of the county through which flows the Mease, or Misbourne, is closely associated with the memories of Milton, the Fleetwoods, the Ellwoods, and the seventeenth-century Quakers. Entering the Chalfont valley from Denham, one passes Chalfont Park: the house was built by Chute for General Churchill: and then on the right hand is the Grange, where lived the Peningtons, and whence Isaac Penington was taken (1665) to Aylesbury Gaol. Isaac Penington had married Lady Springett, whose daughter, Gulielma Maria, married, in 1672 (as his first wife), William Penn, then of Heronsgate, near Chalfont St. Giles. Isaac Penington, William Penn and his two wives, Gulielma Springett (*obiit* 1693) and Hannah Callowhill (*obiit* 1726), together with several of their children, were buried in the neighbouring Quakers' graveyard, known as "Jordans," acquired by Thomas Ellwood, of Bottrells, and others, in 1671. (2) For building purposes, a plot of ground, about half an acre in extent, in West End-lane, Hampstead, being the premises of the "Cock and Hoop," one of the last of the old wayside taverns now remaining in that part of London. (3) In May next, at the Town-hall, Usk, will be offered for sale a portion of the Marquis of Worcester's estates in Monmouthshire. In the sale will be included Monkswood, the ruins of Usk Castle, and the Castle House and grounds. The remains of Usk Castle, rebuilt by the Clares, *temp.* Edward IV., comprise the tower gateway, the great hall, and portions of the outer wall with its flanking towers. Close by was a Benedictine priory, founded by one of the Earls of Clare.

Reredos, St. Ninian's Episcopal Church, Glasgow.—On the 2nd inst. the Bishop of Glasgow dedicated the new reredos erected in St. Ninian's Episcopal Church, Glasgow, in memory of the late Mrs. Hutchison. The reredos is built of white Caen stone, and is designed to be in harmony with the style of the church. The centre-piece over the altar consists of a super-altar and three trefoil-arched panels. The arch mouldings are supported on pillarettes of green Genoa marble. The spandrels, capitals, and cornice are carved, while the central arch is accentuated by a slight gablet surmounted by a foliated terminal cross. The whole is flanked by two tall buttressed piers tapering up to crocketted pinnacles. The central panel contains a sculptured quatrefoil medallion, with "the Lamb and Flag" in alabaster, while the two side panels contain alabaster figures representing St. Ninian and St. Margaret of Scotland, the backgrounds being relieved with carved diaper work, gilt. The work has been carried out from the designs of Mr. Henry D. Walton, architect, Glasgow, by Mr. William Vicers, sculptor, Glasgow.

By-laws with Respect to New Buildings, Birmingham.—The Public Works Committee report to the City Council that in the series of by-laws with respect to new streets, courts, and buildings which were adopted by the Council on October 4, 1887, by-laws were included (Nos. 21 and 22) from the model by-laws issued by the Local Government Board with respect to the provision of parapets and the carrying of party walls in all new buildings above the roofs of such buildings. In the case of buildings used simply as dwelling houses the committee have long felt that these provisions were unnecessary, and have not insisted upon their being carried out. The plans for the workmen's dwellings to be erected by the Council in Milk-street having recently been submitted for the approval of the Local Government Board, the Board pointed out that they did not comply with these by-laws, and suggested that if the Corporation proposed to revise these by-laws they should do so before the plans were approved. The committee have caused an amendment of these by-laws to be prepared, and such amendment has received the provisional approval of the Local Government Board, and the proposed new by-laws are now submitted for adoption by the Council. The principal by-laws now submitted are as follow:—External Walls.—Every person who shall erect a new public building, a new building of the warehouse class, or a new domestic building which may be intended to be used wholly or partly as a shop or as a place of habitual employment for any person in any manufacture, trade, or business, and may exceed 30 ft. in height, shall cause such part of any external wall of such building which is within a distance of 15 ft. from any other building to be carried up so as to form a parapet 1 ft. at least above the highest part of any roof or gutter which adjoins such part of such external wall, and he shall cause the thickness of the parapet so carried up to be at least 9 in. throughout. Party Walls.—Every person who shall erect a new public building, or a new building of the warehouse class, shall cause every party wall of such building to be carried up 9 in. at the least in thickness:—(1) Above the roof, flat, or gutter of the highest building adjoining thereto, to such a height as will give, in the case of a public building or a building of the warehouse class, a distance of at least 3 ft., measured at right angles to the slope of the roof, or above the highest part of any flat or gutter, as the case may be. (2) Above any turret, dormer, lantern light, or other erection of combustible materials fixed on the roof or flat of any building within 4 ft. from the party wall, and so as to extend at least 12 in. higher and wider on each side than such erection. (3) To a height of 12 in. at the least above such part of any roof as is opposite to and within 4 ft. from the party wall. In every case where the woodwork of the roof projects beyond the face of the building, he shall cause every party wall of such building to be properly corbelled out in brickwork or stonework to the full extent of such projection, and to be carried up above the projecting eaves 9 in. at the least in thickness, to such a height as will give a distance of at least 3 ft., measured at right angles to the slope of the roof. Every person who shall erect a new domestic building shall cause every party wall of such building to be carried up at least as high as the under side of the slates or other covering of the roof of such building. He shall also cause the slates or other covering of the roof to be properly and solidly bedded in mortar or cement on the top of the wall, and shall cause the roof to be so constructed that no lath, timber, or woodwork of any description shall extend upon or across any part of such wall.—The penalty for offending against any of the foregoing by-laws is for every such offence 5*l.*, and in the case of a continuing offence a further penalty of 40s. for each day after written notice of the offence from the Town Council. Provided, nevertheless, that the Justices or court before whom any complaint may be made or any proceedings may be taken in respect of any such offence may, if they think fit, adjudge the payment as a penalty of any sum less than the full amount of the penalty imposed by this by-law.

City Improvements.—The City Engineer (Mr. D. J. Ross), in his annual report to the Corporation, states that negotiations had been continued to acquire the various interests in the premises required for the widening of the southern side of Fleet-street. The premises 19 and 20, Fleet-street, nearly opposite St. Dunstan's Church, being about to be rebuilt, a favourable opportunity occurred for widening Fleet-street at its western end, and the London County Council had agreed to contribute 20,000*l.* towards the cost, which offer the Corporation had accepted. The improvement at the western end of Cheapside had occupied attention, and many interests had been acquired. All remaining claims were under negotiation. With regard to the large area destroyed by the great fire in Cripplegate, when three and a half acres were demolished, the Corporation gave great attention to the question of effecting improvements. Many schemes and estimates for widening the existing thoroughfares and for forming new streets were prepared, but the London County Council had declined to contribute towards any of them. Failing in obtaining any contribution from the London County Council, the Corporation, considering that any improvement, if carried out, would be of a metropolitan and not a local nature, did not feel justified in proceeding by themselves. The result had been that the properties on the site had been rebuilt on the old lines of frontage and no improvement effected. An arrangement had been made for widening Lothbury on the south side between Prince's-street and the Old Jewry. The London County Council had agreed to contribute one-third of the cost of making the street 50 ft. wide. The Corporation were forming a new street between Fenchurch-street and Crutched Friars—40 ft. wide, the owner of the land paying 6,000*l.* towards the cost—and, on the invitation of the London County Council, were contributing one-half the cost of widening Mansell-street, one of the direct approaches to the Tower Bridge. As regarded electric light, 502 arc lamps were being used, but the question of lighting the side streets by electricity was still under consideration.

New Clock, Leighford, near Stafford.—A large clock has been erected in the parish church; it chimes the quarters, strikes the hours, has two dials, facing west and south, and is fitted with all modern improvements. Messrs. John Smith & Sons, of Derby, have carried out the work.

Surveys of the United Kingdom.—It is estimated that the expenses connected with the survey of the United Kingdom and of minor services connected therewith will amount, for the financial year just commenced, to about 266,000*l.* As a slight set-off it is anticipated that some 29,000*l.* will be received from the sale of maps to the public and for special work executed at the request of local and other authorities. The amounts to be devoted in the current year to the several sections of the work in hand, together with the further amounts that will probably be required, and the approximate dates proposed for the completion of some of the works are as under: Completion of the new series engraved 1-in. map with hills: amount required this year, 9,000*l.*; subsequently, 23,750*l.*; to be finished, December 31, 1902. Maintenance and revision of the 1-in. map of Great Britain: required this year, 2,000*l.* Special revision of the 1-in. map of Ireland: this year, 10,000*l.*; subsequently, 12,500*l.*; to be finished March 31, 1903. Special revision of the $\frac{1}{4}$-in. map of England: this year, 1,500*l.*; subsequently, 1,500*l.*; to be finished March 31, 1901. Preparation of the engraved $\frac{1}{4}$-in. map of Scotland: this year, 1,000*l.*; subsequently, 2,000*l.*; to be finished March 31, 1901. Special revision of the engraved $\frac{1}{10}$-in. map of Great Britain: this year, 300*l.*; subsequently, 1,700*l.*; to be finished March 31, 1902. General revision of the 6-in. and 25-in. maps of Great Britain so that no map shall have remained unrevised for a longer period than twenty years: this year, 105,787*l.*; subsequently to complete, 1,182,944*l.*; to be finished March 31, 1910. Completion of the re-survey of Ireland on the 25-in. scale: expenditure this year, 45,000*l.*; subsequently, 866,500*l.*; to be finished December 31, 1918. Publication of maps prepared and revised as above: this year, 47,100*l.*; subsequently, 757,300*l.*; to be finished, Great Britain, December 31, 1910; Ireland, December 31, 1920. Set of county maps showing existing Local Government areas: concluding expenditure, 750*l.*; to be finished March 31, 1900. Survey of Guernsey on the 25-in. scale (two-thirds of the cost of the survey to be repaid by the States and one-third out of the Crown revenues of the island): final expenditure, 533*l.*; date of completion, March 31, 1900. Maps for Land Judges' Court and Land Commission, Ireland (to be ultimately repaid from the proceeds of the sales of estates), 3,600*l.*; revision of town scale maps (the cost over and above the cost of revision on the 25-in. scale being repaid by the towns desiring revision on the larger scale), 5,000*l.*; engraving maps for the Geological Survey, 1,000*l.*; and services for other public departments, 6,000*l.* It should be noted that maps and books are presented to libraries under the Copyright Act, and supplied gratuitously to public departments, &c. The value of the works so distributed in 1898 by the Survey Department was about 15,625*l.*

Glasgow Technical College. — The architectural classes of the Glasgow and West of Scotland Technical College had their annual Easter visit to Beverley and Hull. The party left Queen-street on the 1st inst. and returned on the Wednesday afternoon following. The principal object of the visit was to measure and sketch at Beverley Minster and St. Mary's Church, Beverley. The latter at the north end of the town is one of the largest parish churches in Yorkshire. It belongs to the Perpendicular period and contains some interesting old leaded glass. Beverley is almost unique among English towns in having, for its size, two such large mediæval churches. A visit was paid also to the interesting little church at Cottingham and the Holy Trinity Church at Hull. The amount of work done was a sufficient guarantee of the success of this holiday visit.

Ipswich and Felixstowe Building Trades' Association.—The annual dinner of this Association was held recently at the Crown and Anchor Hotel, Ipswich, the chair being taken by Mr. Fred Grimwood, with Mr. Chas. Borrett in the vice-chair. On this occasion a general invitation had been extended to the architects and surveyors of the town and neighbourhood, which met with a hearty response, the professional body being represented by Mr. E. Buckham, C.E. (Borough Surveyor), Mr. H. Miller (County Surveyor), Mr. T. Miller, C.E., Mr. W. Eade, Mr. T. W. Cotman, Mr. G. W. Leighton, Mr. F. Crossley, and Mr. W. H. Brown. After the loyal and patriotic toasts, Mr. H. Miller submitted "The Town and Trade of Ipswich." Councillors F. Bennett, A. Ranson, and E. Catchpole responded. Mr. T. W. Cotman gave "Success to the Association." He remarked that he looked somewhat askance on trade combinations of any kind, but in the present state of affairs he recognised that they were called into existence for the purpose of mutual help and defence. It was, however, by individual effort and force of character that our commercial supremacy could be maintained, and he thought it a weak point in any trade when a person was coerced from making his own bargain when he liked, and with whom he liked. In acknowledging the toast, Mr. F. Grimwood remarked that it was only by such Associations that labour difficulties could be satisfactorily adjusted. They had no hostility to trade unions up to a certain point, but when the masters were not allowed to conduct their own business, it necessitated action being jointly taken by employers to protect interests, which, whilst not antagonistic to the men, were of vital importance to those who had put capital into concerns, and built up valuable trade connexions. He felt sure the architects must see the difficulties now surrounding the building trade, and so increasing cost of the work. Mr. Thurman also acknowledged the toast. The toast of "Past and Present Officers" was proposed by Mr. George Abbott, especial reference being made to the services of the hon. secretary (Mr. W. Grayston), who suitably replied. Mr. C. E. Whitmarsh gave "The Visitors." The Borough Surveyor responded, quoting statistics showing how steadily the town had grown since 1885. Since that year more than 3,000 dwelling-houses had been erected; 700 buildings other than dwellings had been built, and over 100 roads and streets made up. Councillor G. Fenn and Messrs. W. Eade and T. Miller, C.E., also replied.

## *CAPITAL AND LABOUR.*

The Labourers' Strike in Leicester.—On the 6th inst. the number of builders' labourers on strike in Leicester had reached 751, and in addition there were sixty navvies and general labourers in receipt of strike pay. As was anticipated, this has brought building operations in the town and district practically to a standstill, throwing out of employment several hundred bricklayers and other building trade employés. It is stated that some twenty-six non-federated firms are now paying 6½d. an hour to the labourers, and this has been accepted by the men, whose notice was originally for an advance of a penny per hour. According to the employers' view, the difficulty is not really with the labourers, but with the plasterers, and it is suggested that whether the former had come out or not work must have been stopped until the plasterers' dispute was settled. The employers do not regard the later development as one of very serious importance, believing that matters will find their level when the plasterers resume work. That is not to be understood to mean that the desired advance, or any part of it, will be granted.

Bricklayers' Wages, Coalville, Leicestershire.—The bricklayers at Coalville gave notice in November last for ½d. per hour advance, which the masters declined to give, but expressed their willingness for arbitration in the matter. The bricklayers, however, insisted on the advance, and determined to cease work on Good Friday, at the expiration of the notice. At a meeting of the master builders held subsequently, it was decided to concede the advance. The rate paid to bricklayers in the district will now be 8½d. per hour instead of 8d. as hitherto.

Lancashire Master Builders and the Plasterers' Lockout.—According to an official report, the master builders are preparing for a general lockout of their men to bring the present plasterers' dispute to a settlement, and in this action are supported by the Engineering Employers' Federation. Over 200,000 men are affected.

Strike of Builders' Labourers at Gateshead.—A large number of labourers employed by Gateshead builders are at present on strike for an advance in wages. The standard wage is stated to be 6d. per hour, but most of the smaller builders pay a halfpenny over this amount, and to the best class of workmen 7d. an hour is given. The workmen wish a minimum rate of 7d. to be paid to all labourers, and, this having been refused, they ceased work.

Arbroath Building Trades Dispute. — The secretary of the Arbroath Joiners' Society on the 8th inst. received intimation that the federated masters had agreed to grant the increase of ½d. per hour for which the men had struck work, but that they declined to sign the by-laws in the meantime. The Committee of the Society met on Saturday evening, and it was unanimously resolved to continue the strike until the by-laws are signed. It is understood that the slaters employed in Arbroath have, following the suit of the painters and joiners, sent in a request for an increase of ½d. per hour.

## *LEGAL.*

### THE PUTNEY ANCIENT LIGHT DISPUTE.

The case of Ayling & Sons *v.* Clements and Others came before the Court of Appeal, composed of the Master of the Rolls and Lords Justices Rigby and Vaughan Williams, on the 11th inst., on the appeal of the plaintiffs, Messrs. Edward Ayling & Sons, boat builders, of Putney, from a decision of Mr. Justice North in the Chancery Division refusing to grant an interim injunction restraining the defendants until the trial or further order from interfering with the plaintiffs' ancient lights, and also refusing to grant a mandatory injunction to compel the defendants to pull down so much of their building as had been erected since notice of the plaintiffs' claim to the ancient lights in question. The case was reported in the *Builder* of the 1st inst.

Mr. H. Terrell, Q.C., in opening the appellants' case, said that his clients' boathouse was originally built in 1859 by Messrs. Simmons, the boat builders, who then and for some time afterwards occupied it. In 1882 it was rebuilt and somewhat slightly altered. As the boathouse originally stood in 1859 there were three skylights on the western slope of the roof. In June, 1882, the premises were sold by Messrs. Simmons to a Mr. Alexander, who pulled down the boathouse and built the present one, but, although he altered the plane, he was careful to preserve the ancient lights in question.

The Master of the Rolls: Did Mr. Justice North refuse the injunction because the lights are not ancient?

Mr. Terrell: No, because the evidence was not sufficiently clear as to the identity of the lights.

The Master of the Rolls said it was a strange and unusual thing to ask for a mandatory order on an interlocutory application.

Mr. Terrell replied that the matter was a most important one to his clients, as the defendants had built up a wall and obscured their light altogether.

The Master of the Rolls: That is a case for "pulling down" after the trial, is it not?

Mr. Terrell said that the substantial question raised was one of law. His submission was that Mr. Justice North in holding that the plaintiffs must identify the lights exactly had gone wrong in law. He did not think that the facts were in dispute.

Mr. Cozens Hardy, who appeared for the defendants, Mr. Clements and Mr. Aldis, said that in his opinion the facts were directly in issue.

Mr. Terrell said that Mr. Justice North had overlooked the evidence of Mr. Simmons, who had worked for years under the old skylights. The Court of Appeal had held that although the plane was altered the ancient lights could be preserved.

Lord Justice Rigby said that the right to light might be lost if the owner of the dominant tenement had so altered his building that he could not identify the lights as they previously existed. There might be a question as to whether the lights had not been abandoned.

Mr. Terrell said that that was the point he had to meet.

Lord Justice Rigby said it appeared that neither the owner nor the architect nor any person on behalf of the owner took the slightest trouble to ascertain where the old windows were.

Mr. Terrell said that he would agree that they did not keep any records. The model which was in evidence showed that the second or middle of the plaintiff's three windows corresponded within an inch or two with the old window.

The Master of the Rolls asked Mr. Macnaghten, Q.C., who appeared for the defendant Hirst, the builder, whether he would give an underrtaking to "pull down" if ordered to do so at the hearing.

Mr. Macnaghten said he was of opinion that the plaintiffs had made out no case. The defendants' building was practically finished now. They began building as far back as October 1, and had been going on ever since.

Mr. Terrell said that the defendants had built 30 ft. higher since the writ was issued.

The Master of the Rolls: Well, the building looks practically up, as far as I can see.

Mr. Terrell: It is practically up now, but it was not so at the date of the writ.

The Master of the Rolls: An interlocutory injunction in such a matter as this is almost unheard of.

Mr. Terrell said that the plaintiffs had suffered great damage by what the defendants had done, which necessitated their using artificial light in their workshop. He, on behalf of the plaintiffs, was perfectly willing to treat the motion as the trial of the action. The whole question was whether the plaintiffs had preserved their lights or not.

The Master of the Rolls: Your lights are in such a case of ambiguity that we could not think of granting a mandatory injunction on such materials as these. It is hopeless.

Mr. Terrell pointed out that the plaintiffs might be seriously prejudiced if the defendants sold their property before the trial.

Mr. Macnaghten said that he was willing to have the trial expedited as far as possible.

After some further discussion it was arranged that the plaintiffs should register the suit as a *lis pendens*, and that the action should be set down at once for trial in the Chancery Division, with liberty to either party to apply.

The Master of the Rolls said that the appeal ought never to have been brought, and that it must be dismissed, with costs.

### DECISION AS TO PICKETING.

In the Chancery Division on Wednesday, Mr. Justice Stirling gave judgment in the case of Charnock *v.* Court and others. The action was brought by the plaintiff Charnock and twenty-five other master joiners of Halifax to restrain the defendants, two members of the strikers' union of joiners at Halifax, from watching or besetting the plaintiffs' premises, or interviewing their workmen with the object of inducing or persuading the men not to work for the plaintiffs. In February last a strike occurred among the joiners at Halifax, with the result that the plaintffs had to seek for labour elsewhere. An agreement was entered into between the plaintiffs and certain workmen at Belfast, for these to come over by way of Fleetwood to fill the strikers' places at Halifax. The agreement was that the men, who described themselves as skilled workmen, and non-union men, should proceed to Halifax, and from February 21, 1899, work diligently and faithfully for a year for any firms of master-joiners of Halifax which should be specified. They were to be paid 8d. per hour, and were not to be employed for more than forty-nine and a half hours per week. The men came over from Belfast in two batches, the first consisting of nine, and the second of thirteen. On arrival at Fleetwood it was alleged that they were met at the landing-stage by certain members of the defendants' union, and induced or persuaded to break their contracts with the plaintiffs. The plaintiffs' case was that the defendants offered to pay the men's railway fares to whatever town, except Halifax, they desired to go for work. The result was that only six men arrived at the plaintiffs' works. The defendants, on the other hand, denied that they offered to pay the men's fares until they had made up their minds not to go to Halifax in consequence of the condition of things there. Any person or persons, said the Judge, who watched or beset a house or other place where such other person lived, or worked, or carried on business, or happened to be, with the object of inducing him not to work for his employers, was guilty of an illegal act. If, however, it was simply done with the view of gaining or communicating information it was a legal act, and the defendants were justified in their conduct. He was of opinion that what the defendants had done at Fleetwood, both at the landing stage and the railway station amounted to an illegal act, and therefore the plaintiffs were entitled to an injunction. As regarded what happened at Halifax when the men arrived there, there was a great conflict of evidence. The plaintiffs' case was that the men were interviewed at their lodgings, followed in the streets, and induced to go to the workmen's club, with the object of persuading them to leave the plaintiffs' employ and to seek work elsewhere. The defendants denied that there was any truth in that suggestion, and said that they only interviewed the men with the legitimate object of obtaining and communicating information. He came to the conclusion that it was not a case in which he ought to grant an interlocutory injunction, and therefore that portion of the plaintiffs' case failed. This point could only be decided at the trial. The case was of importance, and ought to be decided speedily. He would suggest at the assizes, where also the expenses incurred would be less. The judge then granted an injunction as to Fleetwood, or any other place where the men might be landed, as he had already intimated.

Judgment was given accordingly.

# COMPETITIONS, CONTRACTS, AND PUBLIC APPOINTMENTS.

## COMPETITIONS.

| Nature of Work. | By whom Advertised. | Premiums. | Designs to be delivered. |
|---|---|---|---|
| *New School of Science and Art | Frome U.D.C. | 25*l*. and 10*l*. | April 29 |
| *County Buildings, Edinburgh | Midlothian C.C. | ........ | No date |

## CONTRACTS.

| Nature of Work or Materials. | By whom Required. | Forms of Tender, &c. Supplied by | Tenders to be delivered. |
|---|---|---|---|
| Surveyor's Materials | Bermondsey Vestry | F. Summer, Surv. Town Hall, Spa-road, S E. | April 17 |
| Making-up King's-road | Reading Gas Co. | H. E. S. Baker, Engr. Gas Works, Reading | do. |
| Sewers, Comiston-road | Edinburgh T.C. | T. Hunter, City-chmbrs. Edinburgh | April 18 |
| Stone (1,000 tons) | Witney (Oxon) R.D.C. | G. Wallis, Dist. Surv. Bampton, R.S.O. Oxon | do. |
| Cast Iron Pipes (400 tons) | Tynemouth T.C. | J. F. Smillie, Boro Surv. Tynemouth | do. |
| Wood Paving Blocks | Vestry of St. Mary Newington | L. J. Dunham, Vestry Hall, Walworth-rd. S E. | do. |
| Footbridge, Plympton, Devon | G. W. Ry. Co. | G. K. Mills, Paddington Station, W. | do. |
| *Sluice Valve Hydrants | Tottenham U.D.C. | P. E. Murphy, 712, High-rd. Tottenham | do. |
| *Brick and Pipe Sewers | do. | do | do. |
| Cast Iron Pipes | Shrewsbury Gas Co. | W. Belton, C.E. Gas Works, Shrewsbury | April 19 |
| Three Houses, Cliffe-lane, Huddersfield | ...... | J. Berry, Archt. 9, Queen-st. Huddersfield | do. |
| Two Cottages, Elgin, N.B. | ...... | Reid & Wittet, Archt. Elgin | do. |
| House, Consett, Durham | J. Orton | G. T. Wilson, Archt. 121, Durham-rd. Blackhill | do. |
| Fire Station, Parkstone | Poole T.C. | J. Elford, Surv. Poole | do. |
| Church, Stenhousmuir | ........ | J. Strang, 102, High-street, Falkirk | do. |
| House, Pennyburn, Londonderry | ...... | W. E. Pinkerton, Archt. Londonderry | do. |
| Almshouses, Skeldergate, Yorks. | ...... | Penty & Penty, Archt. Lewel-chmbrs. York | do. |
| Hall, Walton Workhouse | West Derby Union | H. P. Cleaver, Brougham-terrace, Liverpool | do. |
| Two Houses, William-st. Workington | W. R. Irvin | W. G. Scott & Co. Archt. Workington | do. |
| *Timber Goods Shed | Midland Railway | Co.'s Archt. Cavendish House, Derby | April 20 |
| *Cleaning and Painting | do. | do. | do. |
| Flints | Warminster R.D.C. | R. H. Bourne, Surv. Crockerton, Warminster | do. |
| Road Materials | Selby R.D.C. | E. Townend, 1, Abbey-place, Selby | do. |
| Cottages, Wyringstown, co. Down | Lord Dunleath | H. Hobart, Archt. Dromore | do. |
| Whinstone (5,000 tons) | Rothwell nr. Leeds U.D.C. | J. T. Pears, Council Offices, Rothwell | do. |
| Hospital, Aspenden | Buntingford R.D.C. | E. G. Thody, High-street, Buntingford | do. |
| Electric Lighting Plant | Peterborough Corp. | J. C. Gill, C.E. Municipal Offices, Peterborough | do. |
| Additions to School, Kettins | ...... | R. Watson, Coupar Angus, Fife | do. |
| Bridge, Aireworth | Keighley Corp. | W. H. Hopkinson, C.E. Town Hall | do. |
| Granite Setts (1,000 tons) | do. | do. | do. |
| Surveyor's Materials | Chorley (Lancs.) R.D.C. | J. Whitfield, 10, High-st. Chorley | do. |
| *Shop Premises with Dwelling House | ...... | E. F. Taylor, New Barnet | do. |
| *Electric Lighting | Sunderland Union | W. & T. R. Milburn, 20, Fawcett-st Sunderland | April 21 |
| Broken Granite Road Metal | Ashford U.D.C. | W. Terrill, Surv. North-st. Ashford, Kent | do. |
| Additions to Farm House, Richmond, Yorks. | ...... | Clark & Moscrop, Archt. Darlington | do. |
| Store Premises and House, Silkstone | Barnsley Co-op. Soc. | G. Moxon, Archt. 23, Church-st. Barnsley | do. |
| Villas, Northfield-road, Dewsbury | ...... | J. L. Fox, Archt. Bond-st. Dewsbury | do. |
| Making-up Whittaker-street | Batley T.C. | O. J. Kirby, Boro Surv. Market-place, Batley | April 22 |
| Roads and Sewers, Cathays Park | Cardiff Corp. | W. Harpur, C.E. Town Hall | do. |
| Three Cottages, Bexhill | East Sussex C.C. | F. J. Wood, C.E. County Hall, Lewes | do. |
| Hospital, &c. Chinley, Chapel-en-le-Frith | High Peak Hospital Committee | W. R. Bryden, Archt. 1, George-st. Buxton | do. |
| House, Creevy, Crossgar | W. Hutton | F. W. Lockwood, Archt. 16 Waring-st. Belfast | do. |
| Warehouse, Leeds | Pilkington Bros. | T. Winn, Archt. 92, Albion-st. Leeds | April 23 |
| *Isolation Hospital | Reigate T.C. | W. H. Prescott, Market Hall, Redhill | April 24 |
| Sewers, &c. | Croston, nr. Preston U.D.C. | F. E. Dixon, C.E. 49, Lune-st. Preston | do. |
| Alterations, to House, Bourne, Lincs. | W. North | F. G. Shilcock, Archt. Bourne | do. |
| Street Works | Waterloo (Lancs.) U.D.C. | F. S. Yates, C.E. Town Hall | do. |
| House, Drumin, N.B. | ...... | Mr. Thomson, Archt. Fife-Keith, N.B. | do. |
| Road Materials | Long Ashton R.D.C. | J. Hawkins, Surv. Brockley, Bristol | do. |
| Paving Clough-street | Morley Corp. | W. E. Putman, C.E. Town Hall, Morley | do. |
| Sewering, Victoria-rd. Morley | ...... | do. | do. |

## CONTRACTS—*Continued.*

| Nature of Work or Materials. | By whom Required. | Forms of Tender, &c. Supplied by | Tenders to be delivered |
|---|---|---|---|
| Granite Road Metal (2,000 tons) | Runcorn R.D.C. | J. Ashton, Workhouse, Dutton, Runcorn | April 24 |
| Chapel, Horbury | ...... | W. H. Dinsley, Archt. Chorley, Lancs. | April 25 |
| Firebricks, &c. | Tyldesley (Lancs.) Dist. Council | C. Austin, Council Offices, Tyldesley | do. |
| Alterations to Wingfield House, Trowbridge | Sir Vincent Caillard | W. H. Stanley, C.E Trowbridge | do. |
| Road Materials, nr. Guildford | Hambledon R.D.C. | G. Lintott, Surv Cranleigh | do. |
| Making-up Cobbold-road | Felixstowe U.D.C. | F. B. Jennings, Town Hall, Felixstowe | do. |
| *Enlarging School | Harrow (U.D.) S.B. | Houston & Houston, 5, York-bldgs. Adelphi, W.C | do. |
| *Post Office, Hyde, Manchester | Comrs. H.M. Works | Offices, Storey's Gate, Westminster | do. |
| *Taking-down and Rebuilding Walls | Hackney Union | W. A. Finch, 76, Finsbury-pavement, E.C. | April 26 |
| *Iron Shelters, Walls, Gates, Fencing, &c. | Islington Vestry | J. P. Barber, Town Hall, Upper-st. N. | do. |
| Public Baths | Poole T.C. | J. Elford, Surv. Poole | do. |
| Club Premises, Crewe | ...... | Sugden & Sons, Archt Leek | do. |
| *Materials (various) | Twickenham U.D.C. | F. W. Pearce, Town Hall, Twickenham | do. |
| Stations, &c. | Donegal Railway Co. | J. Barton, C.E. Exchange-buildings, Dundalk | do. |
| *Twenty-eight Artizans Dwellings | Brighton Corp. | F. J. C. May, Town Hall | April 27 |
| Schools, Kelling | Weybourne (U.D.) Sch. Bd. | F. Andrews, Holt, Norfolk | do. |
| *Public Baths | Chester Corp. | Douglas & Minshull, Abbey sq. Chester | April 29 |
| Police Station, Prudhoe | Northumberland C.C. | J. Cresswell, Moot Hall, Newcastle | do. |
| Road Works, Hellingly | East Sussex C.C. | F. J. Wood, Surv. Lewes | do. |
| Public Hall, Ynysbwl | .. | J. Rees, Archt Pentre | do. |
| *Name Plates | Ealing U.D.C. | C. Jones, Public Bldgs. Ealing | do. |
| *Yellow Deal Blocks | Paddington Vestry | Surveyor, Vestry Hall, Harrow-rd. W. | May 1 |
| *Tar Paving Materials | L.C.C. | Parks Dept. 9, Spring-gardens, S.W. | do. |
| *Sewage Works | Mountain Ash U.D.C. | J. Mansergh, 5, Victoria-st. S.W. | do. |
| Four Houses, Lisburn, Ireland | H. G. Larimour | H. Hobart, Archt. Dromore co. Down | do. |
| *Structural Steel Work of Tower | Morecambe Tower Co. Ltd. | R. T. Gifford Read, 1, Gt Chapel-st. Westminster | do. |
| *Stables, Cottages, and Cells | County of Southampton | W. J. Taylor, The Castle, Winchester | do. |
| *Supply and Fixing Sanitary Appliances, &c. Darenth Asylum | Met. Asylums Bd. | Offices of Bd. Norfolk-st. Strand, W.C. | do. |
| *Filter Beds | Clacton U.D.C. | Taylor, Sons, & Santo Crimp, 27, Gt. George-st. S.W. | May 2 |
| *Iron Pipe Sewers, Manholes, &c. | Watford U.D.C. | D. Waterhouse, 14, High-st. Watford | May 3 |
| *Road Making and Paving | Fulham Vestry | C. Botterill, Town Hall, Walham Green, S.W. | do. |
| *Naval Reserve Buildings, Altcar, nr. Liverpool | Admiralty | Director of Works, 21, Northumberland-av. W.C | May 5 |
| *School and Caretaker's House | Gloucester S.B. | A. J. Dunn, 31, St. Michael's-square, Gloucester | May 6 |
| *Concrete Wall, Drainage, and other Work | Brecon C.C. | H. E. Thomas, County Hall, Brecon | do. |
| *Electric Light Station | Darlington Corp. | Boro. Surv. | May 8 |
| *Railings, Gates, and Stonework and Steps | L.C.C. | Archt's. Dept. 13, Spring Gardens, S.W. | do. |
| *Superstructure of Band Stands and Painting | do. | do. | do. |
| *Lime | Richmond Main Sewerage Bd. | W. Fairley, C.E. Mortlake S.W. | May 9 |
| Gasholder Tank, Great Float, near Birkenhead | Wallasey U.D.C. | J. H. Crowther, Engr. Great Float | May 15 |
| *Seven Story Factory, Norwich | A. J. Caley & Son, Ld. | E. Boardman & Son, Queen-st. Norwich | No date |
| *Offices, Bristol | Prudential Insce. Co. | A. Waterhouse & Son, 20, New Cavendish-st. W. | do. |
| Shops, Falls-rd. Belfast | F. O'Neill | W. J. Moore, Archt. Belfast | do. |
| Four Houses, City-road, Chester | ...... | T. M. Lockwood & Sons, Archt. 80, Foregate-st. Chester | do. |
| House, Marine Parade, Clacton | G. W. Thomson | J. W. Martin, Archt. Station-chmbrs. Clacton | do. |
| School, Caistor | ...... | J. H. Cooper, Archt. Lincoln | do. |
| Church, Barrow-in-Furness | ...... | E. M. Young, Archt. 90, Duke-st. Barrow | do. |

## PUBLIC APPOINTMENTS.

| Nature of Appointment. | By whom Advertised. | Salary. | Application to be in. |
|---|---|---|---|
| *Engineer | Monmouth Corp. | ........ | April 19 |
| *Clerk of Works | Gloucester Corp. | 3*l*. 3s. per week | April 24 |
| *Clerk of Works | Limehouse B. of W. | 2*l*. 10s. and uniform | do. |
| *Clerk of Works | Coventry Corp. | 4*l*. per week | do. |
| *Architectural Assistant | L.C.C. | 200*l*. per an. to commence | do. |
| *Works Manager | Cnty. Boro. of West Ham | 500*l*. per annum | April 29 |
| *Clerk of Works | County of Southampton | 3*l*. per week and travelling expenses | No date |

*Those marked with an asterisk* (*) *are advertised in this Number. Competitions, p.* iv. *Contracts, pp.* iv. vi. viii. x. & xxii. *Public Appointments, pp.* xix. & xxii.

## MEETINGS.

### FRIDAY, APRIL 14.

*Architectural Association.*—Mr. F. W. Pomeroy on "Modelling as Applied to Architecture," with practical demonstrations. 7.30 p.m.

*Royal Institution.*—Professor A. W. Rücker on "Earth Currents and Electric Traction." 9 p.m.

*Institution of Junior Engineers (Westminster Palace Hotel).*—Paper to be read and discussed: "Piles and Pile-driving," by Mr. H. C. Reid. 8 p.m.

### SATURDAY, APRIL 15.

*Institution of Junior Engineers.*—Visit to the works of the new Vauxhall Bridge. 3 p.m.

*Sanitary Institute (Demonstrations for Sanitary Officers).*—Inspection at Beddington Sewage Farm. 3 p.m.

*Perth Architectural Association.*—Visit to Free Middle Church, Tay-street. 2.30 p.m.

### MONDAY, APRIL 17.

*Sanitary Institute (Lectures for Sanitary Officers).*—Dr. George Reid on "Sanitary Appliances." 8 p.m.

*Victoria Institute.*—Professor Hull, F.R.S., on "Sub-oceanic Terraces and River Valleys." 4.30 p.m.

### TUESDAY, APRIL 18.

*Society of Arts (Applied Art Section).*—Mr. Stephen Webb on "Inlaying." 8 p.m

*Institution of Civil Engineers.*—Mr. J. Murray Dobson on "Buenos Aires Harbour Works." 8 p.m.

### WEDNESDAY, APRIL 19.

*British Archæological Association.*—Mr. C. Dack on "Survival of Old Customs at Peterborough." 8 p.m.

*Society of Arts.*—Mr. Walter Hunter, M.Inst.C.E., on "London's Water Supply." 8 p.m.

*Builders' Foremen and Clerks of Works' Institution.*—Quarterly meeting of the members. 8 p.m.

*Sanitary Institute (Demonstration for Sanitary Officers).*—Inspection in the Parish of St. George's, Hanover-square. 2 p.m.

### THURSDAY, APRIL 20.

*Institution of Civil Engineers.*—The seventh "James Forrest" Lecture, to be delivered by Professor J. A. Ewing: "Magnetism." 8 p.m.

*Royal Institution.*—Professor Dewar on "The Atmosphere." II. 3 p.m.

*Society of Antiquaries.*—8.30 p.m.

*Sanitary Institute (Lectures for Sanitary Officers).*—Mr. J. Wright Clarke on "Details of Plumbers' Work." 8 p.m.

### FRIDAY, APRIL 21.

*Institution of Civil Engineers.*—The seventh James Forrest" Lecture, to be delivered by Professor J. A. Ewing: "Magnetism." 4 p.m.

*Architectural Association.*—Annual Soirée, St. George's Hall, Langham-place, W. A musical play will be performed, entitled: "The Druids' Elect: An Episode of the Ancient Britons." 8 p.m.

### SATURDAY, APRIL 22.

*Sanitary Institute (Demonstration for Sanitary Officers).*—Inspection at the Sewage and Destructor Works, Ealing. 2.15 p.m.

*Edinburgh Architectural Association.*—Visit to Drum House.

## RECENT PATENTS:

### ACCEPTED SPECIFICATIONS.

### *Open to Opposition until June 6.*

[1897.] 30,513, Jones, Vices, &c. 30,736, Silverman, Locks and Keys. [1898.] 2,716, McClurg & Miller, Gas Generators. 7,088, Morey, Fire or Burglar Alarm for Enclosed Places. 7,346, Crawford, Fireproof Floor for Buildings, &c. 7,540, Lock & Pashley, Ball and Socket Joints. 7,630, Sellars, Modelling Compositions or Compounds. 8,045, Zimmer & Others, Paints for Coating Iron and other Surfaces. 9,219, Colbran, Gas Lamps. 9,662, Snoeck, Burglar Alarms. 9,677, Veritys & Ebbutt, Swing Joints or Ceiling Connexions for Carrying Suspended Electrical Light Fittings. 9,934, Holden & Brooke, Plastic

Compositions for Decorating Walls, Ceilings, &c., in Relief. 10,236, Sandy, Bate, & Geer, Electrical Arc Lamps. 10,542, King & Pool, Folding Easel for Artists' Use. 10,577, Winterflood, Water Heaters and their Automatical Valve Attachments. 11,104, Pollock, Manufacture of Bricks, Tiles, &c. 11,412, Hebb & Squire, Circular Saw Benches. 11,566, Ely; 11,970, British Pure Acetylene Gas Syndicate and Keene; and 16,613, Testelin & Roseaux, Acetylene Gas. 11,803, Kuhnt and Deissler, Burners for Incandescent Oil Lamps. 12,078, Peter Wood, Limited, and Nash, Continuous Kilns for Burning Bricks, Tiles, Sanitary Ware, and other Clay Goods, and for Salt Glazing. 12,134, Alley, Pneumatic Hoists. 12,189, Crombie & Allen, Indented Wire Nails. 12,196, Hamblet, Sewer Blocks. 12,219, Smith, Hand Tools. 12,382, Hamer; and [1899] 2,367, Potter & Johnston, Lathe Chucks. 12,851, Adams, Brick Making Machine. 13,878, Ames, Earthenware and similar Pipes, and Method of Jointing them. 21,732, Jones, Door Springs and Swing-door Checks. 23,183, Sturge, Electrical Switches. 23,966, Gilbreth, Mixer for Concrete Cement and other substances. 25,638, McSweeney, Machine for Coating Paving Blocks, &c., with tar or other liquid or composition. 26,899, Weeks & Weeks, Pottery Moulding Machines. [1899.] 392, Antcliff, Hanging of Doors for Strong Rooms, Safes, &c. 2,209, Lundwall, Centrifugal Pumps. 2,382, Woltereck, Manufacture of Pigments. 2,838, Landau, Method of Producing variously coloured objects of Marble-like or other ornamental appearance from Rubber and similar vulcanisable material. 3,286, Beard, Shore Groynes. 3,320, Rice, Automatical Dampers for Stove Pipes. 3,581, Eliot, Appliance for Kindling and Reviving Domestic and other Fires. 3 629, Nuttall & Cooper, Doors for Hoists. 4,165, Bouhon, Chimney and Ventilating Shaft Tops. 4,250, Streubel, Gas-cocks for Gas Burners. 4,328, Ebner, Parquetry and Wooden-block Flooring. 4,329, Strube, Doors. 4,342, Newell, Glass Tiles or Slabs for Architectural and similar uses. 4,472, Baumann & Baumann, Annular Kilns for Burning Bricks, &c.

### ABSTRACTS OF PATENTED INVENTIONS.

28,320.—Manhole Covers: *L. W. Lees.*—Radial slots are made in the cover, beneath which a dished plate, similarly slotted, is mounted upon a pivot, and can be rotated, for regulating ventilation, by means of a box-key which fits the pivot's upper end; a cover, kept in its place by pins that engage the slots, protects the pivot.

28,332.—Testing and Disinfecting Drains: *B. H. Thwaite & H. Allen.*—For testing purposes a mixture of calcium carbide with a gelatinous or saccharine substance is sealed in glass tubes or fashioned in balls or tablets, and the acetylene gas that is given off upon contact with water will reveal the existence of a leak, whilst the resultant lime will act as a disinfectant.

28,338.—Exhausting Incandescent Electrical Lamps: *F. J. Satchwell.*—When it strikes an electrical arc in a chamber through which the air in the lamp is drawn off, the residual oxygen in a lamp-bulb is converted into a highly-rarefied non-combustion supporting gas. The arc is made between two carbon terminals whereof one is flexibly supported, so that, being slightly tapped, they will separate, or the terminal can be made to slide through a mercury-sealed joint. Instead of the arc an incandescent carbon filament may be used.

28,384.—Atmospherical Gas Burners: *Diamond Light Company.*—To prevent draughts and to ensure steadiness of the flames, two sets of air inlets are devised, one set being arranged out of alignment with the other set, and the air upon entering is partially divided by the shape of apertures in the outer sleeve or regulating contrivance. The burner tip and its ring or skeleton guide are mounted upon springs to prevent shocks and vibrations from reaching the mantle; coiled springs upon the guide rods carry the flange of the burner tip, and an angle-piece resting upon a ring supports the guide rods.

28,436.—Safety Device for Kitchen Boilers: *J. Evans.*—A pipe, which must be efficiently protected from frost, is carried from near the bottom of the boiler to the open air at a point above the level of the cold water supply cistern.

28,439.—Generation of Acetylene Gas: *V. Sockeel, A. Lauby, C. Drisse, and A. Sneck.*—The carbide is laid upon the perforated plate of the chamber which is placed inside a double bell, and a pipe, perforated and guarded with a cap at the top, passes down into the water beneath, the pressure of gas within the apparatus automatically controls the access of water to the carbide, and the gas passes through a pipe fitted with cocks to the outer bell, and thence by another pipe and purifier to the holder bell, the chamber is provided with a removable vessel for receiving the lime produced.

28,472.—Sash Fastenings: *W. Rankin.*—A locking-bar, which engages a catch, draws together and fastens the sashes, a spring-bolt on the bar engages a hole in the bar's pivot, and so locks the bar, the bolt can be screwed forwards by means of a milled head until the pin of a spring-knob enters into a groove in order to lock the bolt.

28,484.—A Paint and Coating: *H. Loesner.*—For a weatherproof and waterproof composition, varnish or drying oil is mixed with cement, or with a mixture of silica and cement, together with a pigment.

28,526.—Manufacture and Mixing of Gases: *J. R. Wigham.*—To increase the illuminating power of coal or other gas supplied through a pipe, acetylene is added by passing the gas through a governor or delivering it at a uniform pressure to the burners, and introducing the acetylene, at a point between the governor and the burners, from a generator, a valve regulates the supply of acetylene, and has an index to show what amount of gas is needed for any desired increase of the illuminating power; a governor may be attached to the acetylene supply.

28,569.—Lifting Jacks: *C. H. Slater.*—The operation is effected by means of a lever, held by a link, in the end of which a pin engages with a rack-bar mounted in guide-standards, and kept in position by a spring-pawl; a set-screw secures a pillar, having an adjustable head, to a foot of the rack's lower end.

28,618.—Wooden Fixing Blocks or Bricks: *G. Connell.*—Wooden facing-strips are secured to bricks, concrete, &c., by means of bolts, interlocking dove-tailed projections, recesses, and wedges, flat-headed nails, or metal strips embedded in the concrete and nailed to the wooden face; to the faces of the blocks when built or secured in position, mouldings, wall-linings, and boards may be conveniently nailed.

28,620.—Impregnation of Wood, Bricks, Stone, &c.: *H. Higgins.*—Porous materials are first heated by superheated steam and then immersed in solutions, for which crystalloid salts are used; for the precipitation of insoluble silicates in the pores an alkaline silicate and a soluble substance—*e.g.*, calcium chloride—are separately introduced.

28,636.—Moulding Tiles: *W. & J. Burton.*—Inclined teeth or plates that slide in slots cut in the bottom die or plunger form recesses in the tile, when the plunger is raised in order to eject the tile from the mould, springs force the teeth backwards and the teeth are again raised for action by the contact of their lower ends with a bed plate when the plunger is lowered.

28,656.—Blocks for Paving Roads, Paths, &c.: *W. H. Northcutt.*—The blocks are made of cement, cast in a mould formed with grooves in its hinged sides, or of cast or pressed metal, fashioned with treads and tongues upon two adjacent sides and corresponding grooves upon the remaining sides, and the grooves are filled with mortar, cement, &c., to be kept in position by the metal shell and the ribs and flanges formed with it. Gutter and kerb blocks are similarly formed; curved blocks may be used for arching over tunnels and large sewers, and wood blocks interlocked by means of their tongues and grooves, will serve for paving purposes.

28,696-7.—Windows and Prism-plates: *J. M. Ewen.* Prism plates are arranged in an inclined frame, so that the middle prisms direct the light into the middle of the room whilst the side prisms project the light obliquely on to the sides of the room, the frame can be attached to the top of the window frame, or it can be placed vertically in the window's front; transparent plates or tiles for windows, vault-lights, and so on, are made in curved, lenticular, ribbed, or corrugated shapes, and have parallel prisms upon one side which will throw the light in the direction desired.

28,726-8.—Holders for Incandescent Electrical Lamps: *J. Booth.*—By one contrivance the casing is made in two parts, whereof one has an outside screw for a cord grip, two inside projections to prevent the insulator from rotating, and a flange; the other part is attached to the former within the flange, and is screw-threaded upon its expanded portion for carrying a ring that holds the shade. In another form the casing is made in one piece by stamping. By another contrivance the insulating body, made in one piece, is cylindrical in shape, and has an enlarged part; a projection extends diametrically across one end of the insulator, having on each side round holes which receive contact-blocks and plunger-holders, stepped to fit together, and secured by screws.

28,823.—Doors and Frames for Manholes and Gratings: *J. Price & J. Johnson.*—A spanner-shaped lever, pivotted to a lug and engaging with a projection, holds down the cover or grating of the manhole, or service-box, or electrical junction-box, &c.; the cover is unlocked and raised by passing a hook down to engage with the lever's free end, and a nose of the lever acts a fulcrum for the starting of the cover by the lever, a wedge, pivotted to the lever, and inserted between the back and the frame, serves to hold the grating or cover when it is lifted up.

28,842.—Artificial Stone, Cement, &c.: *H. W. Gruner.*—With calcined magnesia are mixed certain filling materials, such as sand, sawdust, burned refuse, ashes, powdered cork waste, powdered marble or granite waste, and to the admixture is added a solution of magnesium chloride, acetic acid, zinc sulphate, and an alcoholic solution of isinglass soap. The material, which the inventor claims to be capable of resisting acids and fire, can be used as cement or artificial stone, may be moulded into bricks, tiles, or slabs, and utilised for baths, cisterns, floors, ceilings, roofing tiles, paving, walls, and similar things. Slabs, separated by layers of moss-litter, &c., can be used for building soundproof walls, and a substitute for linoleum is to be prepared by adding cork powder to the magnesia and solution.

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## SOME RECENT SALES OF PROPERTY:

### ESTATE EXCHANGE REPORT.

| | |
|---|---|
| March 17.—By William Snowdon (at Easingwold). | |
| Farlington, Yorks.—Wandmore Farm, 55 a. 2 r. 1 p., f. | £1,375 |
| March 25.—By R. Marsh & Son (at Newcastle). | |
| Tanfield, Durham.—Waggon Hill Farm, 46 a., f. | 2,005 |
| Mounsett Cottage, f. | 210 |
| March 28.—By R. Donkin & Son (at Newcastle). | |
| Whalton, Northumberland.—East Low House Farm, 108 a. 1 r. 25 p., f. | 3,350 |
| Beanley Farm, 86 a. 0 r. 22 p., f. | 4,300 |
| The Mansion House and 22 a. 0 r. 38 p., f. | 2,715 |
| The Home Farm, 37 a. 3 r. 38 p., f. | 1,750 |
| Bondicar Farm, 114 a. 1 r. 12 p., f. | 3,000 |
| March 29.—By Stephenson & Alexander (at Pontypridd). | |
| Pontypridd, Glamorgam.—F.g.r.'s 458*l.* 15s. 2d., on the Newbridge Estate, reversions ranging from 25 to 78 yrs. (in lots) | 14,375 |
| Enclosures of land, 7 a. 3 r. 8 p., f. | 315 |
| Llantwit Vardre, Glamorgan.—Glanmyddlin Farm, 20 a. 0 r. 15 p., f. (including minerals) | 1,200 |
| By H. E. Archer (at Saxmundham). | |
| Peasenhall, Suffolk.—The Chalet and The Street Grove Farm, 46 a. 2 r. 18 p., f. and c. | 1,480 |
| A freehold cottage and 1 a. 0 r. 36 p. | 160 |
| By John Chambers (at Wargrave). | |
| Wargrave, Berks.—Twyford-rd., a freehold house. | 800 |
| Highfield-rd., Hyems and Pig Pightle enclosures, 17 a. 2 r. 22 p., f. | 1,100 |
| Blake's-rd., Royal Hill enclosure, 17 a. 1 r. 3 p., f. | 1,300 |
| April 6.—By Bowditch & Grant. | |
| Sydenham.—54, Wells-rd., u.t. 66½ yrs., g.r. 3*l.*, r. 35*l.* | 400 |
| Croydon.—18 and 19, Amberley-grove, f., r. 62*l.* | 800 |
| By Charles Hall. | |
| Camden Town.—3, 5, and 7, Bayham-st., u.t. 11½ yrs., g.r. 54*l.* | 245 |
| Paddington.—44, Eastbourne-ter., u.t. 40 yrs., g.r. 12*l.*, e.r. 100*l.* | 800 |
| By Izard, French, & Izard. | |
| Notting Hill.—Arundel-gardens, freehold rent charges of 19*l.* 10s. | 300 |
| Rotherhithe.—Church-st., St. Mary's Warehouse or Granary, f., r. 40*l.* | 460 |
| By Hawkins & Edgecombe. | |
| Brixton.—204, 208, 210, 222 to 230 (even), Lyham-rd., f. | 2,120 |

*Contractions used in these lists.*—F.g.r. for freehold ground-rent; l.g.r. for leasehold ground-rent; i.g.r. for improved ground-rent; g.r. for ground-rent; r. for rent; f. for freehold; c. for copyhold; l. for leasehold; e.r. for estimated rental; u.t. for unexpired term; p.a. for per annum; yrs. for years; st. for street; rd. for road; sq. for square; pl. for place; ter. for terrace; cres. for crescent; yd. for yard, &c.

## PRICES CURRENT OF MATERIALS.

### TIMBER.

| | | | | | | |
|---|---|---|---|---|---|---|
| Greenheart, B.G. ton | £8 | 0 | 0 | 0 | 0 | 0 |
| Teak, E.I. load | 11 | 15 | 0 | 16 | 15 | 0 |
| Sequoia, U.S., ft. cube | 1 | 9 | 0 | 2 | 0 | 0 |
| Ash, Canada, load | 4 | 0 | 0 | 5 | 5 | 0 |
| Birch, do | 3 | 10 | 0 | 5 | 10 | 0 |
| Elm, do | 4 | 12 | 6 | 5 | 15 | 0 |
| Fir, Dantsic, &c. | 1 | 10 | 0 | 3 | 10 | 0 |
| Oak, do | 3 | 5 | 0 | 4 | 0 | 0 |
| Canada | 4 | 10 | 0 | 6 | 5 | 0 |
| Pine, Canada red | 0 | 0 | 0 | 0 | 0 | 0 |
| Do, yellow | 4 | 7 | 6 | 6 | 5 | 0 |
| Lath, Dantsic, fathom | 4 | 10 | 0 | 5 | 10 | 0 |
| St. Petersburg | 4 | 0 | 0 | 6 | 10 | 0 |
| Wainscot, Riga, &c., log | 3 | 15 | 0 | 6 | 5 | 0 |
| Odessa, crown | 3 | 15 | 0 | 6 | 5 | 0 |
| Deals, Finland, 2nd and 1st std. 100 | 9 | 15 | 0 | 10 | 5 | 0 |
| Do., 4th and 3rd | 9 | 15 | 0 | 10 | 5 | 0 |
| Do., Riga | 8 | 5 | 0 | 9 | 5 | 0 |
| St. Petersburg, 1st yellow | 11 | 15 | 0 | 14 | 5 | 0 |
| Do., 2nd yellow | 10 | 15 | 0 | 12 | 5 | 0 |
| Do., white | 9 | 15 | 0 | 11 | 15 | 0 |
| Swedish | 9 | 15 | 0 | 16 | 15 | 0 |
| White Sea | 10 | 15 | 0 | 18 | 0 | 0 |
| Canada Pine, 1st | 18 | 15 | 0 | 25 | 5 | 0 |
| Do., do., 2nd | 13 | 15 | 0 | 17 | 0 | 0 |
| Do., do., 3rd, &c. | 6 | 15 | 0 | 10 | 0 | 0 |
| Do. Spruce, 1st | 8 | 5 | 0 | 10 | 5 | 0 |
| Do., do., 3rd and 2nd | 7 | 0 | 0 | 8 | 5 | 0 |
| New Brunswick | 7 | 0 | 0 | 7 | 15 | 0 |
| Battens, all kinds | 5 | 0 | 0 | 16 | 0 | 0 |
| Flooring boards, sq., 1 in., prep., 1st | 0 | 12 | 0 | 0 | 15 | 3 |
| Do., 2nd | 0 | 10 | 6 | 0 | 12 | 3 |
| Other qualities | 0 | 5 | 3 | 0 | 6 | 6 |
| Cedar, Cuba, ft. | 0 | 0 | 4 | 0 | 0 | 4½ |
| Honduras, &c. | 0 | 0 | 4 | 0 | 0 | 4½ |
| Mahogany, Cuba | 0 | 0 | 5½ | 0 | 0 | 7½ |
| St. Domingo, cargo av. | 0 | 0 | 5 | 0 | 1 | 3 |
| Mexican do., do. | 0 | 0 | 3½ | 0 | 0 | 4 |
| Tabasco, do., do | 0 | 0 | 4 | 0 | 0 | 6½ |
| Honduras, do. | 0 | 0 | 4½ | 0 | 0 | 6 |
| Box, Turkey, ton | 6 | 0 | 0 | 15 | 0 | 0 |
| Rose, Rio | 7 | 0 | 0 | 16 | 0 | 0 |
| Bahia | 6 | 0 | 0 | 14 | 0 | 0 |
| Satin, St. Domingo, ft. | 0 | 0 | 6 | 0 | 1 | 0 |
| Porto Rico | 0 | 0 | 9 | 0 | 2 | 0 |
| Walnut, Italian | 0 | 0 | 3 | 0 | 0 | 7½ |

### METALS.

| | | | | | | |
|---|---|---|---|---|---|---|
| Iron—Pig, in Scotland ton | 2 | 14 | 2½ | 0 | 0 | 0 |
| Bar, Welsh, in London | 6 | 0 | 0 | 6 | 5 | 0 |
| Do. do. at works in Wales | 5 | 15 | 0 | 5 | 17 | 6 |
| Do. Staffordshire, in London | 6 | 5 | 0 | 7 | 10 | 0 |
| Copper—British cake and ingot | 75 | 15 | 0 | 0 | 0 | 0 |
| Best selected | 76 | 5 | 0 | 76 | 15 | 0 |
| Sheets, strong | 79 | 0 | 0 | 81 | 0 | 0 |
| Chili bars | 71 | 7 | 6 | 0 | 0 | 0 |
| Yellow Metal lb. | | 6½d. | | | 7d. | |
| Lead—Pig | | | | | | |
| Spanish ton | 14 | 10 | 0 | 0 | 0 | 0 |
| English Com. Brands | 14 | 15 | 0 | 0 | 0 | 0 |
| Sheet, English, 6 lbs. per sq. ft. and upwards | 15 | 15 | 0 | 0 | 0 | 0 |
| Pipe | 16 | 5 | 0 | 0 | 0 | 0 |
| Zinc—English sheet ton | 30 | 0 | 0 | 0 | 0 | 0 |
| Vieille Montagne | 31 | 0 | 0 | 0 | 0 | 0 |
| Spelter | 27 | 17 | 6 | 28 | 0 | 0 |
| Tin—Straits | 113 | 7 | 6 | 0 | 0 | 0 |
| Australian | 113 | 10 | 0 | 114 | 0 | 0 |
| English Ingots | 116 | 0 | 0 | 117 | 0 | 0 |
| Banca | 114 | 0 | 0 | 0 | 0 | 0 |
| Billiton | 113 | 0 | 0 | 0 | 0 | 0 |

### OILS.

| | | | | | | |
|---|---|---|---|---|---|---|
| Linseed ton | 17 | 15 | 0 | 0 | 0 | 0 |
| Cocoanut, Cochin | 29 | 10 | 0 | 0 | 0 | 0 |
| Do. Ceylon | 25 | 15 | 0 | 0 | 0 | 0 |
| Palm, Lagos | 24 | 10 | 0 | 0 | 0 | 0 |
| Rapeseed, English, pale | 22 | 15 | 0 | 0 | 0 | 0 |
| Do. Brown | 21 | 5 | 0 | 0 | 0 | 0 |
| Cottonseed ref. | 16 | 10 | 0 | 17 | 0 | 0 |
| Oleine | 17 | 0 | 0 | 19 | 0 | 0 |
| Lubricating U.S. | 0 | 5 | 3 | 0 | 7 | 6 |
| Do. Black | 0 | 5 | 0 | 0 | 6 | 6 |
| Tar—Stockholm barrel | 1 | 6 | 6 | 0 | 0 | 0 |
| Archangel | 0 | 18 | 0 | 0 | 0 | 0 |
| Turpentine | 33 | 0 | 0 | 33 | 5 | 0 |

## TO CORRESPONDENTS.

NOTE.—The responsibility of signed articles, letters, and papers read at public meetings, rests, of course, with the authors.

*We cannot undertake to return rejected communications.*

Letters or communications (beyond mere news items) which have been duplicated for other journals are NOT DESIRED.

We are compelled to decline pointing out books and giving addresses.

Any commission to a contributor to write an article is given subject to the approval of the article, when written, by the Editor, who retains the right to reject it if unsatisfactory. The receipt by the author of a proof of an article in type does not necessarily imply its acceptance.

All communications regarding literary and artistic matters should be addressed to THE EDITOR; those relating to advertisements and other exclusively business matters should be addressed to THE PUBLISHER, and *not* to the Editor

## TENDERS.

[Communications for insertion under this heading should be addressed to "The Editor," and must reach us ***not later than* 10 *a.m. on Thursdays.*** N.B.—We cannot publish Tenders unless authenticated by the name and address of the sender; and we cannot publish announcements of Tenders accepted unless the amount of the Tender is given, nor any list in which the lowest Tender is under £100, unless in some exceptional cases and for special reasons.]

* Denotes *accepted.* † Denotes *provisionally accepted.*

ABERDARE.—For the erection of seventeen houses, Cwmaman, Aberdare. Mr. J. Llewellin Smith, architect, Aberdare:—

Morgan & Sons (per house) £182 10
Willis, Ystrad (per house)* £162 10

[*See also next page.*

BOURNEMOUTH.—For constructing sewers through the Upper Gardens from manhole opposite the "London Hotel" to the borough boundary, and other works in connexion therewith. Mr. F. W. Lacey, Borough Engineer and Surveyor :—

| | | | |
|---|---|---|---|
| F. Osman | £10,050 | Cooke & Co., 16, Victoria-st., S.W.* | £10,000 |
| Grounds & Newton (informal) | 10,402 | | |

BRIXHAM.—For alterations, reseating, and renovations at the Wesleyan Chapel, Brixham. Mr. W. G. Couldrey, architect, Paignton. Quantities by Mr. Vincent Cattermole Brown, Paignton :—

| | | | |
|---|---|---|---|
| H. Pharo | £1,490 0 | R. Waycott | £893 0 |
| E. Pike | 935 0 | R. F. Yeo, Torquay* | 889 0 |
| W. Smaridge | 898 10 | | |

DOVER.—For the erection of the superstructure of new branch premises at Cherry Tree-avenue, Dover, for the River and District Co-operative Society, Limited. Mr. A. H. Steele, architect, Folkestone-road, Dover. Quantities by the architect :—

| | | | |
|---|---|---|---|
| Keeler | £4,204 5 | Lewis & Sons | £3,500 0 |
| W. G. Lewis | 3,966 0 | Dawkins, Dover* | 3,222 0 |
| Denne | 3,796 0 | Hall | 3,045 10 |

HIGHAM FERRERS, Northants.—For the erection of three houses, for Mr. W. Spong. Mr. H. Adnitt, architect, High-street, Rushden. Quantities by the architect :—

| | | | |
|---|---|---|---|
| C. E. Bayes | £765 0 | H. Sparrow | £744 0 |
| F. Henson | 763 0 | R. Marriott | 724 0 |
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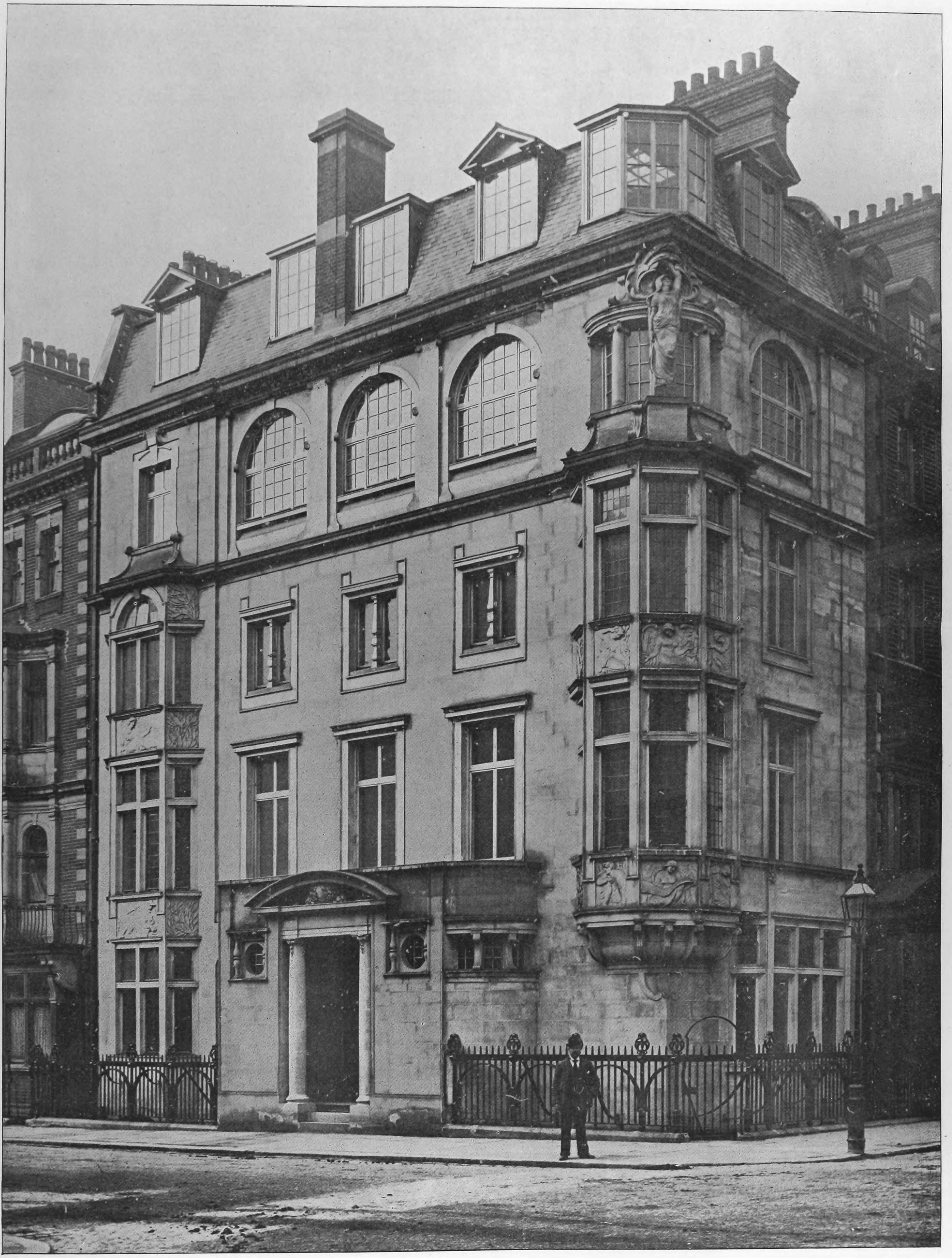

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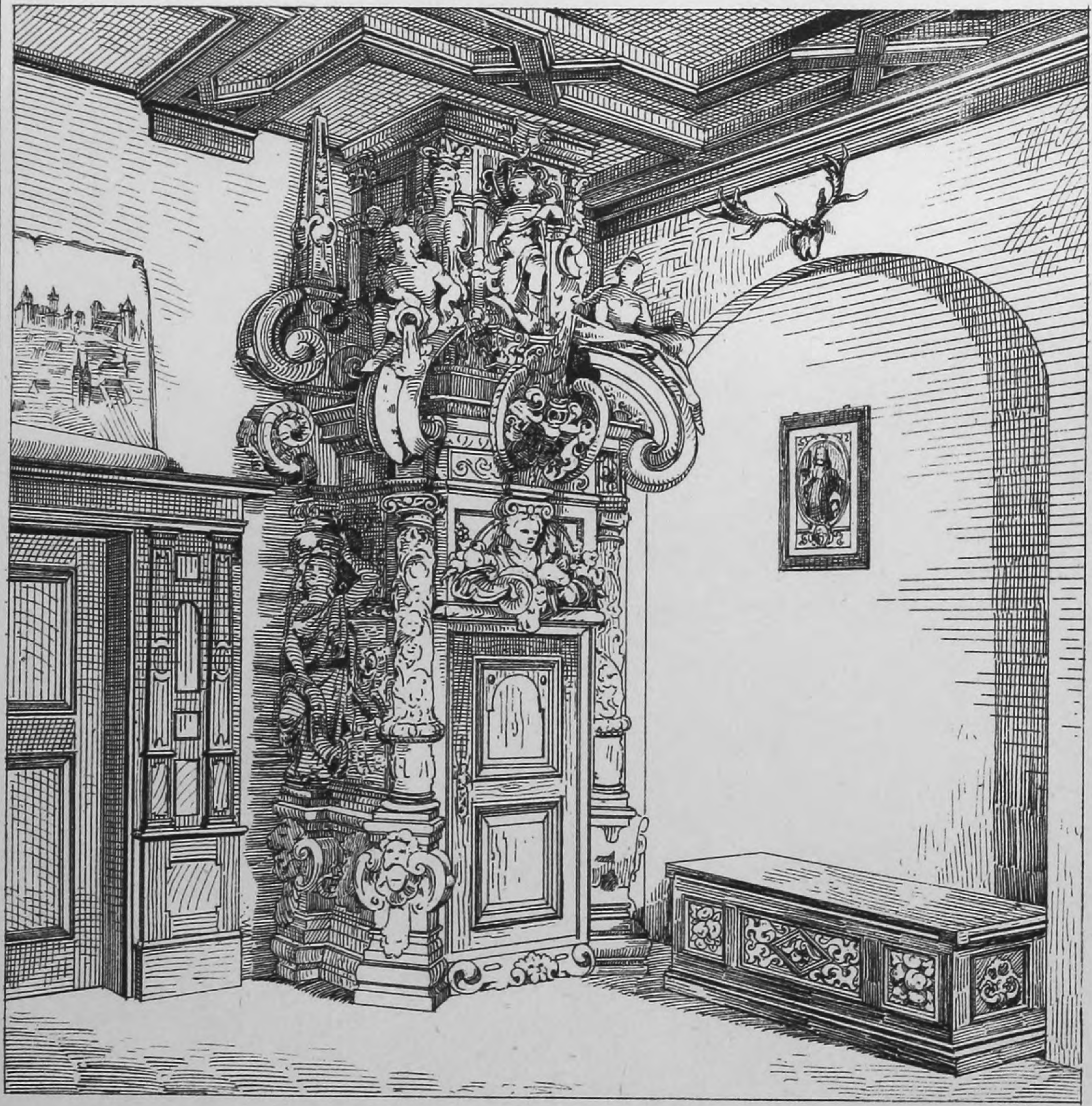

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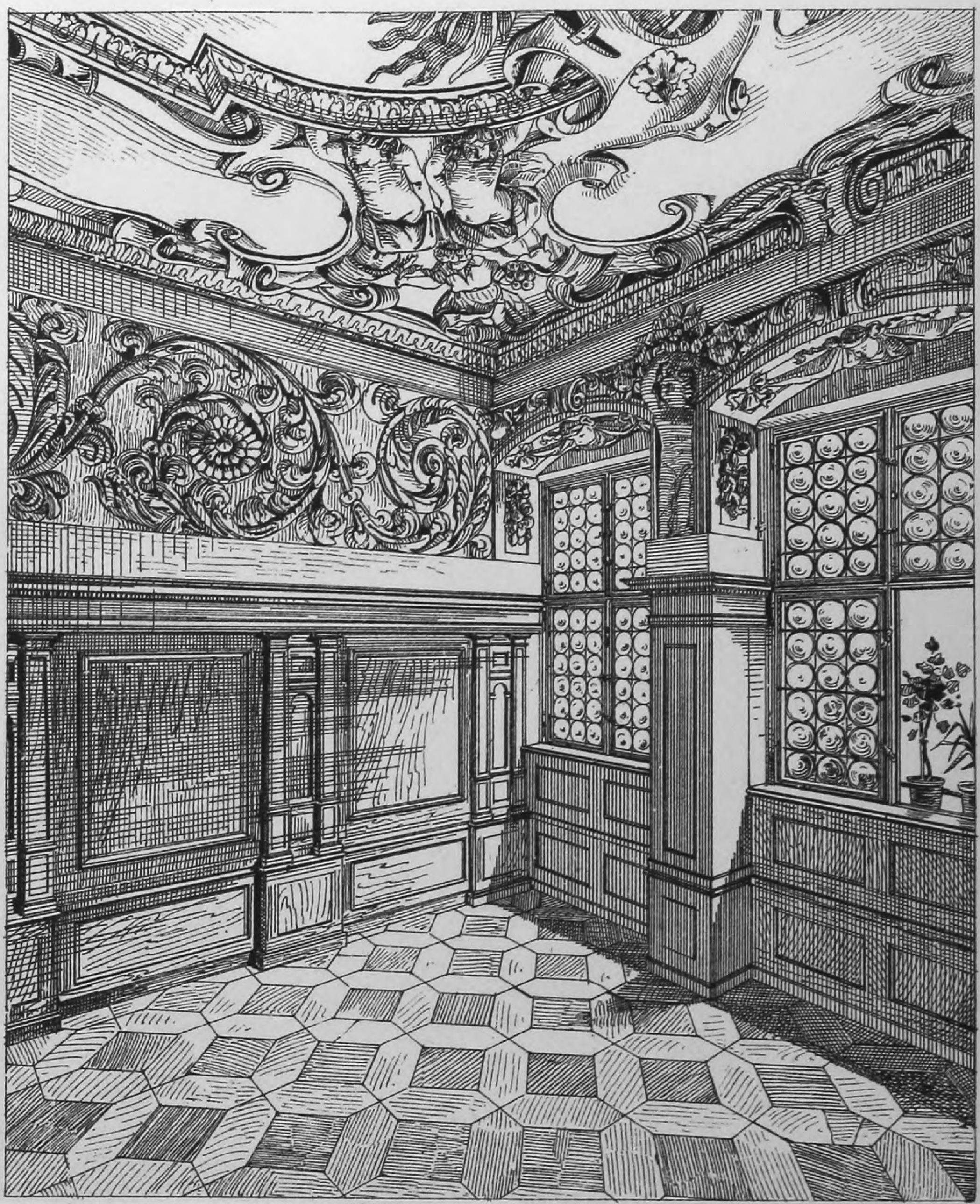

ROOM IN THE FEMBA HOUSE.

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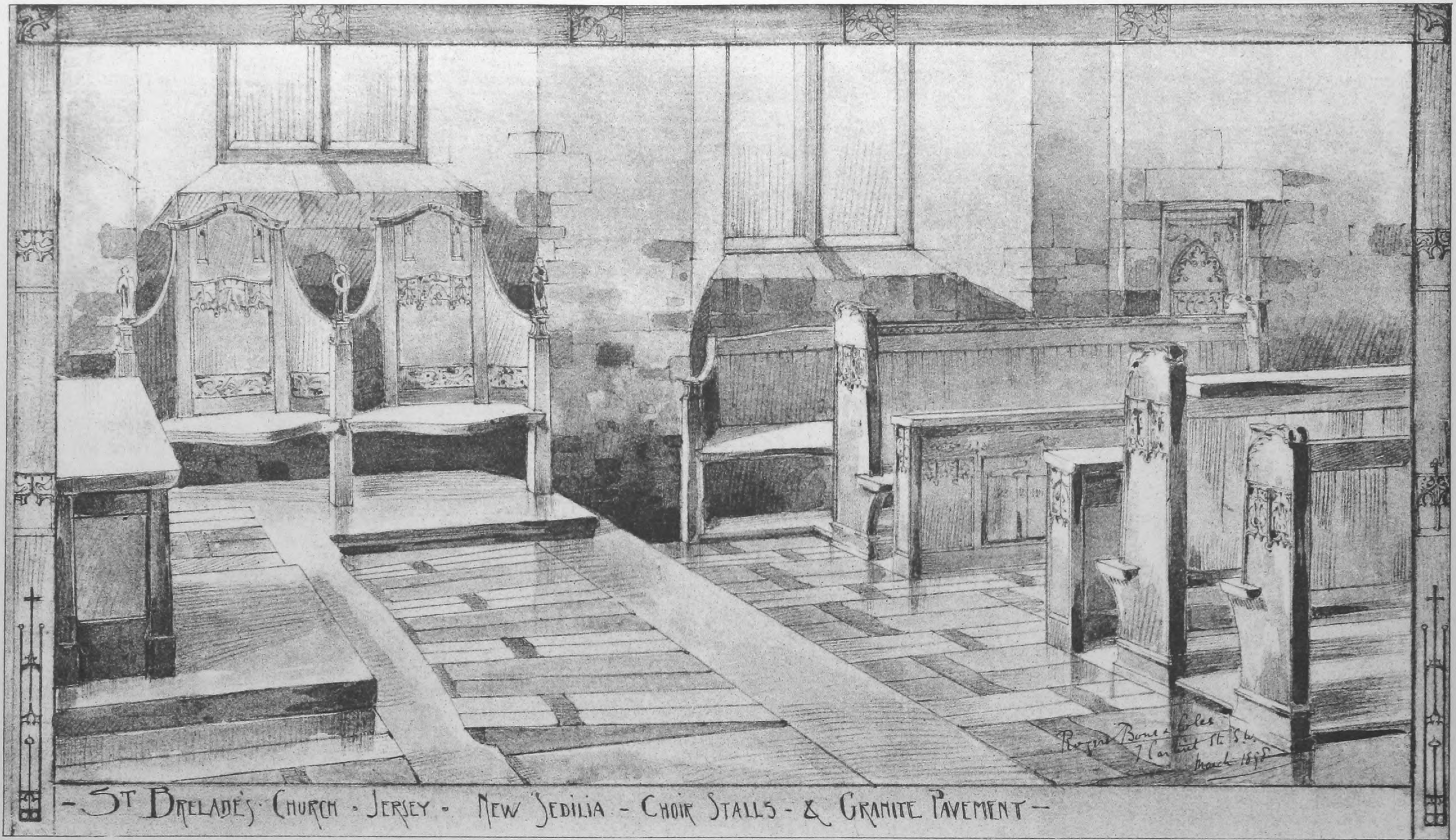

Rogers Bone & Coles
7 Carteret St. S.W.
March 1898

- ST BRELADE'S · CHURCH · JERSEY · NEW SEDILIA - CHOIR STALLS - & GRANITE PAVEMENT -

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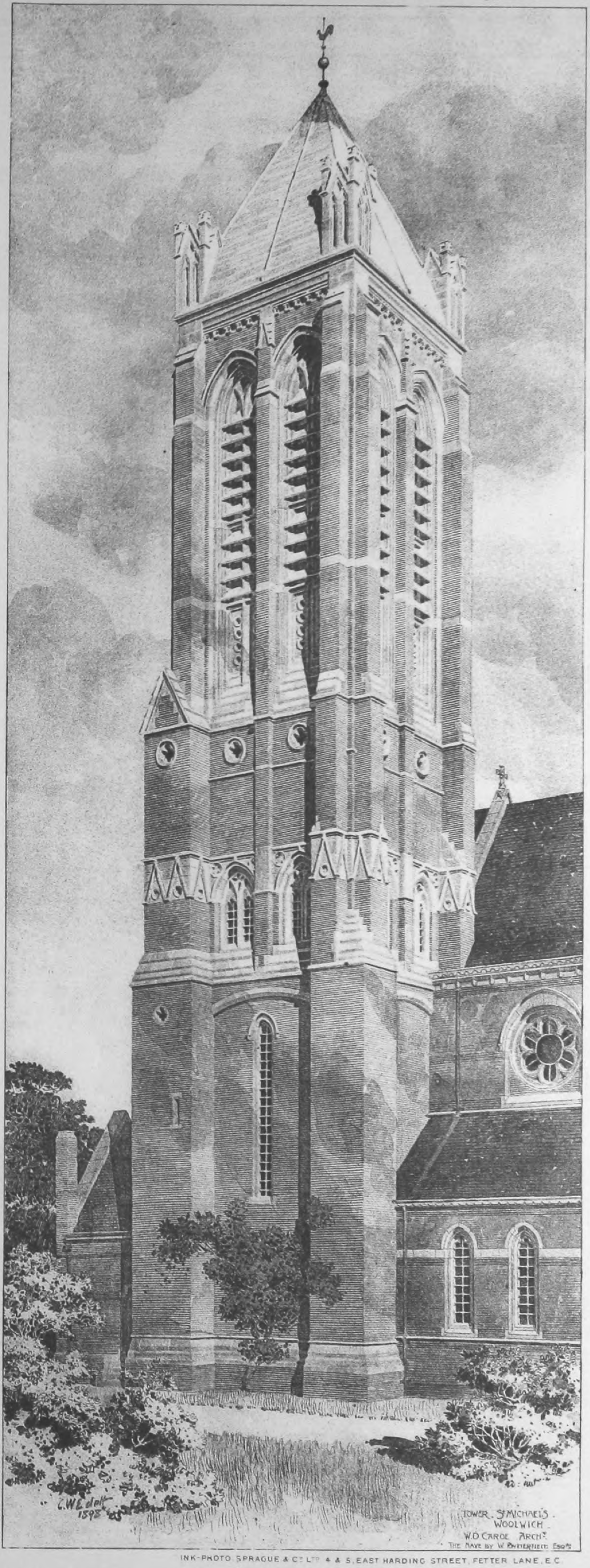
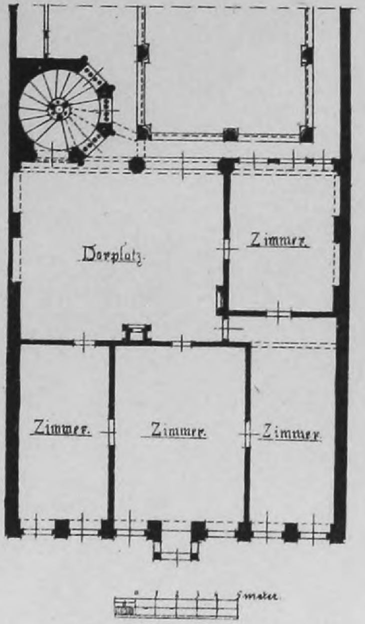
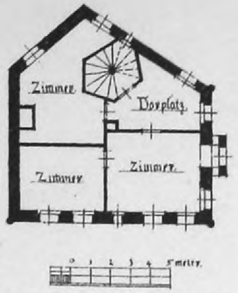


TOWER. ST MICHAEL'S.
WOOLWICH.
W.D. CAROE ARCHT.
THE NAVE BY W. BUTTERFIELD ESQRE

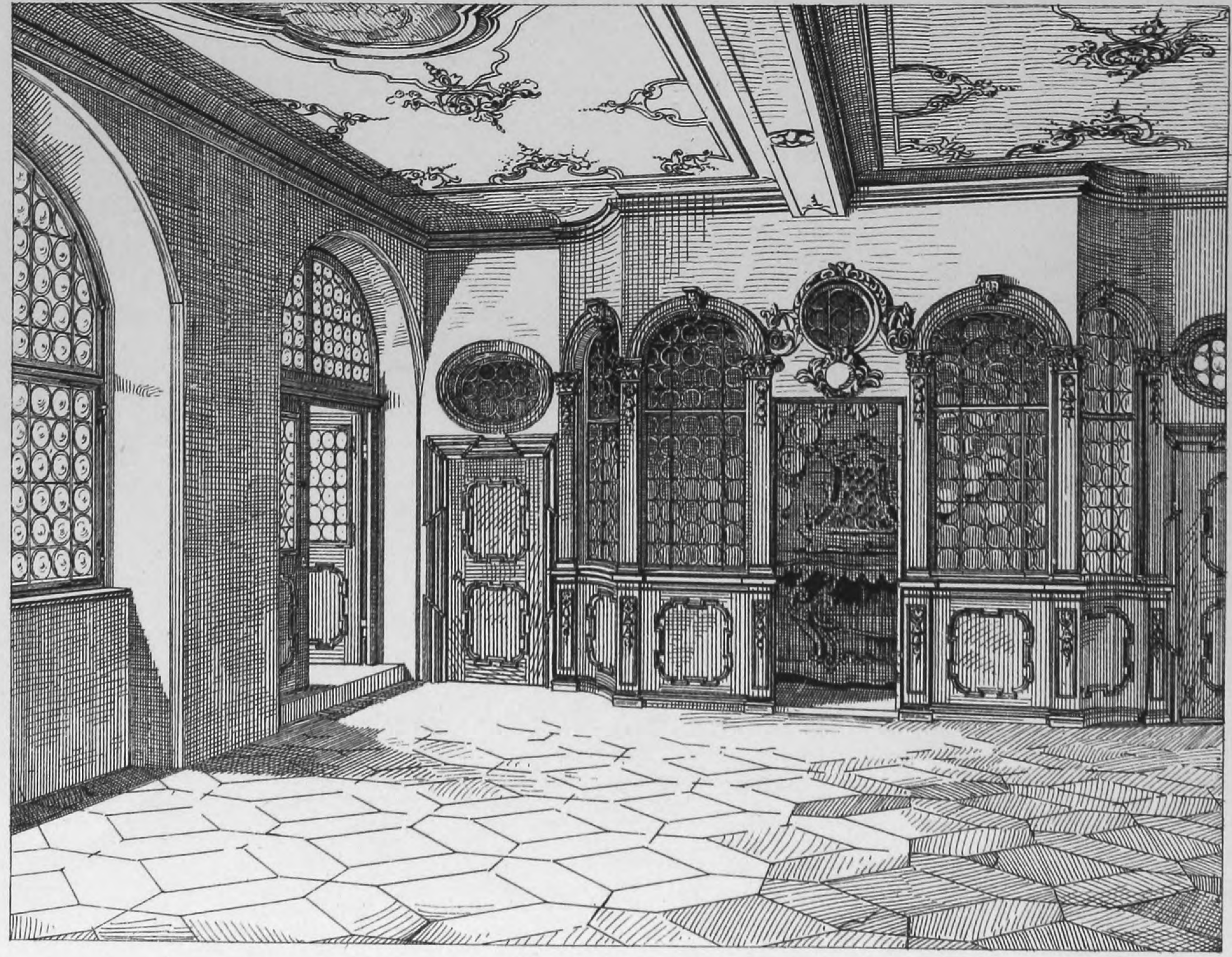
INK-PHOTO SPRAGUE & Co LTD 4 & 5, EAST HARDING STREET, FETTER LANE, E.C


Dorplatz
Zimmer
Zimmer
Zimmer
Zimmer
5 meter

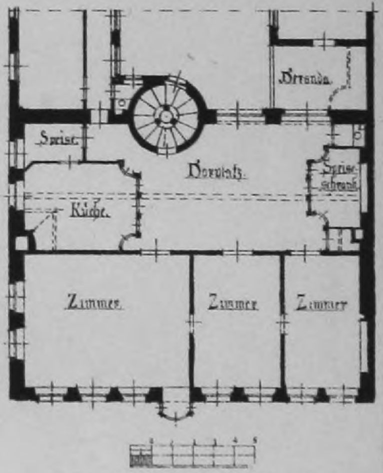
THE PELLER HOUSE:
PLAN OF SECOND FLOOR.


Zimmer
Dorplatz
Zimmer
Zimmer
0 1 2 3 4 5 meter

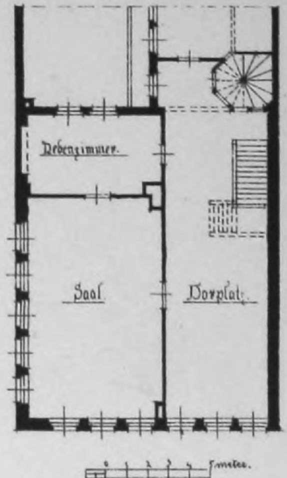
GROUND PLAN OF THE
TOPLER HOUSE.



HALL OF THE HEERDEGEN HOUSE.


Brenda
Speise
Dorplatz
Speise-schrank
Küche
Zimmer
Zimmer
Zimmer

THE HEERDEGEN HOUSE:
GROUND PLAN.


Nebenzimmer
Saal
Dorplatz
5 meter

THE FEMBA HOUSE:
GROUND PLAN.

PHOTO-LITHO. SPRAGUE & Cº Lᵀᴰ 4 & 5, EAST HARDING STREET, FETTER LANE E.C.

SOME OLD RENAISSANCE HOUSES IN NUREMBERG.—DRAWN BY HERR THEODORE EYRICH.

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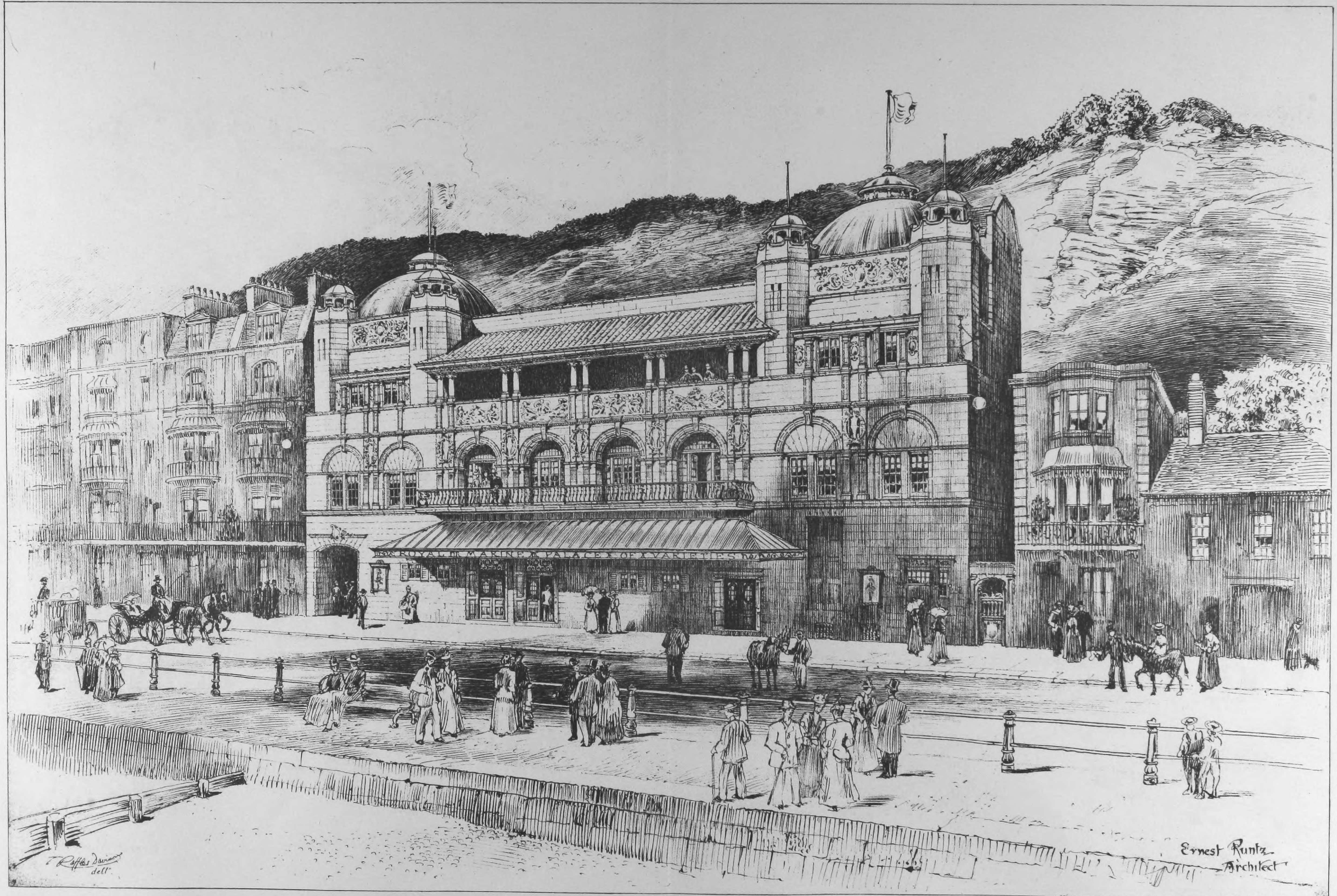
ROYAL MARINE PALACE OF VARIETIES
T. Raffles Davison
dell.
Ernest Runtz
Architect

INK-PHOTO. SPRAGUE & Co. LTD. 4 & 5, EAST HARDING STREET, FETTER LANE, E.C.

MARINE PALACE OF VARIETIES, HASTINGS.—MR. ERNEST RUNTZ, ARCHITECT

# The Builder.

VOL. LXXVI. No. 2933. APRIL 22, 1899.

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## *The Column and the Arch.*

THE book brought out by an American critic, Mr. W. P. P. Longfellow, under the above title,* is not a treatise on the statics of the column and the arch, but an addition to the number of essays which have been written on the fascinating subject of the changes in architectural style and language by which columnar architecture gradually became transmuted into arcuated architecture, and the influences which led to the change. The plan of the book is, however rather peculiar. It may be permissible, in tracing the direct history from column to arch, to pass over the Byzantine style on the ground that "it was a collateral development, and outside the cycle which, beginning with Greek architecture, returned upon itself in the Renaissance." Byzantine architecture is no doubt a kind of separate chapter, having its own beginning and ending apart from the great central progress of architecture in the Christian era. But we cannot regard it as equally reasonable to omit Gothic, and regard it as "a splendid growth that structurally was the completion of the Romanesque, but as a matter of form, was *hors de ligne*, like the Byzantine." On the contrary, not only was the complete Gothic a direct development from the Romanesque, but it affords the most striking phenomenon in the history of the column—of its gradual transformation from the classical shape to the long slender decorative wall shaft, the historical connexion of which with the classical column is nevertheless traceable step by step. And Gothic fills a far larger place in architectural history than Byzantine. To say that "the logical predecessor of the Renaissance was the Romanesque" is hardly the right way of putting it. It is a fact that the Renaissance began on Italian soil, and that on Italian soil the pointed Gothic never received anything but a partial and half-hearted development; but if the Gothic had been developed as fully in Italy as in France, that would not have prevented the Renaissance. The revival of the classic forms of which the principal remains were to be found on Italian soil, and which was brought about as much by literary and philosophic as by architectural influence, would have taken place just the same. And a book on the column and the arch, which omits the most complete and logical development of the arch which the history of architecture has produced, certainly falls somewhat short of the ground professedly covered by its title.

Nevertheless this is a very interesting book, as any book at all well written on such a subject could hardly fail to be. For the column and the arch represent, broadly speaking, the two main forms in which men have endeavoured to give æsthetic expression to the structures which they have erected on the face of the earth since the first dawn of civilisation. In fact, it is hardly possible for us to conceive of any structure which does not come, essentially if not apparently, under either post and lintel or arch construction. The late Professor Clifford thought there might conceivably be a world in which two and two made five. So an architectural theorist might imagine a world in which structures were roofed in on some other principle than either beam or arch; but he would be nearly as hard put to it to define the possible structure as Clifford would have been to define the possible conditions of his imaginary world of the higher mathematics, or of space in four dimensions. Everything comes either under the head of vertical support from below or resistance to pressure against the sides. And when we think of the first beginning of the column—the mere wooden prop, or the stone pier left in a rock-cut cavern, the refinements of design into which it has been shaped form one of the most remarkable examples of the shaping power applied by man—"the most plastic little creature on the planet," as Carlyle said, to give interest and expression to things originally of mere utility. There is, however, an additional interest in architectural history derived from the fact of the illogical mingling of the two methods, the column and the arch, in one style. This, if we come to think of it, is one of the most curious and picturesque facts in the history of style. If we could catch a highly civilised people who had never seen a column, and set them to building arched construction, we might then have arrived at an arched style pure and simple, with no trace of the æsthetic use of the column. The Byzantine architects came nearest to it; in some of their smaller and plainer structures they realised it, in fact; but in the greater and more ornate ones they could not shake off the Grecian column; and in the complete pointed Gothic the Grecian column is still there, disguised as the shaft and cap. And all this indirectly resulted from the fact that the Romans were an uninventive race artistically, and though they commenced construction with the arch, the Greek order had got upon their minds; they were accustomed to regard it as the symbol of architectural style, and mingled its æsthetic semblance with the real arched construction. It was totally illogical, and in a good many Roman buildings it is so palpably a pretence as to be annoying. Yet this irregular alliance has rendered architecture since the Roman era much more interesting and picturesque than it would probably otherwise have been. But for it, we should have had neither the Romanesque nor the Gothic styles.

In dealing with the earliest known column, that of Egypt, the author emphasises a point in regard to it which has not, as far as we remember, been put in quite the same way before. Every one is familiar with the peculiar method of connexion between the Egyptian column and lintel, by means of the plain cubical die on the top of the capital, on which the lintel rests. But Mr. Longfellow suggests that the interposition of this block puts the Egyptian capital in a different category from all other capitals in architecture, which expand under the lintel, as it to afford a better foundation for it and to give apparent strength to the junction of column and lintel. The Egyptian block, which occupies the position of the abacus in the Greek column, instead of expanding over the column, recedes, and is in fact reduced to the thickness of the lintel; the abacus being in some examples even less than the width of the column. The capital is thus purely ornamental, its expansion has not even the appearance of having a practical object. Considering that the spreading Egyptian capital was undoubtedly the origin or suggestion of the Corinthian capital, which appears as decoratively enlarged to carry the lintel better, it is curious to consider that the original form should have no such function. What is the explanation? The author finds it in the fact that the Egyptians were obviously a flower-loving people, making great use of flower forms in all their decorations, and the lotus capital was simply a decoration, and not a decorative treatment of a constructional feature. From that point of view the die on the top may be regarded as intended to keep the ornament out of harm's way; to prevent it bearing on the projecting leafage of the capital and possibly cracking it. The painted representations of columns give at all events no better explanation of the origin of this unusual feature. As the author observes, "the period of immaturity still eludes us." It is a rather curious omission in this Egyptian chapter, that not a word is said as to the plain sixteen-sided columns at Beni-hassan and Deir el Bahari.

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* "The Column and the Arch; Essays on Architectural History." With Illustrations. By P. P. Longfellow. Sampson Low, Marston & Co.

The next chapter bears the title "Græco-Roman Architecture," as representative of the view here suggested, that Greek and Roman architecture are incorrectly or unnecessarily classified, in the ordinary nomenclature, as two styles; that the Roman was only a continued development or evolution from the Greek. As far as we regard the Order alone this is true; but the combination of the arch with the order puts Roman architecture in a different category from Greek in that respect. The distinguishing characteristics, however of Greek and Roman architecture are very well discriminated. The peculiar conservatism and finish of Greek architecture are well described, in contrast with modern practice:—

> "The oldest temple at Selinus and the Parthenon at Athens were perhaps two hundred and fifty years apart, and the builders of one had probably never seen the other, yet they do not differ so much in their ordinance as the American carpenter's church differs from the city original which he fancies he is faithfully copying. . . . To an American who may have seen four or five styles adopted and dismissed in succession, as fashion after fashion has spread over his country, and innumerable forms of buildings devised in each, the fidelity with which the Greeks clung to their type may seem impossible. They sacrificed original invention, consciously or not, which we value above everything else; but in exchange for it they secured perfection, for which we unfortunately do not care."

Perhaps one influence which led to this conservatism and consequent perfecting of a type was the religious one. With the Greeks the temples were almost the only architecture worth counting. The theatres, hollowed in a hill-side, could hardly be called architecture; the houses were probably architecturally insignificant; architecture received its real development in the temple alone. Mr. Herbert Spencer has told us that the primitive architect was probably the priest, as the person who alone knew the will of the deity as to the design and construction of his house; and it seems at all events not improbable, especially in view of some of the utterances of Vitruvius (if there is still a Vitruvius), that the special form of the Doric temple was considered as a sacred one, and not to be departed from, on ritualistic grounds; hence the architects were confined to perfecting it in detail without departing materially from the established form.

Mr. Longfellow has some good remarks on the Romans and their relation to architecture. He raises the question whether there was really a Roman architecture made by the Roman race, and suggests the negative; it was architecture carried out by Greek hands at the bidding of the Roman building-owner; a view for which there is a good deal to be said. The real Romans as we see them in history were, he thinks, "singularly like the English of the nineteenth century" (a comparison which has been made before by English writers):—

> "Masterful in their ways, confident in their power and natural right to rule the world, they were a vigorous, hard headed, practical people, with a great gift for administration and great political sagacity. As they succeeded they grew grasping, as is the natural way of such people, and when they grew rich they grew ostentatious and vainglorious. By the time they had conquered Greece, they had become sufficiently luxurious to covet art as the *nouveau riche* of to-day covets it; all through the second century before Christ the portable works of art in Greece were gathered into Rome, as Napoleon brought his plunder of pictures and statues from Italy, and apparently from the same motives. They pursued art because it tended to magnificence, and literature because they thought it due to themselves. But they were too practical to become artistic or literary, too gifted for command to do any work but that of governing."

We presume the author forgot in the course of the sentence the comparison with which he started, as the sentence about literature can hardly be taken to apply to England, any more than the example of Napoleon in plundering conquered countries of their works of art, which we have never done; we have bought them at a long price. In other respects the parallel is good enough, though we have not had Greeks to do our art-work for us. The author's conclusion is that the art of the Romans is that of the Roman Empire, not that of the Roman race. "Doubtless the men of Rome themselves were responsible in great degree for the rapid development of architecture under their empire. They probably influenced it as American men of business in our time influence the new architecture of our cities. They were the clients, exacting and despotic clients, we may be sure; their demand must have called out the supply, and determined its character." This is a view worth considering; but it does not quite account for the fact of the remarkable coarseness of Roman detail and mouldings compared with Greek—a point of difference which the author omits to mention. This characteristic seems rather to point to the imitation of Greek detail by a race of inferior refinement of perception; though there can be little doubt that Greek artists were considerably employed by the Romans, but to what extent we have no means of knowing. It may have been likely enough, too, that the tastes of Greek artists themselves would be gradually deteriorated under the influence of Rome.

Mr. Longfellow is nevertheless rather disposed to overrate Roman architecture and to think that it has been too much criticised for want of sincerity, and that the modern doctrine of sincerity in building, "of the faithful correspondence of decoration and appearance to the reality of construction," finds little support from either Greek or Roman. This is certainly an exaggeration as regards Greek architecture, which was quite as sincere as Gothic. The author adduces the case of the joints of the columns, which only really bore upon each other for a space round the rim of the drum, "and all the inner surface is cut away roughly so as to escape contact and leave the greater part of the joint hollow and open." But this was at all events the best way to prevent any chance of rocking of the drums of the columns on each other, and it would be a serious practical error to think that, because the drums only rested completely on their outer portions, they were no stronger than a *hollow* marble column with that degree of contact surface, or that the inner portion of the drum was doing no work. And when he compares this to the concrete filling of Roman walls, he forgets the rubble filling and ashlar skins of many a Gothic pier of that Mediæval style which he has just lauded for its sincerity. As to the statement that the spreading abacus of the Doric column is only a pretence, and that the weight of the entablature is taken by a shoulder, or bench, a fraction of an inch high, "a miniature of the die set visible on the Egyptian capital," we think this should have been supported by some evidence in photography; if this is true, it is surprising that so careful an observer as Mr. Penrose says nothing of it. And the statement that this is the *scamillus* of Vitruvius is absurd—the author cannot have looked properly at the passage in Vitruvius, which indubitably refers to the base and not to the top of the column,* and the word is accompanied by the adjective *impar*. Mr. Penrose's conclusion, that the *scamilli impares* were the uneven lowest drums of the columns—uneven because of the curve of the step and the inclination of the whole column inwards, is to our thinking satisfactory, not to say incontrovertible. It is perhaps because it is his that the author takes another view; as we observe there is a tendency among American archæologists to differ from anything that has been promulgated by English scholars. In architecture, the Americans swear by the French; in archæology, by the Germans.

The account of the early development of the Romanesque style in Rome is well written. The author observes that the Romans even after Constantine undoubtedly preferred the column and order, and that when they first lined the naves of their churches with arcades instead of colonnades, economy and ease of construction were their determining motives; "columns could be stolen from distant towns, but it was not so easy to bring whole orders." Coming to the later and true Romanesque period, we notice the remark on the uniformity of scale in the colonnades, the columns of the arcades generally averaging from 10 to 12 ft. apart in all instances. "We cannot say what, in the consciousness of the builders, gave the scale to all these churches —whether it was the convenience of constructing the arches, which masons of small skill would not willingly build larger than these, or the size of the columns which were at their disposal, or a combination of the two." We should surmise that the size of the columns was the leading factor; in other words, that there was a crude feeling for scale still surviving. We quite concur in the opinion expressed, on a later page, that the cruciform type of church was not Early Christian; "in the Roman type the transept was not two arms but one body; the nave did not pass through it, but abutted against it, as the staff of a crutch abuts against the shoulderpiece;" a good point of discrimination.

---

* We find for instance—"His" (*i.e.*, the scamilli) "perfectis in suis locis, spiræ collocentur"; such an expression obviously could not refer to the top member of a column; and the word *scamillus* (*i.e.*, "foot-stool") in itself implies something on the ground.

The chapters on Romanesque architecture are in fact the best portion of the book. But we like and agree in the main with what is said as to the use of the orders in Renaissance architecture, and also in the summing up of the subject at the close of the chapter VII. ("The Renaissance"), and the recognition of the artistic importance of the Renaissance, so long denied during the present century. "Artificial as it was, it could hardly have succeeded as it did in a living and practical art like architecture, if it had nothad the impulse of the world be hindit."

St. Peter's, that building of never-ending interest, is the subject of a separate final chapter, calculated to be very useful to the general reader who is interested in architecture, as it is both critically sound and generally intelligible. We notice the suggestion that the employment of the sixteen concealed masonry ribs connecting the inner and outer shells of the dome is really a construction Gothic rather than Classic, as collecting the main thrust on sixteen points instead of having it distributed over the whole base of the dome. There is no harm in saying so; it depends on how you look at it; the fact hardly alters the essentially anti-Gothic character of the design.

We recommend this book to the attention rather perhaps of general readers interested in architecture than of architects; who, however, will find it an interesting book to read, though they will learn nothing from it, while the general reader may. As before observed, the omission of Gothic from the scheme is a curious contradiction to the assumption of the title; but as far as it goes it is a thoughtful book. We may conclude with the following reflection on the respective merits of the column and the arch, with which we are disposed to agree:—

> "It is not easy to decide, nor need we, which of the two systems, that of the beam or that of the arch, lends itself most to great architectural effects. But for some reason or other a column, if it be large enough, carries a greater impression of stateliness than any other architectural form. This may be due to its uprightness and its isolation, which give it an air of immovable supremacy, like that of a tall man towering above a crowd. At any rate, I suspect that the most majestic architecture that has ever been built, making due allowance for mere scale, has been columnar."

We must regret the absence of an index; an omission which ought not to occur in a modern book.

◆

## THE REBUILDING OF FISHMONGERS' HALL.

IN connexion with the visit of the Architectural Association to the Fishmongers' Hall last Saturday it may be of interest to recall the following facts as to its rebuilding and as to the interesting connexion of Sir Gilbert Scott with its erection in 1832.

Taking the latter first, Sir Gilbert Scott in his autobiography writes—

> "Some time in 1832 I entered the office of my very excellent friend, Mr. Henry Roberts, who had recently obtained by competition the appointment of architect to the new Fishmongers' Hall at the foot of London Bridge.
>
> Mr. Roberts had, subsequently to his original period of pupilage, been for a considerable time in the office of Sir Robert Smirke, whose tastes, modes of construction, and method of making working drawings, he had thoroughly imbibed. He had subsequently made the lengthened continental tour customary in those days, and had not, I think, very long been in practice since his return. He was in independent circumstances, and was a gentlemanly, religious, precise, and quiet man.
>
> I was the only clerk in the office at the time, though he subsequently took a pupil, so that I had the advantage of making all the working drawings of this considerable public building from the foundation to the finish; and of helping in measuring up the extras and omissions as well as of constantly seeing the work during its progress.
>
> The engagement lasted two years, and though most beneficial to me, it seems almost a blank in my memory, from its even and uneventful character."

Following on this interesting record of the great Gothic revival architect's connexion with such a prim Greek revival building, should be given this curious passage of the inner history of the rebuilding of the Hall, which is revealed in another autobiography, that of Sir John Rennie. It appears from his account that old Fishmongers' Hall need not have been pulled down at all. It was a question of the approaches to new London Bridge, which were to be dealt with by a Bill brought into Parliament in 1829. There was a strong opposition, which the Duke of Wellington met with a firm decision to carry through the Bill. Sir John Rennie, the engineer, was made principal witness in favour of the Bill. He says:—

> "The brunt of the battle fell upon me; I was the leading witness and had to establish the whole case. I never felt more nervous in my life; I was to be prepared upon all points to defend everybody else's errors as well as my own. I knew there were several weak points, and though I had an excellent case upon the whole, I still felt the greatest difficulty about it; I knew also perfectly well, that if I broke down, my career as an engineer was ruined for ever, for the Government had pinned their faith upon me." He adds that Mr. W. Montague, the Surveyor to the City, "had, when the first Bill of 1821 was carried, made the surveys of the property to be taken for the approaches on both sides of the bridge, which was confined to 180 ft. above the old bridge—this limit ought to have been taken in a direct line, at right angles to the old bridge; but unfortunately it was taken according to the line of the shore, which near the old bridge receded considerably, whilst the old Fishmongers' Hall, projected beyond it, making the direct line, if taken as it ought to have been, at right angles to the old bridge, 20 ft. longer than if measured according to the line of the shore. This difference of 20 ft. rendered it necessary that old Fishmongers' Hall should be removed."

We are then told of the negotiation to purchase, and that "the Company did not wish to build a new hall, as the existing one answered their purpose very well," but not wishing, however, to be obstructive to the new bridge and approaches they sold, and so the new Hall came to be built. The opposition to the Bill did not discover this inconvenient error, which would have been extremely useful to their case, and one may certainly regret the apparent sacrifice of the older structure to the necessities of a Parliamentary situation and of engineering prestige.

Cockerell, being a brother-in-law of Sir John Rennie, was consulted by him as to the architecture of the approaches, but unfortunately the Committee rejected his designs; he tells us—

> "The Committee considered them to be too ornamental and costly, although they were as plain and simple as these important approaches rendered necessary. The Committee having rejected them, referred the subject to the late Sir Robert Smirke, then one of the Crown architects, and he designed the present buildings on both sides of the bridge, as far as King William-street on the north, and the old Town Hall of Southwark on the south; and certainly, with all due respect to my late friend, Sir Robert Smirke, a more unworthy set of buildings was never designed. Thus not only has a rare opportunity of making handsome and appropriate buildings to one of the greatest thoroughfares of the world been lost, but the buildings themselves are so low and badly built that the advantages of the ground, which it must have been foreseen were capable of almost unlimited development as regards rental, have been in a great measure thrown away."

This severe judgment of the engineer of the bridge has a distinct interest, and is probably one in which most architects will concur. It is certainly regrettable that Cockerell's great abilities just missed being exhibited on such a splendid scale, and with such a unique opportunity. There is a modern lesson in the way in which this great engineer seems, as a matter of course, to have invited architectural advice in his schemes; nor is it the sole occasion related in his life on which he did so, and one can only suppose that more cordial relations between engineers and architects existed in those days. To this, in fact, not a few of the earlier great engineering works bear witness, having a considerable impress of the current architectural ideas of the day.

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## NOTES.

**The Small Houses Bill.** THE Bill to enable the owners of small houses to buy the freehold of these houses by means of loans from Local Authorities was read a second time on Tuesday. We have already pointed out that this measure is a mere piece of electioneering. The Opposition, as much as the Government are in favour of its principle, for the very good reason that it is a measure which sounds so very friendly to the working man. It can do very little for him. A building society can now help him to buy his house if he wishes. But the increased ease and cheapness of communication between the great centres of population makes labour more inclined to move about than at any previous time. Moreover, after all is there any great advantage to a poor man in being the owner of a poor little house? We are inclined to think he is better off if he can move from house to house as he wishes. However, this Bill is now referred to a Grand Committee, and will, we suppose, become law this session.

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**The Building Trades Exhibition.** THE Building Trades Exhibition is to be opened at noon on Wednesday, at the Agricultural Hall, by the President of the Institute of Architects, supported by a number of distinguished men. It is promised that the exhibition will be the best of its class that has been held, and there seems to have been every effort to render it so. It is divided into a General Section (in the Great Hall), an Electrical Section in the Smaller Hall, and a

Smoke Abatement Section, in the King Edward's Hall. There is also, as we have already mentioned, a special exhibit of Road Surveyors' work, which we presume is included under the heading of the general exhibition. We hope the exhibition will be a great success.

**The Kensington Fire.** THE fire at the Hyde Park Court Mansions seems to show that we have not as yet appreciated the risks of an outbreak in tall buildings. We firstly do not afford sufficient protection to the inmates in the form of exits; we do not think sufficiently of the rapid spread of fire up tall shafts; and, lastly, our Fire Brigade has not yet been equipped to meet such contingencies as a fire commencing some 80 ft. above pavement level. As to the question of exit, we desire to advocate the better arrangement and separation of staircases in buildings of this description; and in regard to the spread of fire we again would advocate a better isolation of the individual risks, and the protection of those terrible flues—the lifts. As for the Fire Brigade which worked so splendidly at the Hyde Park Mansions, we would only remind those in authority that even with lengthened fire escapes great difficulty will be experienced in attacking fires of this kind, and that the nimble hook ladder, which is used with such effect in the United States and on the Continent, might well be given a trial, whilst better arrangements for running hose rapidly to high levels will probably have to be provided by the owners of structures of this class.

**Edinburgh County Buildings Competition.** THE conditions of this competition have been forwarded to us officially. They are fairly drawn up, but considering that the problem is a complicated one, and that competitors are required to "state in detail the materials and nature of the work proposed, the construction, ventilating, lighting, heating and equipments," the time (June 27) is rather short, and ought to be extended. The conditions state that the County Council "will reserve to themselves the ultimate decision as to the selection of an architect from among the competitors. They will, however, appoint a neutral architect of standing as assessor, and will give the fullest consideration to his advice." If this latter promise is *bonâ fide* acted upon, we do not see that more can be demanded; but it would have been better if the assessor had been selected and his name given in the Conditions, so that intending competitors may judge whether he is one in whose judgment and fairness they would feel confidence.

**Sanitary State of Christchurch.** DR. ST. GEORGE MIVART'S Report to the Local Government Board on the Sanitary State of Christchurch shows that this important neighbourhood is in a most unsatisfactory condition, and apparently is saddled with a Town Council who are experts in the art of doing nothing. The general result of the Report is that a large number of the smaller houses are in a most unsatisfactory condition, with dilapidated walls floors and ceilings, ill-ventilated, and without proper means for draining off rain-water. More than half the water supply is from wells, public and private; of the latter the Inspector saw few that ought not to be closed. At the National Schools (380 children) there is no water supply but from pumps and wells belonging to adjacent cottages. One of these wells is described as 8 ft. deep, dry-steined and the sides covered with vegetable growth; at the bottom of it "broken pots, tins, and other domestic refuse in variety could be discerned. A number of frogs and toads, some alive and some dead, could also be seen in the water." There is no regular system of sewerage, though there are in the district about 4,100 yards of pipe sewer, of various lengths. From all these the sewage is discharged, untreated, into the Stour and Avon. The Report says—"It is a sufficient commentary upon the attitude of the Town Council with regard to the drainage of the district to record the admitted fact that they have never consulted an expert engineer with a view to the devising of some suitable scheme, but continue to plead that their district is a low-lying one, and therefore difficult to deal with, as an excuse for the continuance of the present system, if system it may be called."

**The Welsbach-Daylight Case.** ON the 15th inst. Mr. Justice Byrne delivered judgment in the case of the Welsbach Incandescent Gas Light Company, Limited, *v.* the Daylight Incandescent Mantle Company, Limited. The action was brought by the plaintiffs to restrain the Daylight Company from infringing the Welsbach patent of 1885, and the main contest turned upon the true meaning of the sentence in the specification, "and instead of oxide of lanthanum cerite earth containing no didymium and but little cerium may be employed." At the date of the patent the true value of a very small proportion of cerium in increasing the light-emitting power of a mantle was not understood, although it was known that a fairly large proportion of cerium was injurious. Mr. Justice Byrne is, however, of opinion that the sentence in the specification is not a warning against the use of cerium altogether, but merely a warning against much cerium, and shows at least that the inventor knew that a little cerium would do no harm. It is also held that the slight deviation in the method of making Daylight mantles from that of making Welsbach mantles is of too immaterial a character to entitle the defendants to say that they have not substantially adopted the Welsbach process. The Welsbach Company may be congratulated upon their success, for while most persons will agree with the latter part of the finding, many will continue to regard Welsbach's reference to a "little cerium" as a happy "fluke." It is worthy of note that the important patent in question dates back to the year 1885; we may, therefore, expect to see the market flooded next year with cheap mantles made under the protection of this expired patent. The Welsbach mantle of to-day is an improvement upon this early mantle, but its sale will not, we believe, remain unaffected by the inevitable competition of cheaper mantles.

**Glass Stone.** SOME interesting information concerning the substance known as glass stone (Garchey's process) has recently been published by J. Henrivaux. This new building material is now being manufactured on a large scale, and the results of some official tests show that it will resist a pressure of 2,023 kilos per square centimètre, whereas granite is crushed under a pressure of 650 kilos. It is also found to be unaffected by frost, and to resist attrition better than Comblanchien building stone or St. Raphael porphyry. Some of the advantages claimed for glass stone as a building material are its cheapness, hardness, resistance to atmospheric influences, and its non-porosity. It is also claimed that it is suitable for street-paving, as it is easy to clean, capable of withstanding the vibration of traffic, and does not (it is said) become slippery. Having regard to the fatal effects of the inhalation of even a very small quantity of glass powder, we should recommend very careful examination of the material under the influence of incessant friction before permitting it to be employed as a paving material.

**The Electric Arc.** AT the Institution of Electrical Engineers last week a very interesting discussion took place on Mrs. Ayrton's paper. Professor Fleming said that although the electric arc had now been known for the greater part of a hundred years, yet our knowledge of it had advanced very little. The phenomena presented were those of the flow of current through a column of vapour, and in his opinion they were very similar to what happened in the electrolysis of liquids. It seemed to him that the carbon molecule was split up into two ions, the negative ion having a much greater velocity than the positive ion. There was, therefore, an accumulation of negative carbon ions forming a cushion on the positive pole, the crater of which was formed by the bombardment of the ions. Starting with this hypothesis, it was easy to show that many of the curious experimental results observed by Mrs. Ayrton followed easily by considering the chemical actions that took place in hissing arcs. Captain Abney stated that many years ago, when pursuing spectroscopic research with the aid of an arc lamp, he had observed most of the phenomena which are now exciting such interest. In particular, he had observed that just before hissing commenced the arc began to rotate very rapidly. He made the suggestion that if the various kinds of electric arc were examined and mapped spectroscopically, a great deal could be learned that could be found out by no other means. It was interesting to learn from Captain Abney that he had anticipated Mr. Trotter's discovery of the rotation of the electric arc by many years, and the modesty with which he made the claim now was only equalled by the magnanimity with which he allowed Mr. Trotter to claim all the credit at the Royal Society meeting some eight years ago.

**A Memorial to Sir Thomas Browne.** IT is proposed to erect, at an estimated cost of about 1,000*l*., a statue to the author of "Religio Medici" and "Hydriataphia" (or "Urn Burial") in Norwich, where he practised as a physician during forty-six years, having removed thither from Shipden Hall, near Halifax, in 1636. A suggested site for the statue is the Haymarket, being near the site of his house, now used as banking premises, and distinguished by a memorial tablet. Sir Thomas Browne was buried in the church of St. Peter Mancroft, where his remains were discovered some years ago on the digging of a grave in the chancel.

**Designs for Wall Hangings.**

NOWADAYS it is a common practice for architects to pay as much attention to the interior decoration of their houses as to the exterior, even designing wall papers, hangings, and furniture. The result in some cases has been very successful, giving a harmonious whole instead of the usual collection of tradesmen's ideas deposited in an incongrous way in an otherwise artistic house. Messrs. Hayward & Son are holding an exhibition of wall papers and other mural hangings at their show rooms in Regent-street, all of which are designed by architects or men well known for their decorative work. A special feature of the exhibition is the jute hangings, dyed and stencilled, or stencilled on the natural coloured jute. The first exhibit we saw was a holly hock design by Mr. Belcher—a frieze based on vertical lines, the stalks at intervals running under the picture-rail to the skirting below, forming plain spans between for hanging pictures or for door openings. Mr. Ernest George has designed a bold all-over pattern for a billiard-room, the stencil in red on the natural coloured jute background. This design is, however, somewhat too hard and geometrical in line even for a billiard-room. Mr. Beresford Pite and Mr. Gwatkin have done some striking designs for this method of decoration. The method produces the effect of tapestry and looks extremely well in all varities of rich, gorgeous, or sombre colouring. There are also many new friezes and papers, both block printed and done by hand. Mr. Clement Heaton's embossed papers (more sanitary than the jute coverings, as they are washable and will not hold the dust) have somewhat the appearance of Japanese work, without the limitations of Japanese colouring. The outline only is embossed, and thus is capable of a rich and varied effect, without the cheap effect that most embossed papers have.

**The Architectural Association.**

WE are glad to see that the Architectural Association has invited Mr. Fellowes Prynne to take a second year of office as their President. Mr. Prynne has made an admirable President, at once friendly and pleasant in his manner and at the same time well able to keep order in a meeting and do all that a President can do towards making it a success. The list of the other officers of the Association for the new session is given in another column.

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## SALFORD CEMETERY COMPETITION.

THERE is one satisfactory feature about this competition, and that is that the instructions explicitly state that, "provided the sanction of the Home Secretary is obtained to this [*i.e.*, the Agecroft] site being acquired for cemetery purposes, it is intended to appoint the architect of the premiated design to carry out the work;" and a second satisfactory feature is that the premium does not merge in the usual 5 per cent. commission. Little else about it can be considered satisfactory, either by the promoters or the competitors. There must be something radically wrong in the promotion of a competition for buildings of this character, if, notwithstanding the artistic temptations, only twenty-nine designers are found willing to compete, and many of these merely pupils or young assistants. Architects do not now rush into competitions with such light hearts as of yore, and promoters will eventually learn that architects of standing will not compete, no matter how tempting the nature of the proposed building may be, unless the instructions are satisfactory and a suitable professional assessor appointed.

In this case the original and the revised instructions contained no mention of an assessor. The question was asked, and on May 26, 1898, the competitors were informed that "the committee have not yet decided to appoint an assessor;" additional replies were sent out on July 1, 1898, and apparently the matter had not then been deemed worthy of the committee's consideration, as no further information was given. This one defect alone is sufficient to account for the generally mediocre character of the designs submitted; capable and busy architects are not likely to compete when there is no assurance that their designs will be judged by an architect in whom they have confidence. If it is a question of a warehouse or factory, where utility is of prime importance, "practical men" may perhaps be capable of deciding; but in a competition of this sort, where artistic quality is the chief desideratum, only a man well-versed in architecture can adjudicate satisfactorily. We were informed at the Town Hall, where the designs are exhibited, that, notwithstanding the "not yet" in the reply of July 1, no assessor was ever appointed.

But the lack of an assessor is not the only defect. No limit of cost was given in the instructions, nor were the competitors required to state the cubical contents of their proposed buildings, so that their estimates could be conveniently checked. The result is that some of the designs are grievously underestimated, and one of the best designs is overestimated to such an extent as to put it out of court. When estimates varying from about 7,000*l*. to 23,400*l*. are submitted for buildings containing the same accommodation, the veriest tyro must know that something is wrong somewhere, especially when he finds that some of the lowest estimates are for buildings of the most costly character. Then, again, there was no necessity for all the "ground plans" to be drawn to the scale of 4 ft. to an inch; perspectives might be submitted or not at the option of the competitors; the geometrical drawings might be finished in black and white, monotint, or colours, and mounted on stretchers or cardboard, or framed or left unmounted, just as the competitor might choose. The result is of course confusing, and the pretty drawing is preferred to the good design.

Design No. 1, by Mr. Henry Lord, of Manchester, has gained the second premium, thanks to the three large and effective perspectives in which the proposed buildings are shown. The perspectives are in sepia, framed and glazed, and are the most showy drawings in the room. In the Church of England chapel, the mortuary, which has evidently proved the crux of the problem to the competitors, is placed at the extreme east of the building; in the Nonconformist chapel it is on the north side; and in the Roman Catholic chapel it is between the altar and the body of the chapel. The buildings are on the whole well planned, with the exception of the urinals; these, although shown on the plans, are discreetly omitted from the elevations, and no wonder, for that belonging to the Church of England chapel is a central feature of the east end, and would, if shown on the elevation, have furnished a curious contrast to the large traceried east window above it. The chapels are Early Perpendicular in style, with stone walls and high-pitched red-tiled roofs, and each chapel has a tower and spire, that for the Roman Catholic chapel being of stone. The required accommodation is given, but one water-closet for men and two for women are not sufficient for a cemetery where, according to the official "replies," the Burial Service may be "read over several coffins" (sometimes fifteen or twenty) "simultaneously." No lavatories or other conveniences are provided for the priests, clergy, or ministers. It is a fairly good design, but expensive and without distinction.

Design No. 2, by Mr. F. W. Dixon, of Manchester, suffers from the lack of perspectives. The style is Perpendicular, somewhat freely treated, the walls being of brick with stone dressings. The chapels are well planned; in those for Churchmen and Nonconformists the mortuaries are on the north side, while in the Roman Catholic chapel it is placed behind the altar. Each vestry has a lavatory adjoining it. The west windows are well designed, but the enclosing arches are too shallow to be effective. Each chapel has a tower with low roof. The lodge and offices are well arranged, and the conveniences sufficient. This design is considerably above the average in merit. The estimated cost is 7,860*l*.

Mr. H. D. Pritchett (Darlington) is the author of the third set of drawings, which are in black and white. They are carefully done, but the effect is marred by the great black masses which fill the arches of the porches. Even if the windows must be blacked, there was no necessity to treat the arches in the same way, as there is an unobstructed view through them, the porches in which they occur being arranged so that carriages can drive through. Mr. Pritchett is the only competitor who has adopted this feature, the *porte cochère*, but the effect is rather weak, as in each case it is surmounted by a stone tower and spire. The style adopted is Late Decorated, and the estimated cost, notwithstanding the stone spires, is only 7,450*l*.

Design No. 4, by Mr. R. T. Beckett (Liverpool), is shown in nine drawings. The elevations are simple; no towers are included, but the Church of England chapel has an octagonal turret. The wood ventilators on the other chapels would have been better omitted, and the scratchy line perspective has doubtless done the competitor more harm than good. Although simple, this design is estimated to cost 8,850*l*.

Of Design No. 5 the less said the better. It has flint-faced walls, vermilion roofs, spiky gables, fly-wheel tracery, and elongated pinnacles.

Design No. 6, by Mr. R. J. Beale (Westminster), shows some variety; the Roman Catholic chapel is in the Norman style, the Nonconformist chapel is in the transitional stage from Early English to Decorated, and the Church of England chapel Perpendicular; but, taken as a whole, the designs do not rise above mediocrity.

Mr. J. G. Stephenson (London) has submitted a design (No. 7) much more worthy of note, although the planning of the mortuaries leaves something to be desired, and the chapels are disfigured by the heavy coping to the gables. The lodge, offices, and gateways are the best part of the design. The two buildings are placed on the right and left of the gateways, and are designed to correspond, each having a semi-octagonal bay rising into a squat circular tower with pilasters above the angles below, and finished with a low dome with lofty finial. Estimated cost 8,875*l*.

Design No. 8 is by Mr. J. P. Wilkinson (Manchester). The lodge and offices are "Gothic" of wretched type, but the chapels are better, although an elevation with 6 ft. 6 in. of vertical height for the wall and 29 ft. for the roof cannot be considered either well-proportioned or beautiful. Estimated cost, 11,655*l*.

No. 9, by Mr. G. B. Lewis (Hackney), is not without good points. The mortuaries are all planned at the east end, giving length to the chapels, which adds considerably to the external appearance. The tracery is good, if not particularly distinguished. Stone walls are shown, and green-slated roofs. The lodge and offices are somewhat wastefully arranged, but the drains are well planned, which is more than can be said of those shown by some of the other competitors. Notwithstanding the simplicity of the plans and elevations of the chapels, this design is estimated to cost 10,008*l*.

No. 10 exhibits a very poor type of Gothic with the baldest of bald plate tracery, and a Classic gateway-pile, the heaviness of which Vanbrugh himself might have envied. Mr. E. C. Ball's design (No. 11) is better. The chapels are all of Early English character, but of a heavy type; the sepia perspective of the Church of England chapel is well drawn. In the next design the offices are adorned with a clock-tower, the lodge is extravagantly planned, and the gateways are deplorable.

Thirteen is by many sane persons considered to be an unlucky number, and we fear that Mr. J. B. Poyser, of Nottingham, to whose design this number has been allotted, will sympathise with these persons to the end of his days, for his design is one of the best in the room, and ought certainly to have been premiated. Unfortunately, he estimated it to cost no less than 23,400*l*., which is nearly double the estimated cost of any other design submitted. We had no opportunity of cubing this and the premiated designs, but as Mr. Poyser's chapels are simply planned, and without either towers or turrets, while the first premiated design has one huge tower and the second and third premiated designs have each three towers, we cannot but think that it would be less costly than any of them. Mr. Poyser's drawings are all to the 4-ft. scale, and are nine in number, but it was an additional disadvantage to him that no perspective was included. The style adopted is a late type of Gothic with low-pitched roofs, and the detail is excellent. The drawings are in brown lines with sepia washes on the roofs and windows, and are very carefully and cleverly done. The Church of England chapel and the gateways are, perhaps, the most pleasing parts of the design, but all is excellent, and, to use a current expression, it is hard lines for Mr. Poyser that his design has not been adopted.

Design No. 14 is more curious than beautiful, with its semi-circular gables, lofty clearstories, and attenuated buttresses. Messrs. Martin & Davis (Darlington) are the authors of the next set of drawings (No. 15), which include a frame of six sketchy perspectives, apparently in ordinary writing ink. An attempt has been made to give the Nonconformist chapel a quasi-Classic appearance, but it is not very successful, and the four slender slated pinnacles, one at each angle of the Roman Catholic chapel, are far from pleasing. Estimated cost, 11,950*l*.

Design No. 16, by Mr. Alfred H. Mills (Manchester), has been awarded the third premium. The plans of the Church of England and Nonconformist chapels are, allowing for the difference in size, practically identical, the only important variation being that the former has a semi-octagonal apse, and the latter a semi-circular one. Each has the mortuary on the south side, the vestry at the north-east corner, and a porch and tower at the north-west corner. The Roman Catholic chapel has the mortuary between the altar-space and the area of the chapel, but this also has the tower at the north-west corner. The geometrical drawings are artistically coloured, the elevations being set off by trees and skies, and the sections of the Roman Catholic and Church of England chapels are relieved with wall-paintings cleverly indicated. The style adopted is early Perpendicular, the towers having lofty slated spires. The west window of the Church of England has seven lights, with the outer light on each side separated from the others by a buttressed mullion, and all the lights enclosed in a deeply-recessed arch. Four small perspectives are sent, mounted on one stretcher. This is certainly a good set of drawings.

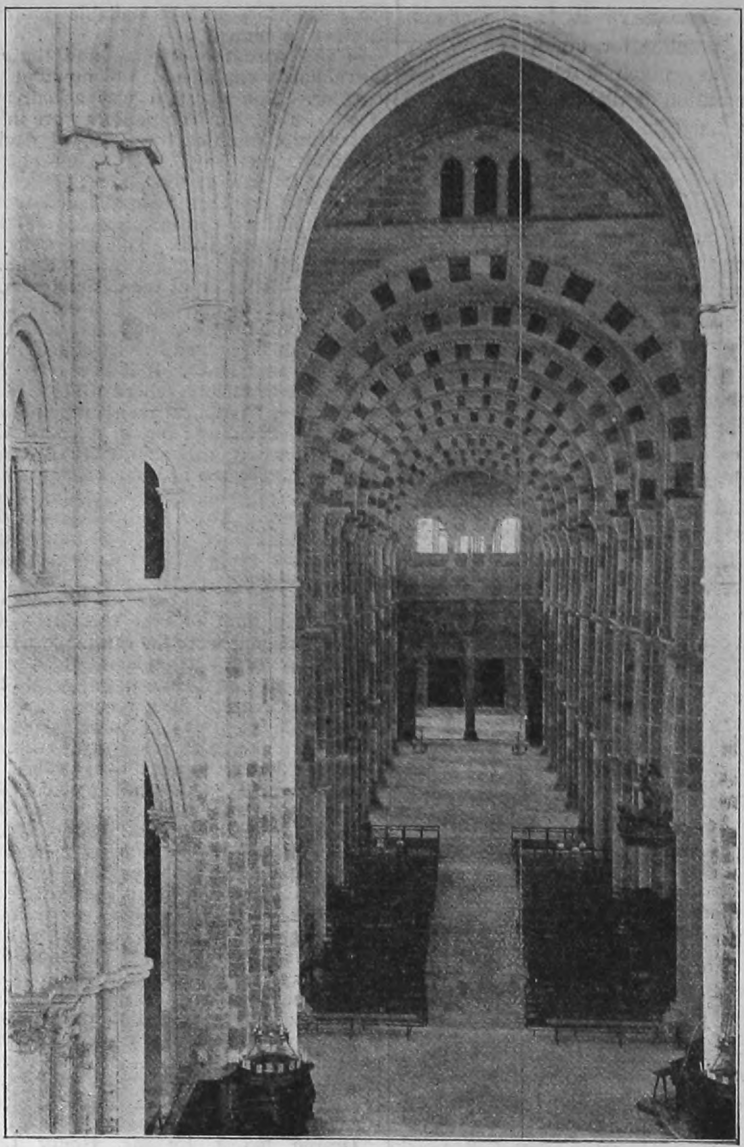
The next design is very poor, and we will pass on to No. 18 by Messrs. Hall, Cooper, & Davis, of Scarborough, which is a good design, but the drawings bear evidence of having been prepared in a great hurry. The buildings are well planned, and the design, though neither elaborate nor eccentric, bears marks of distinction, which is more than can be said for all the premiated designs. Here again the estimate is high, namely, 13,053*l*. ; indeed, with the exception of Mr. Poyser's, it is the highest of all the unpremiated designs.

The first premium has been awarded to Messrs. W. R. Sharp and F. Foster, who, by a strange coincidence, hail from the same city as the other two successful competitors—to wit, Manchester. Messrs. Sharp and Foster's design is a costly one, cleverly shown in a series of sepia drawings, brightened by warmer washes on the roofs. Nearly one-half of the Church of England chapel, exclusive of the mortuary, is carried up as a tower which has a seven-light traceried window on each of the four faces above the roof. As the body of the chapel has two heights of windows, the result is not very satisfactory, the building being too short for its height. The Roman Catholic chapel is simpler, and will be more pleasing in effect ; it has an octagonal apse, but no tower, and the Nonconformist chapel is simpler still. Such a marked distinction between the three chapels is scarcely what one expects in a public cemetery, although, of course, some distinction is desirable. The entrance gateways are well designed with a niche over the large archway, and the adjacent buildings are good in themselves, but have too much the appearance of farm-buildings to be quite appropriate. The urinals adjoining the chapels are better placed in this design than in any other. The difficulty has been felt by most of the competitors, and some have assumed that they were to be adjuncts to the vestries. Messrs. Sharp & Foster place them underground, with the entrances at the foot of the steps leading to the heating-apparatus cellars. This is a good design and worthy of a premium.

Mr. Boyd's design is simple, and the elevations are not without merit, but there is too much waste space in the plans. No. 21 shows towers of mediocre design to the lodge and offices, and the tracery of the Nonconformist chapel is of a debased character. No. 22 is curious and wonderfully coloured, with entrance buildings of most depressing design. No. 23 shows transepts to two of the chapels, and this involves a large amount of waste space. No. 24 is very poor work. No. 25, by Mr. W. H. Linton, of Stockton-on-Tees, has the merit of simplicity, the offices and lodge being the best part. Messrs. Watson and Curry's design is above the average, but does not call for particular comment. The same may be said of Mr. L. H. Dutch's design. Mr. C. Spooner, of London, sends design No. 28, in which two of the chapels have two mortuaries each. The style throughout is simple Early English, and the elevations have merit, but of too quiet a character, we fear, to gain the approval of a committee. The last design, by Mr. H. C. Fread, of London, is worthy of mention for the way in which the mortuaries are planned ; these are, in two cases, octagonal buildings, after the manner of chapter-houses, and connected with the chapels by lobbies. The idea is good, but is not well worked out.

With the exception of the three premiated designs, every set of drawings has the author's report appended, containing his estimate of the cost. Why the reports of the successful competitors should be withheld we do not know, but we made it our business to ask for them, and after considerable difficulty we succeeded in obtaining them for a brief inspection. Messrs. Sharp & Foster, winners of the first premium, estimate the cost of their proposed buildings at 8,830*l*. ; Mr. Henry Lord, winner of the second premium, estimates the cost of his buildings at 11,200*l*. ; while Mr. A. H. Mills estimates that the third premiated design will cost only 8,487*l*. to execute. It is very evident that the competitors' estimates, taken as a whole, give only the vaguest idea of the probable cost of the buildings, and no attempt appears to have been made by the adjudicators to check these estimates and arrive at a satisfactory conclusion. While Mr. Poyser's estimate of 23,400*l*. is too high, there can be no doubt that some of the other estimates are too low. Even in such a simple matter as the boundary walls, there is a vast difference ; those in the first premiated design are estimated to cost 2,500*l*., while the author of the third premiated design estimates his to cost only 1,275*l*.

So ends this competition, which has been "dragging its slow length along" for no less than eleven months. The designs are exhibited in the Health Department of the Town Hall at Salford, and will remain on view until the end of next week.



*Vézelay: The Nave, Looking West.*

## BURGUNDIAN CHURCHES.[*]

An art, in its infancy, often possesses a stronger attraction than it does at its maturity. There is a life, a vigour, an originality about the commencement of any style or movement which is often lacking when such style or movement approaches nearer to what we are pleased to call perfection. Then, although it may better satisfy our critical faculties, it does not appeal so strongly to our sensuous. It is beautiful, it is correct, but it is often cold. To feel the thrill of excitement, to experience the delicious sensation of being confronted by something which we feel instinctively is the result of individual effort, is more likely to happen when in the presence of work designed by the pioneers of a movement than when examining that evolved by the perfecters of a movement. For this reason archaic Greek sculpture often exercises a fascination and affords a sensation which one cannot feel before even an Adonis or a Venus de Milo.

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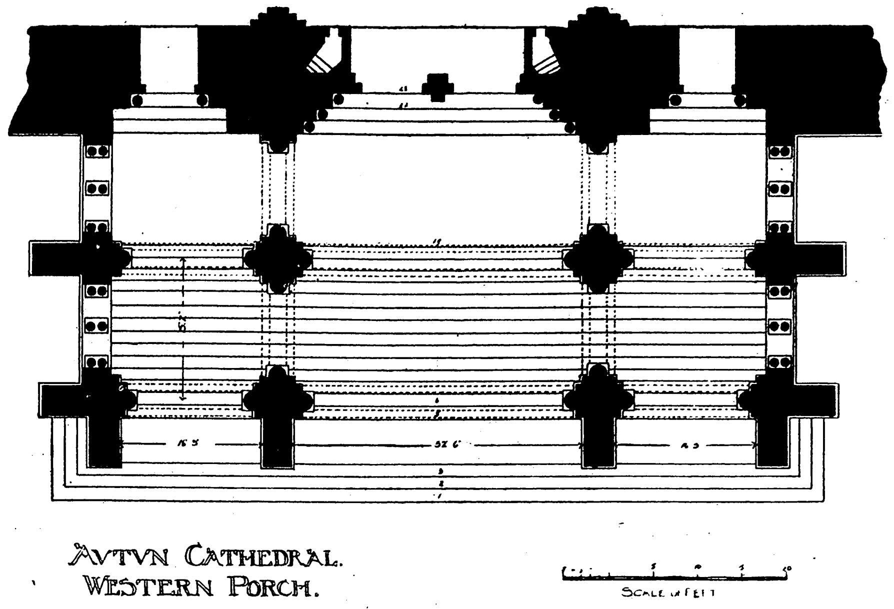
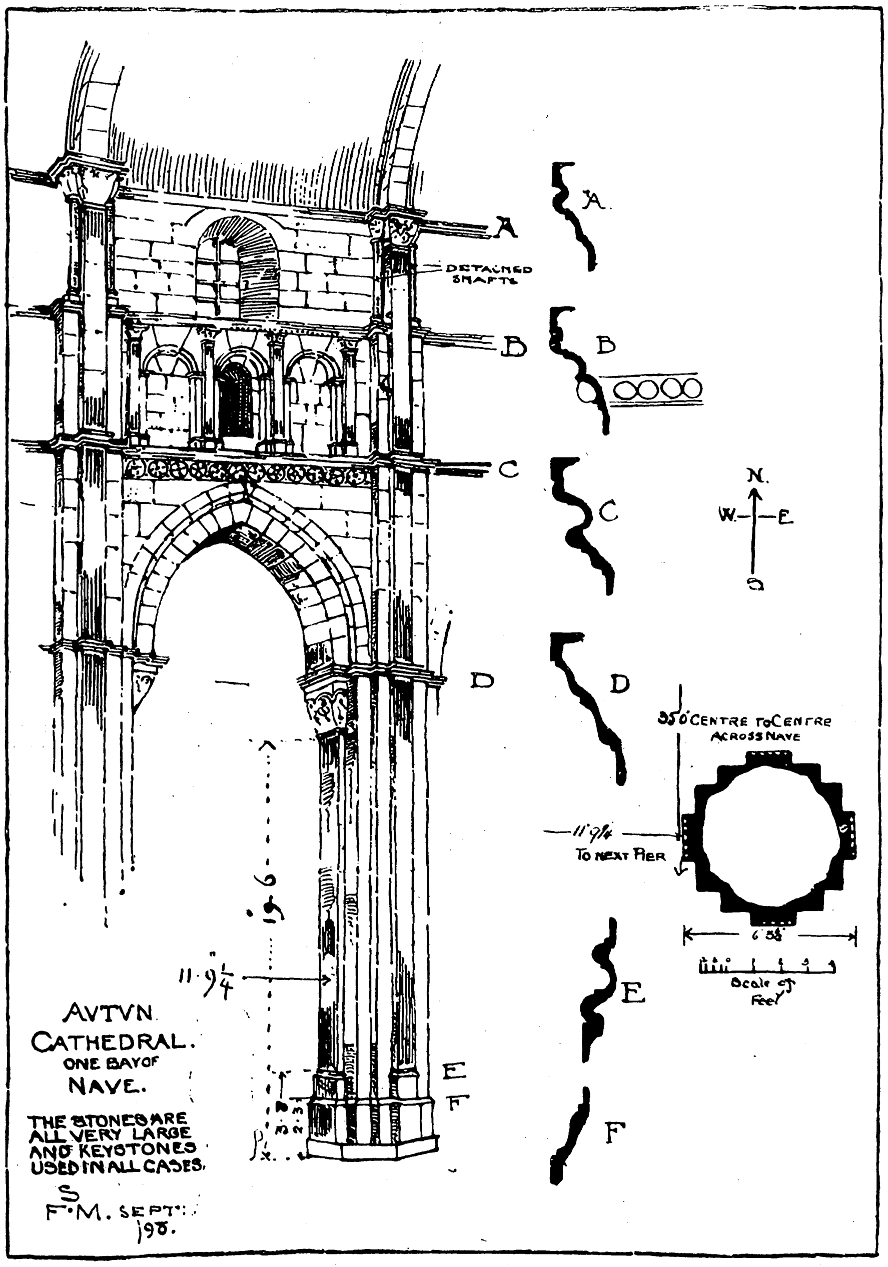
[*] A paper by Professor F. M. Simpson, read before the Liverpool Architectural Society on February 20 last.



AUTUN CATHEDRAL. WESTERN PORCH.



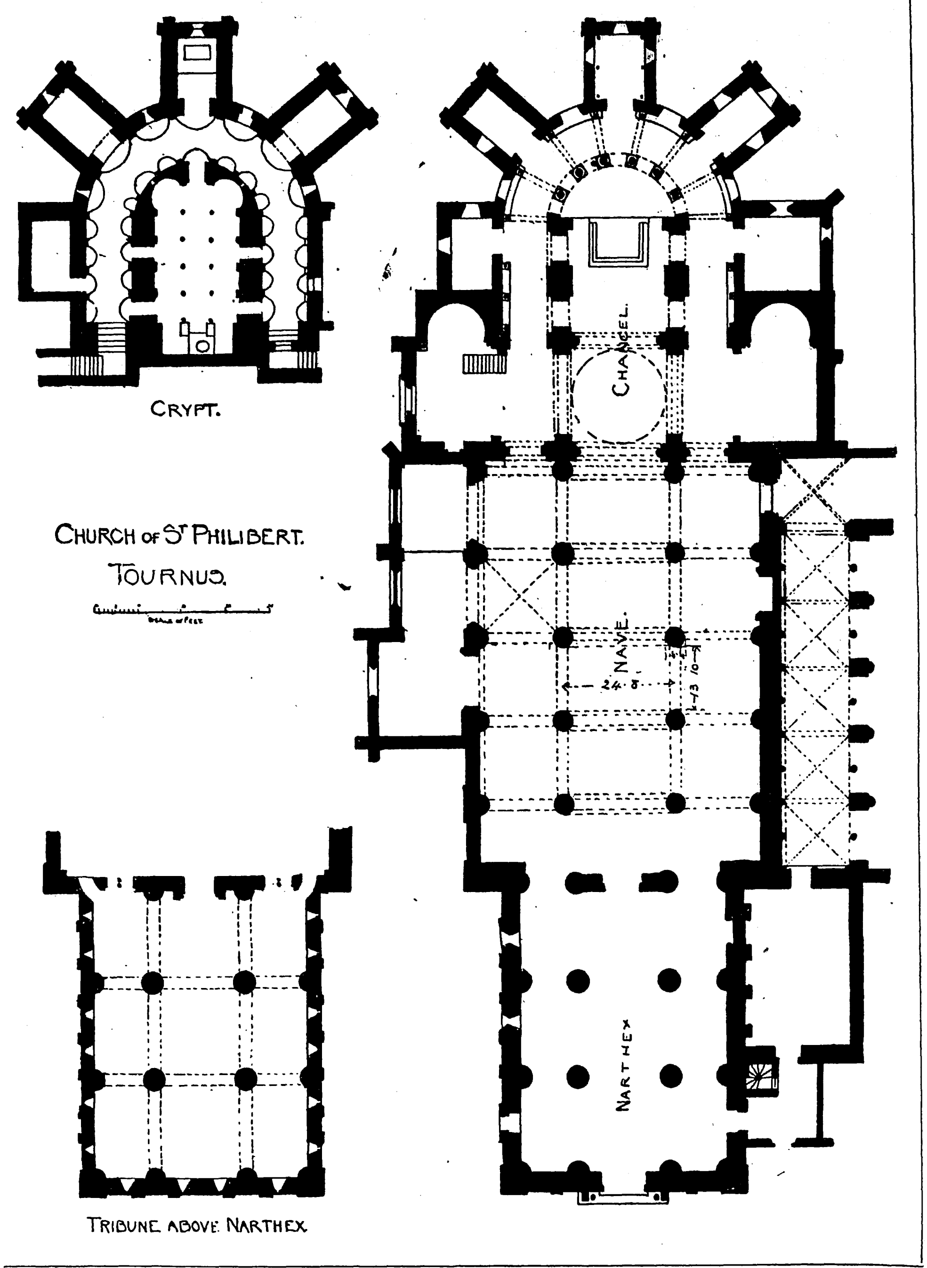
AUTUN CATHEDRAL. ONE BAY OF NAVE. THE STONES ARE ALL VERY LARGE AND KEYSTONES USED IN ALL CASES. F. M. SEPT. 98.

For this an early capital, with embryo acanthus leaves, appeals to one more strongly than the perfected Corinthian of the Pantheon or of the Temple of Mars Ultor. And for this reason it was that, having a fortnight to spare last autumn, I paid a flying visit to one of the most fascinating parts of France, the old Duchy of Burgundy. For here one may see the first attempts of the Gothic builders. Monastic Burgundy is the cradle of the great Western style, which was afterwards polished and perfected by the artist laymen of Central France. It is true that much of the work here is largely influenced by a previous style, and is strongly impregnated with the old Classic feeling. But, putting detail on one side for the present, the great ruling principles which are to be found in the buildings here are those which were afterwards followed by the great Mediæval craftsmen, and which governed their designs.

Of the work commonly called Gothic there is much that is beautiful in the province, but of this I do not propose to treat. I wish to confine my remarks entirely to the earlier work of the eleventh and twelfth centuries, when the whole of Burgundy was, artistically, under monastic rule, and acknowledged as its suzerain the Abbey of Cluny.

Of this mighty abbey, which at one time boasted one of the largest churches in Christendom, few remains exist. The Order, started at the commencement of the tenth century, rapidly developed and reached its zenith about the middle of the eleventh. Its rule extended not only over the Duchy, but far beyond it. It was at Vézelay, the greatest of its offshoots, that crusades were preached in 1098 and again in 1146, and it was from there, in 1187, that the French king, Philippe Auguste, and Richard I., of England, started for the Holy Land. In all the crusades went many monks as missionaries, and other learned men. Some of them doubtless returned filled with delight for the masterpieces of art they had seen in far-off lands. For it was in the East that the old Greek traditions still lingered, and the descendants of the old Greek artists still worked. This was to have an important influence on the work of the Burgundians, as we shall soon see. But there was another influence, equally powerful, which affected their work quite as much. This other was the old buildings dating from Roman times, many of which existed in their midst. At Autun, for instance, even at the present day, there are two Roman gateways, still in good preservation, besides other remains. It is no wonder, therefore, that we find in this twelfth-century work fluted pilasters instead of engaged columns, Corinthian capitals which might belong to the second century A.D., and classic ornament, the egg and dart, the fret, the leaf and dart, and the guilloche differing but slightly from that executed by Roman workmen in the later days of the empire.

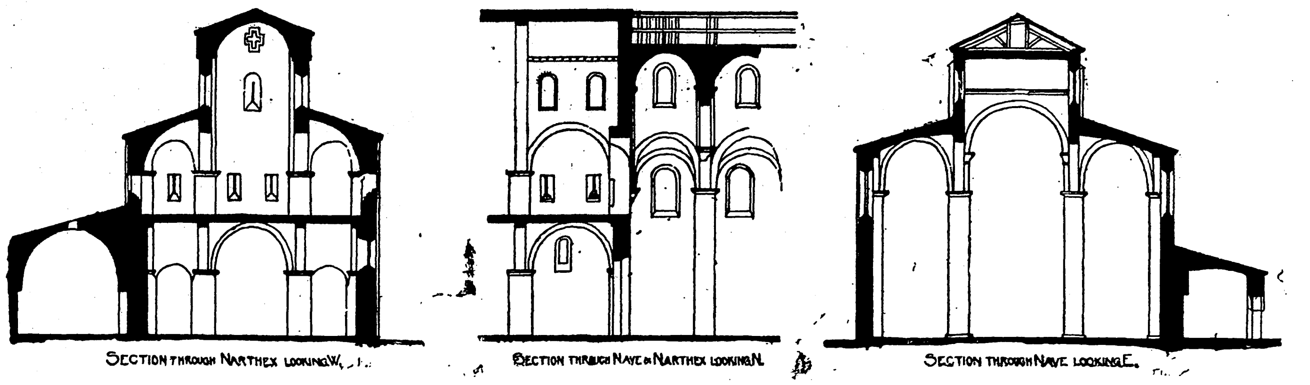
The Classic influence is also shown in their use of large stones, formerly symbolical of Roman greatness, in their barrel-vaults, in their groined intersecting vaults almost invariably built without diagonal ribs, and by the way in which they clung to the semicircular arch, for æsthetic considerations, long after they had introduced the pointed form and had realised its great statical advantages wherever strength and diminution of lateral thrust were essential. This important constructive alteration the Burgundians were amongst the first to adopt. If not quite so early in the field in this respect as their brethren of Provence and Aquitaine, they were undoubtedly the first to universally apply it. One peculiarity may be noticed in the form they adopted—their pointed arches are almost always stilted. Whether this was owing to the fact that it had become a rule with them always to stilt their semicircular arches—all those at Vézelay are so treated—whether they desired, although using the form, to make it as little apparent as possible, or whether they had not yet learnt its full value and were a little afraid of it, it is, of course, now impossible to say. It is also possible that the Saracenic influence, once powerful there, still affected them. An early instance of the pointed arch is to be found in the Church of St. Martin d'Ainay at Lyons, which Fergusson places as early as the tenth century. In the great nave of Cluny, finished about 1130, it is said that the pointed arch was used throughout for all the arches. This is all the more easy to believe because this form is found in the nave of the cathedral at Autun, built at that time. In the nave of Vézelay, built 1104-1120, the stilted semicircular arch is used throughout; but in the narthex, built 1128-1132, all the arches are pointed except the one supporting the eastern gallery. From this, therefore, we gather that the pointed form was in universal use after the first quarter of the twelfth century. The church at Autun is one of the most interesting in the province, not only because it is said to have been a copy, in its main lines, of the Abbey Church at Cluny, and from it consequently we can somewhat realise what the parent church was like, but because one finds here the fluted pilasters, the Corinthian capitals, and the round-arched arcading, legacies from the old Classic days, combined with the pointed arch, the germ of the new development. There are other churches like it: the interior of the cathedral at Beaune is designed on similar lines, and with like detail. It has the same detached shafts immediately under the vault, the same, or nearly the same, arrangement of triforium and clearstory; and the roof, like Autun, is a pointed barrel vault with transverse stone arches to mark the bays. It has also the same fluted pilasters forming groining shafts, the only difference being that supporting the arches of the arcade there are three-quarter columns instead of pilasters, as at Autun. The church at Paray-le-Monial is also similar in design. It is curious how extremes meet, how Transitional work at the commencement of a style resembles Transitional work at the end. At Autun it is the *new* Gothic style grafted on to *old* Classic detail; in many of the early Renaissance churches in France—St. Eustache, Paris, for example—it is the *old* Gothic style clothed in a *new* Classic dress. The result is that the two are wonderfully alike in appearance, notwithstanding the fact that 400 years separates them. But Autun is not only interesting for the reasons I have mentioned. Its great charm is its noble two-bayed open western porch. The porches or narthices form the most distinctive and most majestic feature of Burgundian work. They are of two kinds: open, as at Autun, Beaune, Paray-le-Monial, Semur, Notre Dame de Dijon, &c.; enclosed, forming ante-churches, as at Tournus and Vézelay, and, as was originally, at Cluny. Much has been written about their origin and the uses to which they were put. The reasons for a narthex at the entrance to the Early Byzantine Greek churches of the East are well known. They were used for those people who could not, by the laws of the Church, be admitted within the church itself, for the catechumens or neophytes, the penitents, and sometimes for the women But such can hardly have been the uses for the enclosed porches of the twelfth century in Western Europe. The laws of the Western Church were not so strict against evil-doers regarding their mere entry inside the church as was the case in earlier days. The practically universal adoption of infant baptism and the consequent decrease or absolute disuse of adult baptism had done away with, to a great extent, the probationer class. The laws for admission into the church had been modified. The narthex consequently must have served other needs. The length of this paper does not permit of our inquiring too closely into these, but one may accept one of Viollet-le-Duc's suggestions, that they were largely used to shelter the pilgrims who, on days of high festival, came from afar. I should like also to point out that the enclosed narthex is more commonly found in churches belonging to a monastic order, probably because the monks guarded jealously the right of entry into their churches, and that the open porch was more frequently attached to the cathedral churches which the people had a prescriptive right to enter. Whatever may have been the reasons for them, such reasons ceased to exist with the commencement of the thirteenth century, and few examples of either the enclosed narthex or the large open porch are to be found after that date. The only examples in England one can recall anything like the enclosed narthex are the Galilee porches at Durham and Ely; and the noblest example we possess of the open porch is to be found at the west end of Peterborough.



Still keeping Autun as the pivot round which turns this brief description of the distinctive marks of Burgundian work, one pauses in admiration before the wonderful sculpture which decorates the tympanum over the western doorway inside the porch of this cathedral (see lithograph). Who executed not only this work but similar work at Vézelay and elsewhere? It is totally unlike any other sculpture of the twelfth century with which I am acquainted. Viollet-le-Duc says that in France in the eleventh and twelfth centuries there were five schools of sculpture, the Rhenish, the school of Toulouse, of Limoges, of Provence, and, the last and greatest of all, the Clunisian. When I saw the examples I have mentioned at Autun and Vézelay, I felt that they must have been executed by Greek artists, and that it was impossible anybody else could have combined such strength with such delicacy as is to be found there. Viollet-le-Duc, in his Dictionary, rather shook my belief, but has not entirely shattered it. He says that although many have held the same opinion, still he is convinced that this sculpture was the work of Frenchmen working under Byzantine Greek influence and imbued with its spirit. I mentioned before that the Abbey of Cluny had close relations with the East, and not only sent missions to Antioch and other parts of Syria, but also imported works of art from there; silk hangings, carved ivories, and paintings. It is, therefore, quite possible that the monks, on their return, brought back with them Eastern workmen. Viollet-le-Duc argues against this, saying that in no inscriptions can traces be found betraying the hand of a foreigner. His contention is that the especial feeling in these works of sculpture is taken from the Greek paintings, which he claims they greatly resemble, especially in the treatment of drapery. Be this as it may, it is not, perhaps, of great importance to us as architects. It is enough for us that they are beautiful works of art in themselves, and that they are perhaps the finest examples of twelfth-century sculpture in the world. I hope to be able to prove that this Clunisian school of sculpture spread as far as Chartres and Le Mans. One word ought to be said about the carved capitals. They are equally fine and their variety is marvellous. Some are copies of the ordinary Corinthian capital, many are figure subjects, and a few show an originality in design and a skill in execution which inclines me to the belief, a great authority like Viollet-le-Duc notwithstanding, that they are the work of men with finer instincts than the Western world could then produce. It must be remembered that Viollet-le-Duc, like all Frenchmen, was nothing if not patriotic, and it may be that the wish to show these fine works as specimens of his countrymen's skill was father to the thought. Only one point I will urge as suggested proof that the credit should not be given as he maintains. In the same church one finds capitals so different in feeling that it forces one to think two separate bands of workmen were employed. At St. Eusèbe Church, Auxerre, capitals with sharp acanthus leaves and drilled holes—one of the distinguishing marks of Byzantine work—alternate with others of much more usual design and more ordinary execution; and inside the church of Saulieu, consecrated 1119, there are many capitals bearing no resemblance to those of the Corinthian order and quite unlike anything I have seen elsewhere. To sum up the peculiarities of this Burgundian work:

1. The narthex or porch, either open or enclosed.
2. The strong Classic feeling in detail and mode of construction.
3. Early use of the pointed arch, almost always stilted; at Saulieu, the arches are unmistakably four centred.
4. Roofs—solid barrel vaults or groined (the groining always being domical in section) and the general absence of diagonal ribs even though the arches be pointed.
5. The sculpture and the carving.
6. The ornamental cut-stone work externally forming patterns, which is found only in the south of Burgundy, at Tournus and Lyons, for instance, and which is really more characteristic of work in the department of the Puy-de-Dôme.

One word about the country. It would be difficult to find a more charming and varied landscape than that which lies between Avallon, Semur, and Vézelay in the north, and Autun in the south, and of which the town of Saulieu is the centre and former capital. This portion is called Le Morvan, and abounds with tall hills, almost mountains, and deep, wide, pleasant valleys. Most of the towns are magnificently situated on the tops of hills. Avallon is over 1,000 ft. above the sea level; Saulieu, now not more than a village, nearly 2,000 ft. Autun is more in the plains, but from its size and great antiquity is especially interesting. One last clenching word: The sides of all the hills are



Section through Narthex looking W.

Section through Nave & Narthex looking N.

Section through Nave looking E.

Church of St Philibert. Tournus.

covered with vines, and the wine you drink is Burgundy.

Subjoined are the plans and sections of Tournus, 1009-19, showing the narthex roofed with intersecting vaults over the centre portion, and barrel vaults running transversely over the aisles, like the Basilica of Maxentius; and the upper narthex with quadrant vaults over the aisles and lofty nave roofed with the barrel vault. The unique arrangement of the barrel vaults running transversely over the naves from north to south, one to each bay, is also shown.

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## THE ARCHITECTURAL ASSOCIATION:

### CARVING AND MODELLING AS APPLIED TO ARCHITECTURE.

An ordinary fortnightly meeting of this Association was held on Friday last week in the Meeting-room of the Royal Institute of British Architects, Mr. G. H. Fellowes Prynne, President, occupying the chair.

The minutes of the last meeting having been read and confirmed,

Mr. E. Howley Sim, senior hon. secretary, proposed a vote of thanks to Mr. W. G. R. Sprague for allowing members to visit the Royal Duchess Theatre at Balham on the 18th ult., and a vote of thanks to the British Fire Prevention Committee for permitting members to visit the fire-testing station at North Bank, Regent's Park, on the 25th ult.

These motions having been heartily agreed to, and some donations to the library having been announced,

Mr. Sim called attention to the annual soirée, to be held at St. George's Hall, Langham-place, W., on the 21st inst., at eight o'clock. A musical play will be performed, entitled "The Druids' Elect: an Episode of the Ancient Britons."*

The Chairman announced that Mr. Weedon's water-colour class will commence on the 22nd inst. He could not advocate too strongly, he said, the advantages students could derive in joining such a class. It not only helped students in their work, under Mr. Weedon's tuition, but it afforded an opportunity of meeting others in social intercourse.

*House List for Session 1899-1900.*

Mr. Sim then read the following nominations of the Committee for the house list for next session:—President, Mr. G. H. Fellowes Prynne; Vice-Presidents, Messrs. E. Howley Sim and H. T. Hare; Committee, Messrs. T. W. Aldwinckle, jun., A. Bolton, A. C. Dickie, C. H. Freeman, W. A. Forsyth, B. F. Fletcher, M. Garbutt, A. H. Hart, W. B. Hopkins, F. G. F. Hooper, G. A. Lansdown, H. P. G. Maule, P. J. Marvin, B. Pite, W. A. Pite, H. Passmore, H. A. Satchell, and W. H. Seth-Smith; Hon. Secretaries, Messrs. G. B. Carvill and R. S. Balfour; Hon. Treasurer, Mr. Hampden W. Pratt; Hon. Librarian, Mr. A. S. Flower; Hon. Solicitor, Mr. W. H. Jamieson; Hon. Assistant Librarian, Mr. W. B. Dukes; Hon. Auditors, Messrs. J. W. Stonhold and W. E. Davis; and Assistant Secretary and Registrar, Mr. D. G. Driver.

Any additional nominations to the house list which members may wish to make can, in accordance with by-law 31, be made at the next meeting.

Mr. F. W. Pomeroy then delivered a lecture entitled "Carving and Modelling as Applied to Architecture."

He had ventured, he said, for the sake of comparison, to alter the title and subject of his paper from "Modelling as applied to Architecture" to "Carving and Modelling as applied to Architecture." The whole subject had been exhaustively treated by so many distinguished authors, each from a separate point of view, that it would be presumption on his part to deal with it in the short time they had at their disposal were it not that sometimes a practical and homely view, treated briefly, served to refresh the minds of the advanced student, and started a new line of thought in the beginner. At the outset, he had to confess to considerable indebtedness to a paper by Professor E. A. Gardner, who had given much time and thought to the early Greek carvings and the methods then in use. He was also indebted to his friends Messrs. T. Stirling Lee and Roscoe Mullins for their kind assistance.

Mr. Pomeroy then made some general remarks on the history of art and the manner in which artistic needs spread. When a people had passed through periods of savagery and had settled down and formed cities, the handicrafts developed into arts. From the tribe of many artisans arose the few artists. Simple forms satisfied primitive civilisation; but when the beauty of ornament dawned upon the more advanced man, he placed it all on his church. The mason was not content with plain stones; he must give them meaning. As Mr. Ruskin had said, the first object of ornament was eloquence, and to this object the truths of religion must cry aloud from the very stones; the earthly home of the dead must proclaim the story of the life of its occupant; his effigy preserved in marble; his good actions sculptured in relief. Thus architecture might be likened to a tree: it was the parent stem from which sprang sculpture, and through that nearly all the other arts; therefore, any history of ornament must begin with architecture. There was little doubt that the intention of the primitive artist was to imitate his living models as nearly as possible. It was the great merit of the early Egyptian and Greek sculptors to appreciate the difficulties of attempting to reproduce in granite or marble literal copies of floral or human forms, and they limited their efforts accordingly. Natural forms, to be admissible in their application to architecture must be decorative. Natural though they be, they must be conventionally treated. The monumental simplicity of the Egyptian carvings was a good example of convention, and showed also the natural development of his resources. Working in porphyry, basalt, and granite, severe simplicity was inevitable. The less obstinate and more even-textured marble encouraged the Greek sculptor to greater subtlety of execution, but he never allowed his technical skill to carry him beyond the true sculptural limits. The invariable rule of the Greek carver was to work from a normal front plane, and cut inwards, and consequently this plane was never exceeded by projecting proportions.

In explanation of this, the lecturer drew attention to a photograph of the colossal group of two lions from the gate of the citadel of Mycenæ. There, he said, the masonic form was distinctly retained; the outline of the animals was cut in squarely, and little or no surface carving had been attempted. The whole was a superb archaic work—supposed to be the earliest work of sculpture existing on Greek soil, and, in point of composition and dramatic force, it could not be surpassed. It was easier to trace in an unfinished work the method employed in a craft than in looking at a completed object, and for that reason he drew attention to two photographs of a statue from Naxos, now in the National Museum at Athens The statue itself, according to Professor Gardner, was about two-thirds life-size, and was never finished—perhaps because the sculptor saw that his proportions would not come right.

[Mr. Pomeroy had made a small clay model of the figure, which he exhibited, and he proceeded to explain the sculptor's methods in its production.] The process followed was, according to Professor Gardner, precisely that followed by a beginner in sculpture now, or at any time, when he set to work on a rectangular block of marble from which to hew a statue. First the sculptor drew an outline in full face and in profile on the front and sides of the block. Then he carried these outlines straight through, working from the front parallel to the sides, and from the side parallel to the original front plane. When this process was completed, the statue, from front to side, had the required outline; but in the horizontal section it was perfectly rectangular. When the arms and legs had been similarly outlined, and cut into the required depth, and the face a little shaped, the result was a statue in precisely the condition in which they saw the Naxian statue before them.

The lecturer then quoted from Professor Gardner, who referred in his works to some typical archaic statues in order to ascertain how far it was possible to apply generally to early sculpture the results attained in a single example. In the opinion of that author, it might be inferred that all were made by the same process which could be seen going on in the unfinished statue from Naxos.

A second example of an unfinished statue referred to was one of a group of such statues from Pheneia, most of which seemed to be of fourth century work. Mr. Pomeroy exhibited a photograph of the statue, and he then described at some length the various processes employed in making the statue.

As to models, he thought there could be no doubt that the Greeks used clay models. Phidias could not have made by his own hands even a small part of the Parthenon sculpture, and the most logical conclusion to be arrived at was that he made models and employed a number of craftsmen to carry out the work in marble under his supervision.

The lecturer then compared the carver's method with that employed by the modeller in clay, and with that view he gave a brief sketch of the methods of clay working in early times. From the earliest time modelling in clay was common. The hardening by drying, baking, and burning led to its use for a variety of useful purposes, and in the earliest pottery relics attempts at rude ornamentation could be found. The process of working in clay, among the Greeks as among all other nations, might be considered under three heads, viz., sun-dried clay, baked clay (but without a glaze or terra-cotta), and baked clay with the addition of glaze or porcelain. Sun-dried clay was used by the Greeks for objects for internal decorations. The use of terra-cotta among the Greeks was very extensive; it supplied the most important parts both of public and private buildings, such as bricks, roof tiles, drain tiles columns, and other architectural members,

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* See page 393 for an account of the dress rehearsal of the play on Wednesday.

The desire of rendering terra-cotta less porous, and of producing vessels capable of retaining liquids, gave rise to the covering of it with vitreous enamel or glaze. Ancient terra-cottas in figure work were distinguished from modern by their greater lightness and softness. Modelling in clay must have preceded working in bronze or marble. Some early clay figures had part of the body executed in a different material, though such works were very rare; but the extraordinary nature of the combinations was much modified by the colours with which all terra-cotta figures were painted. Many temple images were frequently made of wood. A plaster cast of a remarkable and beautiful statue of a bronze charioteer could be seen at the British Museum. It had been presented to the nation through the generosity of the French Minister, and it showed evidences of wood treatment; the long, straight lines of the drapery looked as if they had been carved from a block of wood. The head, arms, and feet were quite different in treatment and texture, and they must have been modelled in wax or clay.

The treatment of various materials that brought out the full beauty of material and craft was generally the right one. Modelling in clay or soft wax was a system of building up by adding pieces of the material until the surface desired was arrived at. It might be worked with box wood or ivory tools and wire, shaped into certain forms suitable for getting into the parts of the work where it was impossible to use the fingers. But the fingers and thumb were the modeller's tools par excellence—hence the legend of the Potter's thumb. [Mr. Pomeroy and an assistant then gave an interesting and practical demonstration of the method of modelling in clay.] French artists had carried modelling to a high state of perfection—perhaps with a loss of the monumental dignity and repose which were so essential to all architectural work. Whatever the French sculptor had in his mind he worked out with consummate skill, though this very facility had led to a lack of the true sculptural instinct in the choice of what might be represented. Any one who had visited the Paris Salons must have been struck at the fly-away effect produced by the number of statues with their arms and legs thrown about in an extremely restless and startling manner. Although we owed much of our training in modelling to French teaching, we must take care not to fall into the trap which was the result of working in a very facile material. Modelling might be used in architecture for a great variety of purposes—for preparing details for ornament, for stone, wood, or plaster—and one of the best uses it could be put to for an architect was in preparing small scale models for portions or the whole of his building. He knew of no better means of arriving at the general effect of light and shade of a building than in preparing a rough model—say 2 in. to a foot; to the sculptor it was invaluable.

In carving, if the material was marble the treatment must be a marble one; soft stone required a somewhat different treatment, and modelled work should have its distinctive character and not be in imitation of another material. The real carver naturally worked in a manner which was blocky and geometric, cutting from his front plane inwards, and there was no music to him like the ring of the hammer and chisel on a fine piece of marble. The modeller, on the other hand, worked from the back plane outwards, building up piece by piece. The introduction of the pointing machine had caused sculptors to practise frequently altogether in clay, and thereby lose sight of the true glyptic laws, although the advantages secured by the use of this instrument were immense in a busy and impatient age.

The lecturer then showed a large number of excellent lantern illustrations. They included: Assyrian bas-reliefs in the Palace of Assur-Nasir Pal, showing simplicity of treatment with a hard material; the well-known statue of Theseus, by Pheidias, from the east pediment of the Parthenon frieze; Venus of Melos, from the Louvre; Mexican monuments; Roman portraiture, executed by Greek sculptors; Indian sculpture, showing Grecian influence (due to the Greek invasion under Alexander the Great); Renaissance altar, or shrine, in marble, taken from a garden in Padua; examples of Ghiberti's, Donatello's, Cellini's, Michelangelo's, and Della Robbia's work; bas-reliefs by Jean Goujon; portions of a plaster ceiling from Bromley-by-Bow Palace (demolished in 1894); Paul Pindar's house, Bishopsgate, &c; several examples of the French school (by Frémiet, Barrias, Mercié, Rodin, and Dalou. The French sculptors had progressed very greatly, and their work would probably rank fourth in the great schools of sculpture (the Greeks being first); "General Outram," by Foley, and a group in bronze, from the Wellington monument, by Alfred Stevens, who was thought a great deal more of in France than he was in his own country.

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The Chairman, in opening the discussion, said that as an instructor Mr. Pomeroy was second to none in his art, and yet his modelling class in connexion with the Association was not as well attended as it might be. It was hard to understand why so many architectural students neglected modelling work, and did not appear to realise its importance in relation to architecture. Perhaps it was due to the multifarious duties of an architect, which caused him to miss using such a valuable help in the true art side of his work. There was no art or craft more useful to architecture than modelling, and if architectural students were to work out mouldings and the orders, &c., by means of modelling, they would learn more than by working out mere drawings of them on a board as at present. For one thing, they would get a more perfect idea of proportion. The present line system led men into a narrow groove, and they failed to get a right idea of rotundity, or true proportion. Mr. Pomeroy must feel disappointed that more appreciation of his great and noble art of sculpture was not shown by architects. Mr. Pomeroy had truly remarked that architecture is the mother of the arts, and as architects they ought to feel that the sculptors of the present generation and the immediate past had had more sympathy with architecture and architects than painters had. He hoped that some of those present would express their views as to why modelling is not practised amongst architects more than it is. The lantern slides which Mr. Pomeroy had shown illustrated in a beautiful way his remarks, and his demonstrations had been useful in many ways. He would like to ask Mr. Pomeroy, in regard to sculpture work in relief, what depth of relief he preferred for decorative purposes. Most of them had seen beautiful ancient work in shallow relief, and it would be useful to know what a sculptor's views were as to the most effective relief to work in for decorative purposes.

Mr. T. Stirling Lee, in proposing a vote of thanks, said that sculptors who worked in relation to architecture felt that the real field for sculpture was in association with architecture. A sculptor was a carver—the word sculpture meant to carve: it did not mean to model—and the sculptor who worked in relation to architecture found that the architect used a figure or ornament in a frieze or pediment in order to enrich his architecture, to obtain light and shade, and to illustrate the objects of a building. A sculptor desired nothing more than to work on a pediment, frieze, panel, or cap. A sculptor ought to do his work from a carver's point of view. The real meaning of craft meant archaic, and archaic work was always true, and nearly always true art, and that was the point of view that Mr. Pomeroy wanted to emphasise. Mr. Lee then described, with the aid of a model, how the sculptor, working in relation to the architecture, had to think over every line of his work in order to get it in harmony with the architecture. The difference between modelling and carving was that in carving one did not take off more than one wanted, and in modelling one did not put on more than one wanted. As regards the Chairman's question as to the depth of relief, it depended upon the work. A sculptor never designed a piece of work to go with architecture without thinking of its surroundings. The light and shade of the mouldings governed the height of a relief. Sculpture which had to go with architecture was no longer a living thing; it was a piece of masonry—so much stone decoration, either giving light and shade or making a certain feature in the building.

Mr. W. H. Seth-Smith, in seconding the vote of thanks, said that Mr. Pomeroy had brought out, in a way that he (the speaker) had never realised before, the great distinction between modelling and carving, and the great importance that distinction made in architectural sculpture. They must all realise how true it was that the sculptor must be particularly in sympathy with the work of the architect. The vertical surface of a wall must to a certain extent continue through the carved panels if there was to be harmony. It was an interesting problem how far, where there were large rounded surfaces, as there were in elaborate Gothic work, that principle would be observed, or how far it might be deviated from. But, in the light of what Mr. Pomeroy had said, there was a more immediate problem for discussion, viz., terra-cotta as a material for building. It was being largely employed at the present time, and it was a question how far the principle he had referred to could be applied in regulating the amount of ornament and the method of treating that ornament in terra-cotta. Architects were tired of seeing the great elaboration of terra-cotta and faience which ruined so many buildings, and those who had heard Mr. Pomeroy had learnt something as to the laws of restraint in that material. As to the importance of models, any one who had made models, however rough, of mouldings or larger features, or even of an entire building, would thoroughly support what Mr. Pomeroy had said. Modelling was a recreation, a real enjoyment to an architect when time could be devoted to it. If he could even model his mouldings it would be the greatest possible recreation and rest to him in the course of the routine work of the office, which took up so many hours. He had often thought that it would be well if sculptors devoted themselves to the production of smaller works, something like the Tanagra statuettes; they were often very beautiful, but he did not know if there was a demand for them in England.

Mr. Pomeroy: Not at the price.

Mr. Seth-Smith, continuing, said as to working over bronze casting, there was a disposition just now rather to leave the surfaces of cast-metal things too coarse.

Mr. Millar having referred to modelling in tow and wax,

Mr. Gandy said he was greatly interested in terra-cotta, and he was sorry to hear the material objected to on account of the facility with which it was used and because of the way in which so many modern buildings were smothered in terra-cotta ornament. That was not the fault of the material, but of the architects who allowed it to be used in that way. As a previous speaker had pointed out, most modellers' work began with the clay, and the difference between that work and sculpture was that stone was carved on the spot. With clay, the material could be put up and its effect tested before the material was burnt. Mr. Pomeroy objected to the hard burning which terra-cotta was now generally subjected to; but Mr. Pomeroy would not put soft terra-cotta models out of doors and expect them to last. If they were designed to last they must be fired hard, and if the colour did not suit it could be treated in enamel colouring. At the last meeting of the Institute of Architects some very severe remarks were made as to sticky glazing, but as to terra-cotta it could be fired without glaze at all, and so thin that the touches of the modelling need not be obscured at all—a very great point, for, after all, if they modelled in clay they wanted, when the clay was fired, to see the result of the tool.

Mr. A. H. Hart said, in reference to the Mycenæ gate mentioned by the lecturer, he (the speaker) had had the pleasure of seeing it on the spot, and he could bear testimony to the wonderful effect of that early sculpture—sculpture which had not advanced to the period which might be called perfect. The restraint which was so obvious in such early work ought to be appreciated, for restraint was a great feature in sculpture. In sculpture, when work is over finished, certain desirable qualities (such as regard for the material) may be sacrificed; and material is an important consideration in sculpture, as in all the arts. Again, the modern French method of sculpture, where there is little restraint, seems ill-matched with a dignified stone architecture.

Mr. E. Howley Sim asked Mr. Pomeroy what his views were as to colouring sculpture in buildings. Most Greek sculpture was more or less coloured, and one generally looked upon it as a rather barbarous thing to do now. And as to colouring statues, in the Royal Academy a year or two ago there was a curious coloured statue.

Mr. J. Broad said, as to terra-cotta, it was not so much the material as the worker who was to be condemned. He quite agreed with what

Mr. Pomeroy had said about carved modelling, and he admired the flatness of treatment referred to; but that was the result of not working on the hard material that the carver was accustomed to, which put him into the habit of getting roundness or regularity in relief. It was the training that the modeller received, and not the material, which was at fault.

Mr. Pomeroy: That is my point; the material influences the method of working.

Mr. Broad, continuing, said that by the carver's process the better plaster work was generally modelled, and it was because of his experience in carving that he was able to get the modelling under control. If the modeller in terra-cotta had the carver's training that would, perhaps, lead to a better result being obtained with the material.

The vote of thanks having been carried by acclamation,

Mr. Pomeroy, in replying to a number of questions, said that terra-cotta in relation to architecture was a big question, which could not be dealt with then. His own feeling, however, was that where terra-cotta was used more as dressing on brick structure it was most satisfactory. In some Italian work the terra-cotta decoration and dressing was very agreeable, and was of a nice colour. As he had mentioned, nearly all the terra-cotta in the Etruscan, Greek, and Italian periods was covered with a glaze or painted. As to tow, that was a material used by certain sculptors for certain purposes, and it was quite well known to all workers in modelling or carving. As to the depth of relief, it depended on the surroundings. Every new work was a new problem—there were no receipts. There were certain cheap lines which could be taken up, but that was not art, and artists took a higher view of the matter. Colour in relation to modelling or carving was another big question. In the conditions in which the Greeks lived, colour was no doubt an essential matter with them, but colour in English work should be used with great reticence, and, when used, with a limited palette, although there was great scope for its use in London. He did not see why we should have gloomy bricks and mortar always; he thought that effects of light by gilding, &c., might be attempted. As to the polychrome figure in a recent Royal Academy exhibition, that was by a sculptor-painter named Gerome, a Frenchman. It was a statue of the Goddess of War, executed in bronze—a very beautiful work, showing how alert the French are in making the most of the quality of a material.

The Chairman announced that the next meeting will be held on the 28th inst., when Mr. F. W. Macey will read a paper on "Specifications."

The meeting then terminated.

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## *ARCHITECTURAL SOCIETIES.*

Glasgow Architectural Association.—At the meeting on the 11th inst., the President (Mr. Geo. S. Hill) in the chair, Mr. John Arthur read a paper on "Feuing Plans and their Preparation." In introducing the subject, he referred to the fact that in cities this class of work was generally placed in the hands of civil engineers and surveyors to carry out, a state of things for which he thought architects themselves were largely to blame, from their lack of interest and, in many cases, incompetency for the work. He submitted, however, that with regard to the plotting out of country estates for feuing purposes, the architect, from his training and experience, was the one best qualified to judge how to take full advantage of their natural beauty and surroundings, to give to their prospective roads and houses their highest degree of picturesque aspect and utility, and he exhorted those present to take a greater interest in this work, and to follow more closely in the footsteps of their country brother architect in this respect. Mr. Arthur then referred to surveying and levelling as being two necessary qualifications of the estate architect, and proceeded to show in detail, by illustrations and demonstration, how to survey and level a piece of land, and the use of the various instruments required for that purpose. This led up more particularly to the subject under review, and he went on to describe what steps were necessary to be taken with regard to the preparation of feuing plans for large estates, using Government Ordnance maps as a basis for that purpose, to show how and where to lay off new roads to best suit the arrangements and requirements of feus, how to take levels along the line of old and new roads, and how to reduce these levels to a common Ordnance datum. The paper was fully illustrated by large scale drawings and examples of feuing plans. A vote of thanks to the essayist brought the meeting to a close.

Edinburgh Architectural Society.—On Wednesday, the 12th inst., Mr. J. Fairweather, representative of the Glasgow Architectural Association, read a paper entitled "Minor Points in Practice." Mr. A. Greig, Vice-President, was in the chair. After some advice on the management of clients in the early stages of an architect's career, the lecturer proceeded to discuss the materials and constructions common in domestic work, always contrasting prime costs with probable efficiency, and giving his audience the benefit of his own experience on a multitude of those minor questions on which it is so difficult for an architect at the outset to form a good judgment, and on which success so largely depends. On the matter of hollow walls Mr. Fairweather spoke at some length, and finally gave his verdict in favour of solid stone, with strap and lath, for Scotch work at least. Many ingenious economies were suggested; but at the same time the lecturer made it clear that true economy consisted in a reasonable outlay at the first.

Bristol Society of Architects.—The monthly meeting of this Society was held on the 10th inst. at the Fine Arts Academy, Clifton, Mr. W. L. Bernard, the President, being in the chair. Mr. Edgar Singer of Frome, read a paper on "Memorial Brasses and Enamels," and the lecture was illustrated by numerous rubbings of fine specimens of German, Flemish, and English brasses; the different varieties of enamels were explained, and specimens of Limoges, Cloisonné, &c., exhibited. The lecturer traced the evolution of these interesting links with the past from the simple inscribed cross of pre-Christian times to the elaborately chased and enamelled brasses found on the Continent in the Middle Ages, which so clearly pourtray the costume, armour, and textile fabrics of that period.—The voting-papers for the election of officers and council for the ensuing session were opened, Mr. W. L. Bernard being again re-elected President. Messrs. Joseph Wood and Frank Wills were elected vice-presidents, and the hon. secretary and treasurer (Mr. H. Dare Bryan) was unanimously re-elected to fill these offices. The members of the council were Messrs. Bond, La Trobe, Oatley, W. S. Paul, Skinner, and J. Foster Wood.

Sheffield Society of Architects and Surveyors.—The annual meeting of this Society was held at the School of Art on the 12th inst., Mr. R. W. Fowler presiding. The following gentlemen were elected members of the Society:—Mr. Henry Coverdale, as Fellow; Mr. W. T. Lancashire, as an Associate; and Messrs. S. M. Gibson, D. H. Loukes, and B. J. B. Marsden, students. The treasurer's statement of accounts, which showed a balanee in hand of 124*l*., was adopted. The twelfth annual report of the Council was read by the hon. secretary and adopted. It stated that the total membership is 116, which is the highest in the history of the Society. The Council had their attention called to the case of an architect's client who had declined to comply with the usual custom of paying half (2½ per cent.) the usual commission on the signing of the contract, and the remainder in instalments, in accordance with the Royal Institute of British Architects' scale of charges. The Council called the client's attention to the matter, and the Royal Institute of British Architects' scale of charges was sent to him, with the result that the commission was paid in due course. The Council also sent out copies of the Royal Institute of British Architects' scale of charges to the practising members of the Society, and to the School Board, solicitors, and accountants, and hope this course will have the effect of improving the status and position of the architects and surveyors of the City. The Council have devoted a considerable amount of time to the discussion of proposed conditions of contract proposed for adoption by the Master Builders' Association. On May 18, 1898, Messrs. J. Biggin, G. Webster, H. Brumby, and J. Spink, on behalf of the Association, met the Council and discussed the various points at issue, and more particularly the resolutions of the Society at the special meeting held a nuary 26, 1898. The deputation quite agreed with resolutions Nos. 1 and 2 on condition that the schedule of prices should be considered a confidential document, which should not get into the hands of the architects' clients, to which expression of opinion the Council fully acquiesced. With regard to resolution No. 3, as to arbitration, while unanimous in desiring an arbitration clause of some kind, the deputation were not unanimous as to the extent or wording of the clause, and finally agreed to consider modified clauses quoted to them, together with the Royal Institute of British Architects' conditions of contract, and afterwards communicate their decision on the matter. Correspondence followed, and ultimately Mr. Spink, on behalf of the Master Builders' Association, forwarded an entirely new set of conditions which he hoped the Society would adopt, and which he stated were adopted in Leeds. The Council appointed a committee to consider the matter, and found that the newly proposed conditions were still more objectionable and one-sided, and contained a clause requiring arbitration on every point that might arise during the course of the contract, and which would, in the Council's opinion, prove most detrimental to both the architect's and client's interests, and would not, either, benefit the contractor in most cases. The Council hope, therefore, that the members of the Society will in no case consent to any such form of agreement, especially as they know many builders have signed contracts without requiring such objectionable conditions. The Council have also had before their notice letters from Messrs. Spink & Hodkin with regard to the lock-out of plasterers, and from the Yorkshire Builders' Federation with regard to the Workmen's Compensation Act. In connexion with the latter, the President was good enough to inform the Society that in the course of his practice he had occasion to consult his solicitors with regard to a client's liability under the Act if the contractor became bankrupt or was otherwise unable to pay compensation under the Act. His solicitors advised him that corporate bodies, being employers of labour, would still be liable, but private employers or clients would be exempt. The Council are much indebted to the President for his opinion, which they think will prove of service to the members of the Society. The following gentlemen were then elected officers and Council for the year 1899-1900:—President, J. Smith, F.R.I.B.A.; Vice-President, A. Smith Denton; Hon. Treasurer, Fred Fowles, F.S.I.; Hon. Secretary, W. C. Fenton; Council, the above and Messrs. E. M. Gibbs, F.R.I.B.A.; C. Hadfield, F.R.I.B.A.; C. J. Innocent, F.R.I.B.A., F.S.I.; T. Winder, A.M.I.C.E; J. B. Mitchell Withers, A.R.I.B.A.; and J. R. Wigfull, A.R.I.B.A. A vote of thanks was accorded to the officers and Council for their work during the past year.

Leicester Society of Architects.—On the 12th inst. Mr. J. A. Gotch delivered a lecture on "The Homes of Queen Elizabeth's Courtiers" at the Technical and Art Schools, under the auspices of the Leicester and Leicestershire Society of Architects. The tranquility of Queen Elizabeth's strong rule proved, said the lecturer, a strong aid to architecture, and for sixty years its energising influences lasted; indeed, there was scarcely a village in England in which the architecture of 1560-1620 (covering the reign of Elizabeth and that of James) was not represented. The Elizabethan age was one, the lecturer said, in which magnificence of architecture was studied, and this at the expense of convenience, and sanitation in those days was unknown. Lantern views of a large number of illustrations of stately buildings (exterior and interior) erected in the Elizabethan age were shown.

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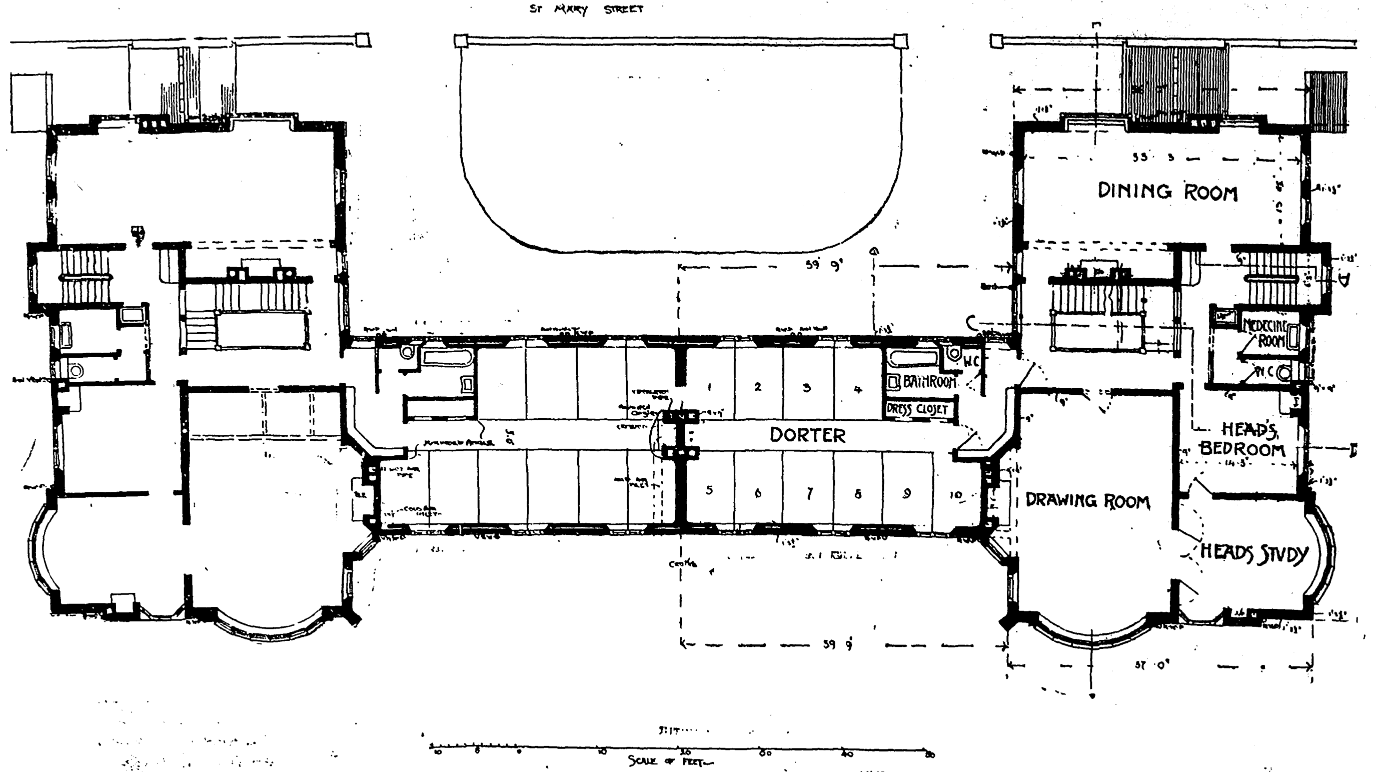
The Decoration of St. Paul's.—In the House of Commons, on the 17th inst., Mr. Carvell Williams asked the First Lord of the Treasury whether, in view of the fact that St. Paul's was a national building, the Government would cause an inquiry to be made as to the expediency of further carrying out the scheme of internal decoration now in course of execution?—Mr. Balfour: The Government has no control over the fabric of St. Paul's Cathedral. As the hon. member is aware, the Dean of St. Paul's has stated that a memorial signed by some distinguished critics dealing with a certain portion of the new work will receive the fullest consideration. In these circumstances, I am confident that the proper authorities of the Cathedral will not sanction anything being done that is distasteful to the general body of public opinion


ST MARY STREET
DINING ROOM
MEDICINE ROOM
W.C
W.C
BATHROOM
DRESS CLOSET
1
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DORTER
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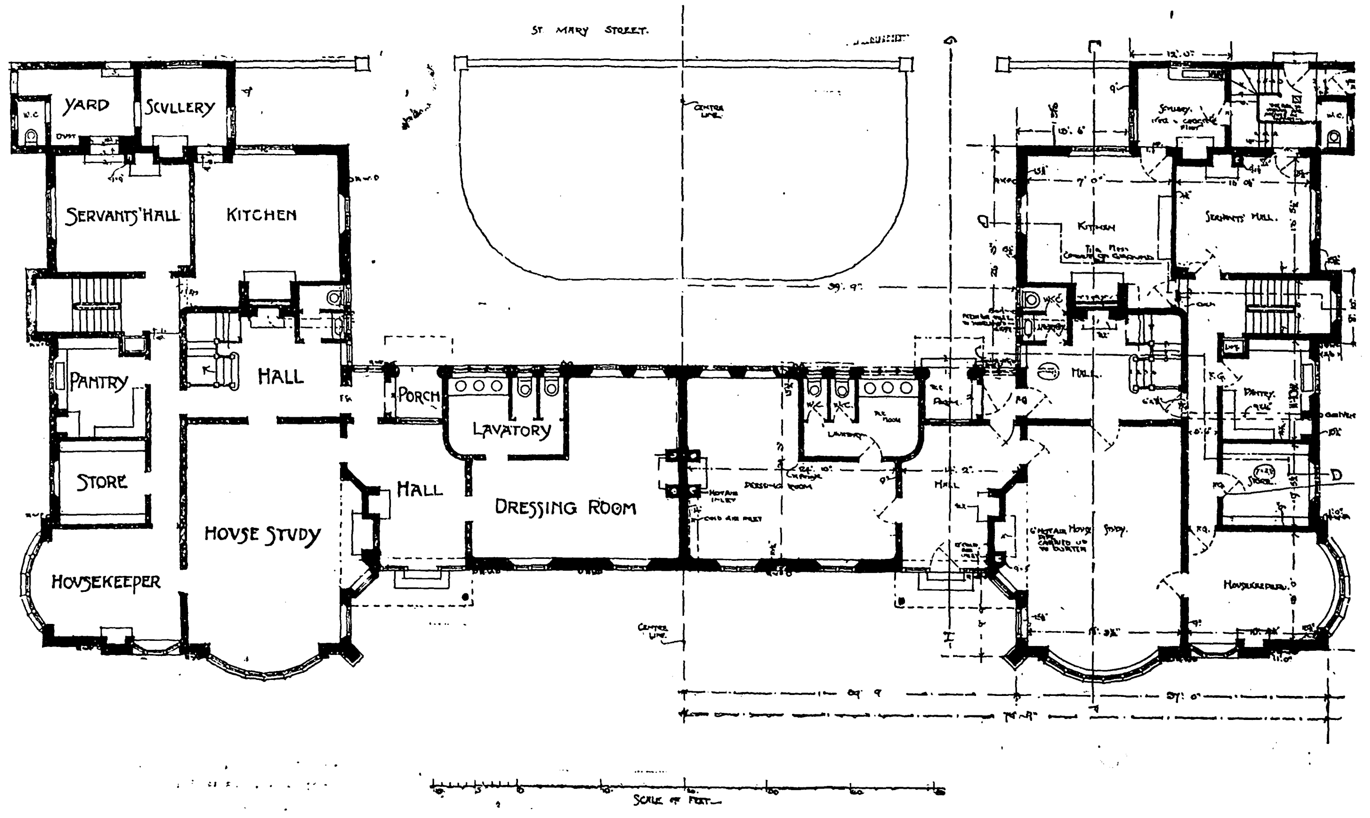
10
HEAD'S BEDROOM
DRAWING ROOM
HEADS STUDY
SCALE OF FEET

FIRST-FLOOR PLAN:


ST MARY STREET
YARD
SCULLERY
W.C
SERVANTS' HALL
KITCHEN
PANTRY
HALL
STORE
HOUSE STUDY
HOUSEKEEPER
PORCH
LAVATORY
HALL
DRESSING ROOM
CENTRE LINE
SCALE OF FEET

GROUND PLAN:

*Dames' Houses, Wycombe Abbey School.*

## Illustrations.

### ILLUSTRATIONS OF BURGUNDIAN CHURCHES.

THE four plates from the churches of Autun, Vézelay, and Vermenton, given in this issue, are from photographs sent by Professor Simpson as illustrations to his paper on Burgundian Churches, read recently before the Liverpool Architectural Society, which is printed in the present issue, and to which the reader is referred.

### NEW HOUSES, WYCOMBE ABBEY SCHOOL.

THE Earl of Carrington's country seat, Wycombe Abbey, was recently sold to the Girls' Education Company and converted into the nucleus of a Girls' Public School, under Miss Dove, of the well-known school of St. Leonards at St. Andrews, as Head Mistress.

Extensive works, consisting of new class-rooms, dormitories, &c., and entire resanitation have been carried out under the superintendence of Mr. W. D. Caröe, in connexion with the Abbey building.

The illustration shows one of two blocks of new semi-detached houses, in the Abbey grounds. Each house is planned to contain twenty-six pupils. The first block is already occupied, and the second will shortly be complete.

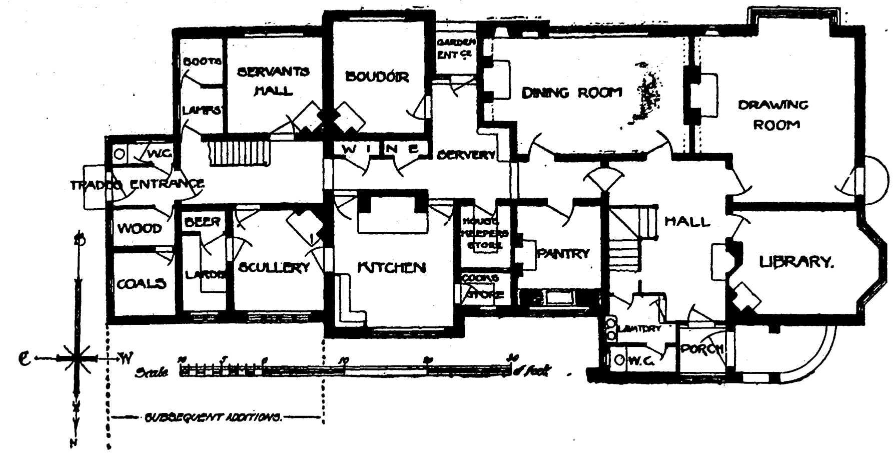
The contractors are Messrs. Norris & Son, of Sunningdale, and Mr. R. Dye is clerk of the works. The drawing was in last year's Royal Academy exhibition.

Wycombe Abbey has no historical interest. A Jacobean red brick house, called Lokes House, existed previously on the site, and some portions of the internal walls still remain. The present structure, erected at the beginning of the century, was by Wyattville—partly of stone, but largely of imitative cement, with an attempt to be of the Perpendicular style.

Turner made the house, during its construction, the centre of a pleasing topographical drawing, one of a series illustrative of the Thames.

### PROPOSED MEMORIAL, HORNCASTLE.

THIS design was submitted in competition for the "Stanhope Memorial" at Horncastle. The form of the memorial was suggested—as may be seen—by a well-known timber "Market



*House near Pinner. Plan.*

Shelter." The plan is octagonal, and in the hollow central shaft there is a fire bell.

The design is by Mr. G. Christopher Carter, and the drawing was exhibited at the Royal Academy of last year.

## HOUSE AT EASTCOTE, NEAR PINNER.

THE plan of this house was largely extended since the building was nearly completed. The view shows the entrance front as originally designed.

The ground floor is faced with red brick and the first floor with rough-cast of a finer texture than is ordinarily adopted; the roof is of red tiles. Mr. W. Howard Seth-Smith was the architect, and Messrs. James Smith & Sons, of Norwood, were the builders.

## EXETER CATHEDRAL.

### WESTERN BAYS ON SOUTH SIDE.

THIS unusual point of view was selected to better illustrate the special character of the cathedral, for the different manner in which the stone has weathered on the south side permits of a better appreciation of the great breadth and dignity of the work.

The cathedral has been so fully dealt with in the *Builder** that it will suffice to draw attention to the indications of the north walk of the cloisters, which was included within the buttresses, these being pierced for a passage against the aisle wall.

A. NEEDHAM WILSON.

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## THE ARCHITECTURAL ASSOCIATION SOIRÉE.

A DRESS rehearsal (ladies' night) of the musical play in connexion with the Architectural Association soirée for this year was given at St. George's Hall, Langham-place, on Wednesday evening, when a large party assembled.

The play, in two acts, and entitled "The Druids' Elect: An Episode of the Ancient Britons," was written by Messrs. G. B. Carvill and Gervase Bailey, the music being by Mr. Leonard Butler. The story practically opens with the entry of the Druids, a body of stately and picturesque characters, and the first Druid refers to an approaching election to the council—presumably the council of an Institute of Ancient Britons—due to the death of the late-lamented Stucco. Two well-known and much-respected architects, Messrs. Ashlar and Rubble, are candidates for the vacancy, and both are said to be hard at work canvassing, though they both strenuously protest against any such accusation. In a professional journal of the period, *The Antediluvian Advertiser and Neolithic News*, the claims of the rivals are set forth in the following manner:—"Ashlar for art; Rubble for reform. Britons be bold. Back the best builder and beautify Briton." Rougepot (a thin disguise for "M. Louis de Rougemont" of recent notoriety), who has been elected the Arch-druid, then comes upon the scene, with a lyre in his hand, to the last bars of "The Wearing of the Green." He announces that the Romans (*i.e.*, a chartered company force), "a mighty people from a great city in the south, beyond the sea," have landed, with General Rodesius at their head. Some amusing remarks are then made as to the intentions in Briton of Rodesius; and Rougepot, whose geographical and natural history knowledge is surprising, sings a song entitled "Limited," *apropos* of company promotion, planning on "a site that is distinctly limited," &c. Subsequently, both Ashlar and Rubble interview the Arch-druid in reference to the election, with the view of getting him to "work the omens" in their respective favour. The Arch-druid is not to be moved for less than 50*l.*, though this sum, he tells Ashlar, who first interviews him, "will settle the election in your favour." Ashlar indignantly declines to be party to any such transaction; but Rubble, on the other hand, has no such scruples, and he pays over the money. Success at an election in those unregenerate days was followed by a sacrifice—sometimes a human sacrifice—and the Arch-druid proposes that in the event of Ashlar being elected that eminent architect shall be called upon to sacrifice his daughter, Blodwen. At the election which shortly follows, the candidates state what they are prepared to do if elected. Ashlar, "just a simple English gentleman," who has designed Vauxhall Bridge and the Temple of the Sun at Stonehenge, is willing to "free all the classes, and issue new passes without any fees being paid;" while Rubble, "an honest British workman, in favour of an eight-hour day," and whose executed work has been mainly of a naval character, expresses his intentions in some verses in which he promises, if elected, to "nullify Building Act law, and double architects' charges with short working days." In the result, Ashlar is elected by a very primitive method, and, contrary to the expectation of the Arch-druid and Rubble, he is prepared to sacrifice his daughter. An incantation by the Arch-druid occasioned much amusement.

There is a very amusing stone-laying ceremony in the second act, an enormous trowel being used, after which Architopius, a travelling student, belonging to the Chartered Company's forces, produces some sketches he has made, including a remarkable drawing of Vauxhall Bridge. "That's what they call Cyclopean architecture, isn't it?" queries one of the characters. "No; County Council architecture," is the reply. In the course of conversation, the Romans inform their Briton friends that an Institute had been founded at Rome for the promotion of elementary knowledge amongst architects, and Rodesius sings some amusing verses entitled "The Institute at Rome," of which the following are samples:—

> "The students went in six by six, when asked the process of burning bricks,
> They said, 'Oh, that's one of the builder's tricks at the Institute at Rome.'
> The students went in nine by nine; when told to define a building line,
> Said, 'a thing invented to spoil design at the Institute at Rome.'"

Rodesius also sings later on a song called "Simplicity," the following verse of which we quote:—

> "The art of modern architects is tending towards the plain
> And simple, yes, the simple;
> We build for Truth and Beauty, and not for worldly gain,
> We're simple, oh, so simple.
> If you want to build a house that will the mouths of critics stop,
> Put four bare walls with windows like a warehouse or a shop,
> And a fat unwieldy drain-pipe from the bottom to the top;
> That's simple, oh, so simple.
> Oh, the simple simplo-maniac has got us in his claws,
> He'll soon dispense with windows, and he'll do away with doors;
> We'll return to what we were before the dawn of history's page,
> And we'll play the noble savage in the Neolithic Age."

As to the contemplated sacrifice, Rodesius (primed by the conscience-stricken Rubble who, while suffering from the pangs of remorse, gives a very good imitation of Sir Henry Irving's style), in an amusing parody of Mark Antony's oration, denounces Rougepot and Rubble, and both these worthies are likely to be killed by the angry Druids, Romans, and girls. Rougepot, however, saves himself by confessing to the Romans that he is their "long-lost Griennus," and Rubble is saved by the interposition of Superfinus, a Roman lieutenant and the lover of Blodwen.

This, omitting the love-making business, is a rough outline of a play which is, from many points of view, a decided success. The play is bright and attractive, well staged and acted, and full of "point" and interest without being vulgar. The entertainment is probably the best and most satisfactory of the kind the Association has ever given. The songs, especially those by Mr. S. Constanduros and Miss Sophie Tyler, were well received, several encores being given. The performers, without exception, acted well; special praise being due to Mrs. Alfred Stalman and Messrs. H. Passmore, Alfred Stalman, G. B. Carvill, and F. D. Clapham. Every one appeared to be part-perfect, and to the production of the play a great deal of time and labour must have been devoted. At its conclusion, the authors appeared in response to a unanimous call.

The following were the *dramatis personæ*:—Lucius de Rougepot, *alias* Griennus (Arch-druid and Adventurer), Mr. Herbert Passmore; Ashlar and Rubble (Ancient Britons, candidates for the Council), Mr. Alfred Stalman and Mr. G. B. Carvill; Rodesius (General in command of the Roman Chartered Company's forces), Mr. F. D. Clapham; Superfinus (a lieutenant), Mr. S. Constanduros; Pennialinus (a correspondent), Mr. Gervase Bailey; Architopius (an architect), Mr. Frank Foster; Toplinus (with Chartered Company's forces), Mr. J. Hayes Wilson; Letitia (a Roman lady of uncertain age betrothed to Superfinus), Mrs. Alfred Stalman; Ellalyn, Lettilyn, Gwendolen, Gwynne, and Llyllien (British maidens), Misses Ada Yerbury, K. Rimell, Blanche Selig, Dolly Jennings, and Ethel Atkins; and Blodwen (Ashlar's daughter), Miss Sophie Tyler. Chorus of Druids, Romans, and British maidens, Mesdames Edith Black, Nellie Carvill, Daisy Englehardt, Helena Kelly, Jessie Maude, Ethel Miller, Berthe Selig, and Elsie Williams, and Messrs. A. Canner, J. Chapman, E. S. Collins, S. Elston, H. Franck, Howard Holt, A. C. Kelly, Douglas Lay, C. Pellew, W. Sneesby, A. G. Turner, and A. H. Whichcord. Manager, G. B. Carvill.

The soirée is to be held on Friday at St. George's Hall, when the play will be given again.

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## THE FIRE PREVENTION TESTING STATION.

THE Testing Station of the British Fire Prevention Committee is already showing considerable activity, the investigations generally taking place on Wednesdays.

Among the tests in hand are several with floors and partitions of an ordinary description as allowed by the Building Act, including solid timber floors and floors with various aggregates of concrete, all of which are, of course, not subject to any patents or the interests of any special firm. Of methods of the latter class—*i.e.*, patented floors, patented ceilings, &c.—a considerable number are, however, also under investigation, and amongst those in hand at the moment are a floor by the Columbian Fire-proofing Company, two floors of the Expanded Metal Company, a ceiling of the Asbestic Company, and windows by the British Luxfer Prism Company.

The tests, which are carried out on scientific lines, but with the practical purpose in view, are conducted by representatives of the Executive, the Council, and the body of members in rotation, and their reports are circulated (approximately) bi-weekly. At the tests carried out on Wednesday afternoon Major-General G. R. Festing, South Kensington, and Mr. Arthur Cates, the Surveyor to the Crown, were present, as representing the Council; Messrs. Edwin O. Sachs (Chairman), F. R. Farrow, Max Clarke, Charles Goad, Ellis

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* See "Exeter" in the "*Builder* Cathedral Series," under date June 6, 1891

Marsland, and Edmund Woodthorpe, as representing the Executive. A number of District Surveyors represented the general body of members, whilst the following four gentlemen attended as special visitors :—Mr. J. McDermott (War Office), Mr. J. B. Westcott, Surveyor (H.M. Office of Works), Mr. J. C. Murray (Admiralty), and Mr. Capon (London County Council).

The number of members and visitors attending tests has, of course, to be strictly limited.

## THE BUILDING TRADE DISPUTE.

There is very little to report this week in reference to the plasterers' lock-out. A meeting of the executive committee of the London Central Association of Master Builders was held on the 13th inst. at the offices, Bedford-street, Strand, but the meeting was a private one.

The master plasterers who, up to the present, have been organised only by being federated through the Master Builders' Association, have decided to have a national association of their own which, while continuing to work in conjunction with the builders' organisation, will pay attention to the interests of plasterers in particular. This decision was arrived at at a recent meeting of about one hundred delegates from all parts of the country, held in Bradford. Mr. J. W. Sugden, of Bradford, was elected first President. The present strike was subsequently discussed, and a communication was forwarded to the National Builders' Association.

We are informed on very good authority that during the first three weeks of the lock-out the funds of the National Association of Operative Plasterers were reduced by about 25 per cent., and this in spite of the fact that, in addition to the special levy, the members paid in during this time about 1,000*l*. in ordinary contributions for sick benefit and superannuation purposes. It is regrettable to see funds that have been contributed for years past by workmen for insurance against sickness and old age so recklessly squandered in the attempt to enforce a system of trade intolerance which could bring no real benefit to the workman.

The Standing Committee of the Master Builders of Great Britain and Ireland held a meeting at the Midland Hotel, Derby, on Wednesday for the purpose of considering the present state of affairs in the building trade. Alderman Holdsworth, of Bradford, presided. The question of a general lock-out in the building trade came up for discussion, and the opinion of the meeting was practically in favour of such a course being adopted. Several of the speakers urged that important questions of principle affecting the prosperity, and, indeed, the very existence of the building trade, were at stake; that the struggle was one which the masters could not afford to lose; and that every effort must be employed to gain the victory. These sentiments found general acceptance. With a view to the lock-out becoming operative at an early date, the masters in the districts associated with the Federation are turning their attention to the question of organisation.

## *COMPETITIONS.*

Agecroft Cemetery, Salford.—Sanction to use this land for cemetery purposes having been received by the Salford Corporation, the drawings sent in in competition were adjudicated upon. Design No. 19, submitted by Messrs. W. R. Sharp and Fred Foster, 28, Deansgate, Manchester, was awarded the first premium of £50; design No. 1, submitted by Mr. Henry Lord, F.R.I.B.A., of John Dalton-street, Manchester, was awarded the second premium of £30; and design No. 16, submitted by Mr. A. H. Mills, Temple Chambers, Brazennose-street, Manchester, was awarded the third premium of £20. The twenty-nine sets of drawings sent in will be on view at the Town Hall, Salford, from Monday, the 17th inst., until Saturday the 29th inst.

Cartwright Memorial Hall, Bradford.—One hundred and fifteen sets of drawings have been received in this competition. Mr. Waterhouse, who is acting as assessor, will commence his examination of the drawings on Monday next. As soon as the premiated designs have been selected, the whole of the drawings will be publicly exhibited.

## *ENGINEERING SOCIETIES.*

Institution of Junior Engineers.—At the meeting on the 14th inst., a paper was read on "Piles and Pile-Driving," by Mr. H. Cartwright Reid. Mr. Basil H. Joy, chairman, presided. In introducing the subject the author made allusion to the antiquity of pile-driving (as evidenced by the pile dwellings of the Stone Age, and the recent discoveries of Mr. W. A. Donelly, of the "Crannog," on the banks of the Clyde, near Dumbarton Castle), to the preservation of piles under old London Bridge for 600 years, and to ordinary foundations at Chatham Dockyard. Various types of piles were then described :—Bearing piles for remedying an unstable foundation, which was effected by transferring the weight to a firmer material below, by consolidating the loose material itself, or by holding the piles in position through the friction of their perimeter; sheet piling, for facing to wharves, for cofferdams, and to surround excavations made in waterlogged areas, as at Chatham Docks, and in compressible soils to prevent material from escaping from under additional weight; true sawing was essential for water-tightness, and the difficulty of driving regularly was partly overcome by the use of grooved and tongued piles; correct shoeing and ringing were of great importance; details of the shoes in general use, as well as the special shoe for grooved piles were described. Various kinds of cast-iron screw piles were illustrated, and attention drawn to a recent form of wrought iron and steel built-up pile for driving, rolled from 6½ in. to 13 in. diameter. Different forms of pile drivers were dealt with, and the more modern endless chain driver, as well as the "Lacour" Steam Monkey, compared with them. The sinking of screw piles and the advantage of the use of the water-jet in sandy soils were alluded to. Diagrams indicating the resistances met with in driving a pile were shown; these resistances were due principally to the inertia of the pile itself, the elasticity of the pile and the ground, the resistance at the point, and friction of the sides of the pile. As the value of the two latter varied with every different section of ground, there was difficulty in obtaining a correct formula to apply to pile-driving. Empirical formulæ, which depend upon the amount of work expended in driving, found most favour, though many of these neglected entirely the quality of the timber, the length of the pile, and its sectional dimensions. The results of the formulæ in use varied in the value assigned to a pile under given conditions, and a varying factor of safety was recommended, so that it was probable, as accurate results could be obtained from Rankine's statement, that the actual load applied varies from 200 lbs. in soft ground to 1,000 lbs. on reaching firm ground, per square inch of sectional area, providing the pile is supported and not free to bend. The detrimental effects in practice of high falls of the monkey were then considered. They were caused by the rapidity of the blow not allowing the inertia of the pile to be overcome before the full force of impact was developed; in the more modern practice, heavier monkeys and low falls were employed, thus "coaxing" the pile down without destroying it. Rapidity of blow of the monkey kept the ground surrounding the pile from close contact and effected a considerable economy, as the longer the interval between the blows the less the pile sank per blow. Experiments showed that piles offered a greater resistance to sinking after absolute quiescence than immediately after the cessation of driving, though this effect was more pronounced in soft or wet ground than in dry and coarse gravel and sand.

## BOOKS RECEIVED.

The Column and the Arch. By W. P. P. Longfellow. (Sampson Low, Marston, & Co.)

Inwood's Tables for the Purchasing of Estates and Valuation of Properties. Twenty-fifth edition; revised and extended by W. Schooling, F.R.A.S. (Crosby Lockwood & Son).

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Gateshead and District Builders' Association.—At a meeting of the master builders of Gateshead, on the 15th inst. in Mr. Morris's Hall, Cuthbert-street, it was agreed to form an association to be named the Gateshead and District Master Builders' Association. The required officers, together with a committee, were duly elected. It was decided to continue to resist the demand made by the labourers for an advance.

# The Student's Column.

## ARCHITECTURAL HYGIENE.

### XV.—VENTILATION.

1. *General: Movement of Air and Air Currents.*
2. *Composition of Air.*
3. *Impurities in Air.*
4. *Respiration and Combustion.*
5. *Quantity of Air Required and its Measurement. Cubic Space. Quantity per Person per Hour. Velocity.*
6. *Inlets: Position and Size.*
7. *Outlets: Position and Size. Extracting Power of Flues.*
8. *Natural Ventilation.*
9. *Artificial Ventilation.*

IN this chapter the important questions of ventilation, lighting, and heating are introduced by some preliminary remarks on ventilation.

The three subjects are so interwoven that it is difficult, and perhaps impossible, to think about or discuss them apart; we shall, therefore, in the first place confine ourselves to the composition and movement of air currents, after which we shall proceed to deal with the remainder of these important subjects, and then give actual examples of executed works.

1. *General.*—The necessity for ventilation need not be here discussed, as every one knows that a supply of fresh air is necessary for all human beings. The want of fresh air properly introduced into a building produces nausea, headache, and a sense of oppression, sleepiness, lassitude, loss of appetite, and, as a rule, inability to fix the attention. In healthy places of worship there should be no sleepers among the congregation. Anybody can realise some or most of these conditions, as they are felt often after having been in a stuffy theatre, church, or place of public meeting, and the effects are often intensified next morning. The principal point in all ventilation is to prevent stagnation of air.

*Heat*—pure heat—has practically nothing to do with the matter, although people are in the habit of referring to a building as being "too hot," whereas they really mean it is badly ventilated, the excess of carbonic acid having rendered the air impure.

A Turkish bath, although raised to a much higher temperature, has no bad results if properly ventilated; so that pure heat alone has nothing to do with bad ventilation.

Dr. Angus Smith's experiments in a leaden air-tight chamber are interesting in this respect as showing that although the air in rooms may be bad enough to put out candles and paraffin lamps, yet people may breathe it and endure it at the time, although they feel the bad effects afterwards.

A general knowledge of the *movement of air* may here be given, because it is on a misconception of the laws which govern movements of air that so many ventilation schemes are failures.

The forces tending to move the air in a room are the wind and the difference in temperature between the outside and the inside of the building. This is to say, that provided sufficient inlets and outlets are furnished the movement of air will be directly proportional to the force of the wind and the difference in temperature, which latter is, by-the-bye, the principal agent in natural ventilation.

The wind is, therefore, a strong factor, but unfortunately it acts principally in cold weather, when to open windows or ventilators without warming the air causes unbearable draughts. In warm weather with a warm breeze good ventilation may be obtained, but on a still day in hot weather with stagnant air, when its frequent change is required, ventilation is wanting. Wind is, moreover, such an uncertain agent that it is not advisable to make any ventilation scheme depend upon it. Natural principles of great importance are: that the specific gravity of cold air is greater than that of hot air, and that air when heated expands and rises. Air expands ·002, or $\frac{1}{500}$ of its bulk for every degree Fahrenheit it is heated, so that if the air be heated 50 degrees above the external air it will be increased in bulk $\frac{1}{10}$th, and is, therefore, lighter in proportion. Cold air when introduced into an apartment has a natural tendency to fall, unless properly warmed. As we shall show, this must be done if a ventilation scheme is to be of any use, otherwise in cold weather the inlets are soon closed because of the draught brought about by the introduction of the cold air, because cold air being heavier than hot air a cold draught *descends* from what should be the *outlet* above. This outlet, as a rule, is closed in consequence, and so it is that schemes of ventilation depending on natural forces alone are doomed to failure. Air must be efficiently warmed in this climate for at least six months in the year.

Retracing our thoughts for a moment; when cold air is introduced, it presses against the warmer air of the apartment and causes it to rise in the same way as water, when poured into a glass containing oil, causes the latter to rise to the top.

Next we come to an important consideration, viz., the *velocity* with which air moves. This depends on the difference in temperature between the internal and external air, and increases directly as the height of the extract flue.

It must, therefore, be remembered that any flue extracts a much larger amount in winter; unless we know this velocity we cannot calculate for the required change of air.

Air is best extracted by something in the nature of a chimney or vertical shaft, which, in order to induce a current, should be heated. Extraction is also aided by the effect of the wind which blows across the top and gives a suction power to the shaft. Extraction flues should be as straight as possible, in order to prevent retardation by friction. A horizontal outlet often acts as an inlet, as such an opening will only extract when the wind blows on the opposite side of a building.

It has been calculated that a right angle bend detracts from the carrying power of any tube about 25 per cent., and it may, therefore, be laid down that ventilation tubes should be large, free from bends, smooth, and vertical. The deduction from velocity caused by friction must always be allowed for. The position of inlet and outlet has much to do with the movement of air currents. Some authorities consider that in winter time it is better to remove air near the floor level, if it is admitted warmed, as it diffuses and pervades the room more thoroughly. In summer, however, when the air is admitted in a cool state, it should be extracted at the top, otherwise it would fall towards the outlet without being distributed. This is the plan adopted in German schools.

### 2. Composition of Air.

Air consists mainly of oxygen and nitrogen in the following proportions by volume :—Oxygen, 21 per cent.; and nitrogen, 79 per cent.; and in addition there is always present a small proportion of carbonic acid gas, and often one or more of the following, viz., ammonia, ozone, or water vapour, argon, &c. In addition, suspended solid matter of mineral or organic particles; and microbes are found under unfavourable conditions. According to Dr. Angus Smith, the purest sea or mountain air contains as much as 20·999 volumes per cent. of oxygen (or nearly 21, as stated above), but the worst air found in a mine contained only 18·27 per cent. In the air of towns the average limit is about 20·96 per cent., and in overcrowded halls the percentage may be as low as 20·65, so that the percentage must be kept within comparatively narrow limits. The amount of oxygen may be decreased in a variety of ways, such as combustion (gas, fires, candles, lamps), by respiration, by fog, organic effluvia, &c.; on the other hand, it is increased by vegetation and by rain.

*Ozone* is a condensed form of oxygen, having a beneficial influence on the health. It is principally present near the sea and open country, and is rapidly destroyed by smoke and other impurities.

Oxygen we must have continually, as on it depend the maintenance of our bodily heat and of energy.

In town houses, in order to prevent impurities such as particles of soot and dust entering, air should be screened by causing it to pass through cotton wool or water. This may be effected by a filtering medium placed diagonally in a tube and presenting a surface about eight times the area of the inlet. This filtering medium should, of course, be changed frequently.

### 3. The Principal Impurities Found in Air are :—

*a. Carbonic Acid Gas* ($CO_2$).
*b. Carbonic Oxide (CO).*
*c. Sulphuretted Hydrogen.*
*d. Marsh Gas.*
*e. Ammonia Compounds.*
*f. Suspended Matters of all Kinds.*

*a. Carbonic Acid* ($CO_2$) is generally taken as the gauge of impurities in air; as it is generally present in excess of other impurities.

It emanates from underground sources in the form of gas, or in solution in mineral waters, also from respiratory processes of animal life. It is increased by combustion, putrefaction, fermentation, and fog. It is diminished by vegetation, rain, and high winds. In designing a system of ventilation it is necessary to provide a sufficient change of air to keep the amount of carbonic acid below a certain percentage, as its presence and the consequent exclusion of oxygen tends to prevent the possibility of animal life.

The quantities in which this gas is found in the atmosphere varies from 0·3 parts per thousand in the finest mountain or sea air, to 1·0, 2·0, or even 3·0 in overcrowded rooms.

An average proportion in the open air is about 0·4 per thousand.

The late Sir Douglas Galton stated that 1·5 parts *per cent.* produce nausea, depression, and headache; 2·5 per cent. extinguishes a candle; 5 parts per cent. is fatal. The greatest amount of carbonic acid gas which may be present in air without harm is generally taken at ·6 per thousand cubic feet.

*b. Carbonic Oxide* (CO), is formed by the imperfect combustion of carbon; and cast-iron stoves give it off in considerable quantities. Air containing 0·5 per cent., according to Galton, produces poisonous symptoms.

*c. Sulphuretted hydrogen* is formed in the air of sewers, in excavations, in marshes, and near gas works, &c.

*d. Marsh gas* is found in the air of marshes and also of coal mines, where the proportion may be sufficient to destroy life by the exclusion of oxygen. *Malaria* appears to arise from decaying moist vegetable matter in forests and marshes.

*e. Ammonia* compounds are derived principally from putrefaction and animal exhalations, and are injurious from the impurities which accompany them.

*f. Suspended matter are of all kinds*, such as dust formed of mineral particles, or organic matter of animal or vegetable origin. Stonemasons suffer from inhaling stone dust, house-painters from the dust of white lead; and the dust of the Egyptian desert produces a kind of ophthalmia. Bronchitis and lung disease occur in factories by inhalations of sand, coal, &c., or particles of cotton or hemp. Indeed, it may be said generally that the air of towns is rendered impure chiefly from the quantity of suspended matters in the air.

## *OBITUARY.*

M. David de Penanrun.—We regret to record the death, at the age of sixty-eight, of M. David de Penanrun, architect, of Paris, and an active and energetic member of the "Société Centrale des Architectes." He was originally a pupil of the Ecole des Beaux-Arts, and became "Inspecteur" under Baltard during the erection of the Halles Centrales, and also "Inspecteur des Bâtiments Civils" under the Government. He soon developed, however, a large private practice, and built many residences, in particular the Hôtel de Pomereu at Paris, various châteaux and villas, the Théâtre Taitbout, the Seminaire at Bièvre, &c. In 1876 he obtained the second premium in the competition for the Municipal Theatre at Cannes. M. de Penanrun was also an able writer on subjects connected with his profession, and was author especially of an important treatise under the title "Les Architectes dans leurs rapports avec les propriétaires, les entrepreneurs, et les tiers." He was one of the promoters of the "Caisse de Defense Mutuelle" among the French architects. His speeches at the architectural congresses, and his occasional communications to the columns of *L'Architecture*, were always characterised both by point and good sense and by the desire to maintain a high principle in the profession.

## *GENERAL BUILDING NEWS.*

St. Stephen's Church, Newport, Yorkshire.—This church has just been consecrated by the Archbishop of York. The building is late Decorated in style, and consists of nave, aisles, transepts, chancel, and an aisle which is to be utilised for an organ. The door at the west end of the building is the main entrance of the church, and here, on each side, is a vestry, one for the use of the clergy, and the other for the choir. The east window of the chancel is a large five-light window of flamboyant character, and is filled with stained glass, the work of Messrs. Clayton & Bell. The building is lighted by hanging brass lamps, one in the centre of each arch, the chancel having a corona, executed by Messrs. Jones & Willis, of Birmingham. There is seating accommodation for some 320 people, and the church has been built of local bricks, with stone dressings, whilst the roof is covered with Staffordshire tiles. Adjoining the church is the vicarage. Both buildings have been carried out from the designs of Messrs. Brodrick, Lowther, & Walker, architects, of Hull. The contractor for the church was Mr. F. Pattison, of Ruskington, Lincoln, whilst Messrs. Kelsey & Son, of Goole, undertook the building of the vicarage.

St. Anne's New Church, Blackpool. — The foundation stone has just been laid of a new Anglican church at Blackpool. Messrs. Austin & Paley are the architects. The new church will occupy a corner position on South Drive. The portion now building will cost about 7,000*l.*, and will accommodate about 600 worshippers. The total cost will be 9,000*l.*, and the church, when completed, will hold 804 persons.

Church, Dean, Edinburgh.—It is proposed to erect a new parish church at Dean. Plans have been prepared by the architects, Messrs. Dunn & Findlay, and approved. The estimated cost of the church, to hold 935, with spire and hall, is 9,000*l.*

New Mission Church, Sparkbrook, Birmingham.—It is proposed to erect a new mission church for this locality at the corner of Golden Hillock and Walford roads. The plans for the church have been prepared by the diocesan surveyor (Mr. W. H. Lloyd). The building is designed to afford seating accommodation for about 700, and the cost is estimated at about 6,500*l.* The materials will be chiefly brick, with stone dressings. The site being short from west to east the church has been planned somewhat wider than usual, with the result that the seats are grouped within a short radius of the pulpit. The building will comprise a chancel 32 ft. by 24 ft., and a chancel aisle, organ-chamber, and vestry, a nave 86 ft. by 29 ft., a south aisle of 19 ft. width, and a north transept, two porches, and an additional exit from the transept.

Church, Kensal Rise.—A Baptist tabernacle is being erected at Kensal Rise. The new tabernacle, it is estimated, will cost, in addition to the site, about 4,000*l.*, and it has been designed by Mr. George Baines, Clement's Inn, Strand. Messrs. Battley & Sons have been entrusted with the building contract. Accommodation is to be provided for 900 people.

Primitive Methodist Chapel, Doncaster.—A Primitive Methodist chapel is in course of erection on the Bentley-road, Doncaster. Messrs. Athron & Beck are the architects. The building includes a school-chapel, 50 ft. by 30 ft., two class-rooms, and a tea-room, each 18 ft. by 13 ft., a store-room, and a heating-room. The front of the edifice will be of pressed bricks relieved by stone. Messrs. C. Sprakes & Son are the builders.

Restoration of Bradford Parish Church.—Bradford Parish Church has just been reopened after restoration. Altogether, an expenditure mounting up to nearly 10,000*l.* has been involved. A great change has been brought about; but it is fair to the architects, Messrs. T. H. and F. Healey, of Bradford, to say that the alterations have been carried out in a truly conservative spirit, and without any sacrifice of the artistic or the historic. The old galleries of the north and south aisles have been removed, and the slender piers which had been cut into in order to support them have been strengthened, and thus extra support is given to the roof of the nave and aisles and the clearstory walls. By way of compensating for the accommodation sacrificed in the removal of the galleries, two new transepts, of the width of two bays, have been constructed. Most of the oak pews have been retained in the nave, but in the western end the old seats have been abolished, and, like the transepts, are fitted with chairs. New vestries to the north-east of the church have made it possible to again restore the Bolling Chapel on the south side — used as a clergy vestry—as part of the church proper. New choir stalls have been provided, and the chancel has been paved with marble in place of the old tiles. The roof of the chancel has been stripped of its slates, the defective wood cut away, and replaced by new, and the whole braced together, boarded, felted, and reslated. In the nave, panels of light-coloured oak have been inserted, whilst the aisle roofs on both sides are entirely new. The Flaxman monument, formerly in the chancel, is to be placed in the north transept. All the old memorials are preserved and placed in suitable positions. Several gifts of memorial windows have been made in connexion with the restoration, and, for artificial lighting, electricity has been introduced.—*Yorkshire Post.*

Wesleyan Methodist Church, Muswell Hill.—The new Wesleyan Methodist Church at Muswell Hill was dedicated recently. The architect for the new church was Mr. J. Gunton, of Finsbury House, E.C., and the builders were Messrs. Castle & Son, Clapton. The church is built of red brick and Bath stone dressings, with open roof covered with Broseley tiles. The present plan consists of nave, aisles, and large transept.

Primitive Methodist Church, Douglas, Isle of Man.—The foundation-stones of a new church in Buck's-road, Douglas, were laid on the 13th inst. The building will seat 900 persons, and the total cost will be about 6,200*l.* Mr. John Wills is the architect and Mr. William Kelly the contractor.

Tower, Long Melford Church, Suffolk.—The corner-stone of the reconstruction of the tower of the Church of the Holy Trinity, Long Melford, Suffolk, has just been laid. The architect is Mr. Bodley.

BOARD SCHOOL, UDDINGSTON, LANARK.—The school which has been erected by the Bothwell School Board at Muiredge, Uddingston, was opened on the 8th inst. The building is two stories in height, with a hall in the centre 59 ft. long and 26 ft. wide, lighted from the roof and by a stained-glass window in the east wall. The roof of this hall is of open timber construction. There are seven class-rooms on the ground floor and seven on the upper floor, with lavatories and cloak-room accommodation. The headmaster's room is on the ground floor. The building is heated by low-pressure hot water pipes and radiators. The plans for the building were prepared by Messrs. Bruce & Hay, architects, Glasgow; and the contractors for the various works were as follows:—Masonry, Messrs. Robert Aitkenhead & Sons, High Blantyre; wright work, Mr. William Miller, Uddingston; slating, Messrs. R. Morton & Sons, Uddingston; plumbing, Mr. Hugh Binning, Uddingston; plastering, Messrs. R. & W. Anderson, Bellshill; glazing, Messrs. C. & J. Malloch, Glasgow; concrete work, Messrs. Hamilton & Co., Glasgow; tiling, Messrs. Kean & Wardrop, Glasgow; heating, Messrs. James Cormack & Sons, Glasgow; painting, Messrs. W. & T. Cunningham, Uddingston; Gasfitting, Mr. James Hutcheson, Glasgow; railings and gates, Messrs. Donald Clerk & Son, Glasgow.

SCHOOL, HAMILTON, N.B.—On the 30th ult. the memorial stone was laid of a new school at Woodside. Mr. G. Paterson is the architect. The building is two stories in height, and is on the central hall principle. The school is to be fitted for 820 scholars, and the estimated cost is between 7,000*l.* and 8,000*l.*

NEW SCHOOL, STANNINGLEY.—A new school has been erected by the Pudsey School Board at Primrose Hill, Stanningley. The school, which has been erected from designs prepared by Mr. E. P. Peterson, architect, Bradford, is built on the central hall principle as a mixed department for 389 scholars. There are three class-rooms on the north and three on the east side of the central hall. The total cost of the buildings, including site, playground, fencing, fittings, and furniture, is about 5,000*l*

SCHOOL BUILDINGS, BANGOR.—The memorial stone of the building which the governors of the Bangor Friars' School have erected to replace the premises in the lower part of the town was laid on the 12th inst. Messrs. Douglas & Minshull, of Chester, are the architects, and Messrs. Jones, Hamilton, & Son, of Altrincham, the contractors.

SCHOOL, PRESTEIGN, RADNORSHIRE.—On the 15th inst. the Duke of Devonshire opened a new county school, established under the Welsh Intermediate Education Act, at Presteign, Radnorshire. The school is built upon the site of the old county gaol, the stone from which has been used in the new building. It provides accommodation for fifty-four students in two class-rooms and an assembly-hall. One of the class-rooms is separated from the assembly-hall by a movable partition. The technical side, which is cut off from the rest of the building, comprises a chemical laboratory 20 ft. by 18 ft., physical laboratory 26 ft. by 16 ft., and workshop 26 ft. by 16 ft. The architect is Mr. H. Teather, of Cardiff and Shrewsbury, and the contractor Mr. John Price, of Presteign.

SCHOOLS, WOODFORD, ESSEX.—The Woodford School Board have had a scheme for the erection of new schools in the George-lane district under consideration for some time, and plans have been prepared for 750 children, together with accommodation for a cookery centre. At a recent meeting of the Board it was decided to proceed with a block to accommodate 488 children and the cookery class room. The plans for this block have been approved by the Education Department, and tenders will shortly be invited. The architect is Mr. E. Tidman, Westminster.

COTTAGE HOSPITAL, LUTTERWORTH, LEICESTERSHIRE.—A cottage hospital is being erected at Lutterworth. The architects are Messrs. Townsend & Fordham, of Peterborough, and the contract has been let to Messrs. Linnel & Son, Rugby. The building will be of two stories, the frontage of 60 ft., facing north-west. The accommodation will comprise nurses' sitting-room, entrance hall, and offices, and two wards, these being placed at the back, with a southern aspect. There will also be an operating room, kitchen, scullery, pantry, and bath-room, besides nurses' bedrooms, tank-room, store-room, &c. A small isolated building will be set apart for a mortuary.

HALL, KINGLASSIE.—A hall, presented to the town by the late Mr. Alexander Mitchell, was opened on the 11th inst. The building was designed by Mr. Little, architect, Kircaldy. It is seated for 500 persons, and is provided with anterooms, retiring-rooms, and janitor's lodge.

HALL, MENSTRIE, N.B.—A hall in connexion with Menstrie Parish Church was opened on the 10th inst. Messrs. Dunn & Findlay, Edinburgh, were the architects. The hall is seated for about 400 people. The following were the contractors:—Masonry, Mr. J. Phillip, Tillicoultry; joinery, Mr. R. Cairns, Alloa; plastering, Mr. John Davie, Alloa; slating, Mr. J. Walker, Alva; heating, Messrs. M'Kenzie & Moncur, Edinburgh.

PARISH CHAMBERS, BLANTYRE, LANARKSHIRE.—At a meeting of Blantyre Parish Council on the 6th inst. it was decided to erect new parish chambers, the site fixed being the Council's own ground in Cemetery-walk. It is proposed to erect a Council-room, with a private or a public office, and also a registrar's office. Mr. Gavin Paterson, architect, Hamilton, was appointed to draw up the plans.

CO-OPERATIVE STORES, MORLEY.—The new central stores of the Morley Industrial Co-operative Society, which have been erected in Queen-street, at a cost of about 12,000*l.*, were opened on the 8th inst. The building is Classic in style, the architect being Mr. George B. Clegg, of Morley.

PROPOSED NEW MUNICIPAL BUILDINGS, MUSSELBURGH, EDINBURGH.—It is proposed to erect new municipal buildings for Musselburgh. On the left (facing south) are the Town Chamberlain's and Burgh Surveyor's offices on the ground floor, Council chamber on the first floor, and police accommodation above. A round tower provides access by a stair to the Town Hall behind and other rooms. On the right (facing the east) are police office, with court-room immediately above, and police constables' quarters on the top flat. The Town Hall will seat 1,000, while the Council chamber will be exactly double the size of the present one. The plans are by Mr. Will. Constable, architect, Musselburgh.

NEW MUSIC HALL, STRATFORD.—The new Empire Theatre of Varieties, Stratford, has been erected in the Broadway. The auditorium has a depth of 70 ft., with a clear width of 60 ft., and is constructed entirely without columns. On the ground floor are fauteuils, pit stalls, and pit. On the first tier is the grand circle, and on the second tier is the balcony, with the gallery set up above it, forming practically a three-circle house. The stage is 40 ft. deep and 70 ft. wide, with a height of 55 ft. A feature of the new building is a number of boxes at the rear of the grand circle. Raised promenades are provided on each level. The style of decoration throughout is Moorish, the prevailing colours being terra-cotta, gold, and blue. The building has been erected from the designs of Mr. W. G. R. Sprague.

MEAT MARKET, LEEDS.—The meat market which has been erected by the Corporation consists of twenty-six shops, each 17 ft. square. The shops are in two rows, with an avenue 12 ft wide between. At the far end are situated twelve offices, six at each end of a pitch-pine balcony, which is reached by a spiral staircase. A caretaker's house will be provided at the principal entrance, and over it will be erected a clock tower 70 ft. in height. The cost of the building, including the abattoirs (which have not yet been completed), will be about 30,000*l.* Messrs. W. Hanstock & Son are the architects.

ADDITIONS TO THE WEST OF ENGLAND EYE INFIRMARY, EXETER.—The foundation-stone has just been laid at the West of England Eye Infirmary of the new block of buildings which are to be erected to provide greater accommodation for staff and patients, in proximity to the present buildings. The plans have been prepared by Mr. A. Bramwell Thomas. A local firm of builders—Messrs. Stephens & Son—have contracted for the portion now to be proceeded with, at a price of 8,500*l.*

ST. JUDE'S VICARAGE, WOLVERHAMPTON.—The vicarage has been erected on a piece of land adjoining St. Jude's Church, Tettenhall-road, Wolverhampton, at a cost of 2,200*l.* The building is of ecclesiastical design. The walls are of red brick, with stone dressings, and the roofs are tiled. On the ground floor there are an entrance hall and staircase, dining-room, drawing-room, study, two kitchens, china pantry, larder, lavatory, back staircase, &c., and on the chamber floor there are seven bedrooms, bath-room, water-closet, housemaids' closet, &c., with hot and cold water circulation throughout. The contractor for the work was Mr. James Herbert, and the architects are Messrs. John Weller & Sons, of Wolverhampton

PROPOSED NEW TOWN HALL FOR BLACKBURN.—The report of Mr. A. N. Bromley, the architect selected by the Corporation, upon the proposal for a new town hall or improvements of the existing building, has been issued. Mr. Bromley says the existing structure is much too good to be discarded lightly, and he suggests that new police courts, a new assembly room, and other additions should be provided at a cost of 79,000*l.* A new town hall, with police-courts, offices, and assembly rooms, would cost 120,000*l.* Mr. Bromley suggests that a new clock tower should be placed at the junction of the present building with the proposed new assembly hall.

PROPOSED NEW ASSURANCE OFFICES, BRISTOL.—It is stated that the new offices for the Star Life Assurance Society, Tramways Centre, are to be commenced forthwith. The building will be from designs prepared by Mr. A. Blomfield Jackson, architect, of London, and the contract has been entrusted to Mr. A. J. Beaven, of Bedminster. The cost is stated to be about 15,000*l.*

CO-OPERATIVE BUILDINGS, BURTON-ON-TRENT.—The Burton-on-Trent Co-operative Society, Limited, are about to erect a range of shops, offices, concert-hall, and show-rooms in Byrkley-street. Mr. R. Stevenson, of Burton-on-Trent, is the architect, and the contract, which amounts to 7,380*l.*, has been secured by Messrs. Thos. Lowe & Sons, of the same town. The buildings are to be ready for use by October, 1900.

## *SANITARY AND ENGINEERING NEWS.*

NEW LIGHT RAILWAY NEAR ABERDEEN.—A new brick factory, with workmen's cottages, &c., has been built at Tarbathie, five miles from Aberdeen, for the Seaton Brick and Tile Company, under the supervision of Mr. R. G. Wilson, architect, Aberdeen, Chairman of the Company; and the formation of a light railway extending from the works to near New Bridge of Don—a length of three and a quarter miles—will be commenced in a fortnight. Messrs. Walker & Duncan, Aberdeen, are engineers of the new line, which will be of 3 ft. gauge and have steel rails and steel sleepers. The railway will cost about 6,000*l.*

WATER SUPPLY, LOOE.—Mr. W. O. E. Mead King held a Local Government Board inquiry at Looe on the 11th inst., in regard to the application of the Looe Urban Council for consent to borrow 6,000*l.* for a new water supply for East and West Looe. Mr. S. Jenkin, engineer, produced plans of the eastern section of the scheme and Mr. J. Thomas, engineer, plans of the western section.

EDGBASTON AND HARBORNE SEWERAGE SCHEME.—At Birmingham Council House on the 12th inst., Major-General H. D. Crozier, R.E., held an inquiry for the Local Government Board relative to an application made by the Birmingham City Council for sanction to borrow 155,000*l.* for works of sewerage, and 1,100*l.* for public walks and pleasure grounds. The City Surveyor, Mr. J. Price, described, by the aid of drawings, the defects of the present system, and explained in detail the work it was proposed to carry out.

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## *STAINED GLASS AND DECORATION.*

MEMORIAL WINDOW, ST. CUTHBERT'S CHURCH, EDINBURGH.—A memorial window has just been completed in the south aisle of St. Cuthbert's Church. The window contains illustrations from the life of St. John. Messrs. A. Ballantine & Gardiner executed the work.

WINDOW, COGAN CHURCH, CARDIFF.—The centre light of the east window of Cogan Church, Cardiff, has just been filled with stained glass (subject "The Crucifixion"), presented by Mrs. S. A. Brain. The work has been executed by Messrs. Joseph Chater & Sons, of London, to the design of Mr. G. Ostrehan.

MEMORIAL WINDOW, ELY CHURCH, CARDIFF.—A memorial window in St. David's Church, Ely, was unveiled recently. The window consists of three lights, the subject being the Ascension, and the work has been executed by Mr. Samuel Evans, of West Smethwick, Birmingham. Messrs. James & Sweet-Escott, of Cardiff, were the architects.

WINDOW, KIRKSTALL.—A large stained-glass window has just been presented to St. Stephen's Church, Kirkstall, by Mr. Edmund Butler, of Leeds. The window, which is at the east end, is in three lights, and the subjects are, in the centre, "Christ in Majesty," on one side "St. Stephen," and on the other "St. Paul." The work has been carried out by Messrs. Joseph Chater & Sons, of London, to the designs of Mr. G. Ostrehan.

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## *FOREIGN.*

FRANCE.—M. Benjamin-Constant has been appointed a Member of the Conseil Supérieur des Beaux-Arts, in place of the late M. Lenepveu.——M. Gauquié (sculptor) and M. Guillaume (architect) have been commissioned to execute the monument to be erected, by public subscription, in memory of Henri Pille, the painter.——The bowl of a baptismal font of interesting design has been found in the vaults of the Church of Saint Sulpice, Paris. It is to be placed in the church.——The "Vieux Paris" Committee has demanded that the south-west tower of the ancient fortified enclosure of the Priory of Saint Martin des Champs should be officially classed as a "Monument Historique." The tower is still in good preservation, but is at present used as a store-house in connexion with a carpenter's shop. It is concealed behind a house in Rue Bailly, near the "Arts et Métiers" building.——M. Charles Normand, the architect, has discovered at the Quai Bourbon, north of Ile St. Louis, some ancient subterranean vaulted galleries which represent the last existing remains of the Paris sewers of the seventeenth century.——A rich inhabitant of Mirecourt has left to that town 500,000 francs for the erection of a church.——The death is announced, at the age of fifty-four, of M. Léon Charles Louis Avenet, a former pupil of the Ecole des Beaux-Arts and of M. Vaudremer, who quitted architecture to take up the art of glass-painting, in which he had considerable success.——M. Alfred Rubé, the oldest scenic painter in Paris, has died at the age of eighty-four. For many years he had taken part in the decoration of nearly all the Paris theatres. He was the last surviving pupil of Ciceri, the celebrated decorator of the "Romantic" Period. Among his numerous works may be mentioned the scenery of the cemetery scene in Ambroise Thomas's "Hamlet," and an admirable night effect painted for a piece at the Comédie Française, "Jean de Thommery." He designed the curtain of the Opera House, and his last work was that for the Opéra Comique. He had talents enough as a draughtsman and colourist to have gained eminence in the wider field of the art of painting, but seems to have preferred the large scale of work for scenic decorations. The scenes which were sent out from his atelier are innumerable, and his name is closely connected with French dramatic art of his period. M. Rubé was a Chevalier of the Legion of Honour.

## *MISCELLANEOUS.*

Professional and Business Announcements.—The business of the late Mr. E. Egan, architect and surveyor, of Loughton, Essex, and 39, Lombard-street, London, will be carried on by Mr. Horace White (who was chief assistant for several years to Mr. Egan) in partnership with the widow, under the style of Egan & White.——Mr. Harry G. Assiter, surveyor, has removed his offices from 5, St. Martin's-place, Trafalgar-square, to 19, Old Queen-street, Westminster.

The Utility of Wood-Flour.—The *Canadian Gazette* publishes some interesting information from an official report regarding the Canadian wood-flour industry. Wood-flour or "wood-meal" is used in the manufacture of a certain kind of linoleum known as "inlaid," and also as an absorbent for nitro-glycerine. It is estimated that about 1,200 tons of wood-flour are used per annum in the United Kingdom for the manufacture of linoleum, while the total consumption for the manufacture of explosives is about 700 tons. The price of wood-flour for making linoleum varies from about 3*l.* to 3*l.* 10s. per ton, and for absorbing nitro-glycerine from 4*l.* to 4*l.* 10s. per ton. For the latter purpose the flour must be made from soft wood, and must be prepared with great care. For linoleum manufacture the wood-flour must be finely ground, white in colour, and of light weight.

Open Spaces, Dollis Hill. — We recently adverted to the proposal to purchase the late Lord Aberdeen's estate at Dollis Hill as a public recreation ground. It is stated that the Willesden District Council have the option of buying, before the end of April current, the whole property, 98 acres, for 50,000*l.* The Council agree to raise 30,000*l.*, and the Middlesex County Council undertake, we gather, to contribute 12,500*l.* All Souls College, Oxford, and the Ecclesiastical Commissioners, both of them being land-holders to a large extent in the neighbourhood, have been asked to subscribe—the Commissioners offer, in response, to lend the District Council a sum of 5,000*l.* at 2 per cent. interest. As the land lies outside the London boundary the London County Council and the Paddington Vestry express their inability to contribute to the purchase.

The Improvement of Cheapside.—A beginning has been made with the project of widening the roadway at the west end of Cheapside from 45 ft. to 65 ft. by the demolition of the houses at the end of Paternoster-row and the corner of St. Paul's Churchyard, to be followed by the removal of the houses at the corner of Newgate-street, where an additional width of 25 ft. will be gained. The scheme will be carried out at a total expense of 155,950*l.*, the net cost being shared equally by the Corporation and the London County Council. One effect is already apparent, in the fine view which one now obtains of the east end and north side of St. Paul's.

The New Government Buildings.—In the House of Commons on the 13th inst. Sir J. Leng asked the First Commissioner of Works whether it was proposed to make the new Government buildings in Whitehall, Parliament-street, South Kensington, and the Patent Office as far as possible fireproof; and whether tests would be made as to which was the best system, or would it be left to the architects employed to decide what system of fireproofing should be adopted.—Mr. Akers-Douglas: The answer to the first paragraph of the hon. member's question is in the affirmative; the architects, in conjunction with Sir John Taylor, will be instructed to consider what system or systems are best adapted to render the various buildings fireproof.

Electric Lighting, Bootle. — The electricity supply station in Pine Grove, Bootle, has just been completed. The scheme has been designed by Mr. Thomas L. Miller, Consulting Engineer to the Bootle Council, under whose superintendence the work has been carried out. Mr. O. F. Francis acted as clerk of works. The buildings were erected by Messrs. L. Parker & Co., Wolverhampton, from plans prepared by Mr. J. A. Crowther, the Borough Engineer. Mr. F. A. Robins was resident engineer.

Jerry Building, Sheffield.—At a recent meeting of the Sheffield City Council, Mr. Howell, alluding to the approval of plans for the erection of certain new houses in Oakbrook-road, hoped the Chairman of the Committee would see that the houses were properly built in accordance with the plans. In Hangingwater-road, close by, there was a very serious example of jerry building. The Council ought to have more building inspectors. Some of the work he referred to had been taken down and rebuilt, and more would have to be. The building of the property was disgraceful. He saw the gable end of one house bulging out, but by some hydraulic means or other it was got in again. Instead of decent bricks, brick ends, broken bricks, or anything else were used for the insides. Either the by-laws were not sufficient, or somebody was not doing his duty. It was a disgrace to Sheffield that houses of that sort should be built.—Mr. Nowill said during 1898 plans were approved for 3,560 new houses, as against 1,906 in 1896, and suggested the advisability of engaging additional inspectors.—Alderman Brittain agreed with Mr. Howell, and thought it desirable that, in their next application to Parliament, the Corporation should ask for power to deal with those houses which were run up at the smallest possible cost, and were dangerous, not only to the health, but to the life and limb of people.—Mr. Hobson thought that the by-laws gave the Council power to do much more than they did at present, and that they had not half enough inspectors.—Mr. Uttley said the building inspectors did their duty ably, but they got no encouragement in it. When a builder was brought before the magistrates a few weeks ago he was fined the enormous sum of 3s. 6d. There was every encouragement to jerry building to-day in Sheffield. He wished to defend the building inspectors, who were humbugged and hampered until life was almost unbearable. They often found, after visiting a new building, that if they went back an hour later inferior material was being used. He was afraid the present building boom would not continue, and that if the staff of inspectors was increased it would have to be reduced in a year or two.—The Chairman of the Highway Committee said the general answer to all these questions was that the department was very much understaffed in the number of building inspectors. He was glad that the remarks in the Council had been made, as they would strengthen the hands of the committee in dealing with those and with other matters. Two building inspectors under normal circumstances were not sufficient for a city of the size of Sheffield, and under the abnormal circumstances of the last few years that number was totally inadequate. Builders required a lot of watching. He thought if the Committee came before the Council proposing the enlargement of the staff, they would have the support of the Council.

Ancient Crosses of Lancashire. — At the recent monthly meeting of the Lancashire and Cheshire Antiquarian Society, held in the library of Chetham's Hospital, Mr. Henry Taylor read a paper upon "The Ancient Crosses of the Hundred of Leyland." The paper was illustrated by a map on which were shown the sites of fifty crosses and the positions of the fifteen churches and chapels of the pre-Reformation foundation. Another map showed the sites of the fifteen religious houses which were established mainly on the western half of the county of Lancaster, between the years 1087 and 1319, and to whose influence the existence of so many crosses may be attributed. Amongst the drawings, sketches, and photographs which he exhibited were plans of the sites of Penwortham Priory, its crosses and holy wells; a drawing of the Preston market cross as it existed in the year 1715, the Leyland village cross, the Standish market cross with stocks and well, and the remains of the Croston market cross and well. There were also a series of sketches of the remarkable monumental slabs in Leyland churchyard; the remains of the celebrated Mab's cross, Wigan, and of the market cross, Chorley; a curious ancient cross near Walton-le-dale; the pedestal of the Pilgrim's Cross, Holcombe Moor; the pre-Norman churchyard cross, Winwick; St. Helen's wishing well, Brindle; and Gradwell's Farm cross, near Croston. In the course of his remarks Mr. Taylor pointed out that light has been thrown on the history of many of the crosses whose remains are to be found scattered over the Hundred, by the "Chartulary of Cockersand Abbey," recently published by the Chetham Society. Several of these deeds, whereby land was given by private individuals to Cockersand Abbey, dating in some cases from the early part of the thirteenth century, define these lands by the planting of crosses, whose pedestals are still to be seen. Instances occur at Shevington and Langtree, Standish, at Fairhurst near Parbold, and elsewhere. Robin Hood's Well and Cross, West Croston, were then described, and the Dob and Hob crosses also in that locality. Mr. Taylor also described the contests which took place at the beginning of this century between the villagers of Sollom and Tarleton for the pedestals of their crosses.—*Manchester City News.*

Association of Municipal and County Engineers.—The Twenty-seventh Voluntary Pass Examination of candidates for municipal surveyorships, carried out by this Association, was held at the Institution of Civil Engineers, Westminster, on Friday and Saturday, the 14th and 15th inst. The written portion of the examination occupied the first day. The greater portion of the second day was devoted to the *viva voce* test of the twenty-eight candidates who presented themselves for examination. The examiners were:—(1) for Engineering, Mr. William Weaver, M.Inst. C.E.; (2) for Building Construction, Mr. J. Lobley, M. Inst.C.E.; (3) for Sanitary Science, Mr. J. Lemon, M.Inst.C.E.; (4) for Municipal Law, Mr. J. T. Eayrs, M.Inst.C.E. Mr. Lemon was the superintending examiner.

Electric Shop-window Lantern.—The Edison and Swan Electric Light Company send an illustration and description of the "Rex" outside shop-window lantern. This is a globe lantern containing incandescent lights. The inner half of the globe, towards the shop window, is of clear glass, the outer half of opal glass, which aids in reflecting the light into the shop window, and also affords on its outer side a surface for the name of the shop, or other announcement.

British Archæological Association Congress.—It is stated that the Congress of this Association will be held in Buxton from July 17 to 22 next. Mr. Charles Lynam, architect, Stoke-upon-Trent, has made the preliminary arrangements. Mr. W. R. Bryden, architect, Buxton, will act as local hon. secretary.

Royal Archæological Institute.—The Council of the Royal Archæological Society have decided to hold the annual meeting at Ipswich this year, from July 25 to August 1. A local committee has been appointed by the Suffolk Institute of Archæology, in conjunction with the Ipswich Scientific Society.

Formation of a Bradford Builders' Federation.—A meeting was held at the Bradford Building Trades and Stone Exchange on the 12th inst. for the purpose of discussing the question of forming an employers' federation for the Bradford district. Rules of the Leeds and other federations were laid before the meeting, and the proposition having been favourably commented upon by the representatives of each trade concerned it was decided to form such a federation.

The Fire at Hyde Park Court.—With regard to the fire in Hyde Park Court we have obtained some information from the architect, Mr. Francis Hooper. He thinks that the fire originated in the service room, probably on the ninth floor, though the first signs of it were seen on the basement and ground floor. These were extinguished by the hydrants which are on each floor. It was then discovered that the fire was raging on the ninth and tenth floors, and it is suggested that fragments of burning material must have fallen down the shaft of the service lift and caused the smaller fires on the basement and second floor. The fire-engines were sent for, when it was discovered that the fire was at the top of the building. With regard to the plan of the building, it consists of two separate blocks, one facing the park and the other Knightsbridge-road. These blocks converge slightly towards each other eastward, and at the west are 40 ft. apart. They are connected centrally by a bridge on each floor, on which are the passenger lifts; between these and the service lift is the stone main wall of the Knightsbridge front block. A special feature in the construction of the building is the outside circular staircase situated on the Park front, passing through the open loggia on each floor; this staircase was used by all who thought fit. The servant maids, whose dormitories are on the top floor, appear to have been terrified by the smoke, and did not venture to cross the building to the staircase. Both the passenger lifts and the staircases are intact. The fire was confined to the timber roof above the large storage tanks in the Knightsbridge front, otherwise the structure of the building is uninjured. The fitting and joiners work on the two top floors of the central portion are all that have suffered, except by water.

## *CAPITAL AND LABOUR.*

State of the Building Trades in March.—According to the *Labour Gazette* employment in the building trades during March continued good though the plasterers have been affected by a dispute. The percentage of unemployed union members among carpenters and plumbers at the end of the month was 1·6 compared with 1·5 in February. The percentage for March, 1898, was also 1·6. During the month there were eighteen disputes, chiefly in regard to wages, affecting 5,724 workmen. Of these disputes eight were in England and Wales and ten in Scotland.

Building Trade Dispute at Sunderland.—The Sunderland Branch of the Northern Counties Federation of Master Builders issued on the 13th inst. a notice to the labourers employed in the building and kindred trades in Sunderland and district, to the effect that it has been reported to them that a large majority of the labourers employed by them are not desirous of leaving their work in the event of some of their number striking. The manifesto then goes on to say that the union men having refused to meet the masters to hear the reasons which induced them unanimously to refuse the men's demands, notice was given that the masters would support all labourers remaining at work, as far as they lawfully could, both during the strike and afterwards. The men have been earning 6½d. per hour, and are seeking an advance of ½d. per hour. The master builders have decided to give two months' notice to the bricklayers' labourers of a reduction from 6½d. to 6d. per hour.

Glasgow and Edinburgh Joiners.—At Glasgow, on the 14th inst., the local master joiners agreed to refuse the workmen's demand for 10d. an hour. It is believed that the men will in consequence strike. A mass meeting of the operative joiners of Edinburgh and Leith was held at Edinburgh the same day to consider the masters' refusal of their demand for an advance in wages from 9d. to 9½d. per hour. The meeting refused to accept the masters' offer of arbitration, and, after a long discussion, it was decided to strike.

The Labourers' Strike, Leicester and Loughborough.—The Secretary of the Midland section of the National Building Trade Employers' Federation has informed the Secretary of the Leicester branch of the Labourers' Union, that the Leicester and Loughborough employers have decided not to grant any increase in wages to the bricklayers' labourers, and that if the men continued to hold out against the unanimous decision of the employers in those towns, the employers would have to consider the advisability of extending the stoppage to all labourers within the federation area. The men have, nevertheless, confirmed their demand for an additional ½d. per hour, and 140 members of the union are already getting it. The bricklayers and some carpenters are affected by the strike. It is believed that the dispute would be settled but for the lock-out of plasterers, which involved the stoppage of labourers sooner or later. The labourers have offered to submit their demand to arbitration by the Board of Trade, and contend that as the bricklayers and carpenters have had an advance recently, they are also entitled to consideration.—*Morning Advertiser.*

The Arbroath Building Trade.—At a meeting of the Arbroath joiners on strike, held on the 12th inst., it was reported that the federated masters, with one exception, had signed the by-laws, and the men agreed to resume work. The wages of the men have been increased from 7½d. to 8d. per hour as the result of the strike. The operative slaters have, following the lead of other tradesmen in the town, lodged an application for an increase of ½d. per hour to their wages. The master slaters, along with the Committee of the Builders' Federation, met the other night, and after consideration it was resolved to decline to grant the advance.

Trade Dispute at Hucknall, Notts.—A small trade dispute is now operating at Hucknall in connection with the local branch of the Amalgamated Society of Carpenters and Joiners, who last October gave their employers notice that from April 1 they would require to be paid at the rate of 8½d. per hour instead of 8d. as heretofore. Several employers have granted the advance, but a few men, who have been refused their demands, have been called out by the Society.

Dundee Joiners' Wages.—The Dundee joiners have received an advance of ½d. per hour, making the total wage 9d. per hour. Application for an advance was made in January, to come into force on April 10, and the state of trade warranting such a step, the employers conceded the increase, subject to certain conditions.

Threatened Painters' Strike at Burnley, Lancashire.—A meeting of the Burnley and District Branch of the National Association of Master House Painters was held on the 13th inst., when the demands of the men regarding an increase of wages and alteration of rules appertaining to overtime and boundaries were considered. It was decided to reject the present demand. Should an arrangement not be come to the whole of the painters in Burnley and district will cease work on May 1.

Building Trade Dispute, Scarborough.—At a meeting of the Scarborough Master Builders' Association on the 17th inst., regret was expressed that the locked-out labourers had refused to accede to the masters' request and work with non-unionist men. It was accordingly agreed to fill up their places. The lock-out, we understand, was brought about by a dozen unionist labourers going on strike because one man employed was a non-unionist. The masters then locked out the unionist labourers, numbering about 300.

The Strike at Felixstowe.—The strike amongst the bricklayers in the Felixstowe district, which commenced with the first of the month, bids fair to continue, neither side being at all inclined to give way. The masters regard the demand of an increase of one penny upon the 7d. per hour now paid as exorbitant.

## *LEGAL.*

### THE PLASTERERS' DISPUTE.

At the South-Western Police-court a few days ago, B. Corke, plasterer, was summoned before Mr. Denman for committing a violent assault on George Stillwell, plasterer's labourer, employed by Veronese, Limited, fibrous plaster manufacturers, Fulham.

Mr. Raven prosecuted on behalf of the London Master Builders' Association, and stated that the case arose out of the plasterers' lock-out. The defendant was not employed by Veronese, Limited, but apparently he nursed some grievance against the complainant, and, meeting him on the evening of the 1st inst. in Lower Richmond-road, Putney, muttered something, and then, without any warning or provocation, dealt him a violent blow between the eyes, knocking him to the ground. Stillwell's nose was broken, his eyes were blackened, and one of his teeth was knocked out. He injured his knee in the fall, and rheumatic gout as a consequence supervened.

After hearing the evidence, the magistrate said the case assumed a different aspect from what it wore at the beginning, and perhaps the defendant did receive some provocation. At the same time, the assault was a serious one, and he would be fined 5*l.*, with the alternative of one month's hard labour in default, besides being bound over in 10*l.* to keep the peace for twelve months.

### CASE UNDER THE WORKMEN'S COMPENSATION ACT.

On Thursday of last week, at Chorley County Court, Judge Coventry had before him a claim, under the Workmen's Compensation Act, of much interest to builders. The application was by Jane Bibby, widow of the late Peter Bibby, to his Honour as arbitrator under the Act, to award the sum of 161*l.* 16s. as compensation for the death of her husband, which resulted from injuries received while following his employment as foreman carter for Robert Brownley, builder, Chorley. Mr. Berry appeared for the applicant, and the respondent was represented by Mr. Byrne (instructed by Mr. Kevill). Mr. Berry, at the outset, said Mr. Brownley was a builder, carrying on business in a large way, and had a joiner's shop in Railway-street, Chorley, which was a workshop within the meaning of the Act, as steam was used there. On September 7 Bibby, the husband of the applicant, was taking a load of timber to the Infectious Diseases Hospital at Heath Charnock, which was in course of erection. Whilst on the way he stopped the horse to wind and went for a few moments into a public-house just at hand. As he was coming out the horse started off and rushed on to the parapet. He endeavoured to stop it, but unfortunately he got between the horse and a palisaded wall and was caught by the wheel and was severely mangled. He was conveyed to the Cottage Hospital but died the next day, leaving a widow and four children. Mr. Brownley rendered the widow pecuniary assistance by giving her 5*l.* and allowing her for a time to live rent free in one of his houses, but ceased on the action being commenced. Mr. Berry said that, although the accident did not actually take place in or about the workshop, it arose out of the man's employment, and his Honour had in a former case expressed the view that so long as the accident was in the course of the employment the employer was liable no matter where it was. His Honour said that was the view he had taken, but it would have to be shown that Bibby was employed by the respondent, and that the respondent's place was a factory within the meaning of the Act. How could a carter be classed as a workman for whom the Act was intended? Mr. Berry said he would have to load his timber in the place where the steam power was used. Mr. Byrne said his contentions were:—(1) That the place was not a factory at all within the meaning of the Act. (2) The accident did not occur in or about a factory. The whole duty of deceased was to look after the stables and carts and to superintend the other carters. (3) They also alleged that the accident was due to the negligence of the deceased. The Judge thought it would be best to hear the facts, and in the evidence which was given it appeared that the backband had broken at the time of the accident. It was an old one, but deceased had had a new one given him, but had not used it. His Honour said the Act stated that the employment was to be in or about a factory. Supposing a stable was on the premises of a factory and a man was employed at it, surely it could not be contended that that was not employment about a factory. Mr. Byrne contended that the injury must occur in physical nearness to the factory, and in support of this he cited two cases which had been decided recently on appeal by the same Judge. In one case it was held that where a workman in a factory who was injured whilst unloading a cart at the gates of the factory was entitled to compensation, in another case it was held that a man employed at a corn-mill who was injured whilst delivering sacks of flour one and a half miles away was not entitled. In both cases, said Mr. Byrne, it was laid down that the injury must be received in employment which was in close propinquity to a factory. The accident in the present case was half a mile away. If his Honour held that it was a factory within the meaning of the Act, and therefore the applicant was entitled to compensation, his (Mr. Byrne's) last point was that Bibby had brought about his fatal injury by his own fault in using an old backband when a new one had been provided for him. In reply, Mr. Berry said that according to the Act respondent was liable to pay compensation if Bibby was injured in the course of his employment, no matter where he was. As to the question of respondent's works being a factory within the meaning of the Act, he said it was necessary that Mr. Brownley should have carters in connexion with his saw mill, to carry timber to and from it. It was obvious that if the Act was not intended to apply to employment at a distance from a factory, the words "in the course of his employment" would not have been inserted in the Act. His Honour, in giving his decision, dealt first with the contention that respondent was not liable, because Bibby, by his neglect, had brought the accident on himself. It appeared to him that by using an old chain while he had a new one in his possession, Bibby did an act which probably cost him his life. It had been stated that he kept the new chain for May Day, but he could not say such an act amounted to "serious and wilful misconduct," which was necessary under the Act before a person could be disentitled to compensation for an injury. As regarded the cases cited by Mr. Byrne, his own view was that if the injury happened in the course of a man's employment in connexion with a factory, it did not matter where he was at the time of the accident. He had, however, to confess that the Court of Appeal had given decisions contrary to that view, and he was bound to follow those judgments. This being so, he must say with some reluctance, he found that deceased was not at the time of the accident in employment about respondent's factory, and he had therefore to make his award in favour of Mr. Brownley.

### INTERFERENCE WITH A PARTY WALL AT ALDGATE

The case of Harris *v.* The London and North-Western Railway Company came before Mr. Justice Byrne in the Chancery Division on the 14th inst.

Mr. Levett, Q.C., said that this was a motion on behalf of the plaintiff to restrain the defendant company from interfering with the plaintiff's party wall at No. 58, Mansell-street, Aldgate, except under the terms of the London Building Act. He understood that his learned friend Mr. Clare appeared for the defendants, and would give him an undertaking until the trial, without prejudice to any question, not to interfere with the party wall except under the terms of the London Building Act. Upon this undertaking the motion stood till the trial.

### ACTION AGAINST CONTRACTORS.

The case of Ffolliott *v.* Pearson & Son, Limited, came before Mr. Justice Phillimore and a common jury on the 17th inst., it being an action brought by the plaintiff, Mr. T. L. Ffolliott, the freeholder of No. 27, East Cliff, Dover, for damages for an alleged nuisance. The defendants, the contractors for the new Admiralty Pier at Dover, pleaded in defence statutory authority. It appeared that the defendants in the course of their work had established a store-yard on the road in front of the plaintiff's house and had also taken possession of the castle jetty opposite the plaintiff's house, and had erected steam cranes and other steam-engines there. The plaintiff complained of a nuisance arising from noise, smoke, and coal-dust.

After some evidence had been given the case was settled, the defendants buying the plaintiff's house. The terms of the settlement did not transpire.

Mr. H. F. Dickens, Q.C., and Mr. G. H. Condy appeared for the plaintiff; and Mr. Scott Fox, Q.C. and Mr. C. G. Jones for the defendants.

### PROTECTING BUILDINGS AGAINST FIRE.

At the Southwark Police-court, on Tuesday, Messrs. Peek, Frean, & Co., Limited, biscuit makers, were summoned by the London County Council for neglecting to obey a statutory notice to provide means of escape in case of fire at a packing-case manufactory owned by them, and occupied by Messrs. Lloyd & Co., at Mill-street, Dockhead.

Mr. Chilvers prosecuted, and showed that the defendants agreed in July, 1898, to do the work, but up to the present had done nothing. The factory was full of inflammable materials, it employed 200 or 300 men, and the only exit from the third floor was a steep ladder of bad construction. There had been two fires since the first notice was served.

Mr. Moresby, on behalf of the defendants, undertook that the work should be done forthwith.

The magistrate said the owners could not transfer the blame to the occupiers. They were liable on the summons to a penalty of 58*l.* for fifty-eight days, but he should only order them to pay 20*l.* and 5*l.* 5s. costs. If the work were not quickly done he hoped they would be summoned again.

## MEETINGS.

#### Friday, April 21.

*Architectural Association.*—Annual Soirée, St. George's Hall, Langham-place, W. A musical play will be performed, entitled: "The Druids' Elect: An Episode of the Ancient Britons." 8 p.m.

*Institution of Civil Engineers.*—The seventh "James Forrest" Lecture, to be delivered by Professor J. A. Ewing: "Magnetism." 4 p.m.

#### Saturday, April 22.

*St. Paul's Ecclesiological Society.*—Visit to the following City churches, conducted by Mr. Philip Norman, F.S.A.:—St. Vedast, Foster-lane, at the back of the General Post Office, at 3 p.m.; St. Anne and St. Agnes, Gresham-street, at 4 p.m.

*Sanitary Institute (Demonstration for Sanitary Officers).*—Inspection at the Sewage and Destructor Works, Ealing. 2.15 p.m.

*Edinburgh Architectural Association.*—Visit to Drum House.

#### Monday, April 24.

*Sanitary Institute (Lectures for Sanitary Officers).*—Professor Henry Robinson on "Sewerage and Sewage Disposal." 8 p.m.

#### Tuesday, April 25.

*Institution of Civil Engineers.*—Annual general meeting of corporate members only, to receive the Report of the Council, and to elect the Council and Auditors for the ensuing year. 8 p.m.

#### Wednesday, April 26.

*Surveyors' Institution.*—Country meeting at Bristol, to be held in the reception room of the Council House, at

11 a.m. The following papers will be read and discussed:—(1) "Bristol," by Mr. William Sturge (Past President). (2) "The Railways and the Farmers," by Mr. W. M. Acworth (Barrister-at-Law). (3) "The Proposed Provision of Workmen's Houses by Loans from Local Authorities," by Mr. Howard Martin (Fellow). The members will dine together at the Grand Hotel, Broad-street, Bristol, in the evening, at 6.30 p.m. The following day will be devoted to excursions to (1) Places of interest in Bristol and its vicinity. (2) Tintern Abbey and Chepstow Castle. (3) Wells and Glastonbury.

*Liverpool Engineering Society.* — Annual General Meeting. Paper by Mr. M. Treleavan Reade. 8 p.m.

*Edinburgh Architectural Society.*—Mr. F. W. Deas on "Churches in South-Eastern Italy." 8 p.m.

THURSDAY, APRIL 27.

*Sanitary Institute (Lectures for Sanitary Officers).*—Mr. Charles Jones on "Scavenging, Disposal of House Refuse." 8 p.m.

*Royal Institution.*—Professor Dewar on "The Atmosphere." III. 3 p.m.

*Society for the Encouragement of the Fine Arts.*—Mr. R. Cameron, M.P., on "The Growth of Art in our Public Schools." 8 p.m.

*Institution of Mechanical Engineers.* — Ordinary General Meeting. Address by the President, Sir W. H. White, 7.30 p.m.

*Institution of Electrical Engineers.*—(1) Continuation of discussion of paper by Messrs. W. Duddell and E. W. Marchant on "Experiments on Alternate Current Arcs by Aid of Oscillographs." (2) Paper by Mr. J. Elton Young on "Capacity Measurements of Long Submarine Cables." 8 p.m.

FRIDAY, APRIL 28.

*Architectural Association.*—Mr. F. W. Macey on "Specifications." 7.30 p.m.

*Royal Institution.*—Professor C. A. Carus Wilson on "Some features of the Electric Induction Motor." 9 p.m.

*Institution of Mechanical Engineers.*—Ordinary General Meeting (concluded). Paper by Mr. H. G. V. Oldham. 7.30 p.m.

SATURDAY, APRIL 29.

*Sanitary Institute (Demonstrations for Sanitary Officers).*—Inspection at the Sewage Outfall Works, Barking. 3 p.m.

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## RECENT PATENTS:

### ACCEPTED SPECIFICATIONS.

### *Open to Opposition until June 12.*

[1898] 7,903, Soulé, and 7,961, Wilson, Electrical Switches. 9,265, Levey & O'Brien, Artificial Stone, Tiles, &c. 9,485, Scott, Scott, & Wilson, Implement for Applying Paint and Similar Substances. 9,669 and 9,670, Westman, Rotary Milling Cutters for the Grooving and Tongueing of Boards, &c., and Machine for Cutting Long Shavings. 9,674, Melhuish, Guthrie, & Hughes, Acetylene Lamps. 10,175, Lumsden, Wrenches for Pipes, &c. 11,400, Ellin, Pincers, Nippers, Hand Vices, and Similar Tools. 11,561, Sugden, Incandescent Gas Lighting. 12,022, Rigby, Generation of Acetylene Gas. 12,439, O'Conor, Dredging Apparatus. 12,448, A. Barraclough & Co. and Others, Lead and Other Piping, and means for Making Joints therein. 12,514, Pope & Rayner, Automatical Alarm for Lifts. 12,657, Petterson, Wickless Burners for Petroleum Stoves, &c. 12,686, Grafton, Cranes. 12,710, Lynde, Hinged Self-closing Bib-cock or Tap. 12,839-41, Siemens & Halske, A.G., Electrical Glow-lamps and Fittings. 13,991, Brecknell, Steel-yards. 14,524, Showell, Retaining Mechanism for Sliding Rods for Fan-light Openers and similar purposes. 15,090, Allen, Waste Water and other Closets. 17,590, Rowe, Fastener for Windows, Cupboards, &c. 17,883, Booker, Arc-lamps. 18,907, Blanckenhorn, Electrical Switch Device for the Temporary Lighting of Staircases, Floors, Cellars, &c., also for indicating the Heating of Shafts and Bearings, and for Fire-alarms. 21,253, Wharldall, Ladders and Step-ladders. 22,515, Michaelsen, Locks. 23,091, Barnes, Casement-stays. [1899] 604, Rulon & Keen, Incandescent Vapour Lamps. 1,001, Porter, Electrical Heaters. 2,289, Zeltner-Dietz, Method of Marking Out the String-boards of Staircases. 2,489, Mauser, Method of Making Bars, Fences, Latticed Work, Fillings, Ornamentations, &c., of suitable material in Strips without Waste. 2,565, Meier & Obacht, Device for Painting, Graining, or Applying Patterns or Designs. 2,574, Moutte, Movable Furnace Grates. 3,295, Raymond & Raymond, Brick and Tile Presses. 3,364, Rogers, Attachment for Street Gulleys to enable them to take off Storm Water. 3,474, Rowntree, Door-operating Mechanism, chiefly for use for lifts. 4,133, Konrad, Preservation and Fireproofing of Wood, &c. 4,273, Hill, Window Sash Fasteners. 4,307, Robertson, Self-acting Window Lock. 4,638, Enock & Enock, Turbines. 4,766, Niederländer, Sliding Windows. 4,817, Bronw, Implement for Measuring Limited Lengths and Automatically Calculating certain Fractional Parts thereof. 4,874, Whiteley, Sliding, Swivelling, or Folding Partitions, Doors, Windows, &c. 4,878, Wilkinson, Case for Electrical Transformer Connexions, also applicable to Street Electrical Light Standards. 5,119, McLaren & Carrod, Purifying and Softening Water.

### ABSTRACTS OF PATENTED INVENTIONS.

28,968.—ROOFS: *W. J. Woods.*—The roof is ridge-shaped at the centre, and diamond-shaped at each corner of the building, the latter portion being constructed of rafters, which extend between the lower bars or plates and a central diagonal rafter or bar, which may reach along the frame's entire, or partial, length, ordinary roofing shingles are attached to purlins nailed to the frame—it is claimed that the method of roofing presents a novel appearance, affording increased facilities for ornament, and for dormer or bay windows at the sides and ends of the building.

29,001.—PARTITIONS: *W. Browning.*—They are constructed of wood or corrugated iron, and have a separate vertical portion held by links upon a base, the lower edge of the vertical part can be raised over the batten of the base, the latter being then folded flat against the former.

29,020.—BRICKS AND BUILDING BLOCKS: *F. S. Smith.* The undersides and ends of the bricks have grooves or recesses, which receive projections and wedge-shaped ribs on the upper faces and the ends of the adjacent bricks; the headers have transverse ribs and projections, with recesses to correspond.

29,040.—LIFT VALVES: *J. W. Lee.*—For taps and cocks in which no packing is employed. The conical end of the spindle makes contact with a cup-shaped valve that falls into the inlet and has a flange to engage with a seat, whilst the spindle's upper part is provided with a long screw thread to engage with the cap screwed into the top of the casing. The valve, made separately, can be easily replaced.

29,122.—CEMENTS AND NON-CONDUCTING COMPOSITIONS: *J. Grange.*—For the manufacture of refractory bricks, slabs, and blocks, pipe and similar coverings, retorts, saggers, furnace and similar linings, and of cement or mortar for pavements, walls, &c., North Staffordshire pig-iron blast-furnace slag is pulverised; to each hundred-weight is added 1½ gallons of gas-tar, and, it may be, 2 lbs. or 3 lbs. of starch and 12 lbs. of salt. For cement the ground slag may be mixed with sand or ashes, and in covering steam-pipes, a layer of ordinary non-conducting composition may, in the first instance, be employed.

29,144.—WINDOWS: *R. H. Stanbridge.*—A band or leather strap passes over a drum or pulley in a recess in the pulley-stile and suspends a weight, one end of the strap is turned around a metal pin fixed inside a groove in the sash-stile and is fastened by a screw, the other looped end of the strap is secured to the weight by a pin and screw.

29,157.—EXTINGUISHING FIRE: *H. M. Kettelwell.*—The inventor's object is to utilise carbonic acid gas, produced by fermentation in distilleries, breweries, &c., for the extinction and prevention of fires; he collects the gas from the fermenting-vat by means of a hopper fitted below an overflow opening made in the vat's side, the gas, by reason of its own weight, collects in the hopper, whence it is conveyed away for storage and use.

29,180.—SECONDARY BATTERIES: *P. Brandt.*—The accumulator comprises a porous clay cell placed in a glass vessel and having removable clay partitions, into which dip, alternately, the teeth or lugs of the lead combs; a paste, made of an alkaline sulphate mixed with calcium oxalate or tartrate and sulphate together with sulphuric acid and an oxide of lead, is laid in the compartments; to accelerate its solidification glycerine and butyric acid are added.

29,206.—DAYLIGHT REFLECTORS, AND FIREPROOF WINDOW-SHUTTERS: *A. J. Brown.*—A pivotted frame holds the reflector, which has a backing of asbestos cardboard or other fireproof material, and can be turned to the required angle, or raised at night-time as a shutter by means of a chain passing over a pulley in the window-head.

29,224.—VALVES, COCKS, &C.: *A. Wren.*—To facilitate the repair or cleaning of a screw-down valve is provided a plug cock beneath, having an opening or series of holes; the spindle passes down into a cap that a pinching-screw locks into position, or a stuffing-box is substituted for the cap.

29,250.—PIPE JOINTS WITH FERRULES: *H. Saunderson & J. Barker.*—The invention is described as being particularly suitable for coupling leaden water-pipes, &c., without brazing or soldering; it consists in expanding the ends of the tubes, fitting them with a correspondingly-shaped ferrule, and in placing collars over each end of the tubes, through the flanges of which the tightening-bolts are thrust; in the case of angle-joints the flange is formed in the casting, and, if the pipe is to be attached to a cistern, a nut secures the ferrule within the cistern.

29,254.—SURVEYING INSTRUMENTS: *E. N. Sennett.*—The instrument may be used in the hand or upon a stand for measuring vertical and horizontal angles; to a horizontal graduated semi-circle is affixed an arch, and on it turns a slotted and graduated arc, which works over a platform; one telescope turns in azimath about the central axis, and can be moved in altitude, carrying a pointer with it; another telescope is fixed at an angle of 45 deg. at one end of the semi-circle's diameter, to receive rays reflected in the horizon glass and index glass, the latter whereof is carried by an index arm; the instrument is further provided with reading-glasses, verniers, and fine adjustments, whilst the reflecting or the direct vision contrivances may be neglected.

29,337.—MEASURING DISTANCES ON MAPS: *J. H. Gray.*—As it runs over the distance to be measured the wheel acts upon a registering wheel by means of pins that project from one face, the latter wheel is adjusted in the line of its axis by turning a screw, and the projecting pins vary in their lengths so that the instrument can be set for different scales. The pins of the measuring wheel may act directly upon the registering wheel or each actuation of the latter can be audibly announced by means of a metal tongue.

29,375.—TREADS FOR STAIRS, SUBWAYS, SEWER OUTLETS, &C.; *J. T. Andrews & G. E. Montagnon.*—A sheet of thin metal is stamped or embossed in dies, a deep depression being first made by the removable portion of the top die, and other more shallow depressions being made afterwards, and punched with holes in their centres; then blocks of suitable material are let into, cemented, screwed, or otherwise secured to the depressions, and grooves are formed between them. For pavement lights the blocks are formed of transparent materials.

29,811.—EARTHENWARE PIPE JOINTS: *M. Yarrow.*—Cement is poured into semi-annular recesses which are formed in the spigot and socket alike, and its escape is prevented by putting oakum, &c., in grooves or indents on each side of the joint, for a firm footing a flat-bearing surface is made on the socket's under-side.

30,004.—WASTE FITTINGS FOR SINKS: *A. A. Russell.*—A screwed spigot secures to the strainer plug a circular strainer plate, radially slotted, and another perforated plate is mounted to turn on the strainer plate in such a way as to cover or uncover the slots. When the sink is empty the perforated plate can be turned to cover the apertures and to so trap noxious vapours in the waste pipe.

30,026.—ARTIFICIAL STONE, BUILDING BLOCKS, &C.: *Grünzweig & Hartmann.*—A building stone, described as porous and light, similar to cork, is moulded from a mixture of clay, kieselguhr, and finely-divided vegetable substances—say, peat, pith, cork, husks, &c.—and the blocks are heated in order to burn the organic constituents.

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## SOME RECENT SALES OF PROPERTY:

### ESTATE EXCHANGE REPORT.

| | |
|---|---|
| April 6.—By Messrs. WICKENDEN (at Hastings). | |
| Bexhill, Sussex.—"The Denbigh Hotel," f. | £4,900 |
| Hooe, Sussex.—"The Red Lion" p.-h., f. | 3,650 |
| Ninfield, Sussex.—"The United Friends" b.-h., f. | 2,000 |
| Sidley, Sussex.—"The Sussex Inn" and two cottages, f. | 3,800 |
| Hastings, Sussex.—Wellington-ter., "The Hastings Castle Inn," f. | 1,400 |
| Rye, Sussex.—"The Cinque Ports Arms Hotel," f., r. 100*l*. | 3,000 |
| By HAWKINS & EDGECOMBE. | |
| Catford.—1, 3, 5, and 7, Charsley-rd., u.t. 78 yrs., g.r. 27*l*., r. 105*l*. 4s. | £830 |
| By STIMSON & SONS. | |
| Homerton.—47, 49, 51, and 53, Swinnerton-st., f., r. 124*l*. | 1,580 |
| Camberwell.—225 to 231 (odd), Southampton-st.; 1 to 15, Riddell-st., also Caroline Cottage in rear, u.t. 13¼ yrs., g.r. 17*l*. 10s. | 1,120 |
| 69, 71, and 75, St. George's-rd., u.t. 62 yrs., g.r. 15*l*. 10s. | 870 |
| Peckham.—8, Hill-st., u.t. 26½ yrs., g.r. 8*l*. 5s. | 200 |
| Norwood.—136, Gipsy Hill, u.t. 67 yrs., g.r. 10*l*., e.r. 55*l*. | 300 |
| Stockwell.—46 and 54, Mordaunt-st., u.t. 66½ yrs., g.r. 10*l*. 5s., r. 55*l*. | 555 |
| Southwark.—42, Lambeth-rd., f., r. 45*l*. | 650 |
| Crouch Hill.—34, Blythwood-rd., u.t. 76½ yrs., g.r. 8*l*., e.r. 50*l*. | 500 |
| Marylebone.—82, Balcombe-st., u.t. 21½ yrs., g.r. 10*l*., e.r. 60*l*. | 440 |
| By NEWBON, EDWARDS, & SHEPHARD. | |
| Highbury.—103, 105, 107, 111, and 115, Highbury-hill, u.t. 78 yrs., g.r. 8*l*. 10s., r. 233*l*. | 3,445 |
| 92, 94, 100, and 102, Highbury-hill, u.t. 78 yrs., g.r. 20*l*. 7s., r. 181*l*. | 2,305 |
| Highbury-hill, l.g.r. 15*l*. 7s., u.t. 78 yrs. | 310 |
| 89, St. Paul's-rd., with range of stabling and workshops known as "Keen's-yd," u.t. 46 yrs., g.r. 50*l*. | 3,660 |
| Hornsey.—75, Myddelton-rd., u.t. 68 yrs., g.r. 7*l*. 7s. | 155 |
| Hoxton.—58 and 60, Rushton-st., and 16, Newport-st., u.t. 10 yrs., g.r. 10*l*. | 280 |
| Barnsbury.—43, Lofting-road, u.t. 9¾ yrs., g.r. 5*l*. | 125 |
| Holloway.—85, Yerbury-rd., u.t. 71 yrs., g.r. 5*l*. 10s., r. 28*l*. | 265 |
| April 7.—By CHURCHER & GALE (at Exeter). | |
| Bow, Devon.—Common Moor Estate, 77 a. 1 r. 8 p., f. | 785 |
| By BRIDGMAN & SON. | |
| Standon, Herts.—Standon Farm, 178 a., f. and c. | 2,350 |
| By HARDS & BRADLY. | |
| Greenwich.—76 and 78, Church-st., also l.g.r. 8*l*., u.t. 25½ yrs., g.r. 14*l*. | 150 |
| Lee Green.—1, Brightfield-rd., u.t. 83 yrs., g.r. 3*l*. 3s., r. 40*l*. | 310 |
| Fulham.—6, 6a, 8, 8a, 10, 10a, 12, and 12a, Furness-rd., u.t. 82½ yrs., g.r. 21*l*. | 735 |
| Greenwich.—7 and 8, Orchard-hill, f. | 570 |
| Lewisham.—3 and 4, Jerrard-st., u.t. 64 yrs., g.r. 5*l*. | 545 |
| By ROBINS, GORE, & MERCER. | |
| Stockwell.—69 and 73, Studley-rd., u.t. 38 yrs., g.r. 8*l*., r. 84*l*. | 820 |
| By FIELD & SONS. | |
| Blackfriars.—87, Upper Ground-st., c., r. 45*l*. | 800 |
| 1, Queen's Arms-court, c. | 200 |
| Peckham.—138 and 140, Commercial-rd., also Bridge Wharf in rear, u.t. 47 yrs., g.r. 12*l*., r. 105*l*. | 675 |
| April 10.—By NEWMAN CHENNELLS. | |
| Shepherd's Bush.—112 and 114, Goldhawk-rd., f., r. 140*l*. | 2,265 |
| By MAY & ROWDEN. | |
| Holloway.—Upper Tollington-pk., l.g.r. 91*l*. 8s., u.t. 68 and 69 yrs., g.r. 50*l*. | 800 |
| By FRED VARLEY. | |
| Tooting.—1 and 2, Maria-villas, f., r. 36*l*. 8s. | 510 |
| Holloway.—7, Roden-st., u.t. 61 yrs., g.r. 6*l*., e.r. 36*l*. | 355 |
| Hornsey.—79, Sydney-rd., u.t. 75 yrs., g.r. 8*l*., r. 34*l*. | 310 |
| Wood Green.—Alexandra Park-rd., four plots of building land, f. | 360 |
| Finchley.—Finchley Pk., Holly Dene, f., e.r. 50*l*. | 800 |
| By S. WALKER & CO. | |
| Hampstead.—30, Fellows-rd., u.t. 65½ yrs., g.r. 10*l*. 10s., r. 130*l*. | 1,190 |
| By JONES, SON, & DAY. | |
| Bethnal Green.—5 and 6, Hunslett-st.; also l.g.r. 3*l*., u.t. 26½ yrs., g.r. 9*l*. | 325 |
| Mile End.—Canal-rd., f.g.r. 29*l*., reversion in 17½ yrs. | 530 |
| Limehouse.—2 and 4, St. Anne-st., f. | 280 |
| St. George's East.—10, 12, 14, and 16, Bostock-st., f. | 720 |
| Leytonstone.—608, High-rd., f., e.r. 36*l*. | 525 |
| By G. B. SMALLPEICE (at Stratford). | |
| Stratford, 45, Martin-st., u.t. 58 yrs., g.r. 6*l*., r. 26*l*. | 190 |
| 4, Martin-st., u.t. 58 yrs., g.r. 20*l*., r. 50*l*. | 470 |
| 43 and 45, Station-st., u.t. 58 yrs., g.r. 10*l*. | 290 |
| 7 and 9, Frederick-st., u.t. 58 yrs., g.r. 10*l*., r. 36*l*. | 300 |
| 224, High-st., u.t. 64½ yrs., g.r. 10*l*., r. 30*l*. | 250 |
| 242, 244, and 246, High-st., u.t. 64½ yrs., g.r. 36*l*., r. 100*l*. | 950 |
| By FRANK LLOYD (at Wrexham). | |
| Broughton, Denbigh.—Brynmally and 91 a. 0 r. 15 p., f. | 4,000 |
| A plot of land with buildings and cottages thereon, 1 a. 0 r. 10 p., f. | 500 |
| Gwersyllt, Denbigh.—A plot of land with buildings, 2 a. 1 r. 28 p., f. | 200 |
| April 11.—By DEBENHAM, TEWSON, & CO. | |
| City of London.—Poultry, f.g.r. 780*l*., reversion in 47½ yrs. | 30,250 |
| Wimbledon.—Merton-rd., f.g.r. 36*l*., reversion in 83 yrs. | 990 |
| By R. STAFFORD CHARLES. | |
| Hyde Pk.—4, Hyde Pk. Gate-mews, f., e.r. 60*l*. | 750 |
| By E. HILL CLARKE. | |
| Streatham.—35 and 37, Lewin-rd., f., r. 100*l*. | 1,455 |
| 93 and 95, Lewin-rd., f. | 1,080 |
| By FRANCE & SONS. | |
| Vauxhall.—9 and 11, Tate-st., u.t. 48 yrs., g.r. 10*l*. | 430 |
| Camberwell.—6, Benhill-rd., u.t. 72 yrs., g.r. 5*l*., r. 27*l*. | 310 |
| Kennington.—3, Bowden-st., u.t. 34 yrs., g.r. 10*l*., r. 45*l*. | 320 |
| By G. F. HARRINGTON. | |
| Drury-lane.—36, Great Wild-st., f., e.r. 100*l*. | 995 |
| By WESTON & SONS. | |
| Brixton.—57 and 59, Arlingford-rd., u.t. 75 yrs., g.r. 17*l*., r. 80*l*. | 655 |
| 35, Lorn-rd., u.t. 27 yrs., g.r. 12*l*. | 220 |
| Stockwell.—38, Dalyell-rd., u.t. 65½ yrs., g.r. 6*l*., r. 32*l*. | 320 |

# COMPETITIONS, CONTRACTS, AND PUBLIC APPOINTMENTS.

## COMPETITIONS.

| Nature of Work. | By whom Advertised. | Premiums. | Designs to be delivered. |
|---|---|---|---|
| *Laying-out Cliff | Clacton U.D.C. | 75*l*.; 50*l*.; and 25*l*. | No date |

## CONTRACTS.

| Nature of Work or Materials. | By whom Required. | Forms of Tender, &c. Supplied by | Tenders to be delivered. |
|---|---|---|---|
| Flints and Granite | Aylesbury R.D.C. | F. B. Parrott, Bourton-st. Aylesbury | April 25 |
| Road Works | Norton R.D.C. | E. A. Sampson, Surv. 17, York-st. Sheffield | do. |
| Fire Station, Weld-road | Birkdale U.D.C. | J. Smallshaw, Town Hall | do. |
| Additions to School, Greenhill | Harrow (U.D.) S.B. | Houston & Houston, Archt. 5, York-bldgs. Adelphi, W.C. | do. |
| Retort House, &c. | Oldham Corp. | A. Andrews, Gas Offices, Oldham | do. |
| Repairing Bridges | Hereford C.C. | A. Dryland, County Surv. Shire Hall, Hereford | do. |
| Extension of Goods Station, Caryl-st. Liverpool | L. & Y. Ry. Co. | The Engr. Hunt's Bank, Manchester | do. |
| Alterations to Passenger Station, Lowmoor | do. | C.W. Bayley, Hunt's Bank, Manchester | do. |
| Surveyor's Materials | Stretford Gas Co. | H. Kendrick, Gas Engr. Gasworks, Stretford | do. |
| Sixteen Houses, May-st. Crosland Moor, Huddersfield | | A. Shaw, Archt. Golcar | do. |
| Road Widening, Winford | Long Ashton R.D.C. | J. Hawkins, Surv. Brockley, near Bristol | do. |
| Surveyor's Materials | Herts C.C. | U. A. Smith, Surv. 41, Parliament-st. S.W. | April 26 |
| Tramway Street Works | Hull Corp. | A. E. White, Engr. Town Hall | do. |
| Broken Granite (920 tons) | Long Crendon R.D.C. | H. Howland, Surv. Chinnor-road, Thame | do. |
| Station Houses | Donegal Railway Co. | J. Barton, C.E. Exchange-buildings, Dundalk | do. |
| House, Cleator Moor | | W. Thompson, 42, Crossfield-road, Cleator Moor | do. |
| House, Cleator Moor | Mr. Rudd | E. Jackson, C.E. Whitehaven | do. |
| House, Cleator Moor | W. Thornthwaite | do. | do. |
| Road Materials | Great Crosby (Lancs.) U.D.C. | W. Hall, C.E. Council Offices | do. |
| Sewerage Works, Dorking-road | Tunbridge Wells Corp. | Boro Surv. Town Hall | April 27 |
| Drainage Works, Middlesbrough | | R. Lofthouse & Sons, Archt. 62, Albert-road, Middlesbrough | do. |
| School, Rhostyllen | Bersham Sch. Bd. | Harris & Lash, Archt. Wrexham | do. |
| Sewerage Works | Tring (Herts) U.D.C. | J. J. Taylor, Engr. 1, Victoria-st. S.W. | do. |
| School, near Brigg | Messingham Sch. Bd. | A. W. Bristow, Sch. Bd. Offices, Messingham | do. |
| House, Roath Park | Cardiff Corp. | W. Harpur, C.E. Town Hall | do. |
| Farm Buildings, Flamborough | Rev. H. L. Ogle | J. Earnshaw, Archt. Wellington-rd. Bridlington Quay | do. |
| Two Houses, Milner-st. Lockwood | | J. B. Abbey & Son, 34A, New-st. Huddersfield | do. |
| Additions to Electric Light Station | Dundee Gas Commrs. | W. Alexander, Arct. Dundee | do. |
| Granite Road Metal | Lichfield R.D.C. | R. J. Knapman, Surv. London-rd. Lichfield | do. |
| Seven Houses, Batley Carr | | B. Watson, Archt. Bradford-rd. Batley | do. |
| Pair Villas, Frostoms, Workington | | W. G. Scott & Co. Archt. Victoria-bldgs. Workington | do. |
| Four Houses, Warwick-rd. Carlisle | | J. Briggs, Market-street, Carlisle | April 28 |
| Additions to Hospital | Ilkeston Hospital Committee | C. W. Hunt, Archt. 132, Station-rd. Ilkeston | do. |
| Sewers | Gorton (Lancs.) U.D.C. | C. J. Lomax, C.E. 37, Cross-st. Manchester | do. |
| Water Supply | Wishaw (N.B.) Comrs. | W. R. Copland, C.E. 145, West Regent-street, Glasgow | do. |
| Public Baths, Union-st. | Chester Corp. | Douglas & Minshull, Archt. Abbey-sq. Chester | April 29 |
| *Alterations at Factory and Works | Sheffield United Gas Light Co. | F. W. Stevenson, Offices, Commercial-st. Sheffield | do. |
| Two Houses, Claypath, Durham | J. Heslington | G. Ord, Archt. 16, The Avenue, Durham | do. |
| Drainage Works, Garlands, Carlisle | | J. Little, Engr. Viaduct-chmbrs. Carlisle | do. |
| *Paving, &c. Works | Beckenham U.D.C. | J. A. Angell, Council Offices | May 1 |
| *Removal and Reconstruction of Bridge | Paddington Vestry | G. Weston, Vestry Hall, Harrow-rd. W. | do. |
| Additions to Hotel, Gwbert-on-Sea | | C. M. Richardson, Cardigan | do. |
| Four Houses, Lisburn | H. G. Larmour | H. Hobart, Archt. Dromore, co. Down | May 1 |
| Sewage Tanks | Merthyr Tydfil U.D.C. | T. F. Harvey, Engr, Town Hall | do. |
| *Isolation Hospital | Reigate T.C. | W. H. Prescott, Market Hall, Redhill | do. |
| *Sewage Works | Mountain Ash U.D.C. | J. Mansergh, 5, Victoria-st. S.W. | do. |
| *Structural Steel Work of Tower | Morecambe Tower Co. Ltd. | R. T. Gifford Read, 1, Gt. Chapel-st. Westminster | do. |
| Sewers | Chelmsford R.D.C. | Taylor & Co. C.E. 27, Gt. George-st. S.W. | May 2 |
| Road Works | Hayward's Heath U.D.C. | E. Waugh, Boltro-rd. Hayward's Heath | do. |
| Bridge, Salcott | Lexden and Winstree R.D.C. | J. Ennals, Surv. Copford | do. |
| *Filter Beds | Clacton U.D.C. | Taylor, Sons, & Santo Crimp, 27, Gt. George-st. S.W. | do. |
| *Victoria Stone Paving | Tottenham U.D.C. | P. E. Murphy, 712, High-rd. Tottenham | do. |
| *Paving Works | Hove Corp. | Surveyor, Town Hall, Hove | May 3 |
| *Iron Pipe Sewers, Manholes, &c. | Watford U.D.C. | D. Waterhouse, 14, High-st. Watford | do. |
| *Isolation Hospital | Southgate U.D.C. | Council Offices, Palmer's Green, N. | do. |
| *New Chapel at Asylum | Glamorgan County Asylums | Giles, Gough, & Trollope, 28, Craven-st. W.C. | May 4 |
| Granite (1,400 yards) | Bexhill U.D.C. | G. Ball, Surv. Town Hall | do. |
| *Heating, &c. Laundry, &c. Fittings, and Iron Bedsteads | Southampton Corp. | W. B. G. Bennett, Municipal Offices | May 5 |
| *Norwegian Granite Kerb | Wanstead U.D.C. | Council Offices | do. |
| *Naval Reserve Buildings, Altcar, nr. Liverpool | Admiralty | Director of Works, 21, Northumberland-av. W.C. | do. |
| *School and Caretaker's House | Gloucester S.B. | A. J. Dunn, 31, St. Michael's-square, Gloucester | May 6 |
| *Electric Light Station | Darlington Corp. | Boro. Surv. | May 8 |
| *Public Offices and Hall | Ilford U.D.C. | B. Woollard, 16, Finsbury-circus, E.C. | do. |
| Electric Light Station | Darlington Corp. | Boro. Surv. Town Hall | do. |
| *Electric Light Wiring and Fittings | St. Marylebone Gdns. | A. Saxon Snell, 22, Southampton-bldings, W.C. | do. |
| *Alterations and Additions to School | Westminster Vestry | Beazley & Burrows, 17, Victoria-st. S.W. | May 9 |
| *Fire Station, St. Mary Cray | Bromley R.D.C. | W. J. Winter, Station-rd. Sidcup | do. |
| *Extension of Electric Light Station | Hammersmith Vestry | H. Mair, Town Hall, Hammersmith | May 10 |
| *Making-up Roads | Egham R.D.C. | W. Menzies, Englefield Green, Surrey | May 13 |
| *Three Detached Villa Blocks | Northumberland C.C. | J. Cresswell, Moot Hall, Newcastle-on-Tyne | May 15 |
| *Repairs to Schools, Brentwood | | Sec. Education Fund, Archbishop's House, Carlisle-place, S.W. | No date |
| *Seven Story Factory, Norwich | A. J. Caley & Son, Ld. | E. Boardman & Son, Queen-st. Norwich | do. |
| Shop, Whetley-lane, Manningham | | H. Ardaker, Archt. Ivegate-chmbrs. Bradford | do. |
| Shop and House, Salen, N.B. | | T. J. A. Armstrong, Glenborrodale, Fort William | do. |
| Foundations, &c. Lands-lane, Leeds | | W. A. Hobson, Archt. 82, Albion-st. | do. |
| Drainage Works, Love-lane | Hessle (Yorks.) U.D.C. | P. T. Runton, Surv. Savile-chmbrs. Hull | do. |
| Street Works, West Bridgford, Notts. | | J. Howitt, Archt. Bentinck-buildings, Nottingham | do. |
| Sixteen Houses, Raven Nook, Carlisle | J. Graham | P. & J. W. Hayton, Surv. Bank-st. Carlisle | do. |
| Water Works, Lasswade, N.B. | | D. B. Todd, 79, High-st. Bonnyrigg | do. |

## PUBLIC APPOINTMENTS.

| Nature of Appointment. | By whom Advertised. | Salary. | Application to be in. |
|---|---|---|---|
| *Surveyor of Highways | Thingoe R.D.C. | 250*l*. per annum | April 25 |
| *Stable Manager | Cnty. Boro. West Ham | 200*l*. per annum and house | do. |
| *Architect's Assistant | Battersea Vestry | 250 rising to 300*l*. per an. | April 26 |
| *Works Manager | Cnty. Boro. of West Ham | 500*l*. per annum | April 29 |
| *Inspector of Roads | Islington Vestry | 50s. rising to 60s. per week | do. |
| *Surveyor | Lee B. of W. | 300*l*. per annum | May 1 |
| *Clerk of Works | Camberwell Vestry | 4*l*. 4s. per week | do. |
| *Engineer and Surveyor | Plumstead Vestry | 500*l*. per annum | May 4 |
| *Clerk of Works | County of Southampton | 3*l*. per week and travelling expenses | No date |

*Those marked with an asterisk (*) are advertised in this Number. Competitions, p.* iv. *Contracts, pp.* iv. vi. viii. x. & xxii. *Public Appointments, pp.* xix. & xxii.

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By W. HOUGHTON.

Walthamstow.—Salisbury-rd., a plot of building land, f. .... £150

Addison-rd., a block of building land, f. .... 700

Norfolk-rd., a block of building land, f. .... 300

By ROGERS, CHAPMAN, & THOMAS.

West Kensington.—26 and 35, Fairholme-rd., u.t. 73 yrs., g.r. 19*l*. 10s., r. 146*l*. .... 700

Pimlico.—21 and 25, Claverton-st., u.t. 34 yrs., g.r. 20*l*., r. 130*l*. .... 950

63, Ranelagh-rd., u.t. 34 yrs., g.r. 9*l*., r. 50*l*. .... 435

Sydenham.—22, West-hill, u.t. 48 yrs., g.r. 10*l*., r. 75*l*. .... 760

Upper Norwood.—52, 54, and 56, Belvedere-rd., u.t. 53 yrs., g.r. 14*l*. 10s., r. 124*l*. .... 960

Catford.—Waterloo-pl., Vine Cottage, f. .... 128

By THOMAS WOODS.

Fortis Green.—5, Clissold Cottages, u.t. 15 yrs., g.r. 2*l*. 8s., r. 34*l*. .... 205

Heston, Middlesex.—"The Courtenay Arms" b.-h., with ten cottages adjoining, u.t. 12 yrs., g.r. 8*l*. .... 500

Feltham, Middlesex.—Tachbrook-rd., nine plots of building land, f. .... 170

Finchley.—Albert-villas, f.g.r. 6*l*. 6s., reversion in 78 yrs. .... 160

By ALFRED RICHARDS (at Hoddesdon).

Hoddesdon, Herts.—High-st., a house and shop, f., r. 45*l*. .... 990

Lord-st., seven freehold cottages .... 1,600

By R. BOND & SON (at Ipswich).

Combs, Suffolk.—The Cedars Estate, 170 a. 3 r. 21 p., f. and c. .... 4,800

By H. J. CHEFFINS (at Saffron Walden).

Thaxted, Essex.—Buckingham's Farm, 119 a. 3 r. 27 p., f. .... 920

By F. R. RAVENHILL (at Bradford-on-Avon).

Bradford-on-Avon, Wilts.—The Fairfield House Estate, 52 a. 1 r. 34 p., f. .... £4,300

By ORGILL, MARKS, & ORGILL (at Masons' Hall Tavern).

Finsbury Pk.—Green Lanes, "The Brownswood Park Tavern," u.t. 60½ yrs., g.r. 2*l*. .... 16,050

By ALFRED FLOWER (at Masons' Hall Tavern).

City of London.—Camomile-st., "The Salisbury Arms" p.-h. and shop adjoining, u.t. 25 yrs., r. 410*l*. till 1903 and 450*l*. thereafter, with goodwill .... 5,100

April 12.—By A. A. HOLLINGSWORTH.

Commercial-rd. East.—Nos. 228 and 228A, f., r. 90*l*. .... 1,400

Haggerston.—17, Whiston-st., u.t. 38 yrs., g.r. 1*l*. .... 135

By MARTIN, CLARKE, & CO.

Ilford, Essex.—1 to 8, Bank Villas, f. .... 2,150

Notting Hill.—34, St. Charles'-sq., u.t. 73 yrs., g.r. 12*l*. 12s., e.r. 100*l*. .... 690

By RUTLEY, SON, & VINE.

St. Pancras.—191, Euston-rd., u.t. 8½ yrs., g.r. 15*l*. 15s., e.r. 80*l*. .... 220

Homerton.—6 and 22, Marian-st., f. .... 300

By T. G. WHARTON.

Tottenham.—46 and 48, Vicarage-rd., f., r. 54*l*. 10s. .... 735

Fulham.—21, Palace-ter., u.t. 86 yrs., g.r. 8*l*., r. 32*l*. .... 415

By DOUGLAS YOUNG & CO.

Clapham.—13 and 15, Macaulay-rd., u.t. 73 yrs., g.r. 21*l*., e. r. 150*l*. .... 1,300

By HEPPER & SONS (at Stockton-on-Tees).

Stockton-on-Tees, Durham.—Lawson-st., "The King's Head Inn," f. .... £4,660

April 13.—By PERCY H. CLARKE.

Barnsbury.—101, Lofting-rd., u.t. 43½ yrs., g.r. 7*l*., r. 30*l*. .... 250

Fulham.—4, Fulham-pk-gdns., u.t. 63 yrs., g.r. 7*l*., r. 40*l*. .... 560

By G. ERNEST CLARKE.

Walthamstow.—26, Orford-rd., f., r. 50*l*. .... 970

8 to 16 (even), Canning-rd., u.t. 97½ yrs., g.r. 25*l*. .... 600

2 and 3, Comely Bank Villas, f. .... 500

By MARK LIELL & SON.

Bow.—1 to 8, Mary-st., u.t. 47½ yrs., g.r. 44*l*. .... 1,035

Stratford.—40 and 41, Carpenters'-rd., u.t. 63 yrs., g.r. 9*l*. .... 320

By C. C. & T. MOORE.

Camberwell.—159, 161, and 163, Camberwell New-rd., also the "Red Lion" b.-h., f., r. 141*l*. .... 3,000

Holborn.—Great Saffron-hill, "The One Tun" p.-h., f., r. 150*l*. .... 5,500

Holborn.—9, Gray's Inn-passage, f., r. 50*l*. .... 460

Bromley-by-Bow.—3 to 19 (odd), Furze-st., u.t. 65 yrs., g.r. 30*l*. .... 1,300

Stockwell.—48 to 56 and 60 to 64 (even), Lingham-st., f. .... 2,515

Mile End.—128, Jamaica-st., u.t. 13 yrs., g.r. 4*l*. .... 155

*Contractions used in these lists.*—F.g.r. for freehold ground-rent; l.g.r. for leasehold ground-rent; i.g.r. for improved ground-rent; g.r. for ground-rent; r. for rent; f. for freehold; c. for copyhold; l. for leasehold; e.r. for estimated rental; u.t. for unexpired term; p.a. for per annum; yrs. for years; st. for street; rd. for road; sq. for square; pl. for place; ter. for terrace; cres. for crescent; yd. for yard, &c.

## PRICES CURRENT OF MATERIALS.

### TIMBER.

| | £ | s. | d. | £ | s. | d. |
|---|---|---|---|---|---|---|
| Greenheart, B.G. ............ton | £8 | 0 | 0 | 0 | 0 | 0 |
| Teak, E.I. ..................load | 11 | 15 | 0 | 16 | 15 | 0 |
| Sequoia, U.S., ft. cube.......... | 1 | 9 | 0 | 2 | 0 | 0 |
| Ash, Canada, load.............. | 4 | 0 | 0 | 5 | 5 | 0 |
| Birch, do .............. | 3 | 10 | 0 | 5 | 10 | 0 |
| Elm, do .............. | 4 | 12 | 6 | 5 | 15 | 0 |
| Fir, Dantsic, &c. .......... | 1 | 10 | 0 | 3 | 10 | 0 |
| Oak, do .............. | 3 | 5 | 0 | 4 | 0 | 0 |
| Canada .............. | 4 | 10 | 0 | 6 | 5 | 0 |
| Pine, Canada red .............. | 0 | 0 | 0 | 0 | 0 | 0 |
| Do, yellow .............. | 4 | 7 | 6 | 6 | 5 | 0 |
| Lath, Dantsic, fathom .............. | 4 | 10 | 0 | 5 | 10 | 0 |
| St. Petersburg .............. | 4 | 0 | 0 | 6 | 10 | 0 |
| Wainscot, Riga, &c., log.......... | 3 | 15 | 0 | 6 | 5 | 0 |
| Odessa, crown .............. | 3 | 15 | 0 | 6 | 5 | 0 |
| Deals, Finland, 2nd and 1st std. 100 | 9 | 15 | 0 | 10 | 5 | 0 |
| Do., 4th and 3rd .............. | 9 | 15 | 0 | 10 | 5 | 0 |
| Do., Riga.............. | 8 | 5 | 0 | 9 | 5 | 0 |
| St. Petersburg, 1st yellow .. .. | 11 | 15 | 0 | 14 | 5 | 0 |
| Do., 2nd yellow .............. | 10 | 15 | 0 | 12 | 5 | 0 |
| Do., white .............. | 9 | 15 | 0 | 11 | 15 | 0 |
| Swedish .............. | 9 | 15 | 0 | 16 | 15 | 0 |
| White Sea .............. | 10 | 15 | 0 | 18 | 0 | 0 |
| Canada Pine, 1st .............. | 18 | 15 | 0 | 25 | 5 | 0 |
| Do., do., 2nd .............. | 13 | 15 | 0 | 17 | 0 | 0 |
| Do., do., 3rd, &c. .............. | 6 | 15 | 0 | 10 | 0 | 0 |
| Do. Spruce, 1st.............. | 8 | 5 | 0 | 10 | 5 | 0 |
| Do., do., 3rd and 2nd .......... | 7 | 0 | 0 | 8 | 5 | 0 |
| New Brunswick .............. | 7 | 0 | 0 | 7 | 15 | 0 |
| Battens, all kinds .............. | 5 | 0 | 0 | 16 | 0 | 0 |
| Flooring boards, sq., 1 in., prep., 1st | 0 | 12 | 0 | 0 | 15 | 3 |
| Do., 2nd .............. | 0 | 10 | 6 | 0 | 12 | 3 |
| Other qualities .............. | 0 | 5 | 3 | 0 | 6 | 6 |
| Cedar, Cuba, ft.............. | 0 | 0 | 4 | 0 | 0 | 4½ |
| Honduras, &c. .............. | 0 | 0 | 4 | 0 | 0 | 4½ |
| Mahogany, Cuba .............. | 0 | 0 | 5½ | 0 | 0 | 7½ |
| St. Domingo, cargo av. .......... | 0 | 0 | 5 | 0 | 1 | 3 |
| Mexican do., do. .............. | 0 | 0 | 3½ | 0 | 0 | 4 |
| Tabasco, do., do .............. | 0 | 0 | 4 | 0 | 0 | 6½ |
| Honduras, do.............. | 0 | 0 | 4½ | 0 | 0 | 6 |
| Box, Turkey, ton .............. | 6 | 0 | 0 | 15 | 0 | 0 |
| Rose, Rio .............. | 7 | 0 | 0 | 16 | 0 | 0 |
| Bahia .............. | 6 | 0 | 0 | 14 | 0 | 0 |
| Satin, St. Domingo, ft. .......... | 0 | 0 | 6 | 0 | 1 | 0 |
| Porto Rico .............. | 0 | 0 | 9 | 0 | 2 | 0 |
| Walnut, Italian .............. | 0 | 0 | 3 | 0 | 0 | 7½ |

### METALS.

| | £ | s. | d. | £ | s. | d. |
|---|---|---|---|---|---|---|
| IRON—Pig, in Scotland ...... ton | 2 | 15 | 0 | 0 | 0 | 0 |
| Bar, Welsh, in London ........ | 6 | 0 | 0 | 6 | 5 | 0 |
| Do. do. at works in Wales...... | 5 | 15 | 0 | 5 | 17 | 6 |
| Do. Staffordshire, in London.... | 6 | 5 | 0 | 7 | 10 | 0 |
| COPPER—British cake and ingot .. | 78 | 0 | 0 | 78 | 10 | 0 |
| Best selected .............. | 79 | 10 | 0 | 79 | 10 | 0 |
| Sheets, strong.............. | 81 | 0 | 0 | 83 | 0 | 0 |
| Chili bars.............. | 74 | 12 | 6 | 0 | 0 | 0 |
| YELLOW METAL ..............lb. | 6½d. | | | 7d. | | |
| LEAD—Pig | | | | | | |
| Spanish ..............ton | 14 | 10 | 0 | 0 | 0 | 0 |
| English Com. Brands .......... | 14 | 15 | 0 | 0 | 0 | 0 |
| Sheet, English, 6 lbs. per sq. ft. and upwards .............. | 15 | 15 | 0 | 0 | 0 | 0 |
| Pipe .............. | 16 | 5 | 0 | 0 | 0 | 0 |
| ZINC—English sheet ..........ton | 30 | 0 | 0 | 0 | 0 | 0 |
| Vieille Montagne .............. | 31 | 0 | 0 | 0 | 0 | 0 |
| Spelter .............. | 27 | 17 | 6 | 28 | 0 | 0 |
| TIN—Straits .............. | 114 | 5 | 0 | 0 | 0 | 0 |
| Australian .............. | 114 | 5 | 0 | 114 | 15 | 0 |
| English Ingots .............. | 117 | 0 | 0 | 118 | 0 | 0 |
| Banca .............. | 114 | 0 | 0 | 0 | 0 | 0 |
| Billiton .............. | 113 | 0 | 0 | 0 | 0 | 0 |

### OILS.

| | £ | s. | d. | £ | s. | d. |
|---|---|---|---|---|---|---|
| Linseed ..............ton | 17 | 17 | 6 | 0 | 0 | 0 |
| Cocoanut, Cochin .............. | 29 | 10 | 0 | 0 | 0 | 0 |
| Do. Ceylon .............. | 25 | 15 | 0 | 0 | 0 | 0 |
| Palm, Lagos .............. | 24 | 10 | 0 | 0 | 0 | 0 |
| Rapeseed, English, pale .......... | 22 | 10 | 0 | 0 | 0 | 0 |
| Do. Brown .............. | 20 | 15 | 0 | 0 | 0 | 0 |
| Cottonseed ref. .............. | 16 | 10 | 0 | 17 | 0 | 0 |
| Oleine .............. | 17 | 0 | 0 | 19 | 0 | 0 |
| Lubricating U.S. .............. | 0 | 5 | 3 | 0 | 7 | 6 |
| Do. Black .............. | 0 | 5 | 0 | 0 | 6 | 6 |
| TAR—Stockholm..............barrel | 1 | 6 | 6 | 0 | 0 | 0 |
| Archangel.............. | 0 | 18 | 0 | 0 | 0 | 0 |
| Turpentine .............. | 32 | 15 | 0 | 33 | 0 | 0 |

## TO CORRESPONDENTS.

J. H.—J. S. & Son (Amount should have been stated.)

NOTE.—The responsibility of signed articles, letters, and papers read at public meetings, rests, of course, with the authors.

*We cannot undertake to return rejected communications.*

Letters or communications (beyond mere news items) which have been duplicated for other journals are NOT DESIRED.

We are compelled to decline pointing out books and giving addresses.

Any commission to a contributor to write an article is given subject to the approval of the article, when written, by the Editor, who retains the right to reject it if unsatisfactory. The receipt by the author of a proof of an article in type does not necessarily imply its acceptance.

All communications regarding literary and artistic matters should be addressed to THE EDITOR; those relating to advertisements and other exclusively business matters should be addressed to THE PUBLISHER, and *not* to the Editor

## TENDERS.

[Communications for insertion under this heading should be addressed to "The Editor," and must reach us *not later than* 10 *a.m. on Thursdays*. N.B.—We cannot publish Tenders unless authenticated by the name and address of the sender; and we cannot publish announcements of Tenders accepted unless the amount of the Tender is given, nor any list in which the lowest Tender is under £100, unless in some exceptional cases and for special reasons.]

* Denotes *accepted.* † Denotes *provisionally accepted.*

AXBRIDGE.—For additions, &c., to casual wards at Weston-super-Mare, for the Board of Guardians. Mr. A. Powell, C.E., 3, Unity-street, College Green, Bristol:—

| | |
|---|---|
| T. H. Brown ........ | £945 |
| H. A. Forse.......... | 900 |
| Lloyd & Son .......... | 875 |
| Dubin .............. | 800 |
| G. Sprake .......... | £795 |
| H. Cook, Bristol* .... | 680 |
| J. Solway............ | 620 |

BARNSLEY.—For the erection of school buildings, Staincross, for the Darton School Board. Messrs. Senior & Clegg, architects, 15, Regent-street, Barnsley:—

| | £ | s. |
|---|---|---|
| *Masonry.*—Walker & Blackburn, Barnsley*.... | £1,106 | 17 |
| *Carpentry and Joinery.*—W. G. & L. England, Barnsley* .............. | 790 | 0 |
| *Plumbing and Glazing.*—W. Dransfield, Barnsley* | 149 | 0 |
| *Plastering.*—M. Fleming, Barnsley* .......... | 78 | 10 |
| *Slating.*—M. Fleming, Barnsley*.............. | 147 | 0 |
| *Painting.*—Snowden & Son, Barnsley* ........ | 33 | 0 |
| *Heating Apparatus.*—Seward & Co., Lancaster* | 72 | 0 |

BRIDLINGTON QUAY.—For the erection of three houses, Cambridge-street, for Messrs. Hardwick & Sons. Messrs. Brodrick, Lowther, & Walker, architects, Bridlington Quay:—

| | |
|---|---|
| J. Sawdon ........ | £1,260 |
| E. Wilson.......... | 1,188 |
| W. Barnes.......... | £1,118 |

All of Bridlington Quay.

BRISTOL. — For erecting the Star Life Offices, Bristol:—

| | |
|---|---|
| E. Walters ........ | £16,535 |
| J. Perkins ........ | 16,100 |
| Cowlin & Son...... | 15,859 |
| Stephens, Bastow, & Co., Ltd......... | £14,749 |
| G. Humphries .... | 14,600 |
| A. J. Beaven ...... | 14,200 |

BURTON-ON-TRENT.—For the erection and completion of four shops, offices, concert-hall, and premises in Byrkley-street, for the Burton-on-Trent Co-operative Society, Limited. Mr. R. Stevenson, architect, Imperial-chambers, High-street, Burton-on-Trent. Quantities by the architect:—

| | £ | s. |
|---|---|---|
| W. A. Stevenson. | £7,595 | 0 |
| G. Hodges ..... | 7,580 | 0 |
| H. Edwards .... | 7,570 | 0 |
| G. H. Adams.... | 7,400 | 0 |
| A. Geary........ | £7,392 | 0 |
| Lowe & Sons* .. | 7,380 | 0 |
| R. Kershaw (informal) ........ | 7,333 | 7 |

CAERPHILLY.—For the erection of an hotel, Aber, for Mr. Wm. Davies Mr. T. Thomas, architect, 17, Quay-street, Cardiff. Quantities by architect:—

E. R. Evans & Bros., Cardiff ............£3,950

[There were twelve tenders in all.]

CASTLETON (Derbyshire).—For the execution of sewage works, for the Chapel-en-le-Frith Rural District Council. Messrs. Sterling & Swann, engineers, Town Hall, Chapel-en-le-Frith:—

Etheridge & Clark, Norfolk-street, Manchester* .................... £2,908 14

DUDLEY.—For the erection of two houses, Grange-road, Dudley, for Mr. J. Whorton. Mr. A. Ramsell, architect, Dudley:—

Love and Flint, Dudley* ................ £1,260

DUDLEY.—For the erection of four cottages, Scott's Green, Dudley, for Messrs. Chilton, Tonks, & Bowen. Mr. A. Ramsell, architect, Dudley:—

Seckerson Brothers, Holly Hall, Dudley*.. £1,000

DUDLEY.—For alterations to works, London Fields, Dudley, for Messrs. Newey & Homer. Mr. A. Ramsell, architect, Dudley. Quantities by the architect:—

| | £ | s. |
|---|---|---|
| Holland & Sons .. | £425 | 0 |
| Whittaker & Co. .. | 400 | 0 |
| Dorse & Co., Cradley Heath*.......... | £387 | 10 |

DUDLEY.—For the erection of one house, North-street, Dudley, for Mr. W. Bagnall. Mr. A. Ramsell, architect, Dudley:—

Seckerson Brothers, Holly Hall, Dudley* .. £485

GREAT BADDOW.—For a cottage at Falcon's Farm. Mr. R. Mawhood, architect, Chelmsford:—

| | |
|---|---|
| H. Potter ............ | £255 |
| W. Fincham.......... | 250 |
| F. Johnson .......... | 225 |
| J. Ely .............. | £205 |
| Weight, Springfield*.. | 192 |

KIRKCALDY.—For the construction of a road, the building of a viaduct, steel-girder bridge, and other relative works, for the Commissioners. Mr. W. D. Sang, C.E., Kirkcaldy:—

| | £ | s. | d. |
|---|---|---|---|
| Waddell & Son ...... | £16,556 | 7 | 11 |
| Macdonald .. | 16,552 | 6 | 8 |
| Mackay & Son ...... | 15,921 | 6 | 4 |
| Wishart .... | 15,811 | 7 | 9 |
| Smith & Sons | 15,412 | 2 | 4 |
| Brunton & Sons...... | £15,124 | 0 | 5 |
| Menzies .... | 14,807 | 7 | 1 |
| Cousin ...... | 14,632 | 2 | 4 |
| Gray & Co... | 14,418 | 13 | 8 |
| Fraser, Junr., Kirkcaldy* | 13,384 | 10 | 4 |

LONDON.—For rebuilding 1, 2, and 3, Brabant-court, E.C. Mr. C. Watkins, architect:—

| | Super-structure. | Foundations. | Total. |
|---|---|---|---|
| Foster & Dicksee.... | £25,998 | £3,783 | £29,781 |
| Ashby & Horner .... | 22,745 | 3,202 | 25,947 |
| Lawrence & Sons.... | 22,410 | 3,122 | 25,532 |
| Colls & Sons ........ | 21,937 | 2,914 | 24,851 |
| Ashby Bros. ........ | 21,892 | 2,954 | 24,846 |
| F. & H. Higgs...... | 21,749 | 2,836 | 24,585 |
| W. Downs.. ....... | 21,736 | 2,767 | 24,503 |
| Patman & Fotheringham.............. | 21,642 | 2,793 | 24,435 |
| H. Lovatt .......... | 21,639 | 2,763 | 24,402 |
| J. Greenwood ...... | 21,287 | 2,662 | 23,949 |

LONDON.—For the erection of warehouses on the site of Nos. 73 to 81, Clifton-street, and the City Stone Yard, Finsbury, E.C., for the Home and Colonial Stores, Limited. Mr. Robert Willey, architect, 33, New Bridge-street, E.C. Quantities by Mr. A. Howard, the Outer Temple, E.C.:—

| | | Extra for Glazed Brick Front. |
|---|---|---|
| Allen.................. | £25,355 | £1,000 |
| Larter .............. | 25,000 | 350 |
| Holland & Hannen ...... | 24,914 | 550 |
| Woodward .............. | 24,290 | 470 |
| Clarke & Bracey ........ | 24,031 | 500 |
| Lascelles .............. | 23,881 | 456 |
| Dove Bros. ............ | 23,355 | 550 |
| Patman & Fotheringham . | 21,791 | 491 |
| Smith & Son .......... | 21,269 | 450 |

LONDON.—For alterations, &c., to No. 9, Pembridge-place, W., for Mr. J. S. Birkett. Messrs. W. H. Ward & R. Marchant, architects, 64, Charlotte-street, Fitzroy-square, W.:—

| | | Reduction for Omission of Panelling. | Allowance for Old Bricks. |
|---|---|---|---|
| Gates ...... | £1,293 | £27 0 | £1 10 |
| Quibell .... | 1,227 | 22 12 | 1 10 |
| Christie .... | 1,180 | 27 0 | 0 15 |

LONDON.—For rebuilding No. 6, Great Marlboro'-st., W. Messrs. W. G. Bartleet & Son, architects:—

| | |
|---|---|
| Webber ............ | £4,739 |
| Carmichael ........ | 4,720 |
| Holloway Bros. .... | 4,700 |
| F. & H. Higgs .... | 4,690 |
| F. & F. Wood ...... | 4,680 |
| Ashby Bros. ........ | £4,587 |
| Bywaters .......... | 4,489 |
| Lindon ............ | 4,303 |
| Patman & Fotheringham.............. | 4,281 |

LONDON.—For the erection of workshop and conservatory at 145, Finchley-road, N.W. Mr. A. J. Wade, architect:—

| | |
|---|---|
| Godson & Sons ...... | £360 |
| Beer & Gash ........ | 298 |
| F. T. Chinchen*...... | £295 |

LONDON.—For ice-making rooms and alterations to Warwick Farm Dairies, Elgin-avenue, for Messrs. Welford & Sons, Ltd. Mr. Edward Vigers, architect. Quantities by Mr. Chas. W. Stephenson, 38, Parliament-street, Westminster:—

| | |
|---|---|
| Tennant & Co....... | £1,088 |
| Cooper, Palmer & Co. | 1,047 |
| William Downs .... | 1,045 |
| George Neal........ | 1,005 |
| Parkinson & Son .... | £994 |
| A. J. Thompson...... | 956 |
| F. T. Chinchen*...... | 939 |

LONDON.—For the formation of new road on the Kingswood Park Estate, Acton Green, W., to be called Bolton-road. Mr. Edward Monson, architect and surveyor, Acton Vale, W.:—

Nowell & Co., Earl's-court*.............. £1,125

LONDON.—For the re-erection of the "Railway Hotel,' Acton, for Mr. A. T. Savigear. Mr. Edward Monson, architect, Acton Vale, W.:—

| | £ | s. |
|---|---|---|
| Lascelles & Co. .. | £8,426 | 0 |
| Patman & Fotheringham........ | 8,251 | 0 |
| W. Wallis ...... | 8,248 | 16 |
| C. Ansell........ | 8,181 | 0 |
| Antill & Co. .... | 8,000 | 0 |
| Godson & Son .. | 7,963 | 0 |
| Beer & Gash........ | £7,775 | |
| Gould & Brand .... | 7,689 | |
| Chessum & Son .... | 7,458 | |
| T. Nye, Ealing Green, W.* ...... | 7,278 | |
| W. Blackburn ...... | 7,060 | |

LONDON.—For the erection of a boundary fence at Brockley Grove, Brockley, for the St. Paul's, Deptford, Burial Board. Mr. John Jas. Downes, architect, 199, Lewisham High-road, S.E.:—

| | £ | s. |
|---|---|---|
| T. D. Long........ | £695 | 0 |
| Simmonds & Son .. | 689 | 10 |
| J. & A. Oldman .. | 685 | 0 |
| Johnson .......... | £664 | 0 |
| Hall Bros.* ...... | 649 | 0 |

LONDON.—For rebuilding stores at Holloway-road, N., for Messrs. Ind, Coope, & Co., Limited. Messrs. Harrington & Ley, architects, 108, Fenchurch-street, E.C.:—

G. Cox, Holloway-road* .................. £225

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| | |
|---|---|
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| Rogers & Co. ...... | 2,750 |
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MOUNTNESSING. — For additions to the Stores. Mr. R. Mawhood, architect, Chelmsford:—

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|---|---|
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| A. C. Soan ........ | 1,750 |
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| W. H. Wheeler .... | 1,550 |
| S. Kavanagh........ | £1,384 |
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| R. Ballard, Lim., Childs Hill, Hendon* ............ | 1,212 |

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|---|---|---|
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| Thos. Jenkins .... | 245 | 0 |
| T. L. Morgan .... | 166 | 19 |
| Leverton, Bros., Aberavon*...... | £163 | 0 |
| Owens, Cardiff‡ .. | 160 | 0 |
| Francis Thomas .. | 160 | 0 |

* Accepted for twelve.

‡ Accepted for thirteen.

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|---|---|---|---|
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| A. E. Symes.... | £725 | 0 | 0 |
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[*See also next page.*

SOUTH KIRKBY.—For the erection of a Wesleyan church. Mr. G. F. Pennington, architect, Central Chambers, Castleford :—

H. Gundill, Pontefract*..................£1,100

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| Ford Bros. | 535 | | |

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|---|---|---|---|
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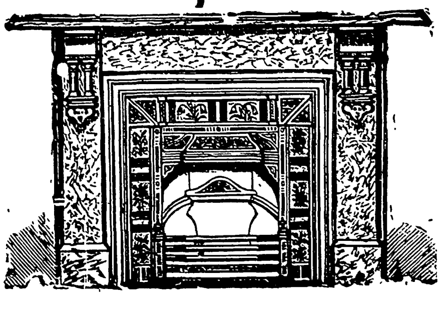

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*Refer also to* "TOO LATE" *column page* xxii.

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The ANNUAL EXAMINATION in CARPENTRY and JOINERY will be held at CARPENTERS' HALL, London Wall, on JUNE 14th, 15th, 16th, and 17th. Certificates and Medals are awarded to successful candidates.

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For full particulars and list of Lectures, apply to S. W. PRESTON, Esq. at the Hall.

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APRIL 26th to MAY 6th, 1899.

BUILDING STONE AND BRICK.

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Notice is Hereby Given that the London County Council, in pursuance of the powers vested in it by the Second Schedule of the London Building Act, 1894, has approved of the following material as fire-resisting, namely, concrete composed of properly burned coke-breeze, free from dust and organic impurities, and Portland Cement, in the following proportions, viz., five parts by measurement of coke-breeze to one part by measurement of Portland cement, mixed together with clean water to the satisfaction of the District Surveyor, when such concrete is used for filling in between the joists of floors, and is filled in to the depth of at least five inches.

C. J. STEWART,
Clerk of the Council.

Spring Gardens,
March 28th, 1899.

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DESIGNS, DRAWINGS, AND PERSPECTIVES.

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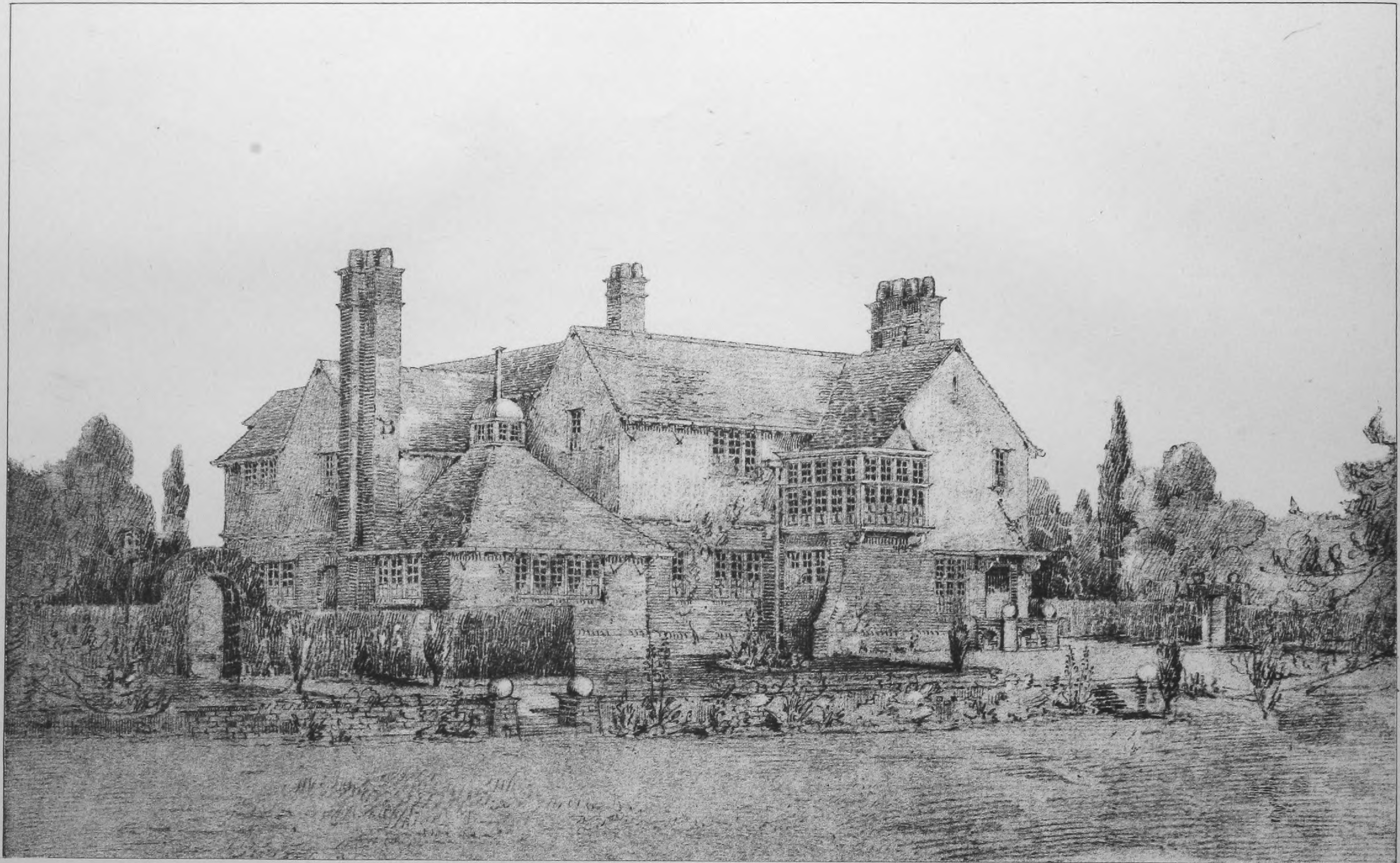

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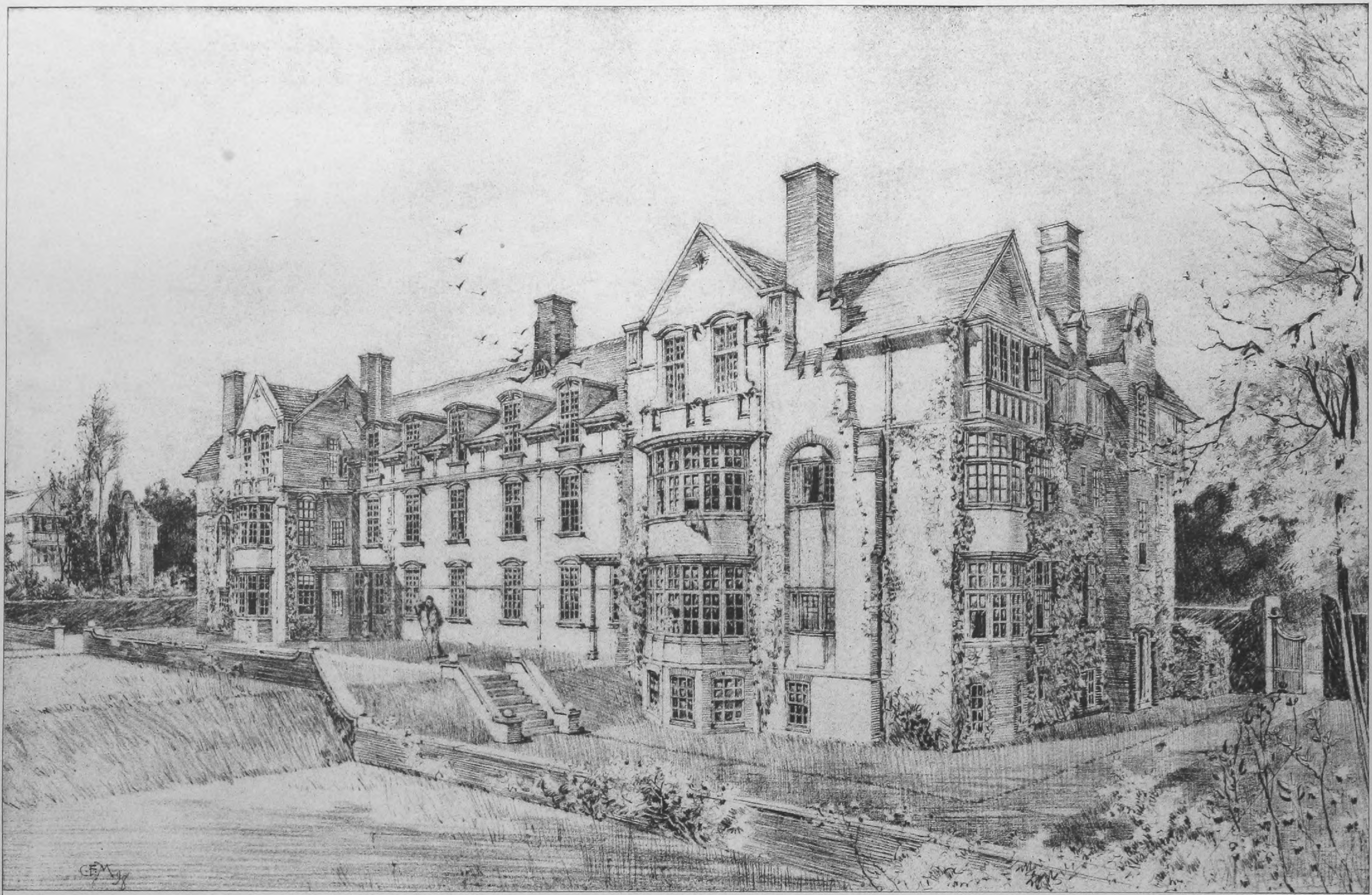

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VIEW FROM THE GARDEN | NEW DAMES HOUSES WYCOMBE ABBEY SCHOOL | W. D. CARÖE M.A. ARCHITECT

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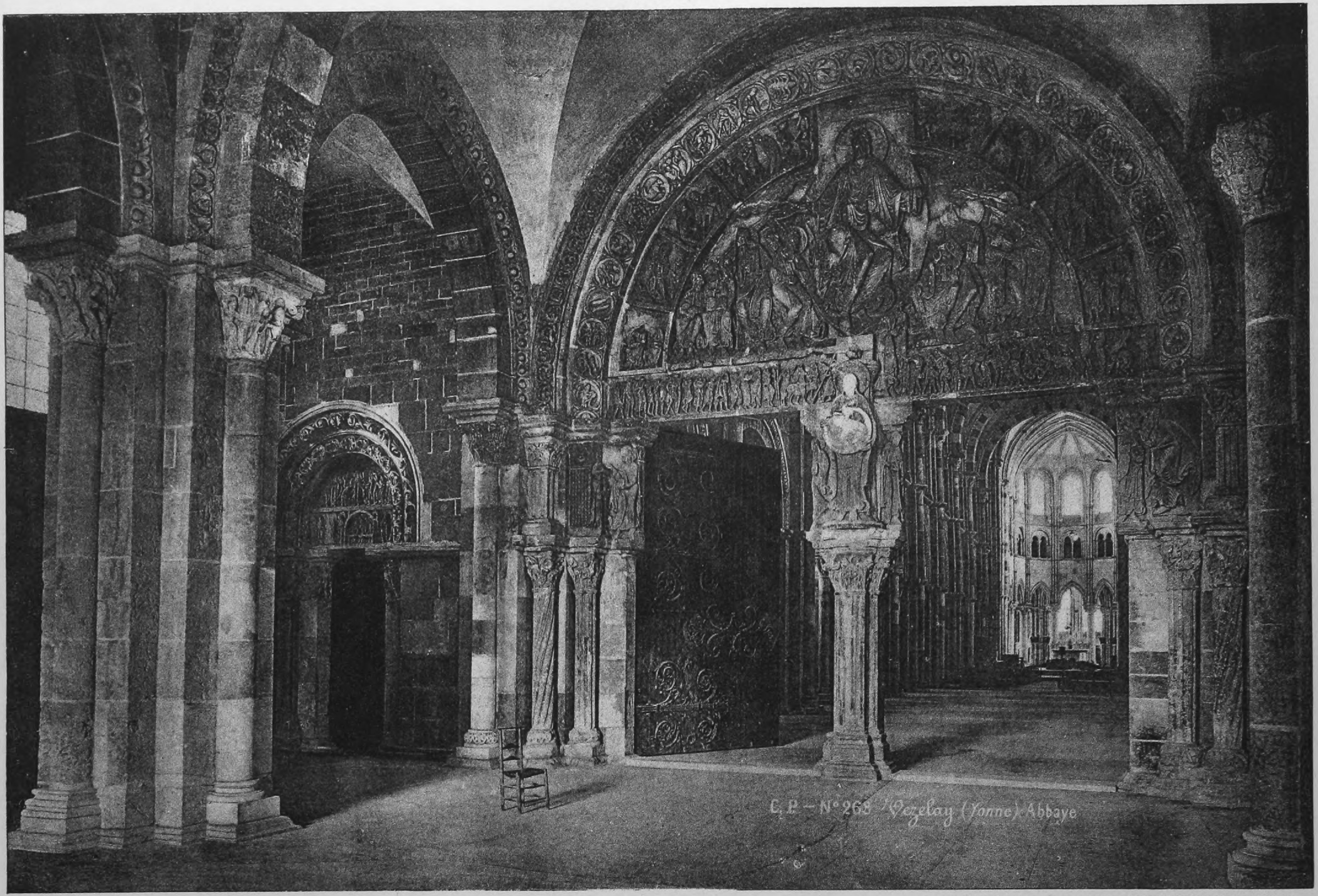
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BURGUNDIAN CHURCHES: VÉZELAY, DOORWAY BETWEEN NARTHEX AND NAVE

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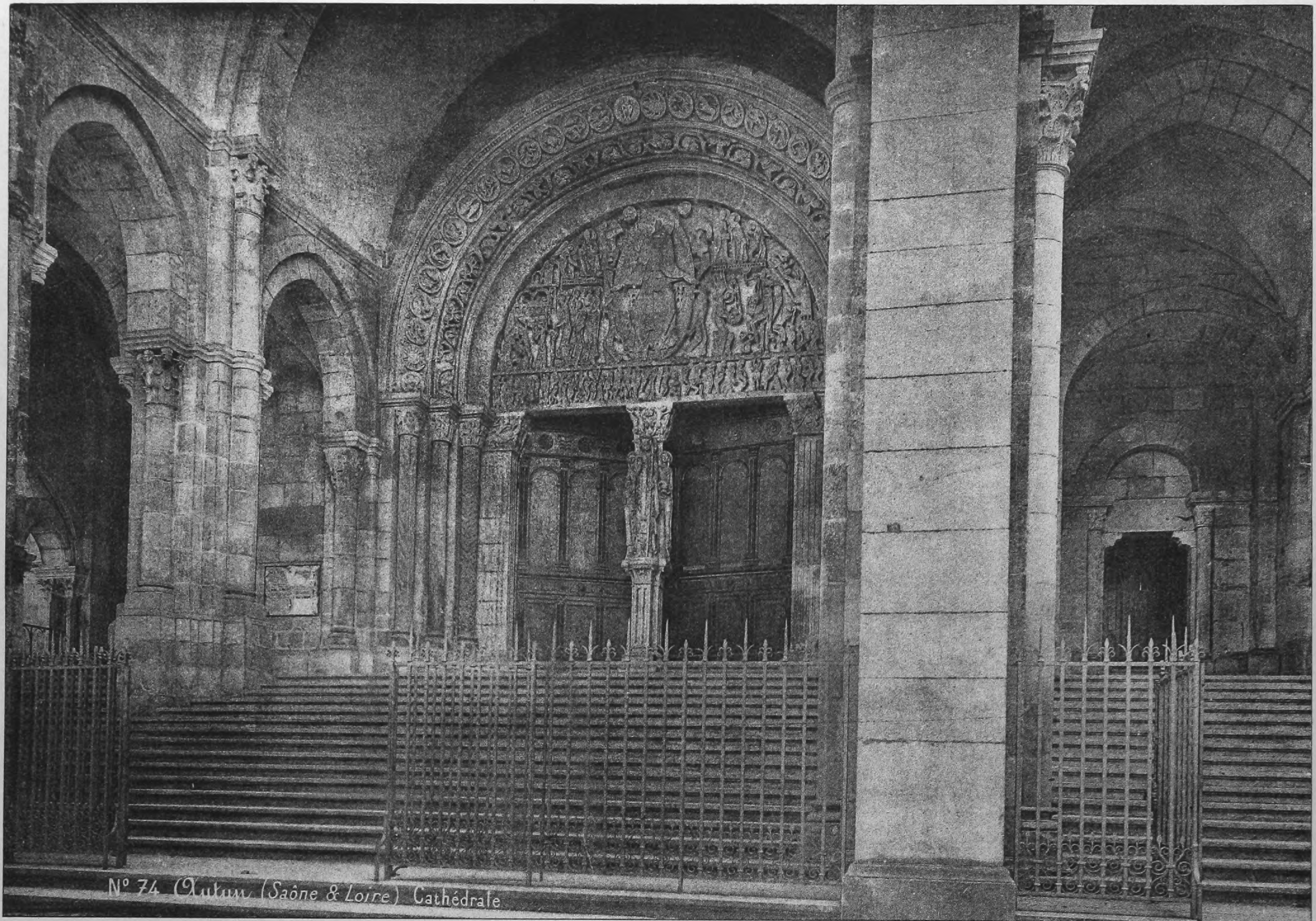
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BURGUNDIAN CHURCHES: WEST PORCH, AUTUN.

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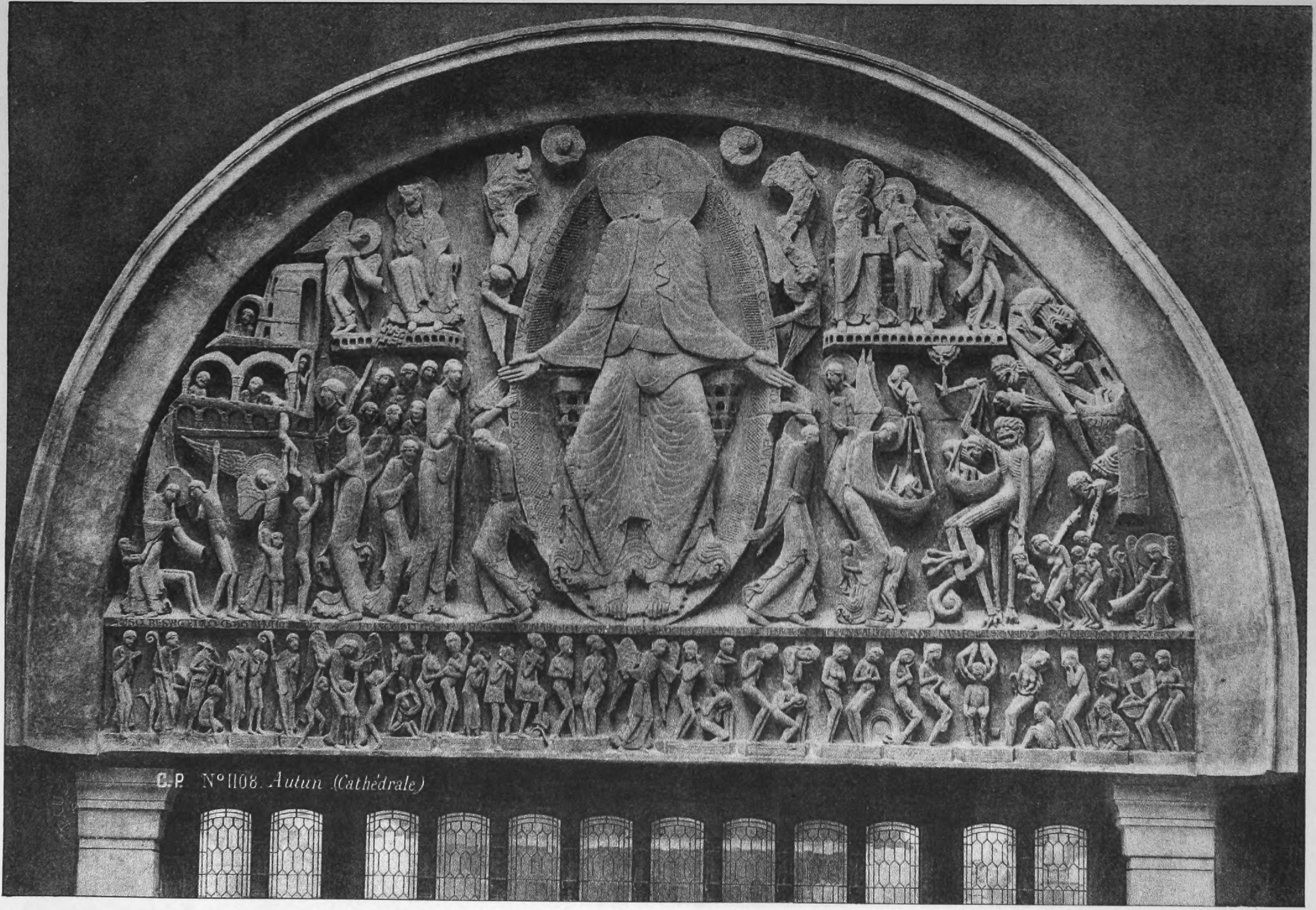
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BURGUNDIAN CHURCHES: SCULPTURE OVER WEST DOOR, AUTUN.
(FROM THE CAST IN THE TROCADÉRO MUSEUM).

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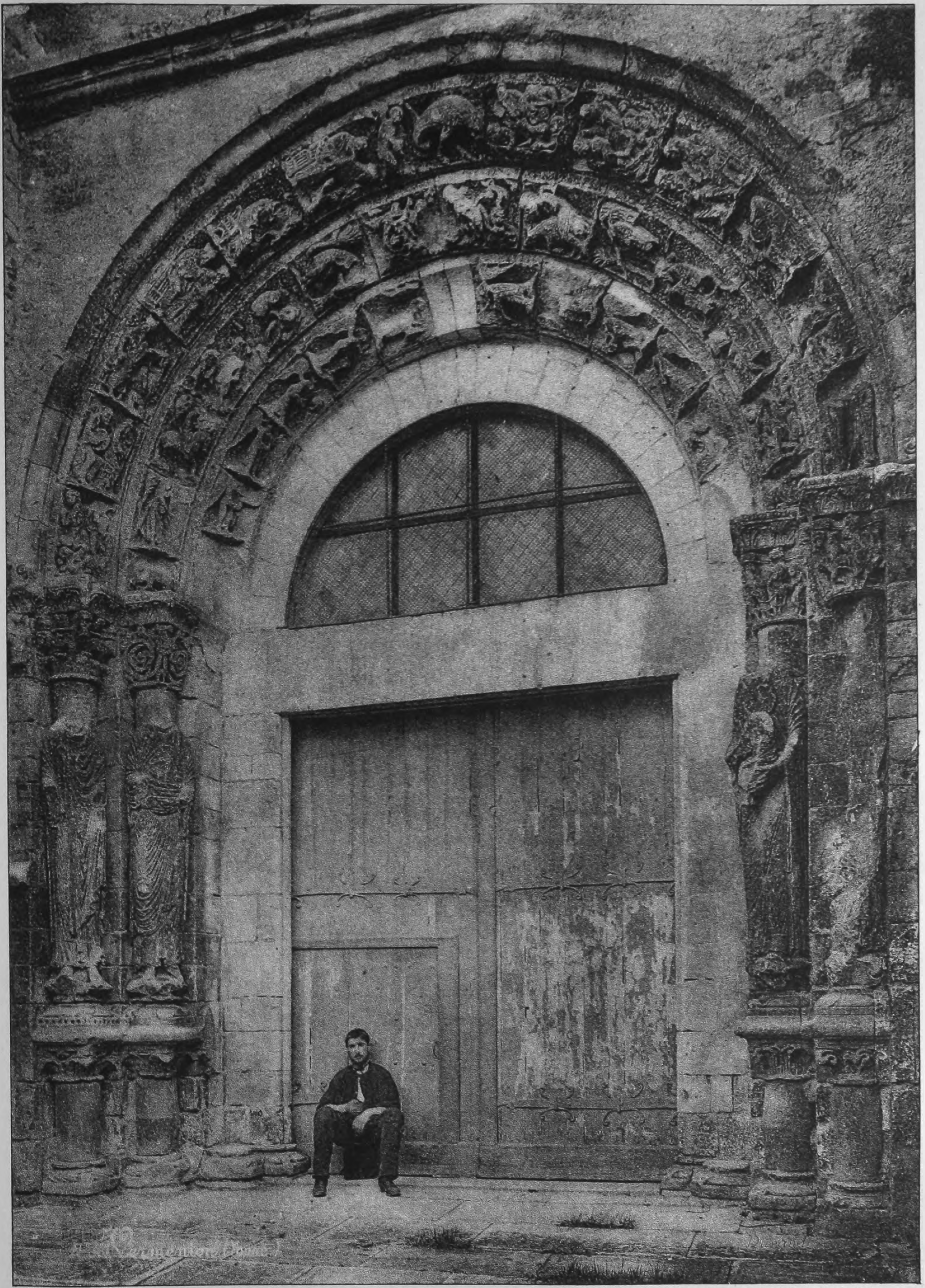

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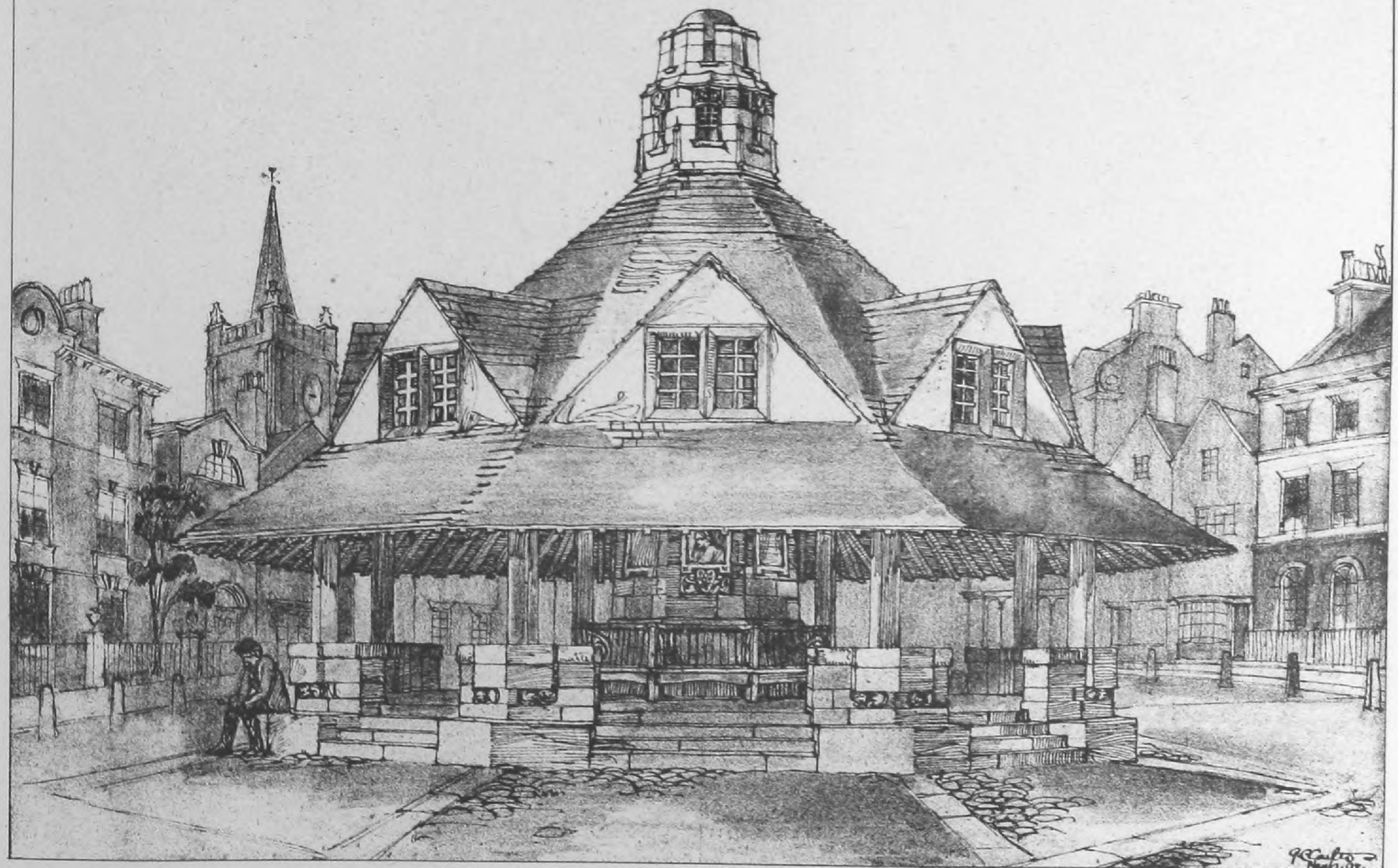
BURGUNDIAN CHURCHES: DOORWAY, VERMENTON.

# PROPOSED MEMORIAL HORNCASTLE · LINCOLN.

Mr G. Christopher Carter
Architect.



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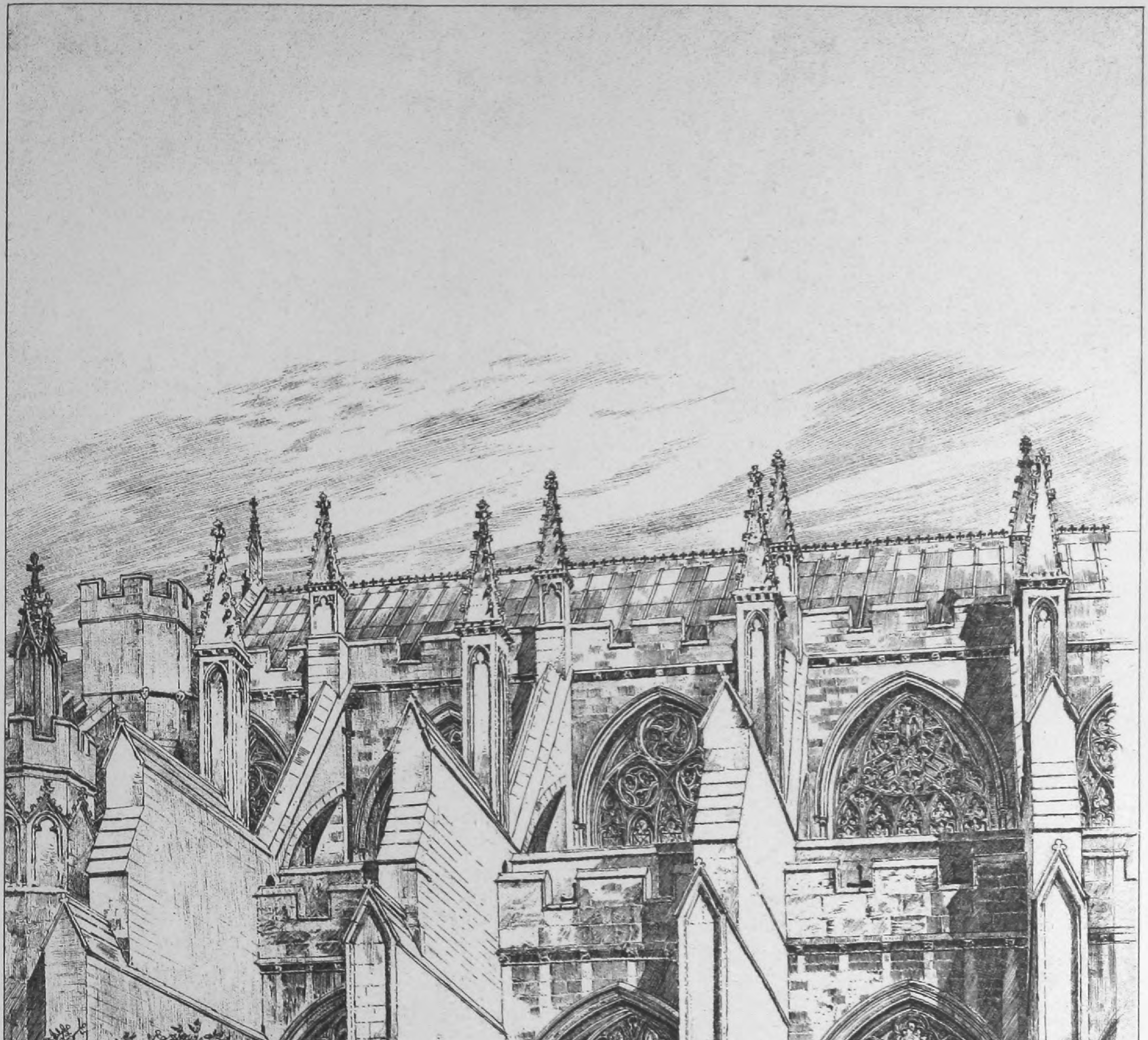
A. Needham Wilson
1897

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EXETER CATHEDRAL, WEST BAYS OF NAVE FROM SOUTH.—Drawn by Mr. A. Needham Wilson, A R I B A

# The Builder.

VOL. LXXVI. No. 2934. APRIL 29, 1899.

## ILLUSTRATIONS.

Britannia Royal Naval College, Dartmouth.—Mr. Aston Webb, A.R.A., architect ................ *Extra Large-Page Photo-Litho.*
Thaxted Parish Church, Essex.—Measured and drawn by Mr. C. Wontner Smith ................ *Three Double-Page Photo-Lithos.*

*Blocks in Text.*

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### *Architecture at the Royal Academy.*

We do not think the present year's exhibition at the architectural room of the Royal Academy will count as one of the best, though there are some good drawings among the number. The room is also enlivened by the presence of four architectural models, two of which are of considerable interest. As these are the most prominent objects in the room, and form a separate class, and as moreover a model comes closer, in a sense, to the actual architecture than a drawing, we may mention the models first.

The most important is that for the upper part of the tower for Colchester Town Hall, designed by Mr. John Belcher. As this is obviously not a "personally conducted" model, we may suggest that in such case the modeller's name might be given. The architect's detail drawing for this tower, exhibited at the last Academy, was published in the *Builder* for December 24, 1898. The model does not differ in any way from the design as shown in the drawing, but it exhibits more effectively the graceful contrast of the lower and upper stages, the upper planned on a concave line on each face, with four colonnettes, two recessed, at each angle. The clock face, a metal construction inserted on the plain face of the tower below, is effective; the figures are replaced by the signs of the zodiac; a fanciful substitution of which we fail to see the point, unless the sun traversed the signs in an hour instead of a year.

The other plan of special interest is Mr. Prior's small house, planned in diagonal cross form—diagonal, that is, to the main lines of the garden surroundings. A plan is given, showing the dining-room (S.E.), the drawing-room (S.W.), the study (N.W.), and the kitchen (N.E.) forming the four arms of the cross. There seem to be four entrances, one in each angle of the cross, the front door to the north and the principal garden door, with a flight of curved steps, to the south, between the dining-room and drawing-room; a kitchen garden walk runs away on the axial line to the east, and a flower garden walk to the west. The centre of the block is occupied by an open court about 15 ft. square, which gives, through semi-circular windows, light and air to the passages which connect the rooms. The design of the house is of an apparently intentionally naïve kind—what might be called farm-house Gothic, and the eight tall chimneys, battered in line, standing up at different points, remind one of the towers of San Gemignano. But it is a matter of interest to see a house which is so completely individual and unlike ordinary houses; and moreover we may add that the idea of the plan might be worked out just as well, and perhaps with a good deal more effect, in a more sophisticated (as Mr. Prior would perhaps call it) form of architecture. Of the other models, a small one of a gate house to be erected at the entrance of the Petersham Avenue leading to Ham House, is perhaps of interest chiefly on account of its intended site. Mr. C. T. Blomfield's larger model of a house at Poulton, Fairford, shows a plain house of the mullioned type with broad bays segmental on plan, marking the dining-room and library, with the drawing-room intervening between them; but in this case no compass point is given, so that one can form no idea of the aspect. It is surprising how many architects overlook this necessary piece of information on a plan. The general treatment of the house is broad and simple, but why mimic in a model the moss and green stains supposed to have accumulated on the roof? We presume it is a model of a new house, not of an old one.

Coming to the drawings, the most important one, occupying the central position on the end wall, is that of which we give a reproduction in the present issue; the dignified and grandiose design for the Britannia Royal Naval College at Dartmouth (1,671), by Mr. Aston Webb, the last elected Associate of the Royal Academy. The main portion, as will be seen by the drawing, is an entirely symmetrical block; the end wings are slightly different, owing to the requirements of the plan, but treated so as not to interfere with the generally grandiose aspect of the whole; the two towers, similarly treated, serve to keep the balance; they appear rather different in proportion in the drawing, but this is obviously the fault of the draughtsman; the design of both is identical. The manner in which the wings of the main building are connected with and yet separated from the centre block by carrying on the cornice on an open colonnade, is a pretty feature in the design. The laying out of the approaches is very dignified, and worthy of the fine position of the building as shown in the sketch of the general site, which we have added in the margin of the principal view. A small plan is appended to the view, on a sufficiently large scale, the author thus setting an example which others of the Academician architects unfortunately do not set, of explaining his view by a plan. The plan which we give is from a larger tracing, kindly prepared for us by the architect.

At the opposite end of the room is the contribution of another Academician, Mr. Jackson; a perspective view of the new Radcliffe Library at Oxford (1,830). No plan is given. In regard to style the building, which, but for the arrangement of the windows, rather suggests a college chapel, is an interesting experiment in combining Classic detail with the general features of a late Gothic buttressed building. The terminations of the buttresses are treated with Classic gablets and mouldings, but the general feeling is Gothic. Between the buttresses three tiers of mullioned windows, with square or segmental heads, are grouped beneath a round-headed arch. The point we do not like is the columns on the upper half of the end, projecting from the building and stopped short upon corbels. Why architects do things of this kind is beyond our comprehension. Of course the *genius loci* may be quoted, but it seems rather a confession of weakness on the part of modern architecture to have recourse to the imitation of a clumsy feature of late Renaissance to fill up the end of a building.

The other Academician architects who exhibit are Mr. Waterhouse, Professor Aitchison, and Mr. Bodley. Mr. Waterhouse's contribution is a view of the extensive additions to the Prudential Assurance Company's offices in Holborn (1,853: no plan). The drawing shows a massive square centre tower or pavilion added to eastward of the present building, forming the centre of the composition, which is completed by the additional building eastward of it, balancing the existing building on the other side. The central mass terminates in a high roof rising behind a battlemented finish, and with conical-roofed turrets corbelled out at the angles, and connected by a deep corbel-table with a row of small windows above; this feature aids much in giving force to the centre block. The style of the rest is in keeping with the existing building, which is familiar to every Londoner. Professor Aitchison sends his diploma drawing, a geometrical elevation of the Royal Exchange Assurance Offices in Pall Mall (1,608), a street elevation of singularly refined character, of which we published an illustration at the time it was completed. Small plans of two floors are added. Mr. Bodley exhibits an interior of St. John's Church, Cowley Oxford (1,625), a drawing which carries us back to the days of the Gothic revival.

A large drawing of the scheme for the decoration of the Lady Chapel, Holy Trinity Church Chelsea (1,743) is exhibited under the name of Mr. H. Wilson, though the inscription on the border gives the name of Mr. C. W. Whall also, as collaborator. This is one of those drawings, for the preparation of which Mr. Wilson has a special genius, which are most striking as specimens of colour effect, but which in general too much want definite architectural quality, and which impress us with the idea that they represent an imaginary effect which the actual building will not realise. Two of the piers in the chapel present in the drawing a picturesque mass of detail of which we cannot tell whether it is carving, or material laid on, or what, though the general effect is highly picturesque; all one can be positive about is that the author of the drawing is a master of effect in water-colour.

One of the most interesting exhibits is the frame of four drawings exhibited by Mr. Caröe, showing the archiepiscopal palace at Canterbury (1,645). From the rambling character of the small plan given, and its want of perpendicularity, we gather that this is partly a working up of old buildings, or at all events that the lines of the building have been determined by the positions of some existing walls. The plan is a long irregular range of rooms with a return backward at one end and a projection at an oblique angle in the centre; this latter contains the dining-room, and probably the drawing-room, which does not appear on the ground plan, is over it. The entrance porch and vestibule are at the re-entering angle of this projection with the main block. The illustrations comprise a general bird's-eye view, a small view of one end of the building as seen from the cloister wall, a general view from the south-west showing how the buildings group with the cathedral, and a view of the return end, the upper portion of which, with its large mullioned window, we take to be the chapel. It is an exceedingly picturesque group of buildings, of which we will give illustrations in our next issue, when we hope the architect will be kind enough to furnish us with some further description, which seems necessary to the proper understanding of the building. This is another case in which a plan on a larger scale would have been very useful to enable the spectator to understand the working out of the design.

Among public buildings illustrated is a large and finely-executed line drawing of "Entrance to the Assize Courts, New Law Courts, Cardiff" (1,646), by Messrs. Lanchester, Stewart, & Rickards. This is a solid and weighty piece of architectural design, with a colonnade in the centre portion, contrasted by plain square masses at each side. The centre bay of the colonnade is broken by the projection of the porch thrust out from it; a rather curious bit of design, in which the side piers, with the succession of large mouldings built on over each other at top, have almost the effect of reminding one of Hindu architecture; the seated figures on the top are effectively placed. One of the great merits of the design for this building, taken as a whole, consists in the picturesque and effective manner in which the authors have used the device of rustication, introducing it in such a manner as to be a far more genuine source of expression than it generally is. Mr. Mountford exhibits exterior and interior perspectives of his design for the new States Hall for Guernsey; no plan is given, which is the more to be regretted, as we know that the plan is a particularly good one. The exterior view (1,769) shows a classic building of very solid and massive character, the walls treated entirely in rustication. In the centre projects a pedimented portico with coupled columns at each side, between which is a semi-circular recess with a coffered semi-dome; at the back of this is placed the entrance doorway. Above the portico is a tower formed of a high stage of perfectly plain rusticated masonry, supporting a story with a cornice in concave lines on the principal faces, in which the device of the portico, an "apse" with a rectangular entry at the back, is echoed on a smaller scale; above this is a small columned cupola on circular lines, contrasting gracefully with those of the story below it. The rest of the building is kept low and square in its lines, the flanks being emphasised at each end by pedimented projections with an order of columns and pilasters. The windows at the side repeat those in front, and the cornice is carried all round, only intercepted by the entrance portico; there is a simple unity about the design which is very pleasing. The interior shows the "Salle d'attente," (1,728), a wide and spacious corridor divided into bays by semi-circular arches with coffered soffits, repeated on the walls, and each compartment surmounted by a coffered dome. The wide piers are decorated with a pilaster at each side, between which, on the lower part of the pier, a pedimented niche is introduced. The floor has a simple decorative treatment of bands and circles in darker stone than the rest; the whole effect is quiet and dignified. A competition design for the same building (1,710) is exhibited by Mr. Frank Atkinson, an exterior perspective (no plan) which has a good general effect, though weak in some points; the tower breaks awkwardly from the sloping roof, its two upper stories are not sufficiently contrasted, and the series of windows at the side are too disconnected and deficient in grouping. Mr. Bramwell Thomas exhibits a large perspective of the new City Hall, Belfast (1,785: no plan), a grandiose building in general effect, but compiled out of very ordinary materials; a piece of architectural commonplace.

Among other important drawings Mr. Belcher exhibits a finely-executed detail elevation of part of his Colchester Town Hall façade (1,722), with coupled stone columns carrying alternately angular and segmental pediments, on a *fond* of red brick; two tiers of windows are included under the pediments, above a rusticated basement. The capitals of the order appear to be what might be described as "Composite" with the scrolls inverted, which we merely note as a fact, not as implying reprobation. The same architect exhibits a large line drawing of the interior of the staircase for the Guildhall, Cambridge, (1,869) which again requires a plan to properly explain it. The view is taken from the upper part of the main flight of stairs, looking down into the hall. The stairs are included in a rusticated basement, above which is a pilaster order with a sculptured frieze running round the upper part of the wall, interrupted by the pilasters; between them are arches on a smaller order opening into a loggia on the first floor level. It is not clear from the drawing, however, whether this is a double staircase hall, the stair repeated beyond the archway on the other side, or not; a point which a small plan would have made clear.

Among the special features of the exhibition may be mentioned the designs for small bridges by Mr. Ernest George; "Two Wooden Bridges" (1,635), and "Bridge, Lodge, and Gate, North Mymms" (1,749). The latter is a simply-treated stone bridge with the old-fashioned cut-water plan to the centre pier in the middle of the stream, carrying a triangular recess corbelled-out over it; the entry to the bridge at each end is marked by a semi-octagon bay spreading from the roadway and terminated by small obelisks on pedestals which form a "stop" to the walls; the lodge, in two stories, is also octagonal, with a central cluster of flues, and groups very well with the bridge. The wooden bridges are two very simple erections; one a covered bridge at Monk-Fryston Park, Hants, the other a small foot-bridge over a right of way, terminated by an octagonal staircase turret of access, the other end of the bridge resting on the top of a sloping bank. This drawing shows how picturesque effect may be given to a small and simple structure for a practical purpose.

Among the more important drawings, to which we are present confining our remarks, may be mentioned two decorative drawings, in very similar style and looking as if they came out of the same "school," at all events. One is Mr. Belcher's "Diagram of Decoration in Council Chamber, Colchester Town Hall" (1,831), which is not exactly a diagram, but a large perspective sketch of the room, with indications of the position and nature of the decoration. This consists of figures in decorative cartouches on the wall spaces between the openings or Welsh vaults at the sides of the ceiling, and scattered bits of colour design of scrolls, &c., of Renaissance type; while in the flat centre compartment is a ring of figures apparently dancing round in a circle, with their heads toward the centre. The general effect of the decoration is very bright and festive; the objection always exists, however, to painting figures on the flat of a ceiling, that it creates a confusion as to which way up one is to regard them, though the complete circle is certainly better than separate standing figures in panels. The other drawing we referred to is Mr. R. S. Balfour's "Branksee Castle, Dorsetshire, interior of south hall" (1,698). The hall is a large apartment divided into two by an arcade of three arches, carried on piers formed each by four columns on one pedestal and carrying one block of architrave; the ceiling of the nearer room is a cross vault with no ribs, only meeting edges, returned on itself in the centre as a pendant from which hangs a lantern; it is decorated, in a similar manner to Mr. Belcher's Guildhall Room, by figures and other devices painted here and there on the ceiling, but not connected into any main design. The drawing is a very good one, and the general effect good, but there is an unconstructive look about the pendant in the centre; the vault appears to be a plastered one, and one would like to know what the construction really is, of which there is no indication.

We shall have more to say about other drawings in the collection.

## ART IN THE HOUSE OF LORDS.

THE debate in the House of Lords on Friday last week, in reference to the decoration of St. Paul's, was amusing in more senses than one. Lord Wemyss, who led the attack, adopted the attitude of superior instructor in matters of taste to the House of Lords, which in former days, as Lord Elcho, he used to assume for the benefit of her Majesty's faithful Commons. He pointed out to the Peers that St. Paul's was "perfect and ideal in proportion and in all that was required in buildings of that kind," a sweeping assertion which would apply to the Parthenon and to a very few other buildings of the world, but not to St. Paul's, a great of the detail of which is by no means in a good or pure style. People whose knowledge in architecture is limited should not make such extensive assertions. If he had confined himself to saying that the decorations were not in keeping with the character of the building he would have been safe. Lord Wemyss also quoted at length from what he described as "a letter that had been addressed to a London paper," which was really the clever and witty imaginary letter about the doings of "Commendatore Richmond" supposed to be addressed to *Punch* by the ghost of Michelangelo. Whether Lord Wemyss really did not know what it was, or whether he thought the authority of *Punch* would be insufficient for the House of Lords, does not appear.

Lord Wemyss's ostensible object was "to ask her Majesty's Government if they can by any means put a stop to the decorative destruction of St. Paul's that is now going on apace under the orders of the Dean and a Committee of Taste; and whether, if this is beyond their power, they will take such legislative action as will save our other cathedrals from the possibilities of a like evil fate." The reply of Lord Salisbury was as amusing in its way as Lord Wemyss's heroics. Lord Salisbury is a typical representative of the national English character, both in its strong points and its intellectual restrictions. One of the latter is the entire inability, on the part of the average Englishman, and more emphatically the average English statesman, to understand that a question of art can be a matter for serious consideration. The whole tone of Lord Salisbury's reply proceeded on the assumption that the question of the decoration of St. Paul's was a kind of joke, a subject which it was impossible to expect that any sensible statesman would take seriously. That is the usual attitude of Parliament and of corporate bodies towards art in this country; and until they learn that art is a matter of serious intellectual interest there will be little chance for public and national art in this country.

Even better than Lord Salisbury's masterly indifference was the ignorance or prejudice on the whole subject betrayed by Lord Clifden, who interposed in the debate to say that if their lordships had not seen "these very disagreeable mosaics," he hoped they would look at the mosaic recently unveiled in the Central Hall of the Houses of Parliament, "in which they might see a specimen of the sort of work which was being done at St. Paul's." Now the very point of the objectors to the work at St. Paul's is that it is *not* the same sort of mosaic as that carried out under Sir E. Poynter, but the adoption of an ancient system of mosaic of Byzantine type, which does not harmonise with St. Paul's. The mosaics in the Hall of the Houses of Parliament would, as far as style of execution goes, harmonise well enough with St. Paul's. The most charming point of all is that here we have another addition to the decoration of the Houses of Parliament, carried out by the President of the Royal Academy, and the only use Lord Clifden can make of it is to invite members to look at it to see what a wretched thing mosaic is! Really, members of the Legislature, Peers and Commons alike, ought to be made to pass an examination before they are allowed to speak about art in public.

As to the question of Government interference, of course every one knew that the Government cannot interfere with the Dean of a cathedral in the treatment of his building. Whether it is desirable that an Act should be passed to put the cathedrals under State supervision is very questionable. The example of the French "Commission des Monuments Historiques" is not reassuring. Deans have sometimes done foolish things with the buildings in their charge, but we should say that to transfer the cathedrals to State supervision would be to put them out of the frying-pan into the fire.

We cannot help remarking on the singular manner in which, in England, questions of this kind as to the treatment of a building are never raised till after the work is done. Any one with his eyes open might have seen, when the first bay of St. Paul's choir was finished, that the work was in a style differing from Renaissance work; and moveover, that if so much colour were put in the roof the difficulty must arise as to knowing where to stop, and as to the necessity for adding some colour in the substructure to support that in the roof. But no one ever sees or protests about anything of this kind till it is all done—and then a storm is got up when it is too late to be of much use.

We desire to repeat our proposal, already made, that the decoration should be confined to the ritual portion of the church, the choir and dome, leaving the transepts and nave as Wren left them. The special decoration of the ritual portion of a church is a perfectly logical procedure; and as matters have been carried thus far, we think the dome ought to be included; but it must be very carefully handled, and we ought to know exactly what is to be done with it before any more money is subscribed.

## NOTES.

The Secret Commission Bill.

THE Bill which Lord Russell of Killowen has introduced into the House of Lords for the purpose of putting an end to the practice of taking secret commissions may, if it becomes law, have some moral effect in checking this pernicious custom, but we scarcely expect it to have any direct results. The difficulty of instituting prosecutions, of obtaining evidence, the disclosure of trade secrets, will militate against its action as a criminal weapon. There must at the present time be many cases in which employers could recover from their agents secret commissions which they have received if they would take the trouble to institute legal proceedings. If employers will not do this, when they might recover money received by agents, is it likely they will prosecute their servants? As regards the Parliamentary fate of the Bill, it cannot be regarded as certain to become law during the present Session. It will pass the House of Lords; it will probably be discussed in a debate in the House of Commons, but unless the Government take it up, which is not likely, the probabilities are that it will not get through the Lower House. But in any event the continued attraction ot public attention to this subject must do good.

The London Gas Inquiry.

THE House of Commons Committee appointed to make inquiries respecting the prices charged for gas by the Metropolitan companies have commenced their labours; and now is the time for Vestries, District Boards, and others who have, or believe they have, reason to complain of the conduct of any of the three Metropolitan gas companies in the matter under consideration, to make known their grievances. Sir Courtenay Boyle, the Permanent Secretary of the Board of Trade, has already given evidence, but nothing of particular interest transpired at his examination. It appears that the prices of gas in the year 1889 compare with those of to-day as follows:—

| | 1889. s. d. | 1899. s. d. |
|---|---|---|
| Gas Light and Coke Co. (North of Thames) | 2 6 | 3 0 |
| South Metropolitan Gas Co. ... | 2 3 | 2 2 |
| Commercial Gas Co. | 2 4 | 2 6 |

Beyond the fact that the Gas Light and Coke Company have abolished meter rents, we have no information, apart from capitalisation considerations, that will greatly aid in accounting for the 38 per cent. excess charge of this company over that of the South Metropolitan Company. The charge of faulty management is a serious one for consumers, shareholders, and officials alike, and can only be dealt with satisfactorily by an impartial committee, such as that now sitting, after exhaustive inquiry. The gas companies have expressed their willingness to give all possible assistance in the inquiry, and it is to be hoped that in future more friendly relations will exist between the controlling authorities and the gas companies. Cheap gas of a predetermined heating value is the only practicable "smokeless" fuel that London is likely to possess for some years to come, and those citizens who are anxious to live in a brighter and clearer atmosphere would do well to see that no petty strife between company and local authority, and no mismanagement of huge business concerns, is allowed to interfere with the supply of gas of a standard quality at the cheapest possible rate.

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**Technical Education.** The recent Report showing the amount expended in England on technical education during the last financial year is again worthy of notice. The total amount expended was 12,000*l.*, which is exclusive of the sums allocated to intermediate and technical education under the Welsh Intermediate Education Act, 1889. As we have more than once had occasion to point out, the weak part of the present system, or want of system, is that money appears to be frittered away in large quantities over bits of technical education in rural districts. The instruction and the course is too often more regarded as a pastime than as a serious business, and there is also a want of continuity. It is very little use for a young man to attend carpentering classes for a few evenings during the winter months if he does not go on with the work after that season is over. There is also too much inclination on the part of the Local Authorities to give every village and hamlet a bit of the grant, whereas the money would often be more fruitful if the instruction were more centralised and the courses more continuous and longer.

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**Old Age Pensions Again.** There is something comical in the way in which measures are discussed in Parliament, and then turned over to a Select Committee or a Royal Commission, as, at any rate, a temporary means of getting rid of them. The last example of this is the Old Age Pensions Bill, which was this week referred to a Select Committee. During the last few years any amount of information has been elicited on this subject. It will now again undergo the same process. The truth is that Members of Parliament are in a dilemma. They see no satisfactory way of helping the aged poor without increasing pauperism; but pledges given at the last General Election, and fears of that which is approaching, make them anxious to place some measure on the Statute Book which will please the electorate. There never was a time when the ordinary Member of Parliament was more timeserving than at present. Without a grasp of principles, with good intentions, he is the very man to fill the Statute Book with unworkable nonsense.

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**The "Benndorf" Monographs.** The "Festschrift" offered to Dr. Otto Benndorf on his sixtieth birthday contains a number of articles of great archæological importance. Out of the fifty-three contributions we may set aside those of purely literary interest, and note only the weightiest of those that remain. Homeric antiquities are represented by an article by A. Engelbricht on burial customs in Homeric days, and another by J. Jüthner on the Homeric discus. Under this head, too, comes a discussion by M. Hoernes on Greek and West-European weapons of the Bronze period. Among the many monographs on vases one by Dr. Pernice on a Corinthian *pinax* or tablet calls for special notice. He discusses an unpublished fragment (in the Berlin *Antiquarium*) decorated with a most curious and interesting design. A potter's oven is depicted surmounted by a large owl—presumably to indicate Athene. In front of the oven is the figure of a tiny gnome, at which a man—presumably the potter — is gazing with attention. Literature gives the clue to the meaning. Pollux (vii., 108) tells us that it was the custom to set up in front of ovens in craftsmen's shops grotesque figures to avert ill-luck. They were called *βασκάνια*. Moreover, the pre-Homeric poem on "Potters and the Potter's Oven" mentions by name a number of evil sprites whose business it was, if angered, to break and crack the pottery. It was no doubt to keep such evil spirits off that the little figure on the *pinax* was set up. Among the many articles on sculpture we have only space to note the publication of a charming bronze in the possession of the Earl of Elgin, at Broomhall, Dunfermline. It represents Athene holding an owl, and is discussed by Dr. Conze, of Berlin.

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**Cement Testing.** A Report is given in the *Engineering Record* of February 24, 1899, of a paper read by Mr. R. W. Lesley, Assoc.Am.Soc.C.E., on "Cement Specifications and Cement Testing." He points out that the testing of cement is being carried out more and more systematically, but that in spite of this the results vary in a very striking way. The breaking strength of cement briquettes varies very much with the circumstances under which it is made and tested, and also with the individual who makes the test, so that it is possible to get very different results from the same cement. The strength of the briquette may thus be affected by the porosity or otherwise of the slab on which it is made, by the cleanliness of the mould, or by the presence of air bubbles if the mould has not been carefully tapped or shaken. The speed of loading, too, is liable to affect the ultimate strength, besides, of course, the amount of water used in gauging and the time allowed between the setting and testing of the briquette. He strongly urges the importance of having a preliminary test of cement to be used on a large piece of work carried out by a trained expert in a properly-equipped laboratory, in addition to the continuous tests which must be run as the work proceeds. The tests carried out by the expert would then form a standard in case of any difficulty arising between the manufacturer and the engineer on the works.

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**The Smoke Nuisance.** From the March number of the Journal of the Franklin Institute we learn that serious efforts are being made to obviate the smoke nuisance in Philadelphia. As a result of several meetings* of that Institute, held specially to consider the question, a proposed ordinance has been drawn up by the Committee of Science and the Arts of the Institute, and recommended to the Board of Health of the city for adoption. The special object of this ordinance is to prohibit the frequent emission of opaque smoke from chimneys of boiler furnaces and smoke-stacks of locomotive engines. It defines "frequent emission" as being the discharge of heavy black smoke for a period of three minutes in any one hour, and repeated in subsequent hours, so as to become a public nuisance. It is proposed to make this liable to a penalty of 2*l.* for the first offence, 5*l.* for the second, and 10*l.* for every subsequent offence.

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**Brick Street-Paving.** It is somewhat surprising that bricks have been so little used for the paving of the carriage-ways of streets in this country. In the United States they have been adopted with satisfactory results, and many miles of streets in Holland are paved with bricks, including the road from Utrecht to Conningham, twenty-seven miles in length. Whether the new brick introduced by Messrs. Woolliscroft, of Hanley, will lead to the adoption of brick paving for English streets we cannot say; but, at any rate, the material is worthy of trial. The brick has been tested by Mr. J. T. Eayrs, M.Inst.C.E., and it compares very favourably with American paving-bricks. The abrasion test was carried out by placing five bricks in a tumbler or rattler, 24 in. in diameter and 30 in. long, and giving them 1,000 revolutions at a speed of twenty-five per minute. The average loss amounted to 7·15 per cent. The test for absorption showed that the bricks are very dense, as the average gain per cent., after fifty-three hours' immersion, was only 1·57 per cent. The makers recommend that the bricks should be laid on a cushion of sand, 1 in. to 1½ in. thick, and then rolled and jointed with bituminous or Portland cement grout, the former being preferred on account of its greater elasticity, and because it "materially reduces the noise of traffic and absorbs vibration." In the estimate of cost of this paving no account is taken of the concrete foundation, which will certainly be necessary if the paving is to be at all satisfactory. This foundation is sometimes of gravel, but in America Portland cement concrete is now generally used. The bricks, we may add, measure 9 in. by 4½ in. by 2⅝ in., and all the arrises are rounded to a ¼ in. radius to prevent chipping. The average weight of the bricks is about 8 lbs. 5¾ ozs., or about 136 lbs. per cubic foot. As the makers offer to "lay a street or portion of one" as a test, we trust that it will not be long before a trial is made; there seems every reason to believe that brick paving will be less noisy than granite, less absorbent than wood, and less slippery than asphalt, but it remains to be seen whether it will combine, to any satisfactory degree, the best qualities of these three materials.

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**Advertising in Edinburgh.** A Bill which has been promoted by the Edinburgh Corporation, and which has been under the consideration of a Select Committee of the House of Commons, contains among its provisions some clauses to enable the Edinburgh Corporation to take decisive action against disfigurement of the city by advertisements. No advertisements, except those (not illuminated) which may be exhibited within the window of a building or within a public conveyance or in a railway station, are to be put up without a licence from the Edinburgh magistrates. The Committee, as reported in the *Times*, has ruled (very foolishly in our opinion) that the Edinburgh Corporation might have powers in respect of the control of sites and hoardings to be used for advertising purposes, but no power of censorship over advertisements would be conferred. This will frustrate the real object of the Bill, which is, as the counsel of the Edinburgh Corporation put it, "to prevent the disfigurement of their beautiful city by advertisements." It is a most laudable and sensible object, and the Committee ought to have given it every support. We regret that any Parliamentary cold water should have been thrown on such a scheme, the proposal of which is highly creditable to the Edinburgh municipal authorities.

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* See the *Journal* of the Franklin Institute, June and July, 1897; and January and February, 1898.

**Winchester Castle and the Moat.** ADVERTING to our "Note" of April 15 (page 363 *ante*) we may here mention that of late years the older defensive works of the castle have been considerably obliterated in the making of the railway and of a parade-ground for the garrison, including nearly all of the space between Southgate-street and the barracks; the ditch followed the course of the old city wall, and the site of the castle hall, which narrowly escaped from the fire at the infantry barracks in December, 1894, was in the outer bailey, or sheriff's ward. The castle, ascribed to William the Conqueror, stood at the south-west angle of the city wall, against which abuts one end of its chapel, so-called, of St. Stephen, which afterwards was converted into the County Hall. The castle, whereof William of Wykeham was constable for a time, was granted, with its precincts, to Sir John de Tichborne by James I., and eventually passed to the Corporation, who sold it for five shillings to Charles II. by a deed dated March 17, 1682. Having served during the reigns of George I. and his two successors as a prison for captives taken in war, it was ultimately converted into barracks in 1796. On March 23, 1683, was laid the first stone of the King's house or palace, never completed, which Wren designed to include a grand approach to the west front of the cathedral.[*] In Milner's "Winchester," 1798–1801, is a large plate "*ex autographo C. Wren equit.*" giving a conspectus of the proposed buildings. Milner says the view is from a drawing by Wren, yet some doubt exists as to its authenticity. Of the castle hall, supposed to be *temp.* Henry III., an account, by Smirke, will be found in the Winchester volume of the Archæological Institute. George I. gave to the Duke of Bolton (who set them in his house at Hackwood Park, near Basingstoke) the marble pillars which the Grand Duke of Tuscany had presented for the grand staircase in the King's palace. Three of the four city gates were demolished by the commissioners appointed in 1770.

**Kew Gardens.** THERE have just been opened to the public the grounds (about 15 acres) belonging to the "Queen's Cottage," which hitherto have afforded an undisturbed resort for rabbits, squirrels, and squirrel-like dormice, together with a variety of wild birds, whereof some fifty-five species made the beautiful bit of free and unspoiled woodland their sanctuary and their home. The place is, indeed, a natural aviary, and inasmuch as many of the birds are of kinds that are very rarely seen near London, it is to be hoped that measures will be taken — as in Wanstead Old Park—to secure them from molestation. The original cottage, thatched and covered with ivy and other creeping plants, contains four rooms and a china closet, with diamond-paned windows, and is said to have been built as a tea-house for George III. and Queen Charlotte.

**The "Spinning House," Cambridge.** IT is stated that the Town Council of Cambridge have decided to erect a new police station and offices upon the site, in St. Andrew's-street, of the "Spinning House." It was established as a house of correction for both the University and the town, and to provide work, including the spinning of wool and flax, for poor people, under the will of Thomas Hobson, the carrier, who left some houses, and a capital sum of 100*l.*, in that behalf. Some years ago it was acquired by the University authorities as a house of detention for women of light character, but was closed in 1894, not long after the courts had ruled that in one particular case their power of arrest had been illegally exercised by the University authorities. The "Spinning House" stands on the west side of the street, and the demolition of the old gateway will remove a familiar landmark of the town.

**Society of Painters in Water-colours.** THE exhibition of the Society of Painters in Water-colours, opened this week, is, as usual, strongest in landscapes; there is even less of interest in figure pictures than usual, for one cannot care for such a piece of flaring commonplace as the large drawing of "Nelson's Birthday at Naples" (151). Among the landscapes a special feature is the series of small studies chiefly of flowers and foreground by Mr. Parsons, one of which "Sea Holly" (146), is a quite perfect bit of coast landscape. Mr. Tom Lloyd shows his usual decorative feeling in landscape in "Harvesters" (45), where the level lines of the punt echo those of the bank and stream; his best work of the year is however "Noon" (128), where reapers rest under shade by a stream whose cool reflections contrast with the golden glow of the corn seen over the bank. Mr. Thorne Waite's "Shoreham Downs, Autumn" (6), is a very fine landscape both in composition and detail and in delicacy of execution. Mr. Eyre Walker, in "Under the Crags, Evening" (17), and several other works, seems to have been trying a new experiment in the way of a specially pervading warm yellowish tone in landscape; seen once it is effective; repeated in all his works this year, it becomes a little conventional. Mr. Colin B. Philips is even finer than usual in his grand hill scene, "Ben Cruachan" (13). Mr. Wilmot Pilsbury is a large contributor, and is becoming less hard in style, while not losing his real excellence of truth of detail; he is an artist who is rising higher in the scale, and adding sentiment to what was always good execution. Mrs. Stanhope Forbes's studies in special effects of colour and light are clever but hardly satisfying. Among other works may be mentioned three or four by Mrs. Allingham, always on the same level of excellence; Mr. Paterson's "Old House, Inverkeithing" and "Barbuie Avenue, Moniaive" (4 and 5)—his "Edinburgh" seen from an old quarry is a failure; Sir F. Powell's "Sunset, Arran" (61); Mr. Gregory's "Going out like a Lamb" (88), a charming study of spring foliage; Mr. Albert Goodwin's "Cities of the Plain" (99) and "Mont St. Michel" (149), the latter rather too much like a dream picture; Mr. R. W. Allan's "Home from the Herring Fishing" (116) and "The Taj from Agra Fort" (184), the latter a true hot sunshine picture; and Mr. Arthur Melville's clever colour studies in "blottesque" style (148, 157).

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## MAGNETISM.

THE "James Forrest" lecture at the Institution of Civil Engineers was given last week by Professor J. A. Ewing, F.R.S., the subject being "Magnetism." That the Council did well in inviting Professor Ewing, and in suggesting that he should lecture on magnetism, the result has proved, but there was a certain amount of truth in his protest that "it was like prescribing an ox roasted whole for an invalid's lunch." The discourse was enlivened by many humorous remarks and some striking paradoxes, which were much appreciated by the audience. Commencing with the history of the subject, he showed how quackery and superstition have found "magnetism" a name to conjure with. Five centuries before the Christian Era iron rings, which had been rubbed with loadstone, were sold as a remedy for gout. These ancient prototypes of the modern electric belt brought in a large revenue to the priests of Samothrace.

Although many of the applications of magnetism have been known for probably five thousand years, yet the science of magnetism only dates from 1600 A.D., when William Gilbert published his "De Magnete." This book entitles Gilbert to rank among the founders of experimental science and justifies the panegyric of Dryden:—

"Gilbert shall live till loadstones cease to draw,
Or British fleets the boundless oceans awe."

This verse caused the lecturer to remark that if Dryden had seen this year's naval estimates and heard the present talk about general disarmament he would have no misgivings about the permanence of Gilbert's fame.

He then gave a brief history of telegraphy to the present day, concluding by warmly congratulating Mr. Marconi on having succeeded in establishing wireless telegraphy between the South Foreland and Boulogne. In this connection he pointed out how Maxwell had proved that light waves were only waves of magnetic induction, and hence that all the visual signals "from the day when Eve first smiled to Adam" are examples of magnetic wave telegraphy. In surveying the history of the evolution of the dynamo, he emphasised the importance of the work done by the brothers Hopkinson, and showed how the dynamo has given us a new branch of engineering, which has already begun to overshadow the parent stem. In his opinion the use of the magnetic field to separate magnetic from non-magnetic substances is an application of magnetism that has a very promising future. Edison has designed crushing and separating machinery for plant in New Jersey capable of dealing with 5,000 tons of ore a day. It is said to produce a concentrate containing 67 per cent. of iron from crude ore containing only 20 per cent. An English syndicate has now taken up this system, and the prospector is already at work searching the Scottish Highlands for beds of mixed magnetic ore. In this search he has the valuable help of the magnetic survey of Rücker and Thorpe. Wherever local magnetic disturbances are marked, then it is probable that deposits of ore exist in the neighbourhood. The lecturer remarked that this was another example of what occurs over and over again in the history of scientific discovery, namely, a utilitarian application of work which at the time seemed only of abstract interest. In the application of engineering few things are more conspicuous than the ultimate usefulness of "useless" knowledge. Professor Ewing might have mentioned in this connexion his own researches in magnetism, which have proved of invaluable help in the whole region of electrical engineering, and yet were begun by him without the slightest idea that they would become commercially important.

He described and showed to his audience the latest forms of his hysteresis tester, permeability bridge, and magnetic balance. He also showed his magnetic curve tracer in action, throwing the magnetic curve on a screen by means of a ray of light reflected from a mirror. Owing to the persistence of vision one saw the whole magnetic curve clearly defined. The applause with which this exhibition was greeted was thoroughly well deserved, for it is a most striking and instructive lecture-room experiment.

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[*] N. Hawksmoor being supervisor, and Edward Strong mason, with T. Kempster, up to the water-table. T. Bateman was clerk of the works in 1696 and in 1704.

The researches of Mr. D. K. Morris on the effects of high temperatures on the permeability of iron were next described. Mr. Morris found that when iron is heated its permeability increases until the temperature attains 250 deg. Centigrade, when there is a sudden diminution. It then increases, but again falls off between 400 and 500 deg. C. From 500 deg. it increases very rapidly, until at 740 deg. its permeability is three times as great as at ordinary temperatures. At 760 deg. it loses all its magnetic properties, but at higher temperatures it becomes feebly magnetic again, and finally loses all its magnetism at 1.000 deg. C. Now, Sir W. Roberts-Austen's investigations on the cooling of iron from a white heat showed that it fell steadily in temperature except at certain places where apparently some internal convulsion took place associated with the giving out of heat. The temperatures at which these phenomena were observed coincide with the temperatures at which Mr. Morris noted changes in the magnetism of the iron. The inference follows that not only at the well-known critical point, but also at the other points, there must be a transformation in the structure of the molecules of the iron. The effect of prolonged heating of iron was investigated by Mr. Roget in Professor Ewing's laboratory, and he has clearly proved that there is a great increase in the hysteresis after prolonged heating—a result of great importance to electrical engineers.

In order to understand to what the phenomena of magnetism are due, we must make some hypothesis as to the molecular constitution of a magnet. Weber's hypothesis, that the molecules of iron are always magnets, and that the process of magnetisation is merely turning the molecular magnets round so that they always point one way, was shown to be sufficient to explain most of the magnetic phenomena, without the necessity of making any suppositions about molecular friction. Mr. Swinburne predicted from it that a piece of iron rotated in a very strong magnetic field would exhibit no hysteresis. This prediction has been verified experimentally by Professor Baily.

A model of a magnet consisting of thirty little pivoted magnets was shown, and their shadows cast on a screen. The odd way in which they grouped themselves in feeble magnetic fields was contrasted with the uniform molecular arrangement in strong fields. The lecturer thought that this model would be a great help in enabling engineers to understand other physical phenomena. In friction, for example, it is easy to believe that there are forces acting between the molecules of adjacent substances not unlike magnetic forces. When we make the bodies slide on one another these forces cause the molecular groupings to be broken up and reconstituted, thus giving rise to the dissipation of energy we are familiar with in friction. Similarly experiments recently carried out by Professor Ewing have proved that the plastic straining of metals is caused by a multitude of separate slippings of one part on another in each of the crystalline grains of which the metal is composed. If there are polar forces between the molecules the magnetic model illustrates how this would involve an expenditure of work. In conclusion, the lecturer eloquently encouraged students of research to continue their labours. The patient and intelligent worker may rest assured that his labours will find a return, not perhaps in profit or in fame, but in that pure impersonal joy of discovery which, as those who have tasted it know, is the investigator's best reward. At the close of the lecture, on the motion of Mr. Preece, a very hearty vote of thanks was given to Professor Ewing for his instructive and admirably composed discourse.

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THE SANITARY INSTITUTE CONGRESS. — The Autumn Congress of this Institute will be held this year in Southampton, by invitation of the Mayor and Corporation, commencing on August 29. The annual dinner of the Institute will take place on May 2.

GLASGOW INTERNATIONAL EXHIBITION. — The ceremony of cutting the first turf for the foundations of the Glasgow International Exhibition was performed on the 22nd inst. The place selected was identical with that of the corresponding ceremony in connexion with the Exhibition of 1888, in the centre of the recreation ground to the south of the museum.

## THE NEW GALLERY EXHIBITION.

THE Exhibition at the New Gallery will not add much to the lustre of the establishment—with the exception of two or three of the portraits, it can hardly be said to contain any picture of the first order, and the proportion of mediocre and uninteresting works is unusually large. It contains one moral picture by Mr. Watts which is pathetic and impressive in its way, but which can hardly be counted as one of his most important productions. This is "Dedication" (103), the subject and title of which seem to be a great puzzle to many of the visitors, though the meaning should be obvious enough. The lower part of the picture (an upright) shows a not very well painted stone altar on the face of which is indicated a bas-relief head of a smirking woman looking in a hand-mirror. The slab of the altar is strewn with the bodies of slaughtered birds, whose plumage makes a belt of iridescent colour across the centre. Above them a winged female figure, perhaps the angel or spirit of Nature, stoops as if in mourning, with her hands to her face. As a painted sermon it is serious and impressive; as a picture it is, in comparison with the best work of the painter, rather weak. Mr. Watts exhibits also a smaller work entitled "Peace and Goodwill" (115), a kind of Madonna and Child, the woman leaning back wearily with her head, turned sideways and thrown back, resting on a support in the rear; the hand of the master is betrayed mainly in the broad treatment of the warm-coloured drapery about her shoulders. There seems to be an intended moral in this too; Peace is weary and despairing—so at least we read it. Then there is a portrait of Lord Roberts, in which there is more of G. F. Watts than of Lord Roberts.

The fact that the exhibition contains a large work, crowded with figures, by Mr. Holman Hunt, is of course the point on which the managers chiefly rely. It represents "The Miracle of the Sacred Fire in the Church of the Sepulchre Jerusalem" (80); the scene and the intention of the picture are described at length in the catalogue. Without the description it would be difficult to make any point or meaning out of it. It shows the interior of the church with an immense compact crowd of figures and faces, none of which detach themselves clearly from the mass, the whole appearing almost on one plane, so that the background figures seem to be only on a smaller scale. The attitudes of the foreground figures most in action are stiff and awkward—see especially the figure of the man running through the centre of the foreground groups. There is no interest either of composition or sentiment; it professes to be a realistic representation of a curious scene; but a "picture" in the artistic sense it is not; and it fails even of realism. It impresses itself on us as a rather melancholy exhibition of conscientious but wasted effort.

Among the few pictures, other than landscapes, which aim at a special artistic sentiment two are notable in addition to Mr. Watts's "Dedication." Mr. John Collier's "Evil" (236) shows a melancholy landscape, closed in by a high bank from which three or four tree-trunks rise against the sky, and in the foreground a crouching woman in a red skirt, with her hair down and a wicked gleam in her eyes, which is hardly borne out by the rather weak expression of the mouth. It does not rise (or sink) to the ideal suggested by the title, which we suspect was given after the picture was finished: still there is something in it. The other work we referred to is Mr. Austen Brown's "In a Calf Shed" (150), in which an everyday subject is treated as the basis for a powerful and suggestive effect of light and colour; there is a kind of "Old Master" style about the picture, which is a fine and effective one of its kind. Mr. Tuke's "Cupid and Sea Nymphs" (189) is amusing enough taken in conjunction with the title; the "sea nymphs" are only distant figures and do not affect the picture; the "Cupid" in the foreground is merely one of the artist's usual clever studies of a nude lad, as in his pictures of boys bathing; a bank holdiday youth stripped; the title seems almost to have been given as a joke.

It would be difficult to select any one as the portrait of the year *par excellence;* there are several however that are remarkable for force and character. Among those of women which rise above the level of what we call "dress" portraits, Mr. Shannon's "Mrs. Senior" (170) is the finest, and comes nearest to being a picture rather than a mere portrait; the figure is seated sideways to the spectator, and the whole painted in rather soft half-tints, the figure seeming to blend with the curtain background; the face is very beautiful and expressive. This is what may be called an intellectual type of portrait; no mere painting of a costume with a face at the top, but a work which is an artistic whole. In his full-length of "Lady Cavendish Bentinck" (199) the same artist has attempted what may be called a Reynolds portrait revived; it is striking and dignified, but a little too palpably a revival in style to look quite sincere. Mr. Spencer Watson's seated portrait, full face, of Miss Latham (188), though hard and cut-out in effect, is an interesting colour study, a harmony in red, black, and blue, the face somewhat too highly coloured by the reflected colour of a broad-brimmed red hat, so as to look rather heated: but it is an original work. Among the portraits of men Mr. John Collier's "With Kitchener to Khartoum" (192), a seated portrait of a war correspondent in shirt-sleeves and riding-boots, writing on a note-book, has much spirit and life. Mr. Sargent's portrait of "Colonel Ian Hamilton" (149) has a touch of the heroic, and is effectively contrasted with Sir George Reid's likeness of the "Rev. Alexander MacLaren" (153), which is hung as a pendant to it; the expression of the shrewd and keen face is very well given. Among small-size portraits Mr. Jacomb Hood contributes two spirited and characteristic examples, "Mr. Denis O'Sullivan" (27), and Miss Frances Forbes-Robertson (165) in a fencing costume, holding a foil; a very spirited little work.

The landscapes that are of any importance are soon reckoned up. The most important is a sea-piece by Mr. Napier Hemy, "A Derelict Boat" (180), which has come nearly in the path of a fishing craft in full sail, tearing through a rough sea which is given with much freedom and movement, and in a style of execution which looks rather like a new departure on the part of the artist. Mr. J. L. Pickering's "The Shadow of a Storm" (146) is a sketch of effect, on a large scale, rather than a finished picture; but it is very powerful, and would lead one to look with interest for future work from its author. It is a loss to the exhibition that Mr. Adrian Stokes, who has generally furnished the strong point in landscape at the New Gallery, sends only one small work, "St. Ives" (89). Mr. R. W. Allan's "In Shelter" (123) is a coast scene with fine free open-air effect, the boats perhaps a little too ostentatiously "broad" in handling. Mr. Robert Little's "A Dream of Italy" (97) is an imaginative landscape of a kind which is not often seen now, and carries us back to the days of Richard Wilson, though with a much warmer and richer colour than Wilson ever employed; the middle distance is filled by a hill whose rounded outline is contrasted by the horizontal lines of a large castle building running along part of it; behind is a silhouette of faint purple mountain rising higher and backed by warm-tinted clouds; the whole a suggestive and poetic work. Other landscapes to be mentioned are Mrs. Corbet's "Lower Farm, Eskdale" (50), Mr. Arnold Priestman's "A Swamp" (44), a good "desolation" picture; Mr. Arthur Tomson's moonlight sketch "On the Chiltern Hills" (114); Mr. Corbet's "From Volterra" (128), a rather conventional but carefully-studied landscape, somewhat reminding one in its distances of De Köning's work; Mr. Alfred East's "The Land that Shakespeare Loved" (200), which, however, does not strike us as answering to the title—it is rather devoid of specially English character; Mr. Thorne Waite's "The Down Farm" (220), and Mr. Parsons's flat coast landscape "Sea Holly and Sea Lavender" (237), a good work, but not equal to his small study of the same subject in the Society of Water-Colours exhibition.

Among works not included in the foregoing category are Miss Flora M. Reid's little picture "New Mown Hay" (69), noticeable for its fine and broad treatment, two capital bear pictures by Mr. Nettleship, and among the water-colours in the Balcony a fine work by Mr. Arthur Hughes, "Benedicite" (394), an idealised figure of a girl seated in a bay window playing on a violin, with a bright sky and white clouds seen through the window bars; rather recalling in sentiment the left hand compartment of the same artist's triptych, "Viola d'Amore," in the Royal Academy three or four years ago.

The sculpture is not important; the only large work, Mr. Taubman's "Adam and Eve," is not very interesting, and Mr. Goscombe

John's "Memorial Figure," a realistic bronze of a girl seated, clad in ordinary frock and shoes, is not sculpturesque, and is so unlike this artist's usual ideals in sculpture that we fancy it is done to please a client rather than himself. Among the small works are Mr. Onslow Ford's small replica of his "Folly,". Miss Halse's "The Morning Star," a little nude figure (apparently wax) poised on tiptoe on a small sphere which rests on the apex of a pyramid; Mr. Colton's clasp in enamel and steel, Mr. Drury's head called "The Little Thinker," Miss Rope's small decorative panel "Mermaids," and Mr. Simonds's decorative panel in *gesso duro*, "Music."

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## FISHMONGERS' HALL: THE SITE AND FORMER BUILDINGS.

On the occasion of the visit of the Architectural Association to the Fishmongers' Hall, to which we have already referred, Mr. H. Chatfeild Clarke read a short paper on the history of the Company and of the site. The following is the portion of his paper referring to the site and buildings:—

"Fishmongers' Hall, Thames-street, was anciently the site of four tenements in the time of Edward III., to which a fifth was after-enumerated, and the conveyances of the five tenements prove the site to have had a frontage of 120 ft. next Thames-street and an average depth from thence to the river of 200 ft. In Henry VII.'s reign the Stock Fishmongers adopted Lord Fanhope's house in Thames-street as their place of meeting, and when both Companies were finally united this house was agreed upon to be their Hall, and was practically the gift of Lord Fanhope, subject to certain payments. The site stood at the south-east end of Upper Thames-street between what was Water-gate and Old Swan-lane, and the total property was intersected by several stairways to the river—Water Gate, Churchyard-alley, Fleur de Luce-alley, Black Raven-alley, Ebgate-lane, or Old Swan, and, after the Fire of London, by an additional alley called Wheatsheaf-alley. Several of these alleys still exist, as you are aware, and retain their ancient names.

### *Description of Old Hall.*

The first hall does not seem to have been a building of any great age or duration. The term "Fanhope's House" implies that the Fishmongers only occupied that mansion at first, and the attaching of additional erections to it forming the whole into their Hall must have taken place subsequently. There are no plans of this hall to be found, but from a small plan by Hogenberg it appears to have been a large square pile of masonry with towers at the angles and a central gateway towards the river. In Hollar's four-sheet view of London, 1647, we perceive two courtyards, evidently formed by running a dining-hall across the original quadrangle. The interior is not described in the company's books, but an heraldic visitation at the British Museum enumerates twenty-two coats-of-arms of Lord Mayors as having been amongst the stained glass in the old hall, some of which are said to have been in the gallery and some in the glass at the hall door.

The fire of London must have attacked Fishmongers' Hall as one of its first large buildings, and reduced it and all the surrounding buildings to mere foundations. In February, 1667, the court ordered their carpenter 'to have a note of all the company's houses lately burnt and where they were situated, that he might look to the foundations of them and see that the company were not wronged by the building of walls on such foundations as party walls, when the same belonged only to the company.'

In 1667 and 1668 Mr. Edward Jarman, the Company's Surveyor, was negotiating regarding various tenancies, &c., of properties surrounding the hall, and in May, 1668, 200,000 bricks were ordered for building at Fishmongers' Hall, and the hall was agreed to be enlarged to 33 ft. wide by 66 ft. deep. The new hall was completed in 1669, and the Company's books transferred thereto in February, 1670. Mr. Jarman, the architect, was also architect to the Drapers' Hall after the fire of London. We have both an engraving and a coloured drawing of this hall. The buildings environed a square, handsomely paved court—the dining hall being on the south side of the court—containing a capacious gallery running round the whole interior.

The present hall was built in 1831 from designs of Mr. H. Roberts, the builders being Messrs. Cubitt & Co. A set of the drawings are shown herewith. The building was set back westward about 40 ft. by the new London Bridge. As will be seen by the drawings, many of the floors are built with brick or tile arches, and the premises are extremely solid throughout, the roof over the banqueting hall being copper. The dimensions of the hall are 73 ft. by 38 ft. by 35 ft. The severe, but pleasing, style of the building speaks for itself, but what strikes one throughout is the extremely pleasing proportions of the various rooms. The hall was decorated in 1863 by Owen Jones, and the decorations have never been renewed until last year."

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## THE INTERNATIONAL BUILDING TRADES EXHIBITION.

On Wednesday Professor Aitchison, R.A., opened this Exhibition at the Agricultural Hall, Islington. A number of gentlemen interested in the Exhibition having briefly inspected some of the exhibits, the party proceeded to the gallery, where the opening proceedings took place. Among those present were Sir Arthur Blomfield, A.R.A., Mr. J. W. Swan, F.R.S., President of the Institution of Electrical Engineers, and Messrs. W. A. Pite, E. O. Sachs, E. J. Lovegrove, Henry Holloway, E. Woodthorpe, Gale, H. Greville Montgomery (the manager), and others.

Professor Aitchison, in declaring the Exhibition open, said that they had assembled to open the International Building Trades Exhibition. Most persons would allow that it was an important exhibition, as the mere fact of building even in so great a capital as London forced attention to it even while passing in a vehicle, but it was only when we considered the great number of industries that are necessary to it, that we could form a true idea of its importance. No building of brick, of stone, or of concrete could be erected without lime or cement, at least in this country (for we read of Babylon being built of bricks and asphalt). Who was the inventor of mortar we did not know, but we knew that the Pyramids of Gizeh were put together with it. Lime generally involved a quarry from which the limestone had to be extracted, the building of kilns, and the use of some sort of firing, carts and horses to draw the quick lime, and roads to draw them on, the building of carts, the leather and iron work for the horses, and food, clothing, and habitations for the men and stables and food for the horses, not to speak of the men and materials required for making the road. It was to the necessity for limestone and fuel that we owe the destruction of so many temples and other grand classical monuments, and when he told them that the marble of the Mausoleum was used by the Knights of Rhodes to burn into lime for the repair of the walls of the Castle of Budrum just before it was taken by Solyman the Magnificent, they would not be surprised at the havoc made among the priceless monuments of antiquity, mainly from the same cause, the roofs being used for the fuel. Viollet le Duc gave a long list of all the trades and occupations that were involved in building. They were present, however, to see new inventions and new applications of machinery to their craft. The exhibition was more or less useful to every one, but it was particularly so to the architects. The application of machinery to all sorts of productions had been of immense advantage to all those engaged in building, and, of course, no less useful to those who occupied the buildings that the architect had designed and the builder executed. He might mention a peculiar use that he had seen one of the modern inventions in the exhibition put to. The invention was a sheet of wire-work. At the intersection of the wires small pieces of terra-cotta were strung on. Some of this wire-work he saw had been bent into the shape of a groined roof, and when plastered inside and out it made a very stiff and apparently serviceable roof, and if it only had the incombustible qualities that were claimed for it, it would be a very valuable preventive to the destructiveness of fire. There were doubtless hundreds of other serviceable inventions exhibited which might be used by the architect and the builder. He might mention one application of machinery to joiners' work that he was peculiarly grateful for. He once wanted to use some square moulded balusters, and the expense of working these by hand was too great to allow their use being thought of, but he found an exhibit here that had been worked by machinery which so much reduced the cost as to enable him to use the balusters. The ancients had used the fall of water and the force of wind for mills and ships, but just before our time the application of steam had increased our power of production at least a hundred fold, and Tennyson, whose poems were published in 1832, spoke of its last triumphs

> "In the steamship, in the railway, in the thoughts
> that shake mankind."

Shortly after that we had the electric telegraph, which has rivalled Puck's boast: "I'll put a girdle round about the earth in forty minutes." Electric lighting had come, and when we considered the progress of electrical science since the days of Pliny the Elder, to our knowledge of it to-day, to the X-rays which had shown us an undeamt-of power, it opened a vista which almost paralysed us to contemplate. On the present occasion there were exhibits of electrical appliances for lighting which had made a revolution in the illumination of houses and cities, and enabled us to get effects that were never even dreamt of before not to speak of the application of electricity as a motive power. One of the great revolutions that had taken place in his time had been the increased wages of the working class, and now it was they who gave the great stimulus to production; but, like other revolutions, it had not been wholly advantageous, for it had been the means of encouraging what he might call the manufacture of rubbish. Up to a comparatively late period England was celebrated for the excellence of her workmanship. English cabinet work was known abroad for the excellence of its wood and fitting and for the absence of artistic design, and England was, he hoped, still celebrated for the excellence and durability of its machinery; but in some classes of manufacture it was almost impossible to get anything that was really good. There was an insane desire to have things cheap, without regard to their excellence and durability, or even their temporary utility. The bulk of English cabinet work was very different from what it once was; small fastenings that had the appearance of solid brass bent in your fingers as if they were lead, while sash-lines and chair-bands were made of some stuff that was scarcely stronger or more durable than tinder. In certain trades there was a counterpoise to this passion for rubbish; in all the things that had to do with health, that were commonly called sanitary appliances, perfection of workmanship was one of the necessities. This was of an immense advantage to the workman and manufacturer; it taught them to be thorough, careful, and accurate, and not to scamp, for the tests which sanitary experts had learned to apply instantly discovered imperfect work or materials. Twenty or thirty years, or still longer, ago, he pointed out the enormous advantage it would be in manufacturing towns to have the whole outer faces of buildings covered with enamelled bricks or enamelled terra-cotta. This was done with white or pale-coloured bricks when there were questions of light to the premises themselves, or to those of their neighbours, but the appearance of such buildings was rather more hideous than when they were built of the ordinary brick. There were ridiculously few buildings of enamelled brickwork or earthenware where any attempt was made to give to them beauty of form and colour. This was due to three causes—to the wretched leasehold system; to the time required, and the accidents inherent in the potter's trade, both to shape and colour of fine earthenware; and to the desire of people to get artistic designs for nothing. As to the advantages, in the first place, dust and soot did not cling so much to a polished face as they did to rough and porous surfaces, and that which did stick might be pretty well cleared off by the free use of a water hose; but the thing he wished most to insist upon was the great importance to mankind of beauty both in form and colour. It could not be supposed that Nature did not know her business, and that her making almost all her works more or less beautiful in form and colour was not of some advantage to man. To him it seemed certain that all these beauties which pervade the earth, the air, and the ocean were intended for man's purification, solace, and delight, and that in great towns, where Nature's beauties were shut out, and where even the sky was obscured by smoke and dust, there must be a necessary lowering of man's intellectual and moral powers unless those gifted men who could impart beauty were employed to confer those beauties they had culled from Nature on the habitations, the furniture, and the utensils of town people. The late Charles Garnier, who was the greatest architect of our time, published in 1869 a book he called "Through the Arts" ("A Travers les Arts"), and in that he gave his dream of the beautification of Paris. "I picture to myself," he said, "the day when the tawny tones of gold will mark the monuments and constructions of our Paris; I imagine the warm and harmonious tints which will tremble under our charmed gaze. One will then have renounced those grand right-angled streets, beautiful beyond doubt, but as cold and formal as the etiquette of a noble dowager. The present inflexible regulations will have their period of reaction, and without hurting anybody each man will be able to build his house without making it exactly like his neighbour's. The grounds of cornices will shine with eternal colours, piers will be enriched with sparkling panels, and gilded friezes will run the length of buildings; the monuments will be clothed with marble and enamel, and the mosaics will make all in love with movement and colour. This will not be mean or false luxury; it will be opulence, it will be sincerity. The eye familiarised with all these marvellous tints and brilliancy will necessitate our costumes being modified and being coloured in its turn; the whole town will be one harmonious reflection of silk and gold." To take a modern instance, he (the speaker) thought our modern manufacturers might take a lesson from Wedgwood, who not only took the greatest pains to render his ware excellent, but also used as his designers the most celebrated artists of the day, and for this reason his ware was called for in every part of Europe, and, he expected, might be found serving its purpose now in many out-of-the-way places. When he first went to Italy, in 1853, it was quite common to have one's meals served on Wedgwood ware. But Wedgwood was only a tardy imitator of the originators of this traffic, the Egyptians and Phœnicians. Schliemann found some of the blue glazed earthenware of Egypt in Agamemnon's Palace at Mycenæ. This ware bothered the translators of Homer, who had no idea of the trade in blue ware, and in the description of Alcinous' Palace in the Odyssey, Pope supposes it to be metal—

> "The cornice high
> Blue metals crown in colours of the sky."

And after these great traffickers the artistic Greek exported his vases and other fictile ware, enriched with representations from his poets or from folk-lore of his country. Those storied jugs, dishes, goblets, and coolers now filled the museums of every civilised country in the world, and were their most cherished possession and their greatest boast. He had dwelt on this at great length, for he still hoped that our country might furnish to the whole world artistic productions which might vie with the works of Flaxman, if they did not equal the superhuman excellence of the Greeks. The saying of John Addington Symonds should be imperishably engraved on the minds of all those who deal in artistic wares—"Nothing is imperishable but high thought, to which art has communicated the indestructible form of beauty."

Mr. J. W. Swan proposed a vote of thanks to the Chairman for his remarks. In England, he said, we suffered from conservatism—a source both of weakness and of strength. We were too apt to adhere to old methods when new and better ones were pointed out, and it required such an exhibition as the one they were opening to make known the improvements which had taken place in the building art.

Sir Arthur Blomfield seconded, and the motion was heartily agreed to.

A photograph of the party having been taken, an adjournment was made to the dining-hall, where luncheon was provided, Mr. Montgomery presiding.

The toast of the Queen having been honoured, the Chairman proposed the health of Professor Aitchison—"one of the most eminent of living architects and the most genial of men."

Professor Aitchison, in response, said "praise undeserved was satire in disguise." It had been a pleasure to him to open the exhibition and to meet so many of his brother architects, and to do a little towards the prosperity of the exhibition—one of the most useful and interesting which had been held in that Hall. Such an exhibition not only made architects and builders acquainted with new inventions, &c., but it gave the outside public an opportunity of seeing them too. He believed that the exhibition would be a success, and thought that thanks were due to the Chairman for the great time and trouble he had taken in the matter.

A vote of thanks to the Chairman brought the proceedings to a close.

The exhibition will remain open until Saturday, May 6, and the next Building Trades' Exhibition will be held in 1901. The following is the programme of arrangements:—Thursday, April 27, Visit of the Institute of Builders; Friday, April 28, Meeting of Association of Municipal and County Engineers; Saturday, April 29, Meeting of Association of Municipal and County Engineers. Visit of the Institute of Sanitary Inspectors, 3.30; Tuesday, May 2. Visit of Surveyors' Institution 3.30; Wednesday, May 3, Clayworkers' Institute, Annual Meeting and Dinner; Thursday, May 4, Visit of Society of Architects, 3.30; Friday, May 5, Meeting of Association of Municipal and County Engineers, 3.30. Lecture at 8.30 p.m. by the Hon. Rollo Russell, M.A.; Saturday, May 6, Meeting of Municipal and County Engineers, 3.30. Visit of Architectural Association, 3 p.m.

### THE EXHIBITION.

The title of International may be fairly granted as legitimate, for many of the novelties which are contained in the show come from America or the Continent.

Novelties, however, are not superabundant, nor are they to be expected in overwhelming profusion in any exhibition connected with the building trade, which has been gradually attaining its present position by two thousand years of growth and development. There are, nevertheless, sufficient novelties to make a visit to the exhibition both pleasant and profitable to all our readers, and whilst there are a goodly number of new names in the catalogue, it speaks well for the utility of the exhibition, both to the exhibitors and their customers, that many firms who have been represented in the past are once again to the fore.

The most striking characteristic of the exhibition at a first inspection is the marked improvement in the artistic character of the design evinced in the stock patterns of manufacturers. There must be an improvement in the taste and appreciation of the British public to render it commercially profitable for manufacturers to stock and exhibit such admirable designs as are to be seen, for example, in the fireplaces and chimneypieces of Messrs. Yates, Haywood, & Co., the door furniture of Mr. James Gibbons, the glass work of Walter J. Pearce, Limited, and the remarkably well-designed mantlepieces of Mr. John P. White.

A special feature in the present exhibition is the grouping together as separate collections of the manufactures, and methods of construction connected with road surveying, electricity, and smoke abatement; the road surveying exhibit being located in the gallery, the electrical section in the minor hall, and the smoke abatement section in the King Edward's Hall. In the general section of the exhibition the bulk of the space is occupied by the exhibits of stone, brick, and other clay goods, and plaster or cement, which form the backbone of the show, as they do naturally of building generally, but all trades connected with building may be said to be fairly represented with perhaps the exception of ironwork and fire-resisting construction.

Amongst the novelties may be noticed the exhibit of the British Non-Flammable Wood Company, Limited, in which are included examples showing that the process does not impair but rather improves the quality of timber in respect of the appearance at least of articles made from it. Examples of polished wood in furniture and of constructive joinery show the possibilities of the treated material.

Adjoining this exhibit is an interesting novel material recently introduced from America and called "compo-board," shown by The British Compo-Board Company. This is made of a wooden core covered with paper on each side, treated to make the finished material resistant to moisture. It is prepared in two thicknesses, $\frac{5}{16}$ in. and $\frac{3}{8}$ in. The sheets are made in 4 ft. widths and up to 18 ft. in length, and can be fixed to studding by nailing or to walls by cementing. It is capable of a certain amount of flexure, and will take paint, distemper, or paper well, so that it is suggested as a solution of the plastering difficulty. It is claimed that the material is fire resisting as well as damp-proof, and of slow temperature conductivity.

A very different treatment of wood is that shown by Engraved Wood, Limited, wherein quasi-carved panels are manufactured by enormous pressure. For a cheap profusion of ornament in repeated patterns as a substitute for carving the process will, no doubt, find many ready to make use of this material.

In the next stall is another decorative idea in woodwork, the employment of eccentric turned spirals in the preparation of what is called Saracenic Land woodwork for Moorish fitments, grilles, screens, &c. This is shown by the Wood Carving Company, Limited, who also exhibit pressed wood mouldings and carvings.

It may somewhat justly be objected that such treatment of wood is illegitimate and meretricious, and lends itself rather to vulgar ostentation at low cost. There are, however, people who desire such ostentation, and the demand is met by the supply. Of quite a different calibre is the woodwork to which we have already alluded exhibited by Mr. John P. White. Here all is legitimate in treatment, original and clever in design, this manufacturer having wisely gone to some of the most talented of modern designers—albeit somewhat of the Arts and Crafts school—for the drawings from which to work. The execution is good and the combination of excellent design with good workmanship leads to an eminently satisfactory result.

Green stain has now descended to the level of Tottenham Court-road, otherwise the turpentine stains shown by Thos. Fewster & Sons, Limited, might have been received with greater enthusiasm. Fewster's stains are, however, not confined to green, but embrace a wide range of colours and, judiciously employed, there are still possibilities in wood-staining which may well be exploited by the help of these excellent manufactures.

Of washable distempers we have had many and not altogether happy experiences, and one is, therefore, inclined to welcome such a material as "Vernolene," a new water-paint prepared by Mejer, Greenwood, & Son, Limited, if it can but substantiate the claims made in its favour as being non-absorbent to moisture, of equal body and greater durability than oil-paint, cheap, and capable of resisting the deleterious action of lime and gas.

The potentialities of the products of the modern glass worker are well shown in the kiosk of Walter J. Pearce, Limited, wherein is exhibited ample proof that we are now no longer restricted to pot metal or cathedral glass, but have at our command an almost bewildering variety of opaque and semi-opaque or translucent vitreous material.

The defective methods of fixing the capping, which are to be found in some forms of roof glazing, are cleverly avoided in the system shown by Mr. Samuel Deards, which may be briefly described as an adaptation of the principle adopted in securing the cappings of zinc rolls, projecting pins fitting into suitable cuts in the underside of the capping material.

The Sanitary Lead Lining and Pipe Bending Co., Limited, have a very useful material in their lead-lined iron pipes, in which the advantages of lead for soil and waste pipes are maintained with the added security and strength of iron protection, thus providing a smooth and non-rusting pipe, with the possibilty of sound joints and the avoidance of the chief objections of iron pipe for sanitary work; the total cost is stated not to exceed that of ordinary 8-lb. lead. A good feature in this firm's work is the provision of screw caps at bends and junctions, rendering inspection and cleansing possible.

One of the best stands in the Exhibition, both for the arrangement and design of the fitting up, as well as for the excellence of the wares displayed, is that of Mr. James Gibbons, to whose door furniture we have already referred. Good design and good workmanship are here allied in the builder's ironmongery and brass work that is shown.

An ingenious form of light steel paling is shown by T. W. Palmer & Co., made of thin sheet metal perforated and held together by self-formed clips. The same firm also exhibit good examples of unclimbable and other iron railings and gates.

The patent trucks of Mr. H. C. Slingsby are of a clever and useful nature. The peculiarity of the trucks is that of the four wheels—two are on a fixed axle under the centre of the carriage, but the others are in front and behind free to slide upon a long axle and thus automatically adjust themselves to turning movements whilst preserving a remarkable steadiness and evenness of running. The trucks are adaptable for all kinds of purposes which they are made to suit.

Arthur Koppel, of Berlin, exhibits some good forms of steel tipping wagons, both side, end and all round tipping and portable light railways, with switches and turntables which would be useful in many factories. Similar goods are shown also by C. A. Zadig & Co.

A novelty in slating is to be seen at the stall of Arthur Lee & Brothers, Limited, the slating being arranged lozenge wise, screwed to battens, and effecting, it is claimed, a large saving of labour and material. Specimens of American slates are also exhibited, which are interesting.

From America comes, too, the Bundy' time recorder, shown by The British Bundy Company, and intended to facilitate the accurate and indisputable record of the time at which employees commence and leave off work, a matter of considerable importance where large numbers of workmen are employed.

Building stones are not well represented in the Exhibition, although many samples are shown in connexion with the special exhibit of surveyors' materials. Excluding these for the present, and confining our attention to the ground floor, we find a neat little stand of Weldon stone from near Kettering. The Weldon quarries, after being worked for many years as stone mines, are now exploited in the open, and are found to yield a face of workable material at least 18 ft. in depth, and there is but little overburden, as the photographs show. This stone is a cream-coloured oolite, varying from fine to medium grain, and it contains but few concretionary "tears." With a view to demonstrating its durability, a panel, dated MDCXC., found amongst the ruins of Kirby Hall, near Weldon, is shown. The letters are clean cut, and still remain remarkably sharp.

Several slabs of the well-known Dundry freestone, from near Bristol, are exhibited. This, also, is a cream-coloured oolite, and is being used in the restoration of Bristol Cathedral, amongst other works.

Messrs. Joseph Brooke & Sons have utilised their York stone from Hipperholme, Lightcliffe, and other localities, in making a broad pavement, with steps, which admirably demonstrates the value of the material for landings, pavements, and the like. The same firm has a good exhibit of white and coloured glazed bricks, ornamental and moulded bricks for string-courses, &c. The stand contains a good assortment also of air-bricks, sinks, baths, salt-glazed bricks, &c.

Amongst the artificial stones we noticed the light cream and whitish coloured sandstones of the Owen-Stone Company, the exhibit of which consists of a bay with two large entrance pillars erected. The use of this artificial material is well shown in an elaborate panel, an ornate mantelpiece, and in other ways. Some interesting particulars concerning the strength of the stone are given. Samples made for one month before being tested show that 78·72 tons per square foot were required to crush the stone; whilst a sample which was one year old withstood a pressure of 222·4 tons per square foot, others coming out at 107·5 and 185·07 tons per square foot respectively. This seems to indicate that the stone improves by keeping, and that some of it is much stronger than other samples. The highest figure quoted is certainly a remarkable result for an artificial stone. Some comparisons are made between the strength of bricks composed of the stone and London stock bricks, to the advantage of the former; but the term "London stock" is too wide to enable us to appreciate the results furnished.

Crown Dale stone is somewhat similar in appearance; a glass case containing mouldings and other examples is on view. This stone is stated to be made of silica and lime subjected to heat and pressure, whereby a silicate of lime is formed as the matrix. It looks like a fine-grained sandstone, and is made in several tints. As with many other serviceable artificial stones it is sent out ready for fixing.

The Patent Indurated Stone Company has a stand of grey stone paving and balustrading, together with samples of stone, silicated concrete tubes, &c. The material appears to be very homogeneous, and is nice and clean. It consists of crushed Leicester granite, washed by machinery, bound together by cement, and formed in steel lined moulds. Slabs thus made are afterwards hardened by a chemical process, and then seasoned in stacks for six to nine months. The crushing strength of the stone, three months old, is given as 7,134 lbs. per cubic inch. This indurated stone is also employed as architectural stonework generally for sills, sinks, copings, troughs, mantelpieces, string courses, &c.

Petrifite is well exhibited, and a large variety of articles made of this mixed with various substances are on view. Artificial stone, mortar, concrete, and bricks are amongst the numerous applications of petrifite. A somewhat similar cement, known as "petrifine," is also shown. One of the advantages of this, which is of special use for interiors, is that it dries so quickly; work may be commenced and finished in a day. It is stated that petrifine may be mixed with either sea or pit sand, and no efflorescence occurs. For the finishing coat the neat cement alone is employed.

Other exhibits are by the Norton Stone and Concrete Company and the Moreau Marble Company. The last-mentioned makes an artificial marble by treating absorbent natural stones, and whilst nobody could mistake the artificial marble for the real thing it is certainly very creditable, and the exhibit is altogether an effective one.

A slab footway set *in situ* is exhibited by the Bristol Corporation; waste from refuse destructors is employed in the manufacture of the slabs. These latter are close-grained and have a roughened surface, produced by numerous small elevations rising from the general surface. The same Corporation shows a carriageway of granite setts.

Messrs. A. C. W. Hobman & Co. exhibit, amongst other things, a stairway the upper portion of which is made of Clifton stone, consisting of ground Kentish rag and cement, whilst the treads of the lower portion are of white marble chips in cements of various dark colours. Specimens of granolithic paving, window sills, and balusters also form part of this exhibit.

Examples of Roman and Venetian marble mosaic, Venetian glass mosaic, and Ceramic mosaic are shown by the Mosaic Manufacturing Company. Samples of Venetian and Roman marble mosaics, and designs of various works already executed are shown by Messrs. Diespeker & Co. Mr. C. H. Broodbank, in addition to a number of slates from Angers, exhibits samples of American "marbleised" slate and enamelled slate, which are certainly excellent imitations of real marble. Attempts at producing breccias, however, are not as successful as some of the others; there is a lack of sharpness in the outlines of the imitation fragments. The same exhibitor has examples of small circular tables made entirely of slate; a special feature of these is the facility with which they may be taken apart and packed in a small compass.

Specimens of cement and mosaic tiles are shown by the Italian Artistic Tile Company; they are of ornate appearance, and exceedingly strong. Experiments show that test pieces withstood a crushing load of 3·42 and 4·22 tons per square inch respectively. The percentage of water absorbed is given as 4·78. These mosaic tiles are kept six months before being sent out. The same company exhibits some curious Italian terra-cotta. The clay is evidently artificially mixed with chemical preparations, and when burnt has a mottled aspect, green evidently being the favourite colour. Regarded at a distance, this terra-cotta somewhat resembles majolica, but it has the advantage of a dull surface and is not glazed in any way.

The exhibition of bricks and tiles in the show is a large one, but not as great as other clay goods, such as stoneware pipes, chimney pots, sinks, and sanitary ware generally. Messrs. James Oakes & Co. have built a wall in which their red surface shale bricks and pit shale bricks are well displayed. The former are made from coal measure shale, or clunch, from tip heaps; whilst the latter bricks are composed of underclays from beneath the coal seams near Alfreton. The mean crushing strength of these Alfreton bricks is given as 376·4 tons per square foot; and they have an average porosity of 3·23 per cent. Other firms exhibiting bricks are Messrs. Rockhill Bros., who have a fine show of fire-clay goods. The New Malden Potteries and Brickworks, Limited, have a number of clean-looking, red sand, moulded and machine-pressed facing bricks, sewer bricks, drain-pipes, &c. Messrs. Herbert Alexander & Co exhibit a number of well-known bricks as illustrations of the work turned out by their brick-making machinery.

One kind of brick is made from crushed slag mixed with cement. The Ketley Brick Company exhibit red terra-cotta ware, comprising window sills, window and door heads, copings, pillar caps, panels, &c. A small building has also been erected in red terra-cotta and pressed red facings, which forms a very effective exhibit. The Rowlands Castle Brick and Tile Works, Limited, exhibit a number of moulded and ornamental bricks which are amongst the best of their class in the Exhibition. Also a number of rubbers, roofing tiles, &c. Messrs. S. & E. Collier show an assortment of bricks, tiles, terra-cotta, air bricks, finials, and agricultural drain-pipes. Messrs. Wood & Ivery, in connexion with their exhibit of Staffordshire blue bricks, have a section of the conduit as utilised in the Birmingham water scheme, the conduit being lined with their blue bricks. Messrs. H., J., & C. Major show several of their patent weatherproof roofing-tiles, Roman pattern, fixed *in situ*, together with specimens of bricks and tiles, and Portland cement. Mr. Mark Gentry, in a large stall of red clay goods, exhibits red facings, rubbers, arch bricks, and moulded and enriched bricks. Some of the arch bricks are 2 ft. in length and thin—tapering off towards one end. Messrs. Colthurst, Symons, & Co. exhibit tiles nibbed and holed for nailing, amongst other clay goods, nearly all of red tints. Messrs. G. Tucker & Son and the Somerset Trading Company have also a good assortment of bricks and tiles. Messrs. Julius Hülsen & Co. illustrate their method for preventing scum and discolouration on facing bricks and terra-cotta.*

## ST. GEORGE'S CHURCH, LIVERPOOL

A SPECIAL meeting, convened by the Liverpool Architectural Society, was held on Thursday, the 20th inst., for the purpose of debating the proposals regarding the demolition of St. George's Church. There was a large attendance, including, besides members of the Architectural Society, several representatives of the Historic Society of Lancashire and Cheshire and the Liverpool Academy of Fine Arts. Mr. W. E. Willink, President of the Society, occupied the chair, and in his introductory remarks said the Architectural Society felt that in the interests of their art they should make an effort to get the tower and spire retained. The loss of the tower and spire would be one that could not be lightly repaired.

The Bishop of Liverpool wrote: "I think it very unlikely that it will be a popular step to pull it down. I doubt extremely whether anything better will be put in its place."

Professor Simpson (University College) moved the first resolution as follows:—"That from æsthetical and historical considerations the demolition of St. George's Church tower and spire would be an act very greatly to be regretted." He said that historically the tower and spire were valuable as marking—first, the site of the old castle; second, the site of a church erected in 1720, which was afterwards pulled down; and, third, the site of the present church. As regards the view from the river, he said the tower and spire formed a magnificent contrast with the very fine building of the White Star Line Company at the bottom of James-street. As to the design, there was nobody in that room who would agree that it was a poor bit of architecture. The design, considering the time when it was erected—1820—was very good. He was perfectly certain that if the tower and spire were removed the loss would be felt by most Liverpool people.

Mr. Robert Fowler (artist), in seconding, endorsed the remarks of Professor Simpson.

The resolution was carried with unanimity.

Mr. Henry Peet (Historic Society of Lancashire and Cheshire) proposed:—"That the Finance Committee be respectfully requested to recommend the City Council to rescind their resolution of April 5 with reference to the demolition of St. George's Church tower and spire."

Mr. Henry Hartley, architect, in seconding, said it had been officially ascertained beyond doubt that the tower and spire would stand safely after the body of the church had been removed. If it were removed, he as a citizen of Liverpool, as well as an architect, would feel that there had been something removed from his life, and Liverpool would no longer be to him, looking from the Cheshire side and from the river, the same Liverpool that it had been in the past. Liverpool was commercial. If the tower and spire were removed, looking at the town from the river, they would see the commercial side, but would lose all the poetry the tower and spire imparted to the city.

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* Next week we shall devote a further article to the Exhibition.

The resolution was passed.

[The above is abbreviated from a report which appeared in the Liverpool *Daily Post*. We hope the opinions expressed will have their effect. To remove the tower which is the central architectural object at the end of the principal street of Liverpool would be as great a mistake as to remove St. Mary-le-Strand in London—more could not be said.]

## *ARCHITECTURAL SOCIETIES.*

Glasgow Institute of Architects.—A special meeting of the Council of this Institute was held on the 24th inst. in the chambers of the secretary, Mr. C. J. MacLean, 115, St. Vincent-street, under the chairmanship of Mr. David Barclay, President. The President explained that this meeting had been called to consider the principle of the Bill recently introduced into the House of Lords by Lord Russell of Killowen relating to illicit commissions. The President stated that one of the objects of the Institute is to insure that the business carried on by its members shall be free from anything dishonourable, and that they welcomed any action, through such a Bill or by any other means, which would insure fair trading in business and honourable dealing amongst all professional men. By Article 10 of the Articles of Association of this Institute every member is required as soon as possible after his election to sign a declaration that he will not have any interest in any trade contract for work which it is his duty to superintend or pass; nor will he receive or accept any pecuniary consideration or emolument from any measurer or tradesman working for a client under his supervision; but shall in every case receive payment for all professional services from his client direct, and not otherwise. It would seem, however, from the comments on Lord Russell's Bill which have appeared in some of the public prints that this is not fully understood, and that architects, along with others, are assumed to be commonly in receipt of such double commissions. He believed that the profession in Scotland was singularly free from this taint. The following resolution was then unanimously passed:—"That the Council of the Glasgow Institute of Architects, in the interests of honest trade, and to show its disapproval of illicit commissions, in whatever form, resolves to support the principle of Lord Russell's Bill, and that this resolution be communicated to the Royal Institute of British Architects, and that this Council expresses its willingness to support that body in any similar action it may take in favour of the principle of the Bill."

## *ARCHÆOLOGICAL SOCIETIES.*

British Archæological Association.—The tenth meeting of the session of this Association was held on the 19th inst., Mr. T. Blashill, hon. treasurer, in the chair. The hon. secretary, Mr. Patrick, announced that the Congress would be held at Buxton from July 17 to 22. Mr. Dack, of Peterborough, read a paper on "Old Peterborough Customs and their Survival." He said that Peterborough had, perhaps, more curious old customs still surviving than any other city in England. The curfew bell was still rung at Peterborough, and the Cathedral was thought to be the only one where the old and correct order of processions was properly formed. Until about thirty-five years ago a sedan chair was in constant use to carry old ladies to church, concert, or party. The chairman belonged to a family who had been chairmen for many generations. The Rev. H. J. D. Astley, hon. secretary, read a paper by Miss Russell on "Some recent observations on the vitrified forts and drystone brochs in the north of Scotland and elsewhere." The paper elicited considerable discussion, the Chairman remarking that it was not the first time that the subject of vitrified forts had been brought before the Association, but more evidence of the vitrification was required. Mr. Gould remarked that they were not necessarily to be taken as early work. In several instances pieces of Roman tile had been found in their construction.

Glasgow Archæological Society.—The monthly meeting of the Glasgow Archæological Society was held at 207, Bath-street, on the 20th inst., when Mr. P. MacGregor Chalmers read a paper on "The Early Fabric of Glasgow Cathedral, with Notes of Recent Excavations." A short historical sketch of the early structures was given. The church—the choir only—founded by Prince David, was described as being necessarily in the Norman style, of the type of Dunfermline Abbey, or of much of the work at Durham. This choir must have been destroyed at an early date, since there is evidence that a second choir was erected in the time of Bishop Ingeham (1164-1174). Of this fabric an interesting fragment remains in the old wall shaft in the lower church, marking doubtless one of the angles of the apse of this early south aisle. To this choir Bishop Joceline began to add a nave. Wynton says he enlarged the church in 1181. As the choir was again destroyed this work was interrupted. Of Bishop Joceline's restoration a great deal more remains than is currently supposed. The north wall of the north aisle, the lower part of the north and south transepts, the general arrangement of the present vaulted landings leading to the aisles of the upper church, and almost the entire south aisle of the lower church, with its walls and vaulting, are of this period. This part of the description was assisted by a series of large drawings of all the mouldings. The object of the recent search under the floor of the cathedral, which was undertaken by permission granted by the Government, was to determine if any part of the ancient foundations had been allowed to remain. As a preliminary to this description, Mr. Chalmers indicated the results of a similar search at Jedburgh Abbey carried out by him some time ago by permission of the Marquis of Lothian. At Glasgow the search went to prove that all the old foundations had been removed. It was doubtless found necessary to do this owing to the method adopted for the foundation of the present cathedral. It was found that the pillars are not carried down below the pavement level as pillars. A great wall, about 8 ft. thick, seems to run continuously the whole length of choir, from east to west. It goes down a great depth, and reaches, at the top, to within 9 in. of the floor. The four pillars of the shrine are also founded upon a four-square wall. One of the other interesting discoveries was the finding of two of the original glazed red brick floor-tiles. These were exhibited at the meeting, and were compared with almost identical tiles found at Glenluce Abbey, which Mr. Chalmers is at present engaged repairing. A series of interesting photographs were shown. These included one of the painted panels on the vaulting of the church. The last photographs shown were several of the remarkably beautiful carved bosses in the lower church, each carved with a beautiful face, undoubtedly portraits. Professor Young next read a paper on "Collection of Medical Receipts by (a) the last Abbot of Westminster, (b) a Rector of Minchinhampton, (c) the Pastor of Westbury, Wilts." Mr. J. T. T. Brown, writer, read a paper, written by Mr. George W. Campbell, entitled "The Seals of Glasgow University."—*Glasgow Herald.*

## *COMPETITIONS.*

Formby Sewerage Scheme.—The author of the scheme placed first by the assessor is Mr. C. A. Atkinson, C.E., Liverpool. The estimated cost is 32,000*l*.

New Vagrant Wards, Hexham.—The Guardians have adopted the plans by Mr. T. Leslie Anderson, of Newcastle-upon-Tyne, submitted under the motto "Arcadia." The author has been awarded the premium of 20*l*., subject to the approval of the Local Government Board, and on condition that the contractor will carry out the work for 2,000*l*.

The St. Pancras Baths Competition.—At a meeting of the St. Pancras Vestry, on Wednesday, Mr. G. Blount brought forward, on behalf of the Baths Committee, the report of Mr. A. Hessell Tiltman, F.R.I.B.A., the assessor who was appointed some time ago to advise the Vestry as to the relative merits of the designs for the new baths received from the six architects selected by the Vestry to compete. After giving a detailed criticism of each design, the assessor stated that, apart from the general disqualification of all the plans upon the point of cost, he was of opinion that the two designs Nos. 1 and 5 best met the requirements as set out in the instructions, and that of the two he gave the preference to No. 5. Mr. Tiltman pointed out that either design would require modification, the chief object of which would be to reduce the cost to within the limit of the 50,000*l*. mentioned in the instructions to competitors. After a long discussion the Vestry decided to adopt design No. 5, and to ask the author to make such modifications in his plans as would bring the cost of the buildings within the 50,000*l*. limit, and to make such other alterations as the Vestry might consider to be desirable. It was also resolved to retain Mr. Tiltman for the purpose of advising as to the modifications. On the envelopes being opened it was found that the authors of the six designs were as follows:—No. 1 design, Messrs. E. Harnor & F. Pinches (assessor's estimate of cost), 63,350*l*.; No. 2 design, Spalding & Cross, 58,850*l*.; No. 3 design, Francis J. Smith, 58,340*l*.; No. 4 design, R. Stephen Ayling, 60,812*l*.; No. 5, Thomas W. Aldwinckle (selected), 63,550*l*.; No. 6, E. I'Anson & Son, 62,387*l*.

## THE LONDON COUNTY COUNCIL.

The first meeting of the London County Council after the Easter recess was held on Tuesday in the County Hall, Spring Gardens, Lord Welby, Chairman, presiding.

*Loans.*—On the recommendation of the Finance Committee, it was ageed to lend the Greenwich District Board 16,255*l*. for paving works, the Hammersmith Vestry 4,820*l*. for electric lighting purposes, the Lewisham District Board 3,785*l*. for street improvements, &c., the Newington Vestry 10,000*l*. for paving works, the Battersea Vestry 8,540*l*. for purchase of land for electric lighting purposes, the Plumstead Vestry 4,200*l*. for purchase of site for offices, and the St. Pancras Guardians 2,000*l*. for alterations and additions to schools.

*Rotherhithe Tunnel.*—The greater part of the sitting was occupied in considering a report of the Bridge's Committee in reference to a proposed Thames Tunnel at Rotherhithe. They submitted the following scheme:—

"The open approach to the tunnel is to commence on the south side of the river at the junction of Union-road with Lower-road, direct access to the open approach being provided not only from the main thoroughfare but also from Neptune-street, Albion-street, and Adam-street by means of a paved area formed to gradients leading down to the end of the open approach. The open approach will be constructed along Adam-street, and will cross over the East London Railway by a bridge at Rotherhithe station, access to which from the open approach can be provided by a subway passing under Adam-street. The cut-and-cover portion of the tunnel will extend from the East London Railway to a point near Dodd's-place, where the first shaft will be situated and the actual tunnel construction will commence, and will continue under the Antimony Works and the South Metropolitan Gas Company's premises to the second shaft near the Surrey Lock entrance of the Surrey Commercial Docks. From this point the tunnel will pass under the river to the third shaft, which it is proposed to sink on premises immediately to the west of Shadwell Fish Market. From the third shaft the tunnel will proceed, partly on a curve and partly on a straight line, to the fourth, which it is proposed to place on the north side of Broad-street, just to the east of Collingwood-street. At this shaft the cut-and-cover construction will commence and extend along parallel to Broad-street as far as Butcher-row, at which point the open approach would commence and be continued by a curve to join Horseferry Branch-road, the gradient of which being the same as that required for the tunnel approach, the northern portion of this road would really form part of the approach.

The span of the bridge carrying the Blackwall Railway over Horseferry Branch-road, which is now 40 ft., would have to be increased so as to provide convenient access between the tunnel and Commercial-road East.

The total length of the tunnel and approaches from Union-road on the south, to Commercial-road East on the north, will be 6,825 ft., or about 1¼ miles, or very little more than the length of Blackwell Tunnel, from East India Dock-road to the entrance gateway at Blackwall-lane, and in connexion with this question of length it should be pointed out that whereas in the case of the Blackwall Tunnel the length between the main thoroughfares on both sides of the river, viz., between the East India Dock-road on the north of the Thames and the Lower Woolwich-road or Trafalgar-road on the south is two miles, the length between the main thoroughfares in the scheme now under consideration is only 1¼ miles.

The Blackwall Tunnel only taps a fully populated district on the north side of the river, but the proposed Rotherhithe Tunnel will tap fully populated districts, and districts which are large business and commercial centres, on both sides of the river. It is therefore quite reasonable to expect that the amount of traffic which will pass through the Rotherhithe Tunnel, if it is constructed, will very largely exceed that which now passes, or even for some years to come will pass, through the Blackwall Tunnel.

As regards gradients the Rotherhithe Tunnel will have on the south side about 1,828 ft. of 1 in 34 and about 475 ft. of 1 in 50, and on the north side about 2,260 ft. of 1 in 34. These distances refer to the tunnel and approaches between the entrance houses. Between the entrance house on the north side of the river and Commercial-road East will be a length of 489 ft. with a gradient of 1 in 34, and between the entrance house on the south side and Union-road will be a length of 105 ft. also with a gradient of 1 in 34. The tunnel under the river will be horizontal for a length of 1,028 ft., and have a gradient of 1 in 75 for a length of 640 ft. The Blackwall Tunnel gradients are as follows:—2,409 ft. of 1 in 36 on the south side, and 2,569 ft. of 1 in 34 on the north side, the tunnel under the river being horizontal for a length of 1,222 ft. The actual descent in passing from the north side through the tunnel will be 89 ft., as compared with 75 ft. 6 in. in the case of the Blackwall Tunnel from the north side of the river.

The width of thoroughfares proposed in the Rotherhithe Tunnel are 17 ft. for the carriageway and 4 ft. 2 in. for each footway, as compared with 16 ft. and 3 ft. 1½ in. respectively for the Blackwall Tunnel.

The headways proposed will be 18 ft. 6 in. at the centre of the carriageway, and 15 ft. 7 in. at the channels, as compared with 17 ft. 6 in. and 14 ft. 7 in. respectively for the Blackwall Tunnel.

It will be seen from these figures that the accommodation for traffic in the Rotherhithe Tunnel will be decidedly superior to that in the Blackwall Tunnel.

In order to obtain this improved accommodation it is necessary to make the outside of the proposed tunnel 30 ft. in diameter, or 3 ft. larger than the outside diameter of the Blackwall Tunnel.

It is proposed to have stairways at each of the four shafts in addition to stairways at the commencement of the cut-and-cover on each side of the river.

On the north side of the river, Broad-street, Medland-street, and Butcher-row will be widened, and London-street and Rose-lane will be affected.

As regards the difficulties likely to be encountered in the execution of the tunnel, we think, from the information obtained as to strata, that under the river and on the north side there will probably be less difficulty than in the case of the Blackwall Tunnel, but there may be difficulties as regards water in constructing the deep cut-and-cover portion on the south side of the river.

The approximate estimate of the cost of the works involved by the scheme is 1,400,000*l*.

With regard to the acquisition of property, we have ascertained that the estimated cost is 798,250*l*. This sum will include the cost of acquiring sites for the re-housing of those persons of the working classes who may be displaced by the carrying out of the scheme. In compliance with the standing order, we are in communication with the Finance Committee, who will in due course report their views on the financial bearings of the project. We recommend—

(*a*) That a tunnel be constructed to connect the districts of Rotherhithe and Shadwell, at an approximate cost of 2,198,250*l*.

(*b*) That application be made in the next session of Parliament for power to carry out the work, and that the Parliamentary Committee be instructed to take the necessary steps for that purpose."

Alderman Beachcroft moved a long amendment, asking for information on several points concerning the Metropolitan bridges, the Woolwich Ferry, and the Blackwall Tunnel. Colonel Hughes, M.P., seconded the amendment. He said they were going too fast in these matters. The Blackwall Tunnel was not a success, and it was fated to be used as a railway or a tramway like the original Thames Tunnel. People would not walk for more than a mile underground. The amendment, on a division, was rejected by 68 votes to 31, and the recommendation was carried by 69 votes to 29.

*Tower Bridge Southern Approach.*—The Improvements Committee recommended, and it was agreed, that the working drawings, specification, and estimate of the cost (5,655*l*.) of the paving and other works in connexion with the portion of the new Tower Bridge southern approach between Artillery-street and Tooley-street be referred to the manager of the Works Department, with a view to the work being carried out without the intervention of a contractor.

*Lower Thames-street Improvement.*—The same Committee, with reference to the proposed widening of Lower Thames-street in the interests of the Fish and Fruit Markets, proposed: "That the estimate of 50,000*l*. submitted by the Finance Committee be approved, and that the Council do contribute, on the usual conditions, one-fourth of the net cost of the widening of Lower Thames-street to 60 ft. between Botolph-lane and Fish-street Hill, as shown upon the plan submitted by the City Corporation, such contribution not to exceed the sum of 50,000*l*." A motion to refer the matter back for further consideration was defeated on a division by 66 votes to 26, and the recommendation was then carried.

*Clearances at Waterloo Station.*—Some points were raised by Lieutenant-Colonel Ford with reference to the clearance of dwellings proposed to be made at Waterloo Station by the London and South-Western Railway Company. The Parliamentary Committee of the Council reported that they were at present negotiating with the company with a view to the company constructing a new street, and providing proper accommodation for rehousing persons of the labouring classes who may be displaced by the proposed extension of the station.

Mr. Cornwall, the chairman of the committee, said they were in full sympathy with the points raised as to rehousing, and hoped to carry the negotiations to a successful issue.

*Safety of the Guildhall.*—It is proposed to hold a masque at the Guildhall on certain days in June next in connexion with the Art Workers' Guild, and the Lord Chamberlain is prepared to grant a licence for the performance provided that the Council inform him that they consider the premises safe for the purpose. The Theatres and Music Halls Committee of the Council reported that they considered the premises "reasonably safe," provided that precautions to the number of nineteen are observed, and they recommend that the Lord Chamberlain be so informed.

Sir Joseph Dimsdale regretted the number of restrictions that were imposed, and that the number of persons to be admitted was to be only 500, whereas the hall would seat 1,000.

In the course of the discussion it was pointed out that the first report of the Architect was entirely adverse to granting the licence, and all the precautions required were necessary as a protection against fire. It was said by Sir Algernon West that it was a building most difficult to escape from in case of fire.

The recommendation of the Committee was adopted.

*Repairs, &c., to Fire Station.*—The Fire Brigade Committee reported, and it was agreed, (1) That the tender of Mr. C. F. Kearley to execute for 555*l*. the work of painting, repair, alteration, and drainage in the old part of the Battersea Station be accepted. (2) That the Council do sanction an expenditure of 230*l*. for repairs, painting, and pointing, at the Greenwich Station; that the work be carried out by the Council without the intervention of a contractor; and that the specification, quantities, and estimate be referred to the manager of works for that purpose.

*Iron and Glass Shelter, Coburg Hotel, Carlos-place, W.*—The Building Act Committee reported as follows, the recommendation being agreed to:—

*St. George, Hanover-square.*—In this case proceedings were taken against the Coburg Hotel, Limited, for erecting an iron and glass portico to the porch at the entrance to the Coburg Hotel in Carlos-place and beyond the general line of buildings, notwithstanding the fact that the Council refused to give its consent. For the defence it was contended that the portico was not a structure within the meaning of Section 22 of the London Building Act, 1894, and that as it projected over the public way, both the local authority and the police had power to take proceedings under other statutes, but had not done so. It was further contended that if the magistrate was of opinion that the portico was a structure within Section 22, then the case came within the proviso contained in that section as being upon land lawfully occupied by a building or structure. The magistrate decided that the portico was a structure within the meaning of Section 22, and that the case did not come within proviso to that section, nor did the portico come within the statutes under which either the Local Authority or the police could take proceedings, and he imposed a penalty of 2*l*. with five guineas costs to the Council. The magistrate also made an order for the demolition of the structure. On the application of the defendant, however, the magistrate consented to state a case for the opinion of the High Court upon the point raised. We think the Council should take steps to uphold the magistrate's decision. We recommend—That the solicitor do take the necessary steps for upholding before the High Court the decision of the magistrate in the proceedings taken by the Council with reference to the iron and glass shelter, erected at the Coburg Hotel, Carlos-place.

*Leighton & Millais Buildings, Millbank Estate.*—The Housing of the Working Classes Committee reported, and it was agreed, that standing order No. 195 be suspended, so that payments up to 80 per cent. of the value of the work executed may be made in respect of the erection of Leighton and Millais buildings, Millbank Estate; and that the amended tender of Messrs. Holloway Brothers, amounting to 12,380*l*. for the erection of the buildings be accepted.

The Council adjourned soon after seven o'clock.

## METROPOLITAN ASYLUMS BOARD.

THE fortnightly meeting of the Managers of the Metropolitan Asylums District, was held on Saturday at the County Hall, Spring Gardens, Mr. R. M. Hemsley presiding.

*The Northern Hospital.*—The Works Committee reported that they had invited tenders for the erection of an engine-house and chimney-shaft for the electric lighting installation at the Northern Hospital. The lowest tender was 2,795*l*., from Mr. J. Appleby, of Cornwall-road, S.E., and there were five others, ranging up to 3,470*l*. The lowest tender being largely in excess of the architects' estimate (1,700*l*.—made on February 1 last—and subsequently increased to 2,000*l*.), they had inquired further into the matter, and had no doubt that the discrepancy was due to the fact that the architects, Messrs. Pennington & Son, greatly under-estimated the cost. Mr. Appleby had consented to certain modifications in the specification and quantities whereby the cost of the work would be reduced from 2,795*l*. to 2,620*l*., and the Committee recommended that the revised tender should be accepted. Mr. Will Crooks, L.C.C., denounced the practice of cutting down the work because the architects' estimate had been too low. The work was undertaken on the representation of the architect that it would cost a certain sum, and then they found the cost would be considerably greater. Of course, Messrs. Pennington would be paid commission on the tender. It seemed to him a very nice way of making money. Mr. Edward White, L.C.C., said the work had been cubed out at a shilling a foot, which was too low for the class of work. The Committee had considered the builder's estimate and thought it exceedingly moderate, but there were a few items which could be omitted without injury to the buildings. It did not do to place too much reliance on a cube estimate. Mr. Purchese, L.C.C., said these architects had done some of their best work, but they did not seem to have looked into this matter very carefully. The Committee had gone very thoroughly into the cost of electricity. and had come to the conclusion that the cost would be less than that of gas. This excess of over 50 per cent. altered the whole position. They did not pay professional men 5 per cent. to write down imaginary prices. Mr. Helby said Mr. Purchese had let out the secret. The Committee wanted to make out that electricity would be cheaper and that accounted for the 1,700*l*. Now that the tenders came in there was an access of 65 per cent. After further discussion the Committee's proposal was adopted.

## THE BUILDING TRADE DISPUTE.

THERE is little to report this week as to the lock-out of the plasterers. Attempts are being made by the masters, we believe, and with some success, we understand, to carry on plastering work without the assistance of union men; but there are no indications of an immediate settlement of the dispute. Some of the masters in the North and the Midlands are inclined to favour a general lock-out in the building trade; but it is not likely that this will take place—at all events, at present.

HYDE PARK COURT, ALBERT GATE, S.W.—In reference to the paragraph in last week's issue under this heading, Mr. Francis Hooper requests us to state that the late firm of Messrs. Archer & Green, Buckingham-street, Strand, were the original architects of these buildings, and that only after the dissolution of the partnership in 1889 was Mr. Hooper associated with Mr. Thomas Archer in the work.

## APPLICATIONS UNDER THE LONDON BUILDING ACT, 1894.

At the meeting of the London County Council on Tuesday, the Building Act Committee brought up the following list of applications under the 1894 London Building Act. Those applications to which consent has been given are granted on certain conditions.*

### *Formation of Streets—Manor Park Estate.*

*Lewisham.*—That the sanction of the Council be given to the construction, in connexion with the formation of new streets on the Manor Park Estate, Lee and Lewisham, of the proposed bridges intended to carry public roads over the river Quaggy (Mr. A. W. Osborn for Messrs. Johnson & Aldridge).—Agreed.

### *Artisans' Dwellings.*

*Hammersmith.*—The erection, under Section 42 of the London Building Act, 1894, of four blocks of artisans' dwellings on land on the east side of Fulham Palace-road, Hammersmith (Messrs. N. S. Joseph, Son, & Smithem, for the trustees of the Guinness Trust).—Refused.

### *Lines of Frontage.*

*Islington, East.*—That permission be given to Mr. A. Mills to retain a projection (an illuminated sign) at the "Myddleton Arms" public-house, No. 52, Canonbury-road, Islington, extending beyond the general line of buildings in Canonbury-grove, on condition that he do remove such sign at the expiration of one year from April 25, 1899.—Agreed.

*Kensington, North.*—That permission be given to Mr. C. W. Treadaway to retain a projection (an illuminated sign) at the "Sun in Splendour" public-house, Portobello-road, Notting Hill, extending beyond the general line of buildings in that street, on condition that he do remove such sign at the expiration of one year from April 25, 1899.—Agreed.

*Chelsea.*—Inclosed porches, bay windows, and balconies to two blocks of residential flats on the north-east side of Franklin's-row, Chelsea, between Turk's-row and Pimlico-road (Mr. P. Hoffmann for Mr. J. D. Mackenzie).—Consent.

*Greenwich.*—One-story shops upon part of the forecourts of Nos. 68, 70, 72, 74, 76, 78, 80, and 82, Blackwall-lane (formerly Marsh-lane), East Greenwich (Mr. H. Busbridge for Mr. W. Busbridge).—Consent.

*Islington, North.*—A one-story building on the west side of Stroud Green-road, Islington, between Nos. 101 and 109 (Messrs. Edmeston & Gabriel for the Aylesbury Dairy Company).—Consent.

*Islington, North.*—Four-story bay-windows to three blocks of residential flats proposed to be erected on the south side of Pemberton-gardens, St. John's Park, Upper Holloway, (Mr. S. Perks for the Tuffnell and Caledonian Parks Syndicate).—Consent.

*Lewisham.*—A one-story building at the side of No. 20, Springbank-road, Hither Green, Lewisham (Mr. E. T. Hedges for Mr. Packer).—Consent.

*Norwood.*—An addition in front of the British Home for Incurables, Crown-lane, Streatham (Mr. E. T. Hall for the Board of Management of the British Home for Incurables).—Consent.

*Rotherhithe.*—A one-story shop upon part of the forecourt of No. 205, Southwark Park-road, Bermondsey (Mr. M. L. Saunders for Mr. R. O. Friend).—Consent.

*Bow and Bromley.*—An iron and glass illuminated sign at the "King's Arms" public-house, 167, Bow-road, Bow (Mr. J. G. Needham for Mr. E. Morton).—Refused.

*Battersea.*—Two one-story shops on the east side of Queen's-road, Battersea, adjoining the London, Brighton, and South Coast Railway (Mr. H. Bignold for Mr. W. Peacock).—Refused.

*Brixton.*—A one-story shop in front of No. 166, Ferndale-road, Brixton (Mr. R. Bawden for Mr. J. Arnold).—Refused.

*City of London.*—An iron and glass shelter at the entrance to the Holborn-viaduct Hotel, Holborn-viaduct (Messrs. Spiers & Pond, Limited).—Refused.

*Hammersmith.*—One-story shops in front of Nos. 54 and 56, Uxbridge-road, Shepherd's Bush (Mr. G. H. Fox for Messrs. C. Rawley, Cross, & Co.).—Refused.

*Hampstead.*—That Messrs. Lee, Bolton, & Lee be informed that the Council cannot entertain their request for compensation in respect of the land required to be dedicated to the use of the public by the terms of the Council's consent to the erection of houses with shops on the west side of South-end-road, Hampstead, and also the erection of houses, with bay-windows, on the south side of John-street (for Mr. F. T. Binnington).—Agreed.

*Hampstead.*†—A block of residential flats on the northern side of Finchley-road, at the corner of West Hampstead-avenue (Mr. J. Reynolds).—Refused.

*Kensington, South.*†—A two-story bay-window in front of No. 68, Bedford-gardens, Kensington (Mr. W. H. Parkinson for Miss Baillie).—Refused.

*Lewisham.*—Five houses with one-story shops on the west side of High-street, Lewisham, at the corner of Albacore-crescent (Messrs. Phillips, Norfolk, & Prior for Mr. H. F. Harrington).—Refused.

*Norwood.*—Houses with shops on the west side of Norwood-road, West Norwood, between Ullswater-street and Harpenden-street (Mr. F. A. Powell for Mr. A. G. Rose).—Refused.

*Wandsworth.*†—One-story shops on part of the forecourts of Nos. 15, 17, 19, and 21, East Hill, Wandsworth (Mr. T. J. Lynes).—Refused.

*Westminster.*—A three-story oriel window at No. 26, New Tothill-street, Westminster, at the corner of Dacre-street (Mr. P. Hoffmann for Mr. C. M. Owen).—Refused.

### *Width of Way.*

*City of London.*—Offices, with projecting piers and oriel windows, on a site abutting on Moorgate-street, King's Arms Yard and Coleman-street (Messrs. Gordon, Lowther, & Gunton for Mr. C. Morrison).—Consent.

*City of London.*—Buildings on the site of Nos. 18 and 19, Whitefriars-street, City, and premises at the rear abutting upon George-yard and Ashen Tree-court (Messrs. A. Billing, Son & Rowley for Mr. W. Downs).—Consent.

*Hoxton.*—A block of dwellings on the north side of Red Lion-court, Hoxton-street, Shoreditch (Messrs. Lewcock & Callcott for Mr. S. Mead).—Consent.

*St. Pancras, North.*—Rebuilding of the "Vine Hotel, Highgate-road, St. Pancras, at less than the prescribed distance from the centre of a public footway leading from Highgate-road to College-lane (Messrs. Cubitt & Collinson for Mr. E. Tabernacle).—Consent.

*Westminster.*—A one-story addition at the rear of the "Regent Arms" public-house, No. 53, Regency-street, Westminster, at less than the prescribed distance from the centre of Vincent-street (Mr. H. W. Budd for Mr. Low).—Consent.

*Southwark, West.*—An addition to the "Prince of Wales" public-house, St. George's-road, Southwark, at less than the prescribed distance from the centre of Hayles-street (Messrs. Waring & Nicholson for the trustees of the Lambeth Hayles Charity Estate.—Refused.

*Bow and Bromley.*—Two buildings, to be used respectively as a bakery and warehouse, on the east side of Fawe-street, Morris-road, Bromley-by-Bow (Mr. Max Clarke for Spratts Patent, Limited).—Refused.

*Islington, West.*—A factory on the west side of Eden-place, Eden-grove, Holloway (Messrs. Kingsford, Dorman, & Co., for the Star Brush Company, Limited).—Refused.

### *Space at Rear.*

*Hammersmith.*—The extension above the diagonal line mentioned in Section 41 of the London Building Act, 1894, of a portion of a block of residential flats on the north side of Addison Court-gardens, Blythe-road, Hammersmith (Mr. R. J. Worley).—Refused.

### *Deviation from Certified Plan.*

*Lambeth, North.*—Deviations from the plan certified by the District Surveyor, under Section 43 of the London Building Act, 1894, so far as relates to the proposed rebuilding of Nos. 124 and 126, Oakley-street, Westminster Bridge-road, Lambeth (Messrs. Stock, Page, & Stock for Mr. Seth Taylor).—Consent.

### *Line of Fronts and Width of Way.*

*St. Pancras, South.*—A theatre building on the south side of Euston-road, with two iron and glass shelters to abut respectively upon Euston-road and Tonbridge-street (Messrs. Wylson & Long for the proprietors of the Euston Theatre).—Consent.

### *Lines of Frontage and Construction of Buildings.*

*Strand.*—The retention of a temporary iron and glass porch at the buffet entrance to the Adelphi Hotel, John-street, Adelphi (Mr. W. Emden for Mr. F. Evans).—Consent.

*Islington, East.*—That Mr. J. Webster be informed that the Council is not prepared to accede to his request for its consent in respect of wooden name boards erected on top of the open pale fence and party fence walls enclosing the forecourt of Nos. 4, 5, 6, 7, 8, 9, and 10, Kingsland-green, Dalston.—Agreed.

*Rotherhithe.*—Two iron gangways across Church-passage, Rotherhithe, at the second and third floor levels of Messrs. Dudin's warehouses on each side of that street (Messrs. W. A. Crips & Sons, for Messrs. Dudin & Sons).—Consent.

*Norwood.*†—A temporary wood and iron chapel with projecting porch, on a piece of land adjoining No. 71, Gipsy-road, Norwood (Mr. Harbrow, for the Rev. W. Hobbs).—Refused.

### *Lines of Frontage and Space at Rear.*

*Hackney, South.*—A bakehouse with loft over at the rear of No. 71, Chatsworth-road, Clapton, to abut upon Blurton-road (Mr. H. Dearsley, for Mr. H. Lunken).—Consent.

*St. George, Hanover-square.*—That, under the provisions of Section 73 of the London Building Act, 1894, the consent of the Council be given to the erection of a three-story dwelling-house with porch and two-story bay windows, on a portion of the site of No. 1, Belgrave-square, St. George, Hanover-square, fronting on Wilton-crescent, and that the Council, under the provisions of Section 207 of that Act, do also consent to the alteration of No. 1, Belgrave-square (Mr. P. A. Todd, for Mr. W. Tebb).—Agreed.

*Wandsworth.*—That the Council, under Section 22 of the London Building Act, 1894, do not consent to the frontage of six shops with one story over, on the east side of Lower Richmond-road, Putney, near River-street, and that the Council, under Section 41 of that Act, do not permit the erection of such buildings (Mr. H. Bignold, for Mr. Temple).—Agreed.

### *Width of Way and Cubical Extent.*

*Whitechapel.*—That the Council, in the exercise of its powers under Section 13 of the London Building Act, 1894, do consent to the erection of one-story offices, &c., on the west side of an ale-store at Albion Brewery, Brady-street, Whitechapel, to abut upon Bath-street, at less than the prescribed distance from the centre of the roadway, and that, subject to the provisions of Section 76 of that Act, 1894, the Council do consent to the erection of the proposed one-story offices, &c., and of an extension of a torrifying house, whereby the northern division of the ale-store will exceed in extent 250,000, but not 450,000, cubic feet (Mr. R. Spence, for Messrs. Mann, Crossman, & Paulin).—Agreed.

### *Width of Way and Deviation from Certified Plans.*

*Hackney, South.*†—That the consent of the Council be not given, under Section 13 of the London Building Act, 1894, to the re-building of No. 21, High-street, Homerton, at the corner of Plough-lane, and that the sanction of the Council be not given to certain deviations from the plans certified by the district surveyor under Section 43 of that Act (Mr. I. Mason, for Mrs. C. Rix).—Agreed.

### *Width of Way and Construction of Buildings.*

*Bermondsey.*—A wood and iron roof over the existing one-story timber stage and office adjoining in the yard at the rear of No. 21, Old Kent-road, abutting on Ackworth-street (Messrs. Battley, Sons, & Holness).—Refused.

*Hoxton.*—That Mr. A. L. Crawford be informed that the Council is not prepared to accede to his request for the Council's licence in respect of a wooden building or structure on the south side of Britannia-gardens, Hoxton.—Agreed.

### *Formation of Streets.*

*Wandsworth.*—That an order be issued to Mr. W. H. Collier, sanctioning the formation or laying out of new streets for carriage traffic on the Durnsford Park Estate, Merton-road, Wandsworth, and in connexion therewith the widening of a portion of Merton-road (for Messrs. A. and J. Wise and signed by the Chairman of the Building Act Committee). That the names Strathville-road, Penwith-road, Acuba-street, and Ravensbury-road be approved for the new streets.—Agreed.

*Whitechapel.*—That an order be issued to Messrs. D. Cubitt, Nichols, Sons, & Chuter, sanctioning the formation or laying out of three new streets for carriage traffic out of the east side of Middlesex-street (formerly Sandys-row), Spitalfields (Sir Algernon K. B. Osborn, Bart.). That the names Tripe-street, Cobb-street and Short-street be approved for the new streets.—Agreed.

*Lewisham.*—That an order be issued to Mr. G. F. Logsdail, sanctioning the formation or laying out of new streets for carriage traffic on a portion of the St. Germain's Estate, Hither-green, Lewisham, and in connexion therewith, the widening of a portion of Hither-green-lane (for Mr. A. Cameron Corbett, M.P.). That the names Torridon-road (in continuation), Ardgowan-road (in continuation), Minard-road (in continuation), Broadfield-road (in continuation), Wellmeadow-road (in continuation), Hazelbank-road, Hafton-road, Killearn-road, and Dowanhill-road be approved for the new streets.—Agreed.

*Woolwich.*—That Mr. J. O. Cook be informed, in reply to his letter asking for reconsideration of the Council's decision with regard to his application for sanction to the formation or laying out for carriage traffic of a new street to lead out of the south side of Nightingale-place, Woolwich Common, and the widening of a part of Nightingale-lane, that the Council is not prepared to accede to his request; and that the Woolwich Local Board be informed with reference to their letter on the subject that the Council is not prepared to sanction the proposed streets of a less width than 40 ft.—Agreed.

*Lewisham.*—That an order be issued to Mr. D. Watney, refusing to sanction the formation or laying out for carriage traffic of two new streets upon the Belmont Estate, Belmont-hill, Lee, and in connexion therewith the widening of a portion of Belmont-road (for the Mercers' Company).—Agreed.

*Wandsworth.*—That an order be issued to Messrs. Lee & Pain refusing to sanction the formation or laying out for carriage traffic of a new street to lead from High-street to Cooper's-arms-lane, Putney, and, in connexion therewith, the widening of a portion of Cooper's-arms-lane (Mr. R. J. Pettiward).—Agreed.

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* Names of applicants are given in brackets. Buildings are new erections unless otherwise stated.

### *Artisans' Dwellings.*

*St. Pancras, East.*—That the Council do make an order as follows :—Whereas Mr. O. Fleming, of No. 17, Pall Mall East, London, acting on behalf of the London County Council, on March 25, 1899, under the provisions of Section 42 of the London Building Act, 1894, delivered at the County Hall a plan of three blocks of intended dwelling houses, to be inhabited by persons of the working class, and proposed to be erected, not abutting upon a street, on a site at the rear of houses on the north side of Grafton-place and the south side of Lancing-street, Somers Town, St. Pancras. . . . . The Council, in the exercise of its powers under Section 42 of the said Act . . . . does by this order sanction the said plan.—Agreed.

### *Building for the Supply of Electricity.*

*Bow and Bromley.*—That the Council do approve of the plans (Mr. O. E. Winter for the Board of Works for the Poplar District) for the construction of an electric lighting station and works on a site at the corner of Glaucus-street and Yeo-street, Bromley.—Agreed.

*The recommendations marked † are contrary to the views of the Local Authorities.*

## FACTORY AND WORKSHOP ACTS, 1878 TO 1895.

AT the meeting of the London County Council on Tuesday, the Building Act Committee brought up the following report, the consideration of which was adjourned :—

"By the provisions of the Factory and Workshop Acts, 1891 and 1895, the duty is imposed upon the Council of seeing that each London factory or workshop, in which more than forty persons are employed, is provided on the stories above the ground floor with such means of escape in case of fire for the persons employed therein, as can reasonably be required under the circumstances of each case. The powers thus conferred upon the Council are, in accordance with the standing orders, exercised by us ; and applications are constantly being made for a statement of the Council's requirements in regard to the means of escape to be provided in the cases above referred to. It is, of course, quite impossible to draw up any absolute rules or regulations upon this subject, as each case must be dealt with upon its merits after full consideration of its circumstances, but we have prepared a general statement of requirements which we think will be of use in assisting factory owners in making applications for the Council's certificate or in submitting proposals to comply with the Council's requirements. A copy of the statement is appended to this report ; and we recommend—'That the Council do approve the following statement prepared by the Building Act Committee with reference to the Council's requirements in respect of the means of escape from factories, workshops, &c., in accordance with the provisions of the Factory and Workshop Acts, 1878 to 1895.'"

### I. *Provision of Means of Escape in Case of Fire.*

*Applications, Plans, and Particulars.*—Applications for the Council's certificate in respect of the means of escape from new buildings, and applications with proposals to meet the Council's requirements in respect of the means of escape from old buildings should state—

(*a*) The number of persons to be employed on the premises, specifying the number of males and females employed on each floor.

(*b*) The trade to be carried on on each floor, with particulars of machinery, power, &c.

(*c*) In the case of factories, whether the premises were erected before January, 1892, and, in the case of workshops, laundries, &c., whether erected before January, 1896.

(*d*) The name and address of the owner.

Applications should be accompanied by complete plans and sections drawn on the unglazed side of tracing linen to $\frac{1}{8}$-in. or $\frac{1}{4}$-in. scale ($\frac{1}{8}$-in. scale preferred), and a block-plan to a small scale showing the premises and the surrounding buildings and thoroughfares, such block-plan to have the north point indicated.

### II.

*Requirements as to Means of Escape.*—The following statement of the requirements of the Council with respect to means of escape in case of fire is framed with a view to assisting owners in submitting proposals to comply with the Council's structural requirements under Section 7 of the Act of 1891. Such statement must not, however, be taken as binding upon the Council, but only as a general guide or indication, since each case is, after full consideration of the varying circumstances, dealt with upon its merits ; and nothing herein contained must be taken as in any way interfering with or derogating from the powers of the Home Office, the Council, the District Surveyors, or of any other authority whatsoever under the Factory Acts, the London Building Acts or any other Act or under any by-laws or regulations relating to the construction of buildings or otherwise, or as constituting any consent, sanction, allowance or permission under any such act, by-law or regulation, but all such acts, by-laws and regulations must be fully observed and complied with notwithstanding anything herein contained.

*Number of Staircases.*—The number of staircases required depends, *inter alia*, upon the following circumstances :—

(*a*) The area of the building ; (*b*) the number of persons employed or which could be employed ; (*c*) the disposal of the workpeople ; and (*d*) the alternative means of escape which may be available.

*Alternative Means of Escape.*—It may, however, be laid down as a general principle (subject to the exceptions hereafter mentioned) that distinct and separate alternative means of escape, exclusive of windows, loop-hole doors, &c., are required from each of the upper floors, either by means of—

(*a*) A second staircase in the same block ; (*b*) a proper staircase in another block, to which access is available on all the upper floors by proper openings in the party or division walls, or by external communication ; or (*c*) open iron bridges where the blocks are not adjoining each other.

*Escape by Roof.*—The means of escape from each of the upper floor levels should be placed as far apart as possible ; and, in all cases where practicable, some means of escape from the roof of the building to the roof of adjoining premises should be provided.

*Cases in which One Staircase may be Deemed Sufficient.*—In small and inextensive premises, and in some cases where it is possible to provide a staircase in a central position, one properly inclosed staircase, constructed of incombustible materials, may be accepted ; but in all cases where only one staircase is provided, some means of escape from the roof to the roof of adjoining premises *must* be provided.

### III.—STAIRCASES.

The following are the general requirements of the Council with regard to the construction of internal staircases, &c. :—

(*a*) *Position.*—Staircases should be placed next to an outer wall, and must be so arranged as to deliver by means of a doorway, not less than 4 ft. 6 in. wide in the clear when the doors are open, direct into the outer air at the ground level into a public way or thoroughfare or some large open space. Staircases must be so arranged that persons enter the staircases from any floor level in the same direction as persons descending the staircases.

(*b*) *Lighting and Ventilation.* — They must be properly lighted and ventilated by windows.

(*c*) *Inclosing of Staircases.*—Staircases, including landings and passages from one flight to another, must be inclosed with newel and inclosing walls, not less than 9 in. thick, carried up above the roof and ceiled with iron and concrete.

(*d*) *Materials to be Used.*—They must be constructed of incombustible materials.

(*e*) *Steps, Flights, and Landings.*—The steps thereof must be solid square or spandrel, arranged in straight flights, without winders ; each flight must consist of not more than twelve and not less than three steps, and the steps must be supported at both ends on brickwork, and the staircases must have landings at the top and bottom of each flight and between the flights. Such steps and landings are to be of the same width as the staircase (see (*i*) below) and not less than 6 in. thick.

(*f*) *Treads.*—The treads must not be less than 10 in. wide clear of nosings.

(*g*) *Risers.*—Risers must not be more than 7½ in. high.

(*h*) *Handrails.*—Staircases must be provided with handrails fixed upon both sides thereof and continued round the landings, and chased into the ends of the newel walls.

(*i*) *Width of Staircases.*—The width of the staircases is to be regulated as follows :—

(*a*) Where the premises are adapted for the employment of less than 200 persons on the floors above the ground floor, the staircases must be not less than 3 ft. 6 in. wide.

(*b*) Where adapted for more than 200 persons on the floors above the ground floor or where more than 100 persons are employed on any one floor above the ground floor the staircases must not be less than 4 ft. 6 in. wide.

(*j*) *Doorways to Staircases.*—Staircases must in all cases be connected with all floors and the roof by means of doorways of the same width in the clear, when the doors are open, as the stairs.

(*k*) *Spandrel Steps.*—Spandrel steps where used must be of the following thickness—

(*a*) For 3 ft. 6 in. staircases, not less than 3 in. thick in the smallest part.

(*b*) For 4 ft. 6 in. staircases, not less than 4½ in. thick in the smallest part.

(*l*) *Doors to Staircases.*—All doorways to staircases must be fitted with doors of fire-resisting materials (solid teak or oak 2 in. thick or other approved material) in two folds, hung so as to open in the direction of exit or to swing both ways clear of stairs, landings, passageways, and footways ; such doors to be fitted with springs, weights, or other approved appliances to close them after use, and to be fastened by means of automatic bolts only, if fastenings be required, so that doors open by pressure from the inside.

### IV

*Construction of Staircases in certain "Old Buildings."*—In the case of old buildings[*] (in respect of which the Council is not required to issue a certificate) where there is a distinct and separate alternative means of escape provided, to the satisfaction of the Council, from each of the upper floors, the enclosed staircase may be constructed of teak or oak, not less than 2 in. thick, including the treads, strings, carriages, bearers, landings, joists, and floors, the risers to be not less than 1 in. thick, but no fir or pine must be used ; and the enclosure to the staircase may be a solid partition of incombustible material at least 3 in. thick ; but such staircase must, in all other respects, be formed and arranged as required for a staircase for a new building as regards width, going, treads, risers, doors, handrails, &c. (see No. III.).

### V.

*External Iron Staircases.*—In cases in which external iron staircases are accepted by the Council as means of escape, they must be constructed with dead bearings and without cantilever work.

They must comply with the requirements (above specified) for inclosed staircases as regards width, going, width of treads, height of risers, doors, handrails, &c.

They must deliver into the outer air at the ground level into a public way or thoroughfare, or some large open space.

Where an iron staircase is in general use the treads must be of approved non-slippery material (as distinguished from perforated iron or chequered iron plates).

All windows and similar openings by, or near, which such staircases pass must be protected with kiln wire, or glazed with a combination of glass and wire or other approved fireproof glazing.

### VI.—ESCAPE BY ROOF.

*Guard Rails on Roofs.*—Proper guard rails must be provided to the routes of escape on roofs, &c., where necessary, to the satisfaction of the Council.

### VII.—GANGWAYS.

*Gangways.*—Clear gangways, at least 3 ft. 6 in. wide, must be kept up to, and between, all staircases, bridges, and exits on all floors.

### VIII.—EXIT DOORS.

*Doors Usable as means of Exit*—All doors usable as means of exit must be made so as to open in the direction of exit, or to swing both ways clear of stairs, landings, passageways, &c.

*Width of such Doorways, &c.*—All such doorways, and all passageways, must, where of a less width than 3 ft. 6 in., be increased to that width.

*Door-fastenings.*—All such doors must be fitted with automatic bolts only, if fastenings be required.

### IX.—LIFTS.

*Inclosing of Lifts.*—Lifts should be enclosed all up with brickwork 9 in. thick, or with incombustible material of approved quality and thickness, and fitted with iron or other fire-resisting doors, unless, with the approval of the Council, such lifts be enclosed with fire-resisting materials to a height of 4 ft. above each floor level, and above this with stout wire-mesh guard.

Lifts must be kept at some distance from staircases, and must in no case be connected directly therewith by means of openings or otherwise.

### X.—WINDOWS.

*Windows to Open.*—All windows on the floors above the ground floor, facing the public-way, street, thoroughfare, or open space must be made to open easily at sill level to a sufficient height and width to allow a full-grown person to pass through in case of need.

## LONDON BUILDING ACT, 1894 :

### CASES BEFORE THE TRIBUNAL OF APPEAL.

THE Tribunal of Appeal under the London Building Act, 1894, sat at the Surveyors' Institute, on Monday, to hear two appeals against decisions of the London County Council. The members of the Tribunal present were Messrs. Arthur Cates (chairman). A. H. Hudson, and J. W. Penfold.

The first appeal engaging the attention of the Tribunal was brought under Section 13, by the New Westminster Brewery Company, and had reference to the refusal of the London County Council to grant their consent to a proposed one-story addition at the rear of the "White Horse and Bower" public-house, 86, Horseferry-road, Westminster. Mr. Craies, barrister, appeared for the appellants, and Mr. Seager Berry, from the solicitors' department of the Council, represented the respondents.

From the statement by the learned counsel for the appellants, it appeared that the Brewery Company acquired a cottage abutting on Monk-street at the rear of this public-house, their object being to demolish it and erect on the site an addition, or what counsel thought might be more correctly termed an annexe to their premises. The cottage had a forecourt about 3 ft. deep, and in their plans the company proposed that the addition should extend over this. On the other hand, however, the plans provided that the height of the new building should not exceed 14 ft., the height of the old flank wall; and, moreover, to prevent any objectionable feature attending the proposed building, it was decided that it should be without windows. The new addition was, according to Mr. Craies, required to meet a public want. Opposite the site were the works of a gas company where a large number of men were employed, and the annexe to this public-house would offer facilities for luncheons and would contain a billiard-room which could not be objected to in any licensed establishment. Accordingly application was made to the Council on December 22 last to approve the plans, but a reply was received that the Council could not give their sanction because, owing to the narrowness of Monk-street, the front of the proposed building would be less than the prescribed distance from the centre of the roadway. Subsequently, on January 16, an amended plan was submitted, but the Council upheld their previous decision; and the question now before the Tribunal was whether they would endorse the action of the Council, or act in the spirit of Section 13, Sub-section 4, of the Act, and hold that a reasonable case had been made out by appellants to entitle them to have their plans passed. The question in this instance was entirely one of expediency, and the scheme, if carried out, would be in the interest of the public. With regard to the Council's objection that Monk-street was too narrow to permit of this structure being erected, Mr. Craies pointed out that the street was in no sense a residential one, that it was very little used by vehicular traffic, and that it was practically impossible to contemplate a public improvement in the thoroughfare, because there were two huge gasometers opposite the cottage.

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[*] By the term "old buildings" are meant those of which ne construction was begun before the commencement of he Acts, viz. :—For factories, January 1, 1892 ; for workhops, laundries, &c., January 1, 1896

Mr. J. H. Budd, architect and surveyor to appellants, gave formal evidence upon the plans, and in reply to Mr. Seager Berry contended that one serious objection to the forecourt being allowed to remain was that as the street was quiet and dark at night nuisances might arise.

Mr. Seager Berry said the Council was under the impression, rightly or wrongly, that the proposal not only infringed the rule as to prescribed distance, but also involved a question as to line of frontage. Moreover, the Council saw no reason why the question of the erection of a billiard-room should bar the way in future to any widening scheme that might arise. At present the street could be widened from end to end without much difficulty. The case was entirely one for the Tribunal, but he would submit that the decision of the Council should not be reversed unless stringent conditions were imposed.

After some discussion, the Tribunal allowed the appeal, but imposed the conditions that a protecting rail should be erected beside the adjoining cottage, that the erection should not be above 14 ft. in height, and that no building or structure be erected above an angle of 45 deg. from the top wall. No order was made as to costs.

In the second case, the trustees of the late Captain W. B. Phillimore appealed against the refusal of the Council to allow the formation or laying-out of new streets for carriage traffic on land and house known as Moray Lodge, Campden Hill, Kensington.

Mr. Macmorran, Q.C., and Mr. Harper represented the appellants, and Mr. Seager Berry appeared for the Council.

Mr. Macmorran explained that Moray Lodge, together with several other large houses and grounds, formed a large estate in the heart of Kensington. The appellants were the freeholders of Moray Lodge, and having, by an arrangement approved by the Court of Chancery, acquired the lease, they were desirous, in consequence of the difficulty of letting this class of property, of erecting a number of smaller houses on the estate, at a rental of from 150*l.* to 200*l.* per annum—houses which were in great demand at Kensington. Before this could be done it was necessary that a new road should be constructed from south to north of the estate. The Moray Lodge scheme was intended only as part of a general scheme of development for the whole freehold estate. The leases of several other lodges and grounds would not fall in until 1914, but in all probability the trustees would be able to acquire them before that period. The difficulty which presented itself, however, was in relation to Thorpe Lodge, which was situated at the extreme north of the estate. The leaseholder of this place had not come to terms with the appellants. They, therefore, were unable to carry the road through to the public thoroughfare on the north side of the estate, and the Council had refused to sanction the scheme on the ground that the new street would not have direct communication with a public highway at the northern end. There did not seem to be any prospect of getting over the difficulty as to Thorpe Lodge, the lease of which would not fall in until 1954, but appellants had so arranged the scheme of development that Moray Lodge could be regarded as only a part of the general scheme to be carried out when the other leases fell in. Kensington Vestry had notified their approval of the scheme, and he asked the Tribunal to bear in mind that to deny appellants' sanction to the scheme would be to practically prevent any development until, as far as they could see at present, 1954.

Evidence was given by Mr. Eustace J. A. Balfour, architect, and Mr. William Weaver, Surveyor to Kensington Vestry. The latter said he had reported to the Vestry strongly in favour of the scheme.

Mr. Seager Berry said the great objection held by the Building Act Committee of the Council, and which justified their refusal, was that the trustees were not in a position to give a binding undertaking that the development would be continued on the lines sketched out. Within the past fifty years several Building Acts had been passed, and there was no telling what the next fifty years would bring forth in the same direction. This made the duty of the present Council all the more onerous.

Eventually, the Chairman intimated that the Tribunal considered the application premature, and they were bound, on the facts disclosed, to dismiss the appeal.

## THE ARCHITECTURAL ASSOCIATION SOIRÉE.

THE soirée of the Architectural Association was held on Friday last week at St. George's Hall, Langham-place, when "The Druids' Elect" was again performed, with a success equal to that which characterised the dress rehearsal on the previous Wednesday,* and with even greater enthusiasm.

During the evening Mr. Fellowes Prynne, the President, said that he had been asked, and no doubt the question was intended as a compliment to the gentlemen who had acted, "Why do these gentlemen spend their energies on architecture?" He offered his congratulations to the ladies and gentlemen who had taken part in the play.

# Illustrations.

## BRITANNIA ROYAL NAVAL COLLEGE, DARTMOUTH.

THIS building, to be erected by the Lords of the Admiralty, will occupy a beautiful site on the Dart known as the Mount Boon Estate, about 200 ft. above the river, and immediately above where the *Britannia* is at present stationed.

Accommodation is provided in the building for 260 cadets and staff.

The educational buildings form the central block, and contain a large hall, 90 ft. by 50 ft., with two floors of class-rooms on either side, including lecture-room, steam study, and chart-room, with reading-rooms on the first floor; while at the end of the hall is the seamanship-room, the front of this block containing the captain's and chief officers' and instructors' rooms.

On either side of the central block are the dormitory and day-room blocks, each block for 130 cadets, with day-rooms on the ground floor and dormitories over for thirty-three cadets in each, the dormitories being arranged for hammocks and sea chests, and with a lieutenants' room between each pair of dormitories.

On the north side of these blocks are sanitary blocks, with changing-rooms, shower-baths, boot-rooms, &c., on the ground floor, and lavatories, bath-rooms, and the usual accommodation on the dormitory floors.

The block at the western end contains the cadets' dining hall, 80 ft. by 40 ft., entered from a large lobby at the end of the main corridor, with serving-room, cadets' kitchen, and the usual scullery and stores. On the south side of this block and towards the view are the officers' ward, the mess-room, &c., with kitchens and stores complete. On the north side are the various mess-rooms for the petty officers and staff with their kitchens and stores, and dormitory accommodation over.

The corresponding block at the other end of the building contains the captain's house, also with a southern exposure towards the view, and a chapel to hold 350 persons.

The whole building, which has a southern frontage and a beautiful view towards the mouth of the Dart, is arranged in semi-detached blocks to secure ample proportion of air round each block. It is raised on a spacious terrace 34 ft. wide called the Cadets Terrace, which is overlooked at either end by the windows of the ward-room and the captain's house. A smaller terrace is provided at the west end for the officers and another at the east end for the captain. The main terrace is approached by a covered ascending drive at either end with a broad flight of steps in the centre, covered playgrounds being formed under the terrace.

The level space enclosed by the roads and terrace will be laid out as a garden.

The terrace walls throughout are being faced with the local limestone, and are now in course of construction, Mr. F. Marshall, of Plymouth, being the contractor.

The grounds, roads, and playing-fields are being formed under the supervision of Mr. H. E. Milner.

It is proposed to erect the buildings with Portland stone, red brick, and green slates.

Sick quarters with sixty beds will be built to the west of the site, consisting of infectious and non-infectious blocks, an administrative block, doctor's house, and quarters for the infectious nurses.

Mr. Aston Webb, A.R.A., is the architect.

## THAXTED PARISH CHURCH.

THAXTED Parish Church, Essex, dedicated to St. John the Baptist, and also to St. Lawrence and the Virgin Mary, is one of great interest.

When and at whose cost this fine church was built can only be a matter of conjecture, as it is quite evident that the parishioners, even in their most prosperous days, could not without aid from other sources have accomplished its erection. The various coats of arms remaining in the church seem to point to the fact that the parish was assisted by persons of power and wealth connected with the place, though not inhabitants.

Thaxted, in early times a mere village, became in the time of Henry III. a town of some importance. The Cutlers had established themselves here, and appear to have exercised an extensive and flourishing trade, and it was about this time probably that the little village church which was situated not far off from the present structure, and dedicated to St. Catharine, was done away with, and a larger church built to suit the altered requirements of the town. Of this church the nave arcade is now the only remaining portion.

The descendants of the house of Clare were its chief patrons. Elizabeth de Clare, who succeeded to her share of the estates of the family and who founded Clare College, Cambridge, and was a munificent patroness of various good works in her day, very probably helped, but it is more likely that her son, the Earl of Ulster, did more. The south aisle and south transept are said to have been built in the fourteenth century, and also that the south porch was built by Lionel, Duke of Clarence, son-in-law of the Earl of Ulster mentioned above, and in the latter half of the same century. This, however, does not appear to have been the case, for the architecture is of a later date, being probably early fifteenth century work.

There is no doubt that many alterations were made by the family of the Mortimers who possessed the greater part of the manor of Thaxted. The north transept and north aisle were most probably built by the same family, and about the same period Edmund Mortimer, Earl of March, is supposed to have started this work and also to have built the tower and spire. The arms of March and Ulster still remain on the arches of the tower.

The chancel was completed, if not built entirely, by Edward IV., and was finished in 1465. The north porch is also supposed to have been erected by him. He appears to have taken some interest in the town and church, as his arms, carved in oak, may still be seen on one of the old houses.

The choir stalls were beautifully carved; the remains of them may be seen just within the tower arch, on the screen which divides the belfry from the church, but the greater part was carried away in the early part of last century. The timber roof in the aisles are most interesting examples of Perpendicular work, and are well worthy of notice, as is also the celatura at the east end of the roof of the Lady Chapel, as an example of what now rarely exists.

C. WONTNER SMITH.

**Primitive Methodist Church, South Moor.**—The foundation stones have just been laid of a new place of worship for the Primitive Methodist body at South Moor. The new church, which is to be built of stone, will provide accommodation for nearly 500 worshippers. A vestry is included in the designs, and there will be direct communication with the school at the back. Mr. T. E. Davidson, of Newcastle, is the architect, and the contract has been let to Mr. Craven, of Beamish.

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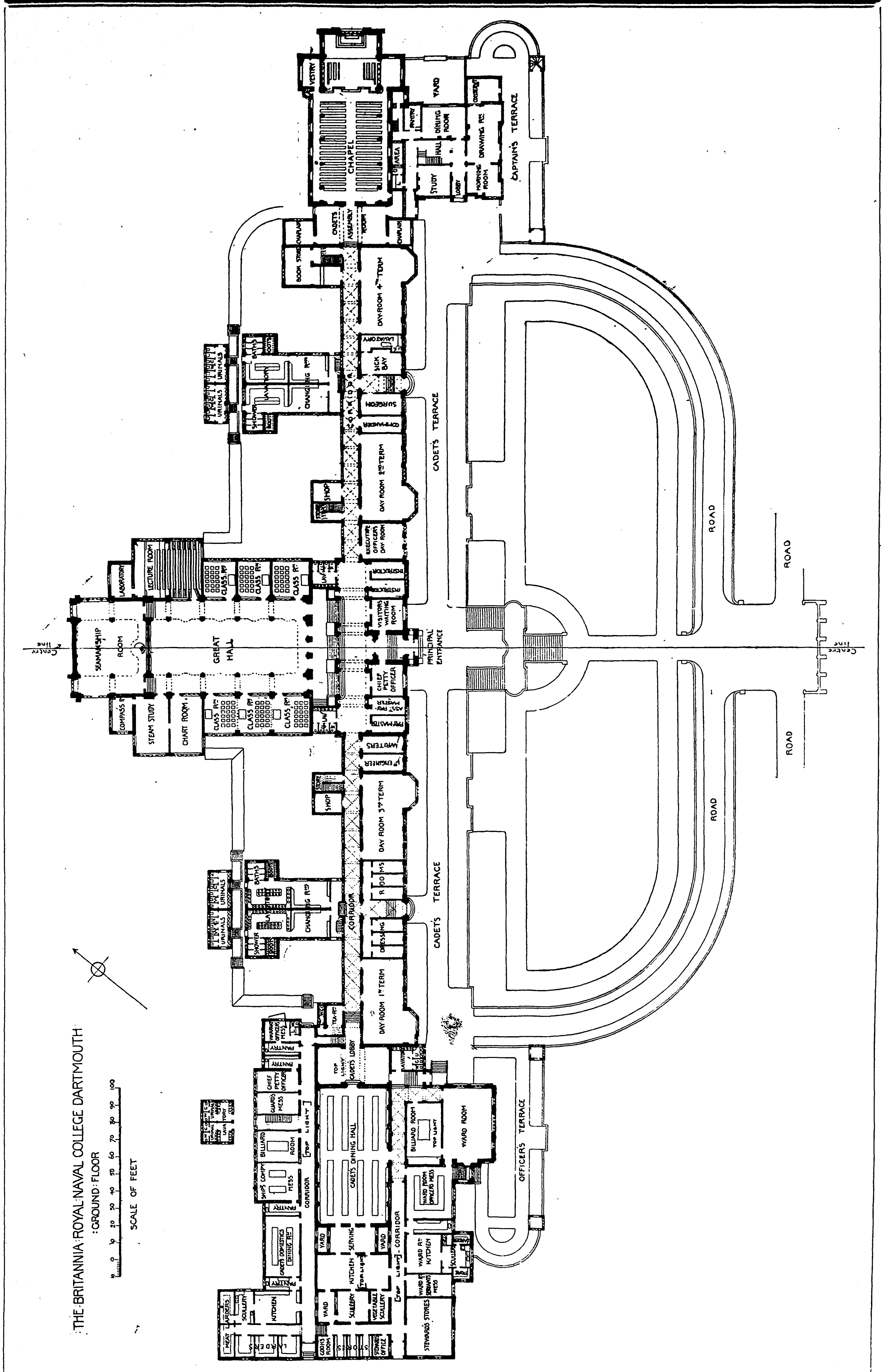
* See our account of the play in last week's *Builder*, page 393.



THE BRITANNIA·ROYAL·NAVAL COLLEGE DARTMOUTH
:GROUND·FLOOR

SCALE OF FEET
0 10 20 30 40 50 60 70 80 90 100
VESTRY
CHAPEL
YARD
PANTRY
DINING ROOM
DRAWING RM
HALL
AREA
STUDY
LOBBY
MORNING ROOM
CAPTAIN'S TERRACE
CHAPLAIN
CADETS ASSEMBLY ROOM
BOOK STORE
DAY ROOM 4TH TERM
LAVATORY
SICK BAY
SURGEON
COMMANDER
CORRIDOR
BATHS
BOOTS
LAVATORY
CHANGING RM
SHOWER
URINALS
DAY ROOM 2ND TERM
SHOP
STORE
EXECUTIVE OFFICERS DAY ROOM
INSTRUCTOR
VISITORS WAITING ROOM
PRINCIPAL ENTRANCE
CHIEF PETTY OFFICER
ASST PAY MASTER
PAYMASTER
WRITERS
1ST ENGINEER
LECTURE ROOM
LABORATORY
CLASS RM
GREAT HALL
SEAMANSHIP ROOM
Centre line
COMPASS R
STEAM STUDY
CHART ROOM
CADETS TERRACE
ROAD
DAY ROOM 3RD TERM
ROOMS
DRESSING
DAY ROOM 1ST TERM
TEA RM
WARRANT OFFICERS MESS
PANTRY
CHIEF PETTY OFFICERS
GUARDS MESS
BILLIARD ROOM
SHIPS COMPY MESS
TOP LIGHT
CADETS LOBBY
CADETS DINING HALL
CADETS DOMESTICS DINING RM
KITCHEN
SCULLERY
LARDERS
MEAT
YARD
SERVING
VEGETABLE SCULLERY
COOKS ROOM
STORES
STEWARDS OFFICE
BILLIARD ROOM
WARD ROOM
WARD ROOM OFFICERS MESS
WARD RM KITCHEN
WARD RM SERVANTS MESS
STEWARDS STORES
OFFICERS TERRACE

## HOLBORN TO THE STRAND.

THE London Improvements Bill, which has for its main object the construction of a thoroughfare from Holborn to the Strand, came before a Select Committee of the House of Commons on the 24th inst., presided over by Mr. A. H. Brown. The first witness to be called by Mr. Talbot, on behalf of the promoters of the measure, the London County Council, was Mr. G. Shaw-Lefevre. As to the proposals with respect to betterment and recoupment, he had always considered that in any public improvements recoupment was the best mode of obtaining the increment of value arising from the improvement in aid of the cost of the scheme, but there were cases in which betterment was preferable. In this particular scheme it was proposed to apply betterment to the south front of the Strand and recoupment generally over the remainder of the property affected. It would be absurd to apply recoupment to the Strand, as it would involve the buying up of the houses and businesses at enormous cost. Cross-examined by Mr. Pollock, Q.C., for the Duke of Norfolk, he admitted that Parliament in 1890 and 1897 rejected the idea that betterment should be applied to the south side of the Strand in connexion with a widening of that thoroughfare, and that the County Council itself omitted the south side of the Strand from the betterment area of the scheme of 1893. The present, however, was a different scheme, and the County Council Valuer was of opinion that the effect of the Bill would be to add considerably to the value of the property in the whole of the Strand.—Sir Alexander Binnie, Chief Engineer of the London County Council, said the general design of the new street had been the outcome of ten or fifteen years' deliberation on the subject, and the scheme before the Committee had been arrived at after consultation with the Royal Institute of British Architects. One of its great advantages was that it would create a great main thoroughfare with unexceptionable gradients. At present some of the gradients in the neighbourhood of the Strand were very trying, that of Wellington-street, for instance, being one in twenty-five. The gradient of the new thoroughfare would be one in ninety or one hundred, while that of the two branches into which it divided at the Strand end would be one in fifty or fifty-five. Questioned as to St. Clement Dane's Church, he stated that an agreement had been arrived at as to the line of curtailment of the churchyard for the purposes of the improvement. There was no intention of interfering with the church itself.—The following day Mr. Alexander Young, F.S.I., who for the past ten years has been the Valuer to the London County Council, gave evidence. Dealing with the cost of the scheme, he estimated that the gross expenditure on acquiring the necessary property would be 4,442,500*l.*, and after the completion of the improvement he computed that 4,088,300*l.* would be yielded by recoupment, leaving a net cost of 354,220*l.* To that had to be added a sum of 300,000*l.* for rehousing the working classes displaced and 120,000*l.* for the cost of works, with the result that the total net cost of the improvement would be 774,000*l.* He thought the scheme was the most favourable for the application of the principle of reconstruction that had come under his notice. It was the boldest scheme which had been considered, and was certainly the most economical. For the most part the new thoroughfare would run through what was at present either slum or semi-slum property. The character of the district would be entirely changed, and its value would be very greatly increased. It was estimated that the construction of the street would result in displacing 3,000 persons of the labouring classes, and there were 2,250 more for whom provision would have to be made in connexion with the Clare-market scheme. Accommodation would be found for 1,616 in the neighbourhood of the new street, for 1,670 within a mile of it, and the remainder would be rehoused on the Millbank-street site. Cross-examined by Mr. Erskine Pollock, Q.C., on behalf of the Duke of Norfolk, he admitted that the time to be allowed for the completion of the new street was seven years, and that after that the London County Council might postpone the fixing of the betterment rate for ten years. The result, of course, might be that property would be liable for seventeen years to have a betterment rate put on it without it being known what that rate would be, but he declined to admit that that would cause difficulties in dealing with the property.—On Wednesday, Mr. James Field, one of the Surveyors under the Board of Trade, who has had thirty years' experience in London, examined by Mr. Freeman, said he had considered carefully the scheme of the Bill, and could confirm the estimate which had been stated to the Committee that the cost of purchasing the properties would be, viz., 4,390,845*l.* The Bill would convert a district of slums into one of the finest avenues London possesses. So far as the relief of traffic was concerned, it would be a great Metropolitan improvement.—Do you consider it important that it should be carried out in completion of, and in conjunction with, the Clare Market scheme ?—Yes. The Clare Market scheme has done much to clear away slums in the district bounded by the Strand and Holborn, and the present scheme will clear away all the rest. This district of slums will be pierced by an avenue composed of fine shops with fine residential flats above them. Do you not consider that this site between St. Clement Danes and Wellington-street will form a fine position for theatres ?—Yes. This central site will be one of the architectural features of London, which will be visited by people coming from the east and west. There will be a magnificent opportunity to put up buildings which will be a credit to the Metropolis.—Mr. Thomas Blashill gave evidence in support of the Bill, declaring that the width of 100 ft. fixed upon for the new street was a very moderate width.

## Correspondence.

*To the Editor of* THE BUILDER.

### EMPLOYMENT OF CONTINENTAL PLASTERERS IN LONDON.

SIR,—My attention has been called to certain misleading reports in reference to the employment of Continental plasterers in London.

I beg to state that my Association has engaged the services of a large number of plasterers from the Continent. The Association's agents clearly informed those workmen that a trade dispute existed in London, in consequence of the unreasonable demands of the London plasterers, although it is possible that, out of the hundreds of men engaged, a few may be found who will state the contrary.

They have been properly cared for, and the bulk of them are now giving every satisfaction to their employers with regard to the quality, and more especially to the quantity of, their work.

The public will be interested to learn the cause of this situation. I may, therefore, explain that the original cause is *the limitation of apprentices*, by which the National Association of Operative Plasterers has brought about a chronic hindrance to the building trade.

For a long time the Plasterers' Association has been allowed to enforce its arbitrary rules on the trade, to the detriment of both employers and employed; and as this is *one* of the intolerable restrictions against which the employers are now contending, your readers may desire to know the rules under which this sytem has been enforced.

*By-Laws to London Rules authorised by the N.A.O.P. Executive Council.*

No. 1. "That the number of improvers shall be *one* to *seven* full-priced men, but, notwithstanding the above, no firm shall employ more than fifteen improvers at any one time."

Clause 1. "That *all* lads employed shall be registered, and shall pay a contribution of 1d. per week until they attain the age of 18 years. They shall then become full members of the N.A.O.P.

It will be observed that the Plasterers' Association not only limits the number of apprentices to *one* to *seven* men, but insists upon levying its toll upon *all* of them, and makes membership with their Association an essential to any apprenticeship.

Indentures of apprenticeship used to provide for the apprentice to be bound to the *master*, and that the apprentice "his master faithfully shall serve, his secrets keep, and all his lawful commands obey." But under the recent *régime* the Plasterers' Association ousts the master completely with an effrontery that is scarcely conceivable.

The immediate cause, however, of the engagement of Continental plasterers is to fill the places of workmen who persist in practices which apparently every one except themselves regards as not only objectionable but indefensible, for it is intolerable that the building trade of the country should be brought to a standstill, and workmen in other trades thus thrown out of employment for any such inadequate cause.

The services of Continental plasterers will, obviously, be required for a long time, until the increased supply of apprentices have become duly qualified mechanics.

As regards the Carton Pierre and Fibrous Plaster branch of the plastering trade, I may say that this has always been to a great extent a Continental trade, to which the British workman has not taken kindly, and so long as he persists in harassing his employers by his intolerance, they will naturally prefer to carry on their business with more contented, skilful, and energetic workmen.

In conclusion, allow me to mention a fact which is pregnant with significance to those who study these questions. My Association is paying these Continental workmen the full London rate of wages, which is about double the rate they can earn in their native country.

THOMAS COSTIGAN, Secretary,
London Master Builders' Association.

### A NEW THEORY AS TO SOIL-PIPE VENTS.

SIR,—I think the following incident may be of interest to some of your subscribers.

Some little time ago I had to examine a house in London from a sanitary point of view; among other items, I objected to the soil and vent pipe, which was composed of light iron pipe, such as is used for rain-water purposes, with putty joints and narrow sockets. Shortly after my report being sent to my client I was requested to meet the house agent to discuss my report on behalf of the landlord. The first item he pounced upon was the soil-pipe, demanding to know what was the matter with it. On my explaining the usual objections, he calmly informed me that I must be very far behind the times, and that I apparently knew very little about air currents; and that "he always had soil and vent pipes fixed of this material, as, of course, anybody could see that the sun's rays could penetrate thin iron more easily than thick, or lead, and so heating the air in the pipe would cause an updraught." I left then. IGNORAMUS.

## The Student's Column.

### ARCHITECTURAL HYGIENE.

#### XVI.—VENTILATION (*continued*).

#### 4. RESPIRATION AND COMBUSTION, &C.

RESPIRATION.—Beside the ordinary impurities, the action of breathing or respiration helps to render the air in a room impure unless it is renewed. Respiration abstracts oxygen, increases carbonic acid, and adds watery vapour, ammonia, and organic matter to the air; besides which there are exhalations more or less odorous from the skin. The amount of carbonic acid given off by an adult per hour is ·6 cubic feet.

*Combustion.*—Coal when burnt gives off carbonic acid, carbonic oxide, sulphuric acid, and other impurities. According to Galton, analyses of various sorts of coal showed that they contained a mean of 1·7 per cent. of sulphur, and that the ash from such coal contained only 0·2 per cent. From this it will be seen that the burning of 1,000 tons of coal would send fifteen tons of sulphurous acid into the air, which would become converted into sulphuric acid.

Turning to coal gas we find that it forms an important cause of impurity in houses, for its products of combustion are carbonic acid, carbonic oxide, ammonia, and sulphur compounds.

Without going fully into calculations it is stated that each cubic foot of gas burnt per hour vitiates as much as one human being does by respiration. An oil lamp similarly affects the purity of the air but in a less degree, although for the amount of light obtained it is stated to foul the air more than gas.

#### 5. QUANTITY OF AIR REQUIRED.

We have now considered the composition of air, the impurities to which it is liable by contamination, and also by respiration and combustion. We now come to the very important point as to the quantity of air required by a human being.

According to Hood, women and children do not require such a large allowance as men; the proportion being two-thirds for females, and one-half for children.

Respirated air contains about 4·5 per cent. of carbonic acid, depriving the air of that amount of oxygen. An average adult, as already stated, gives off about ·6 cubic feet of carbonic acid per hour, and as 1,000 cubic feet of air under average circumstances contain ·4 cubic feet of carbonic acid, an addition of ·2 cubit feet will react the limit of the standard of purity allowed, viz., ·6. An adult will therefore render 3,000 cubic feet of air impure in one hour, because he will add ·2 cubic feet to each thousand, which will thus have absorbed the largest amount of carbonic acid which is permissible.

We now, therefore, arrive at the following data, that we should have a system of ventilation which shall give each person 3,000 cubic feet of fresh air per hour. Thus in an air-tight room or compartment, for a man to live, say, ten hours, it would be necessary for it to contain 30,000 cubic feet, if the air was not to be rendered more impure than the accepted standard. If an airtight room only contained 1,000 cubic feet, it would, by the same calculation, suffice for one person only twenty minutes.

This is a Utopian standard, however, which in practice seems to be seldom adhered to, and, indeed, Hood takes pains to state that it may not be necessary. The late Sir Douglas Galton asserted that no room could be considered even tolerably ventilated as a permanent arrangement unless at least 1,000 cubic feet of air per occupant are renewed per hour. Consequently, in a room 20 ft. by 15 ft. by 10 ft. high, which contains 3,000 cubic feet, and is occupied by three people, the air would not require changing more than once an hour, but if occupied by fifteen people, it would require renewing five times an hour.

Authorities differ largely as to the quantity of air required. Dr. Whitelegge, for instance, states that 500 cubic feet per head per hour is the minimum allowance, and that for rooms not continuously occupied 1,000 ft. per head is quite sufficient if passing through the room at a velocity not exceeding 5 ft. per second. Other writers give from 3 to 30 cubic feet per minute for people undergoing no exertion, and as much as 70 ft. for ball-rooms, hospitals, or workshops.

As it is generally practically impossible, however, to tell the number of people who will inhabit any particular apartment, heating engineers, as a rule, calculate that the air of an apartment should be changed from one to six times an hour according to the purposes for which it is used, *e.g.* :—

| | Times an hour. |
|---|---|
| Large hall and churches (in consequence of large cubic space...... | 1 |
| Dancing-rooms ........................ | 4 |
| School-rooms .......................... | 3 |
| Hospital ................................ | 5 or 6 |

Rooms are rarely so well built but that air can enter freely. The doors and windows of ordinary houses are not so closely fitted as to prevent air currents, which thus ventilate the room, even in the absence of other intended ventilation.

Again, sitting-rooms are not used continually like hospitals, and will, therefore, get their supply replenished in the intervals.

In order, however, to avoid draughts, it is usually assumed in a country like England that the air of a compartment should not be changed oftener than three times an hour, unless the incoming air is warmed; so that a room containing 1,000 cubic feet, which could be changed as above, is generally stated as a standard of measurement for ordinary purposes.

This question of draughts is most important, because no system of ventilation can be considered perfect which produces such a draught as can be felt by the inmates.

Further, the supply of fresh air should not move with a greater velocity than 5 ft. per second, so that the number of people in an apartment should be regulated in such a way that sufficient air can be given at a velocity not exceeding that rate.

*Cubic Space.*—As to the amount of *cubic space* which should be provided for each person, the following table has been prepared after reference to various other authorities :—

| | Cubic feet of space per head. |
|---|---|
| London Board School........................ | 130 |
| Board Schools (Education Dept.)......... | 80 |
| Canal Boats (adults)........................... | 60 |
| „ (children) ...................... | 40 |
| Common Lodging Houses ................ | 300-400 |
| Army Permanent Barracks .............. | 600 |
| Prisons with separate cells .............. | 800 |
| | per bed. |
| Army Hospital Wards........................ | 1,200 |
| | per seat. |
| Army Chapel Schools........................ | 200 |
| „ Infants' Schools ...................... | 96 |
| | per horse. |
| Stables (open roofed) ........................ | 1,200 |
| „ (with men over) ........................ | 1,300 |

*Quantity of Air per Person per Hour.*—The following table from Hood gives the quantity of air which should be provided *per person per hour* for a room occupied to its maximum capacity, the inlet being sufficient :—

| | Cubic feet per person per hour. |
|---|---|
| Ordinary living rooms ...... | 1,200 |
| Sleeping apartments ......... | 900 |
| Schools (scholars of full age) | 900—1,200 |
| „ (infants) ............... | 720 |
| „ (dormitories) ......... | 720 |
| Meeting rooms, public halls, lecture rooms ............... | 1,200—1,500 |
| Ball rooms.......................... | 2,100—2,400 |
| Theatres, dining halls, &c.... | 1,200—1,500 |
| Hospitals (ordinary)........... | 1,200 |
| „ (infectious) ......... | 2,100—3,000 |

It will be seen from this table that Hood's standard is not as high as many authorities, but in practice it seems to be the one most usually adopted. In very many cases it is even considerably higher than that which is obtained.

As an example, by the Factory Acts adequate ventilation is prescribed, and this is generally taken as signifying 250 cubic ft. per head per hour in ordinary working hours, and 400 cubic ft. during overtime.

From these data the amount of air which it is necessary to introduce per hour can be calculated to maintain a given standard of purity.

Let $x$ = volume of fresh air required per hour per head to maintain required standard B.

A = the number of cubic feet of carbonic acid in 1,000 cubic feet of fresh air = 0·4.

B = proposed maximum limit of carbonic acid in the air of a room (usually taken at 0·6 parts of carbonic acid per 1,000 volumes of air).

C = the number of cubic feet of carbonic acid given off per head per hour = 0·6.

$n$ = number of persons to be provided for.

$$\text{Then } x = \frac{C \times n}{B - A} \times 1{,}000 = \frac{600\,n}{B - 0{\cdot}4} = \frac{600\,n}{0{\cdot}6 - 0{\cdot}4}$$

And supposing that the number of persons = 100, then

$$\frac{600 \times 100}{0{\cdot}6 - 0{\cdot}4} = \frac{60{,}000}{0{\cdot}2} = 300{,}000 \text{ cubic feet per hour.}$$

And provision must be made for this amount to enter, the impure air being extracted at the same time.

*Velocity.*—According to "Montgolfier's" rule, air under pressure will enter a *vacuum* with a velocity equal to that acquired by a body falling from a corresponding height (H), and this velocity is determined by the formula $V^2 = 2gH$.

When H = the height (under standard conditions of barometer and thermometer H = 5 miles, or 26,400 ft.).

$g$ = acceleration due to gravity (32·18 ft. per second).

V = velocity required in feet per second.

$$\therefore V^2 = 2 \times 32{\cdot}18 \times 26{,}400.$$
$$V^2 = 1{,}699{,}104.$$
$$V = 1{,}300 \text{ ft. per second.}$$

In ventilation problems, however, the air passes not into a vacuum, but into a space containing air at a low pressure, so that the velocity is dependent upon the difference of the barometric pressure (P) and the air under a low pressure (p).

It is also necessary to calculate the height (h) of a uniform column of air of the standard of density (as was adopted in determining *H*), which would give the pressure *p*.

The formula being, therefore, for ordinary ventilation problems :—

$$V^2 = 2\,g\,(H - h);$$

and after substituting various values it may be put—

$$V = 8\sqrt{x - \frac{x}{1 + {\cdot}002\,(t - T)}}$$

in which $x$ = height of vertical flue.

$t$ = temperature of room.

T = „ „ open air.

*Example:* Let $t = 60°$ F.

T = 40° F.

$x$ = 20 ft.

$$\text{Then } V = 8\sqrt{20 - \frac{20}{1 + {\cdot}002\,(60 - 40)}}$$

$$V = 7{\cdot}1 \text{ ft. per second.}$$

Therefore, if we find the sectional area of the flue in feet and multiply by the linear velocity, it will give us the number of feet discharged per second.

There is one point which in practice we must not omit, and that is friction; this varies directly as the length of the tube L and the square of the velocity, and inversely as the diameter D, viz., $\frac{V^2 L}{D}$. In practice this allowance is usually ¼.

De Chaumont's rule for ascertaining the relation between the size of the opening and the hourly delivery of air is as follows :—

$$D = 200 \times \phi \times \sqrt{{\cdot}002 \times x \times (t - T)}$$

where D = the required delivery of air in cubic feet per hour.

$\phi$ = sectional area of inlet or outlet or of tube in square inches.

$x$ = height of heated column of air in feet.

$t$ and T = internal and external temperatures respectively.

*Example:*

*If* $x = 20$

$t$ and T = 60 and 40 respectively.

D = 6,000

$$\text{Then } 6{,}000 = 200\,\Phi \times \sqrt{{\cdot}002 \times 20 \times (60 - 40)}$$
$$6{,}000 = 200\,\Phi \times \sqrt{{\cdot}8}$$
$$6{,}000 = 178\,\Phi$$
$$\frac{6{,}000}{178} = \Phi$$
$$33\frac{126}{178} = \Phi$$
$$33{\cdot}56 = \Phi$$

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## BOOKS RECEIVED.

THE STORY OF NUREMBERG. By Cecil Headlam (J. M. Dent & Co.)

MURRAY'S HANDBOOK TO WARWICKSHIRE (John Murray.)

MEISTERWERKE DER BAUKUNST UND DES KUNSTGEWERBES ALLER LAENDER UND ZEITEN. Edited by Hubert Joly. Part I. (H. K. Koehler, Leipzig.)

MANUALE DE ARCHITETTURA ITALIANA ANTICA E MODERNA. Di Alfredo Melani. (U. Hoepli, Milano.)

THE TALL BUILDING UNDER TEST OF FIRE. By H. de B. Parsons. (No. 17 of Publications of the British Fire Prevention Committee.)

JOURNAL OF THE SANITARY INSTITUTE. April, 1899. (E. Stanford.)

FIRE TESTS WITH FLOORS. (No. 15 of Publications of the British Fire Prevention Committee.)

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## *OBITUARY.*

**MR. J. P. FORDHAM.**—We regret to record the death of Mr. J. P. Fordham, whose name is familiar to our readers as a partner in the firm of Messrs. Douglas & Fordham, architects, of Chester (now Douglas & Minshull). Mr. Fordham was a native of Essex, but received his professional education at York; he subsequently entered the office of Mr. Douglas, of Chester, and became his partner. Mr. Fordham retired from the firm in 1898, and died at Bournemouth on the 10th inst., aged fifty-five. During his partnership the firm of Douglas & Fordham carried out a great deal of work at Chester and upon the Eaton estate; also schools at Port Sunlight, the Parish Church at Rossett, Denbighshire; "Abbeystead," Wyresdale, Lancashire, Glangwrna near Carnarvon, &c. They were concerned in the widening of St. Werbergh's-lane, now St. Werbergh's-street, Chester, and built the branch Bank of Liverpool offices at the Eastgate end, several shops, and a block of offices at the cathedral end.

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## PORTISHEAD SEWERAGE SCHEME.

THESE works have been successfully completed, and everything in connexion therewith is in perfect working order, and the house connexions are being rapidly proceeded with.

The sewage, without treatment of any kind, is discharged into the River Severn at a point about a third of a mile from the shore. The point of discharge was selected after making very careful experiments to ascertain the set of the tides, and the rise and fall of the tides were taken every quarter of an hour for fifteen days. With the aid of these observations it was possible to select a point of discharge where the sewage would for certain be carried well out from the shore, whether the tide be ebbing or flowing, and to design the sewers so as to enable them to discharge at all states of the tide without providing storage tanks. Owing to the large range of tide at Portishead, being as much as 43 ft. between high and low water of high spring tides, the sewage will discharge at all states of the tides, except in the case of high spring tides, when the sewage will accumulate in the outfall sewer for a short time before and after high water, to be discharged directly the tide has fallen a few feet. Valves are provided to keep the sea-water out of the sewers, and owing to these, and the fact that the low-level sewers are distinct from the high-level, the sewage having to be lifted from the former to the latter, it is impossible for the sewers in the lower parts of the town to be flooded with sea-water, frequently the case in many towns with an outfall into the sea. The outfall sewer has been so arranged that, should it eventually be found necessary to construct a storage tank or sewer to retain the sewage for a short time before and after high water, such could be easily provided.

In many cases it would be most objectionable to discharge crude sewage into the sea, but when the conditions are in every way as favourable as at Portishead, there cannot be a more successful method of sewage disposal. (It is proposed to turn the whole of the sewage of Bristol into the Severn without treatment, as it is understood, and if this can be done without fear of a nuisance being created, there need be no fear as to the method adopted for the disposal of the sewage of Portishead ever causing a nuisance.)

The outfall sewer from the beach runs in a perfectly straight line in a north-westerly direction to low water. For the whole of this length, 1,896 ft., it is constructed of cast iron pipes, 15 in. internal diameter, 9 ft. in length, and weighing approximately 16 cwt. each. The joints, which were specially designed for the Portishead works, are of the spigot, socket, and flange type, the flanges being bolted with six 1½ in. bolts, against a rubber ring. For the greater part of its length, the outfall has been laid between rows of 8-in. and 10-in. elm piles, ranging in length from 11 ft. to 18 ft., placed 9 ft. centre to centre, and supported on cross pieces bolted to the piles. Longitudinal sills run along both lines of piles. In the mud the piles were driven without shoes, but in the sand and hard ground it was found necessary to shoe the piles. Towards the shore the pipes are supported on concrete piers for some distance, and for the remainder of their length on rock or a foundation of concrete. The pipes and piles for the whole length of the outfall, except a few feet from the end, are below the surface of the exposed shore, and are, therefore, not subject to the violence of the storms, nor do they become an eyesore, as is the case with many sea outfalls.

The total length of main sewers on the high and low levels is approximately eight miles.

*High-level Sewers.*—These consist of 8-in. to 15-in. internal diameter sewers, the depth below surface of ground or road level varying from 4 ft. 3 in. to 36 ft. 4 in. The deeper sewers were constructed in tunnel. The strata proved to be of a very variable character, and a considerable quantity of water was met with in places, necessitating the introduction of subsoil drains and much pumping. For the most part the tunnels were driven through hard rock, with fissures which allowed the water to penetrate to the workings. In tunnel the pipes were well bedded on, and surrounded with Portland cement concrete; but previous to being surrounded with concrete each length, notwithstanding the depth beneath the surface, was tested with water under considerable pressure. In places where a branch sewer joins a main which is at a much lower level, the communication is made by means of cast iron pipes fixed vertically inside the manhole built at the junction. When the difference in level is very slight, the sewage is conveyed from the high-level sewer to the lower one by means of a stoneware back-drop outside the brickwork of the manhole.

*Low-level Sewers.*—The low-level sewers are chiefly 8 in. and 9 in. diameter stoneware pipes. The main sewer through the town is constructed of Parker & Hassall's double lined pipes. In fact these pipes have been used in all water-logged positions; and in cases where the soil was dry, in the highest parts of the low-level system, ordinary deep socketed pipes were used. The character of the soil on the line of the low-level main was found to be of a very unreliable and variable character, soft blue clay, shifting sand, gravel, and live soils of various kinds being met with at one place or another, and these were water-logged to within a very short distance of the surface of the ground. In most instances it was necessary to close board the trenches and pack behind boards with straw, &c. The bottoms of the trenches were not sufficiently stable to lay the pipes upon and various means had to be resorted to to secure a good foundation. In some places the trenches were excavated to the hard marl beneath, and filled to the underside of the pipes with Portland cement concrete; in others the bottom of the trench was piled, close boarded, and concreted prior to the laying of the pipes; in other cases concrete in bags had to be resorted to to secure a good foundation. After laying, the pipes were haunched with Portland cement concrete. Subsoil pipes were put in for the greater part of the length of these sewers, and steam pumping to keep the trenches clear of the subsoil water had to be resorted to for [illegible] months. Owing to the treacherous nature of the ground it was found necessary to leave a considerable quantity of the timber in the trenches to protect the gas and water mains and the adjacent buildings.

These sewers, notwithstanding the great difficulties met with, and the fact that they have on several occasions been subject to a considerable internal hydrostatic pressure, and a constant external pressure of several feet of subsoil water, are believed to be absolutely water-tight. The dry weather flow on the low-level system, including whatever leakages there may be in the brickwork of the manholes, is barely sufficient to cover the floor of the manholes at the lower end of the main sewer in thirty-four hours. Such a result, under the conditions enumerated, has seldom been attained. The permissible leakage allowed by some engineers in a new sewer classed water-tight is as much as 1 to 1½ cubic foot per mile per minute. Taking the smaller allowance, this would give upwards of fifty times more leakage than the recent flow in the low-level sewers at Portishead. The amount of gas that would be consumed in lifting the moisture from all sources discharging at the lower end of the sewer for a period of twelve months would be about 3,000 cubic feet, an unappreciable amount.

*Manholes.*—These have been constructed throughout with hard wire-cut Cattybrook bricks, jointed in Portland cement mortar, and in wet ground the outside of the manholes has been rendered in neat Portland cement to within a short distance of the ground. The brickwork, practically speaking, is water-tight, and must be so considering the small amount of water discharging at the end of the outfall.

*Lampholes.*—These have been put in in a few places, and were constructed by building at the change of line or gradient a small concrete chamber and bringing therefrom a 9-in. stoneware pipe to within a foot of the ground, the shaft being surrounded with 6 in. of concrete. There are altogether about 135 manholes and lampholes.

*Ejector Chambers.*—Ejector chambers for the reception of Shone's Pneumatic Ejectors have been built beneath the surface of the roadway in brickwork and concrete; and these are watertight, although the floor of the ejector in each case has at times upwards of 17 ft. of subsoil water above it. The chambers are lined with white glazed bricks.

*Engine House.*—The combined engine house and air-compressing station is built of selected Cattybrook bricks, with box stone dressings. The inside walls, to a height of several feet, are lined with glazed bricks. The roof is covered with ordinary red tiles, and the inside woodwork in roof is wrought fair and stained and varnished.

*Machinery, &c.*—The whole of the low-level sewage is lifted by means of Shone's pneumatic ejectors. Crossley's gas engines and air compressors are in duplicate. Two ejectors are fixed in each chamber, and it is possible to work either of them. The cast-iron compressed air main is 2 in. diameter and leads from the air compressing station to each ejector. The ejector discharges into the cast iron sewage main, increasing from 5 in. to 6 in. internal diameter. Outside the air compressing station the lifting of the sewage goes on automatically. All the sewage flows by gravitation to the ejectors within the chambers, and the rising sewage automatically opens the valve in the compressed air main, lets in the compressed air and the sewage is forced up the sewage main to the high level gravitating sewer to the point of discharge, and this action will continue as long as the compressed air is kept at a pressure of from 18 lb. to 22 lb. per square inch, and there is sufficient sewage flowing to fill the ejectors. The arrangement looks complicated at first sight, but it is beautifully simple and does its work well.

*Flushing Arrangements.*—Automatic flushing tanks with field annular syphons, supplied with Company's water, have been built at several points, and at the dead end of branch sewers. In cases where automatic flushing-tanks are not provided, disc-valves have been placed on the outlet side of the manholes, so that these manholes can be converted into flushing-tanks by closing the valve and filling the manhole from a water-cart or neighbouring ditch or stream, should such be at hand. Disc-valves are placed in several manholes along the line, so as to assist the flushing arrangements.

*Junctions* have been put in for all existing houses along the line of sewers and wherever it is at all likely that houses will be built. The junctions have been temporarily closed, pending the connexion of the house drains, by means of a stoneware disc bedded in Medina cement, and held in position by means of an iron cramp and thumbscrew, the remaining space of the socket being filled with Medina cement. This plan has been found successful, for whilst it makes a water-tight joint the stoppers can, with care, be easily taken out when it is desired to do so for the purpose of making the house connexions.

Where the sewers are very deep the junctions have been brought up to within a few feet of the surface of the road, so as to make the work of connexion much less costly and troublesome. The pipes forming the vertical connexions have been surrounded with concrete and made perfectly water-tight.

*Ventilation.*—The system adopted for ventilating the sewers is that known as "The Column and Shaft System." Cast-iron ornamental columns are fixed in various parts of the district at the edge of the pavement and other suitable positions, and shafts are fixed to the sides of the houses in a few places. Many more of these shafts should be fixed from time to time whenever permission can be obtained to do so, and it is rarely that permission is withheld, since the fixing of a shaft at any point relieves the drain in the vicinity from the internal pressure that would be otherwise exerted by the sewer gases. Each shaft is supported at its lower end with a cast-iron ducksfoot bend resting on a block of concrete. A rust pit is provided for catching the rust, &c., and preventing the possibility of the pipe becoming useless through being blocked. An inspection and cleansing hole has been provided in the ducksfoot bend for the purpose of removing anything let down the pipe. The columns were designed so as to serve the purpose of electric light standards or lamp posts, and special attention has been paid in fixing the positions of the columns so that if eventually they were called into use for either of the above purposes, they could be of the maximum advantage. There is a receptacle in the base of each column to catch rust or anything else finding its way into it. This receptacle can be reached from a door in the lower part of the column.

It was originally intended that ventilating cowls should be fixed at the top of the vent columns and shafts, and this is necessary both to give a finish to the shaft or column as the case may be, as well as to prevent birds nesting therein, and also to assist aspiration.

The ventilation of the low-level sewers is aided by fixing two very high 9-in. diameter cast-iron ventilating exhaust columns. These are fixed in connexion with the nozzle chamber attached to the sewers and the ejector chamber and the exhaust pipe discharging the spent compressed air. The compressed air, after ejecting the sewage, discharges into these high columns through the nozzle chamber, drawing the air from the ejector chamber and sewers and driving or forcing it up the column.

*Materials.*—The Parker & Hassal's pipes were supplied by Messrs. Hexter Humpherson & Co. and Messrs. Wragg & Co. Syke's screw-joint pipes by the Albion Clay Company; and the deep socketted ordinary pipes by the above makers and Messrs. Doulton & Co. The bricks used in the construction of the manholes, engine-house, ejector chambers, &c., were selected wire-cut stock bricks made and supplied by the Cattybrook Brick Company. The Portland cement was supplied by Messrs. J. & B. White Bros.; the Field's automatic siphons for flushing tanks by Messrs. Stone & Co.; the disc valves for manholes, lamphole covers, special manhole covers and tide valves by Messrs. Ham, Baker & Co.; the ordinary manhole covers by the Bristol Foundry Company; the cast-iron pipes for sea outfall by Messrs. Roberts, Ltd., West Bromwich; the ventilating columns by Messrs. Parsons & Sons, near Dudley; the ordinary ventilating pipe by Messrs. Allen, Sen., & Son; and the gas engines, air compressors, ejectors, air and sewage mains and other lifting plant were supplied, fixed, and put in working order by Messrs. Hughes & Lancaster. The whole works cost approximately 18,500*l*.

Mr. F. W. Trimm was clerk of works throughout. Messrs. J. & T. Binns, contractors, Horwich, have carried out the main contract. Mr. T. J. Moss Flower, C.E., F.G.S., of Westminster and Bristol, acted as engineer, and prepared and carried out the scheme.

## *GENERAL BUILDING NEWS.*

RESTORATION OF BANSTEAD CHURCH.—The restoration and repairs which have been in progress for the last nine months are now completed. A clearstory has been formed over the nave arcade of six three-light traceried windows filled with leaded lights, the roofs have been stripped, repaired, and re-tiled. The stonework has been generally repaired, drains re-laid, &c. Through the liberality of a parishioner the interior has been decorated with frescoes, the sanctuary having angels, with wings outspread, standing on clouds and carrying in their hands scrolls. In the splays at sides of windows, sills, and spandrels of lancet windows, the sacred emblems with foliage are introduced, a gold scroll forming capping to the dado, which is painted an olive green. The fresco in the chancel arch represents the great Act of Atonement; the central figure of the crucified Redeemer is life size, and on either side is an adoring angel, the background being relieved with golden stars. Above the cross bar of the arch is the sacred monogram I.H.S. from which issue rays of glory, immediately below which occur the initials of the Alpha and Omega. Following the line of the arch is a label bearing the texts "I, if I be lifted up, will draw all men unto Me." Texts are also carried round the arches of the nave arcade. Mr. F. J. Shopland, contractor of Sutton, carried out the restoration and repairs to the fabric; the decorative work being done by Messrs. Heaton, Butler & Bayne, under the superintendence of Mr. J. Hatchard Smith, architect, London.

PRESBYTERIAN CHURCH, CARDIFF.—Memorial stones of the Presbyterian Church of England, Roath Park, Cardiff, have just been laid. The church stands on a site at the junction of Penylan-road and Marlborough-road, and facing the entrance to Roath Park. It consists of nave, with transepts and chancel, with porches and a vestibule. The internal length is 125 ft., the width of nave 47 ft., and in transepts 62 ft. There will be an open timber roof in pitch pine, the height being 42 ft. The seating and all other woodwork will be in pitch pine. The chief external features will be the tower and spire, 150 ft. high. The central doorway is a copy of Tintern Abbey doorway; there will be a five-light traceried window above. The church is being built of Newbridge polled stone, with bath-stone dressings. The building will accommodate between 800 and 900, 700 in nave and transepts and about 140 in a small western gallery. The choir and organ will be raised above the level of the nave. At the rear of the church there are vestry, session-room, manager's room, and choir-room. The architects are Messrs. Habershon, Fawckner, & Groves, Newport and Cardiff, and the contractor is Mr. James Allan, Cardiff.

WESLEYAN CHURCH, TWICKENHAM. — Christ Church, Twickenham, was opened recently in the Queen's-road. The new building is Gothic in style, and has been built of red brick and Bath stone. The main entrance is by a vestibule. Double doors give access to the church, which is divided into nave and aisles by ornamental iron columns. Wide but shallow transepts have been formed at the pulpit end. A small gallery is placed over the porch, reached by a staircase in the tower, which is surmounted by a spire 80 ft. high. Sittings are provided for 600. The windows are all glazed with tinted lead glazing, the heating is by hot water, and the gas fittings are of wrought iron. The architect was Mr. Charles Bell, of London, and the builders were Messrs. Aries & Co., of Putney. The total cost has been 4,200*l.*

Additions, All Saints' Church, Hull.—The Archbishop of York (Dr. Maclagan) visited Hull on the 20th inst. for the purpose of dedicating a new peal of bells given to All Saints' Church, Hull, by Mrs. Foster Earle, in memory of her late husband; and a new vestry, which has been built on the south side of the chancel. The new vestry is of red brick. The architects for the work were Messrs. Brodrick, Lowther, & Walker. The contractors for the building were Messrs. Robinson & Johnson, of Hull.

Congregational Church, Eastbourne.—The foundation-stones have just been laid at Eastbourne of a new Congregational Church. The new building, which will be erected by Mr. J. Martin, in accordance with plans prepared by Messrs. Spurrell & Murray, will have a length over all of 78 ft., and a width of 46 ft., and will afford seating accommodation for 450 persons. It will be Early Gothic in style, and the walls of the interior will be panelled with pine for a height of 6 ft., the remainder of the walls being in red brick and plaster. The nave columns will be polished granite. The accommodation will comprise an organ chamber, and on either side of the vestibule cloak-rooms are provided. The church will have an open timber roof. It is also proposed as soon as possible to add a vestry, kitchen, &c.

Congregational Chapel, Gowerton, Glamorganshire.—The congregation of the English Congregational Church at Gowerton are building a new chapel to seat 360 worshippers, the contract being 990*l.*, and Mr. Councillor W. Williams, of Landore, being the contractor, and Mr. D. L. Jones, of Llanelly, the architect.

Church, Dalton, Kirkby Ravensworth, Yorkshire.—A new church for the village of Dalton has just been consecrated. The architecture is fourteenth century in style, and the building is of stone, roofed with red flat Staffordshire tiles. The work has been executed by the contractor, Mr. Harwood, of Manfield, to the plans of Messrs. Hicks & Charlewood, architects, of Newcastle.

Consecration of St. Patrick's Church, near Shirley, Warwickshire.—This church was re-opened on the 21st inst., having been almost rebuilt. The only existing portion of the previous church is the tower, a new nave and chancel having been built. The work of renovation is not yet complete, portions of the tower having yet to be restored. The architect is Mr. Bidlake, of Birmingham; and the contractors are Messrs. Smith, of Leamington. The building will accommodate nearly 300 people.

New Public School, Aberdeen. — Contracts have been accepted by the Aberdeen School Board, from local tradesmen, for the erection of a new public school at Mile-end, Stocket. The school will be a three-story building of grey granite, the main elevation being to Gordondale-road. The total cost will be about 12,000*l.* The architect is Mr. A. H. L. McKinnon, Aberdeen.

Board School, Whitchurch, Glamorganshire.—A new Board school has just been opened at Whitchurch. The architect was Mr. Williams, of Cardiff, and the builder, Mr. John Evans, of Whitchurch.

Hotel, Manchester.—The hotel which the Midland Railway Company is erecting in Manchester, and which will be known as the Hotel Midland Grand, is in close proximity to the Central Station. Covering an area of about two acres, it is bounded on its four sides by Peter-street, Mount-street, Windmill-street, and Lower Mosley-street. The main front of the building will be in Peter-street, and two archways will admit to a central courtyard, a similar exit being at the opposite side in Windmill-street. Red and grey Aberdeen granite, with a mixture of Shap granite, will be used in the lower part of the structure, while in the upper portion brick and faience will be employed. The section to be first completed will include a concert hall. There will also be public rooms, a winter garden, a rotunda, a roof garden, a French restaurant, business and stock-rooms, Royal and private suites, and 400 bedrooms. Mr. Charles Trubshaw, of Derby, is the architect for the building. The first contract, amounting to 80,000*l.*, has been let to Messrs. William Brown & Son, of Salford, who have been at work upon the section entrusted to them for some months. It is stated that the company will erect the building in four sections, of which that at the corner of Lower Mosley-street and Windmill-street has been first taken in hand.

Bradford Market Extensions.—Plans and instructions have been issued to Bradford architects by the City Surveyor (Mr. J. H. Cox), with the view to competitive plans being sent in for the extension of the city markets. The plans, in addition to showing the extension of the market buildings, provide for the widening of John-street and Rawson-place. The street frontages will be occupied by shops, with dwelling-houses over, and at the corner of Rawson-place architects are required to provide accommodation suitable for a licensed house. Underneath the market will be cold storage and ordinary cellarage, to be reached by steps, and also by hydraulic lifts. The work is expected to cost 20,000*l.*

Co-operative Buildings, Guardbridge, N.B.—New co-operative buildings are to be erected at Guardbridge. Mr. Anderson, St. Andrews, is the architect, and the estimated cost is 1,500*l.*

Memorial Institute, Liverpool.—Mr. Samuel Smith, M.P., is erecting an institute building at Liverpool as a memorial to his late son, Mr. Gordon Smith. The institute will be erected on a site near the Sailors' Home, Paradise-street, and is to be a stone and terra-cotta building, with a tiled roof. On the ground floor will be reading-rooms and library for seamen; hall, 52 ft. by 33 ft.; a second hall, to be called "The Strangers' Rest," in which will be placed literature in various languages; several smaller meeting-rooms, lavatories, and service-room. On the upper floor are to be officers' reading and retiring rooms, another meeting hall, class-rooms, board and superintendent's rooms, lavatories, &c. Mr. James Strong, of the firm of Messrs. Walker & Strong, is the architect.

Shelter for Women, Ancoats, Manchester.—A new women's shelter was opened on the 20th ult. in connexion with the Manchester and Salford Wesleyan Mission. It is erected on a plot of land containing 213 square yards, with a frontage of 90 ft. to George Leigh-street, Ancoats, and 20 ft. to Great Ancoats-street. The building is four stories high, and is divided into three separate departments, one of which is to accommodate the casuals, another to be used as a servants' home, and the third for the purpose of a temporary home. There are also a coffee tavern and dining-room, which will be worked by the girls of the temporary home. There are sixty-three cubicles giving accommodation to the various departments. Day-rooms, kitchens, and laundry are provided. The buildings are lighted with electricity. The whole of the work has been carried out from the designs of Mr. Walter R. Sharp, of Manchester.

Rope Works, Putney.—A large rope and twine manufactory has just been established not far from the old Baltre Wharf, Putney. The architect is Herbert Hillier, of Westminster; and the builders are Messrs. Kingerlee & Sons, Oxford; the foreman being Mr. Joseph Maycock. The total cost of the works is about 50,000*l.*

Technical Institute, Norwich.—The foundation stone of Norwich Technical Institute was laid on the 17th inst., in St. George's-street. The building was illustrated and described in our issue for January 21 last. The architect is Mr. A. E. Collins, City Engineer, assisted by Mr. W. Douglas Wiles. Mr. S. Warburton is the contractor.

Theatre, Walsall.—It is proposed to erect a theatre, to be styled Her Majesty's Theatre, on a site in Park-street and Wolverhampton-street, Walsall. The building will be carried out in red Ruabon bricks with stone dressings, the elevation to Park-street being surmounted by a dome. Shops will be arranged on either side of the principal entrance in Park-street. The interior accommodation will consist of orchestra and pit stalls, pit, circle, balcony, and gallery, together with eight private boxes. The auditorium will be 69 ft. long and 60 ft. wide. The architects are Messrs. Owen & Ward, of Birmingham.

New Buildings in North Bridge-street, Edinburgh.—At the Edinburgh Dean of Guild Court, on the 20th inst., a warrant was given to Mr. John White for the erection of new buildings on the east side of North Bridge-street. These buildings will extend from the south abutment of the North Bridge to the Commercial Bank buildings at the corner of the High-street. From Jeffrey-street there will be nine stories, and there will be six stories above North Bridge-street. The street floor on the North Bridge level will be devoted to shops. A special feature will be a large bon marché, entering from North Bridge-street, which will occupy the whole of the centre block on the five floors above the bridge level. This bon marché will also occupy the whole of the second floor below the bridge, and the floor on the level of Jeffrey-street, except a small portion at the north-east corner. The remainder of the upper floors will be devoted to an hotel, the entrance to which from North Bridge-street will be by means of a balcony along the north elevation. There will be a restaurant on this level, and on the Jeffrey-street level there will be another restaurant, which will also be in connexion with the hotel. The lower floors of the buildings will obtain good light from Carrubber's Close and Jeffrey-street. Messrs. George Beattie & Son are the architects. The buildings will probably cost about 170,000*l.*

Theatre, Douglas, Isle of Man.—The plans for converting The Pavilion (facing the Harris Promenade) into a theatre have been passed by the Committee of the Douglas Town Council which has charge of such matters. Mr. Frank Matcham is the architect.

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Historic Map of Bath.—This is a second edition of the map of Bath prepared by Mr. T. Sturge Cotterell (published at the *Bath Chronicle* office), showing the houses which have been occupied by various celebrated persons. A good deal of fresh information has been added.

## *SANITARY AND ENGINEERING NEWS.*

The New Glasgow Bridge.—For more than three years operations have been going on in connexion with the rebuilding of Glasgow Bridge. The Town Council of Glasgow took up the matter in earnest in 1892, when they obtained an Act of Parliament to enable them to remove the bridge and to erect a new one in its place, but much had to be done before the scheme could be carried out. A temporary bridge had to be erected to carry the enormous traffic which passes over the river at the place, and this was done at the cost of about 13,000*l.* For various reasons it was resolved to build the new bridge practically with the same elevation as the old bridge, one reason being that the granite piers could be re-dressed and replaced on the new bridge, but as a matter of fact the whole of the new bridge is of granite, the arches being of granite throughout and the piers faced with the same stone. The most difficult and most expensive part of the work was in obtaining a proper foundation. All the piers and the abutments have been carried down to a depth of about 60 ft. below low water level, and from 20 ft. to 30 ft. below the foundations of the quay walls along the Clyde. The foundations were sunk under pneumatic pressure by means of steel cylinders, having an air-tight chamber at the bottom, in which the workmen dug out the excavations, while the cylinders were sunk by being gradually filled up with concrete, the superincumbent weight forcing the cylinders down as the excavations were removed. Each pier is supported by four cylinders, each 15 ft. diameter, these being connected with each other at low water level by semi-circular granite arches on which are built the solid piers which support the main arches. The abutments and wings are also supported by cylinders, those for the abutments being similar to those for the piers, but those for the wings being considerably smaller and built of brick-work instead of steel and concrete. One of the main features of the new bridge will be the parapets, which are of polished granite throughout. The pediments surmounting the piers of the old bridge were rather insignificant, and served merely as bases for gas lamps. These have been superseded by elaborate moulded and polished granite pediments rising considerably above the level of the parapets on the arches. No provision has been made on them for lamps, as the whole lighting of the bridge is to be carried out by means of a row of electric lamps placed along the centre of the carriageway. The new bridge is 80 ft. wide between the parapets. The footpaths on either side are 15 ft. wide, and the carriageway 50 ft. A double line of tramway occupies the centre, and there is on each side ample room for a double line of ordinary street traffic between the tramway rails and the kerb. Provision has been made on the bridge for a large number of pipes, including two 27-in. water pipes, two 24-in. gas pipes, and a whole array of smaller pipes connected with the hydraulic pressure, electric lighting, electric traction, telegraphs, and telephones. The bridge will be opened for traffic during the summer. The engineers of the bridge are Messrs. Blyth & Westland, Edinburgh; the contractors are Messrs. Morrison & Mason, Glasgow; and the whole of the new granite has been supplied by Mr. John Fyfe, Aberdeen.—*Scotsman.*

New Water Supply for Newton-on-the-Moor, Northumberland.—Earth works and other operations have been commenced by Messrs. J. & G. Green, of Warkworth, for the construction of an open storage reservoir to hold 100,000 gallons of water to supply the village of Newton-on-the-Moor. Mr. William Henderson is clerk of the works, and the plans have been prepared by Mr. M. Temple Wilson, architect and surveyor, Alnwick.

Doncaster Rural District. — The Doncaster Rural District Council intend carrying out schemes of main sewerage and sewage disposal for Bawtry, Askerne, Bentley, and Arksey, and have instructed Messrs. D. Balfour & Son, of Westminster and Newcastle-on-Tyne, to prepare plans, estimates, and reports; also to inspect and report on the Conisburgh and Denaby sewage disposal scheme.

Cranbrook District Sewerage. — At the last meeting of the Cranbrook Rural District Council the plans for the sewerage and sewage disposal for the district of Hawkhurst prepared by Messrs. Sands & Walker, of Nottingham, were approved, and application is to be made to the Local Government Board for sanction to the necessary loan for carrying out the works.

## *FOREIGN.*

France.—At the Gobelins the tapestries designed by M. Charles Garnier for the library of the Paris opera-house are in progress. They are ornamented with harps, lyres, and other decorative *motifs*, and their design was one of the last things Garnier executed.——A new hotel for the Sous-Prefecture is to be erected at Bastia, Corsica, close to the sea. ——The joint Salon exhibitions will open on Monday May 1, in the Galerie des Machines, as last year. The general arrangement is much the same as last year, but in the old Salon section the exhibition of engravings has been given up, and a room for decorative art has been allotted to the architectural section.——An exhibition of the works of Puvis de Chavannes is in course of arrangement at the Galliera Museum. It will be opened in the course of next month. —— The Municipal Council of Paris has voted a sum of 600,000 francs for the erection of a special pavilion for the municipal exhibits at the 1900 Exhibition. It will be on the right bank of the Seine, near the Pont Alexandre III., and will be designed in French Renaissance style. M. Gravigny is the architect. ——The death is announced, at the age of thirty-seven, of M. René Bazelin, architect, of Paris; a member of the Société Centrale. and a former pupil of M. Guadet. He obtained the premium in 1889 in a competition opened by the Town Council of Limeil-Brevannes for a block of new schools. ——The death is announced also of M. Duhaupas, architect, of Paris.

THE NEW RUSSIAN CHURCH IN VIENNA.—On Sunday, April 16, was consecrated the striking new Russian Church of the Vienna Embassy. The church has been built on a site belonging to the Embassy, and the cost defrayed by a grant of the late Emperor Alexander III. The work has been carried out by a Vienna architect, the Chevalier Giacomelli, from designs by M. Kotow, of the Russian Academy at Moscow. It occupies an area of about 1,000 square yards, and has a height of 170 ft. The style is Russo-Byzantine, the great crucifix on the central tower being ornamented with a sparkling circle of rock crystals, which in the sun scintillates with all the colours of the rainbow. The images in the interior are the work of two Russian artists, MM. Bruni and Kharlamoff. The photograph of the building, which has been sent to us, shows a sufficiently barbaric-looking edifice, with a sixteen-sided central lantern with high conical roof crowned with one of those huge bulbous finials characteristic of Russian architecture; similar bulbous finials surround it on a lower level. The building must furnish an odd contrast to the predominating character of modern Vienna architecture.

SINGAPORE.—At the beginning of the present year the Committee of the New Teutonia Club advertised for designs for a new Club House to be built upon the site of the present building in Scott's-road. There was no premium offered, but the committee undertook to employ the successful architect to carry out the work at the usual commission, which is 10 per cent. Several architects responded, and subsequently the design submitted by Messrs. Swan & Maclaren was accepted, that of Messrs. Lermit & Westerhout being placed second. Architects were informed that the building was to be on the bungalow principle, the floor to be raised several feet from the ground, the accommodation to be provided comprising a ball-room at least 80 ft. by 40 ft., with large stage at one end with dressing-rooms, scene-rooms, &c., reading-room, billiard-room, refreshment-room, with large room for lounge next bar, and lavatories, dressing-rooms, &c., the whole to be surrounded with a wide verandah and approached through a hall with carriage porch in front. The site was on a spur of a hill, and the successful architects have planned their building to suit this, making their plan L-shaped to avoid earth cutting. The entrance-hall, approached from a large porch up a very wide flight of granite steps, is octagonal on plan, and is placed at the angle of the L, the porch being placed at an angle of 135 deg. with the sides. The hall, which is 60 ft. in diameter, has an arcade 10 ft. wide running round the inside with attached columns at the angles supporting a gallery some 20 ft. above floor level. The whole of the hall will be paved with local marble from Perak, and it is intended to line the walls with coloured marbles from the same quarries. These quarries have been recently started, and are producing marbles of all shades and of first quality. Off the hall a staircase leads to the gallery. The centre part of hall is continued up forming an octagonal tower, with a steep-pitched roof, terminated with a timber ventilator with copper roof. This can be approached by a small staircase. Coming to the main floor again, on the left of the hall immediately near the entrance are ladies' cloak-rooms projecting in front of the general line of the building. The ball-room is on the left of the hall, is 90 ft. by 42 ft. and 40 ft. high, with a stage at the farther end, and a musicians' gallery at the entrance end. The interior is treated with a deep dado of red marble, with numerous doors of large size (so necessary in the tropics); above which is a moulded band supporting attached columns with deep frieze and cornice; the space between the columns to a depth of 4 ft. below the architrave is filled with ventilating lights between stumpy columns. The ceiling is of local hardwood, panelled and coppered. At the side of the stage are dressing-rooms, &c. In the other wing are the billiard-room, reading-room, and refreshment-room, with lavatories, &c., and a gentlemen's cloak-room is provided near the entrance. The interior treatment is similar to the ball-room. All round the building are verandahs 12 ft. wide. The architectural treatment of the exterior is good, plain late English Renaissance, the main walls being carried above the roof of verandah and finished with a heavy wooden cornice, under which are the ventilating lights between the columns. The verandah is divided up with columns, and has a deep, wood cornice, with a lean-to roof, covered with segmental red tiles, but at each end the cloak-rooms are brought forward and carried up the full height of main walls, the upper part being used as card-rooms. They are treated plainly below, but finished with attached columns, with cornice and semicircular pediment, broken by windows, and filled with carving. The building is mainly of red brick and stucco quoins, &c., marble being introduced in places. The roofs generally are of segmental red tiles, but the steep roof of the tower is to be hung with teak shingles. The tower is very plainly treated in red brick, and rough-cast with stucco cornices, and every part of the tower has its use. The whole of the timber used will be local hardwood, and a certain amount of teak. Tenders are now being called for, and the work is expected to be completed early next year. The site is a fine one, as it stands at a considerable height above the road level, and below are nice grounds, with tennis-courts, &c.——Jubilee Town Hall.—Nothing has been done so far to advance this project since the award was made nearly a year ago, except that it is rumoured that the committee have decided to abandon the site pointed out to competitors, and are negotiating for a site on the side of Fort Canning, and have been busy boring on the side of the hill to see, presumably, if the foundations are good.

## *MISCELLANEOUS.*

GOVERNMENT WORKS.—The Committee of Supply in the House of Commons has sanctioned the following estimates for works to be carried out in the course of the current financial year:—Buckingham Palace: continuation of installation of electric light (total cost 11,000*l.*), 2,500*l.*; improvement of ventilation, 200*l.* Royal Mews, Pimlico: warming arrangements in State harness-rooms, coach-houses, &c., 250*l.*; alterations to coach-houses, 150*l.* Windsor Castle: installation of electric light (total cost uncertain), on account, 2,000*l.*; ventilation of the kitchen, 200*l.* Windsor Royal kitchen garden: construction of fruit room, 200*l.* Kensington Palace: restoration of State rooms and banqueting house (total cost, 23,000*l.*; expended to March 31, 1899, 21,000*l.*), to complete, 2,000*l.* Hampton Court Palace: alterations to barracks for improvement of main entrance to Palace, 2,700*l.* Holyrood Palace: granolithic paving, 250*l.* Various palaces: improvements for better protection against fire, 2,250*l.* Marlborough House: alterations in courtyard, 200*l.* Bushy Park: new stable, tool shed, &c., 200*l.* Greenwich Park: improvements and public conveniences, 500*l.*; alterations to Superintendent's lodge, 200*l.*; new footpath (500*l.*), on account, 250*l.* Hampton Court Gardens: new hot-house, 500*l.* Kensington Gardens: new public conveniences and consequent alterations, 500*l.* Kew Gardens: new filter bed, 2,700*l.*; additions to boilers, 135*l.*; experimental well near river, 200*l.*; new mess-room for workmen, 160*l.*; new frame for Alpine plants, 120*l.*; new span frame in melon ground, 125*l.*; new frame in nursery, 125*l.*; new stables for director, 200*l.*; alterations in works depôt, 150*l.*; Queen's cottage grounds, fencing, 300*l.* Regent's Park: addition to greenhouses, 300*l.*; stable and workmen's mess-room, 200*l.* Richmond Park: improving Roehampton entrance and rebuilding lodge, 900*l.* St. James's, Green, and Hyde Parks: further improvements in lighting roads and footpaths, 1,000*l*; wood-paving between Marlborough and Buckingham Gates, 4,000*l.* Houses of Parliament: construction of hydraulic lift in Speaker's residence, 1,000*l.*; reconstruction of members' staircase to the terrace, 500*l*; fitting up and furnishing as a committee room part of the house vacated by the librarian of the House of Lords, 700*l.*; works in connexion with the flues in the speaker's residence, 200*l.*

THE SANITARY INSTITUTE EXAMINATION.—At an examination in practical sanitary science, held at Birmingham, on April 14 and 15, five candidates presented themselves. The following candidate was granted a certificate in practical sanitary science:—G. S. Taylor, Moseley, Birmingham. At an examination for inspectors of nuisances, held at Birmingham, on the same dates, twenty-nine candidates presented themselves. The following seventeen candidates were certified, as regards their sanitary knowledge, competent to discharge the duties of inspectors of nuisances under the Public Health Act, 1875:—A. E. Adcock, West Bromwich; S. Baylis, Nechells, Birmingham; F. R. Bioletti, Birmingham; G. H. Brayshaw, Bradford; J. Dyson, Middleton; E. J. Franklin, Cheltenham; J. W. Gaskell, Hollinwood, Oldham; P. Gray, Bolton; W. S. Hart, Edgbaston, Birmingham; C. J. Humphreys, Birmingham; F. W. Kelway, Bath; W. Parsons, Leamington; A. O. Purnell, Lozells, Birmingham; T. K. Ramsey, Market Drayton; W. R. Smedley, Selly Oak, near Birmingham; I. Stephens, Burton-on-Trent; J. Wood, Illingworth, Halifax.

CRYSTAL PALACE SCHOOL OF ENGINEERING.—The certificates awarded by the examiners for the Easter term of the Crystal Palace Company's School of Practical Engineering were presented on the 21st inst., in the Lecture Theatre of the school. Sir John Jackson took the chair. Mr. R. G. Hodson, Superintendent of the Crystal Palace School of Art, Science, and Literature, read the lists of awards and the reports of the examiners, which were of a satisfactory character. Before presenting the certificates, Sir John Jackson said he was delighted with what he had seen in the school, particularly in the mechanical workshops. In his opinion, no engineer had had a sufficient training unless he had spent a considerable time in workshops or on works in progress. He (the chairman) spent three years in an engineering factory before taking the civil engineering course in Edinburgh University. He had always looked upon those three years as a most useful training. Those who would have to do with workmen in later life would find workshop experience important. But on the whole, perhaps, it was better to get the workshop training in a school like this at the same time that they were getting their class-room training. For the encouragement of the students, the Chairman stated that when he was twenty-five years of age he was entrusted as contractor with the making of a dock, costing from two to three hundred thousand pounds, while at thirty-five he undertook what was considered the somewhat difficult work of putting in the foundations of the Tower Bridge. He mentioned this because people often said that an engineer never did anything before he was forty or forty-five years old. He was now engaged in the construction for Government of the largest dock in England or the world—the Keyham extension dock—and he should be glad to have the works visited by the students of the school. Mr. J. W. Wilson, Principal of the School, remarked that many old students had posts in Africa, and that one of them was engaged in carrying out Mr. Cecil Rhodes's transcontinental telegraph line.

ABERDEEN MASTER MASONS' ASSOCIATION.—The members of this Association have resolved not to tender as sub-contractors for the mason work of the new post office at Aberdeen, and as the Government have declined to alter the system of letting the whole work to one contractor, the outcome is awaited with interest. In the meantime, it is also reported that Government have accepted the offer of an Inverness builder (Mr. Thomas Macdonald) for the erection of additions to Aberdeen Military Barracks, Justice-street, at a total cost of 3,000*l.*

BISHOP LLOYD'S PALACE, CHESTER.—On the 18th inst., Mr. Alderman Charles Brown, of Chester, invited a small company to view Bishop Lloyd's Palace, one of the most interesting old buildings in Chester, situated in Watergate-street, which Mr. Brown has recently purchased. The attendance included Archdeacon Barber and members of the Chester Archæological Society. The front of the building bears the initials "I.R." (Jacobus Rex), and its date has been fixed at 1603. Bishop Lloyd became Bishop of Chester in 1604, and died in 1615, being buried in Chester Cathedral. The interior of the palace contains some remarkable panelling in a good state of preservation. Mr. Brown said there was a danger recently of the building being sold to an American syndicate, and he had bought it with a view of preserving such an interesting relic. The restorations will be carried out by Mr. Lockwood, architect, Chester, with due care not to mar any of the archæological features of the building.—*Liverpool Post.*

THE PHYSIC GARDEN, CHELSEA.—In terms of a scheme prepared by the Charity Commissioners (of which we lately published an abstract) the garden is now committed to the trustees of the London Parochial Charities, who will apportion a yearly sum of 800*l.* towards its maintenance. The garden, which covers about three and a half acres, will henceforth be devoted to the study of botany and vegetable physiology, and the culture of medical plants for instruction in technical pharmacology. The garden had its origin in the parcel of land which the Company of Apothecaries leased from Lord Cheyne in 1673 for their barge-house and the culture of medicinal herbs. Having bought the manor of Chelsea in 1712, Sir Hans Sloane gave the freehold of their garden to the Apothecaries under certain conditions as to its maintenance, in the year 1722. In 1893 the company applied to the Charity Commissioners for relief from their trusteeship, which made a too heavy demand upon their resources. William Aiton, whom we mentioned in our recent account of the history of Kew Gardens, was a pupil of Philip Miller, author of the "Gardener's Dictionary," and head gardener to the Company during nearly fifty years. Miller died in 1771 and was buried in the graveyard of old St. Luke's, Chelsea, wherein the Linnæan and Horticultural Societies erected a monument to his memory.

A WASHABLE DISTEMPER.—We have received some samples of "Hall's Sanitary Washable Distemper," manufactured by Messrs. Sissons Brothers, & Co., Limited, of Hull. It should prove useful for many purposes, for it is cheaper than ordinary paint, and yet can be washed without damage three weeks after it has been applied, if the evidence of numerous testimonials can be accepted. The antiseptic ingredient is cresylic acid, and where its odour is not an objection to its employment is doubtless of some sanitary value as a wall-wash. The washable distemper is said to set firmly even on a damp wall, and can be applied to brick, stone, plaster, or glass. For use, 4 lbs. of the distemper are thinned with 1 lb.

of water, and the mixture will cover a surface of about 25 square feet. Those seeking a material superior to ordinary distemper and yet cheaper than paint, will probably find that this washable distemper will meet their requirements. It is, we understand, made up in various tints.

## *CAPITAL AND LABOUR.*

THE BUILDING TRADE DISPUTE AT LOUGHBOROUGH.—A dispute has recently arisen between the master builders of Loughborough and the bricklayers' labourers, the latter of whom demand an increase of wages, and have come out on strike because the terms asked for have not been conceded. The labourers have been receiving 5d. per hour, and the dispute has resulted in throwing 130 men out of employment. The bricklayers still remain at work, and in place of the labourers who have come out the masters have employed a number of "blacklegs." Arbitration has been suggested, but nothing definite has yet been arranged. The Loughborough Trades Council have taken up the cause of the labourers, and recently held a mass meeting in the Philharmonic Hall. Mr. Fred Morley, President of the Trades Council, occupied the chair. During the proceedings Mr. Bruton proposed, and Mr. Kennett seconded, the following resolution, "That this mass meeting pledges itself to use every means in its power to secure for the builders' labourers in Loughborough a living wage." The resolution was carried.

ABERDEEN MASONS AND SETTMAKERS.—It has been agreed that a rise of ½d. per hour be given to operative masons—both hewers and trowel men—making the standard rate 8½d. per hour. The advance will take effect from May 23. Settmakers at the Aberdeenshire quarries have been conceded an advance of ½d. per hour on day work, and from 6d. to 1s. per ton on piece work.

BUILDING DISPUTE AT CARDIFF.—A meeting of the Master Builders' Association was held on the 21st inst. in the offices in Castle Arcade, the members sitting as a conciliation committee, and they met representatives of the carpenters, bricklayers, and operative stonemasons, the two former with respect to the rule of which the masters have given notice relative to walking distance. The carpenters took back the employers' offer to their society, and in the course of a few days will report the result of their deliberations. The bricklayers have decided to agree to the terms of the masters' proposal in their entirety. The operative stonemasons were met last, and the decision of the joint meeting, held on the previous night, was communicated to them—that the employers could not see their way to grant them the advance of ½d. per hour, of which notice had been given, as they considered the application premature and not warranted by the present state of trade, with so many masons out of employment. The masons apply, also, for a reduction of hours—to leave at noon on Saturdays, and to have an hour for dinner all through the year—which the masters are prepared to consider when they act in conjunction with other trades, as it will be extremely difficult for employers, in the ordinary course of business, to permit one section of mechanics to leave off at noon while others continue until one.—*Western Mail.*

BUILDING TRADE DISPUTE, WEST HARTLEPOOL.—The building trade dispute at West Hartlepool led to a serious outrage there on the 24th inst. A builder's labourer, named Jordan, working on a house in Duke-street in course of erection, was followed by two other labourers, with whom he had some words. The pair seized hold of Jordan, and, it is alleged, threw him to the ground, a distance of two stories. The man's leg was badly broken, and he sustained other serious injuries. His assailants are in custody.

STRIKE OF GLASGOW CARPENTERS.—Close upon 3,000 house carpenters struck work in Glasgow on the 20th inst. for another advance for a halfpenny per hour on the present rate of 9½d. The men state that seventy-two firms have already conceded the advance.

WAGES IN THE BARNSLEY (YORKSHIRE) BUILDING TRADES.—The question of wages and rules in the building trades of Barnsley have been under consideration recently. The joiners and their employers have agreed as to the advance of ½d. per hour, and the masons and bricklayers also have agreed as to the advance of ½d. per hour all round. After May 1 joiners and masons will be paid 8½d. per hour, bricklayers 9d. per hour.

## *LEGAL.*

### STRUCTURAL ALTERATIONS.

#### ALLEGED BREACH OF COVENANTS IN LEASE.

IN the Chancery Division of the High Court of Justice, on the 21st inst., Mr. Justice North had before him the case of Peter *v.* The Plymouth Breweries, Limited, on a motion by the plaintiff, Mr. Albert Edward Peter, for an *interim* injunction to restrain the defendants until the trial or further order, and their servants, workmen, contractors, and agents, from in any way altering or interfering with the structure of certain premises known as the Exmouth Hotel, 66, Union-street, East Stonehouse, and from cutting or altering the front or side walls, windows, partitions, or from otherwise committing waste on the premises in such a way as to prevent or prejudice the carrying on upon the premises of the business of a licensed victualler in breach of a lease granted on September 28, 1890.

Mr. Vernon Smith, Q.C., appeared for the plaintiffs, and Mr. Macnaghten, Q.C., for the defendants.

Mr. Macnaghten, said that the question was whether his clients, as tenants of the premises, had committed waste on the premises,

Mr. Vernon Smith said his affidavits went to show that the defendants had caused damage, and that there were cracks in the walls.

Mr. Macnaghten said his evidence was to the effect that these cracks were old.

After some further discussion, his Lordship, at the defendants' request, directed the motion to stand over for a week.

### THE RIGHT TO WORK STONE UNDER A RAILWAY.

ON the 24th inst. the case of the Queen on the prosecution of H. E. Walker and A. C. Walker *v.* the London and North-Western Railway Company came before the Court of Appeal, composed of Lords Justices A. L. Smith, Collins, and Romer, for judgment on the appeal of the defendant company from an order of a Divisional Court making absolute a rule for a mandamus requiring them to take up an award made by Mr. Foster Brown in reference to whether the Rugby Portland Cement Company, the plaintiffs, should be allowed to work certain stone for the purposes of their business adjacent to the defendant company's works at Rugby. The plaintiffs, it appeared, gave notice of their intention to work stone under the Railway Company's works, and to this the defendants objected. The matter, therefore, was referred to arbitration, Mr. Foster Brown being the arbitrator. Before him it was claimed, on behalf of the defendants, that the question which he had to deal with must be decided having regard to some private Acts of Parliament passed in 1833 and 1835, under which the railway was constructed and controlled until 1846. A consolidated Act then repealed those private Acts, but the effect of certain of their provisions was reserved. The Divisional Court held that the Railway Clauses Act governed this case, and that the defendant company were bound to submit to its provisions. They therefore made absolute the rule for a mandamus ordering them to take up the award of the arbitrator. The Railway Company now appealed, contending that the provisions of the private Acts governed this case.

By a majority of the Court the decision of the Divisional Court was affirmed (Lord Justice Collins dissenting) and the appeal was dismissed with costs.

A stay of execution was granted for a fortnight with a view to the Appellants lodging an appeal to the House of Lords.

Sir Edward Clarke, Q.C., Mr. E. Page, Q.C., and Mr. A. Underhill appeared for the appellants, and Mr. Dugdale, Q.C., and Mr. Noble for the respondents.

### ARCHITECTS' ACTION AGAINST THE MANCHESTER SCHOOL BOARD.

ON the 20th inst. the case of Messrs. Woodhouse & Willoughby, architects, against the Manchester School Board, was heard at the Manchester Assizes before Mr. Justice Bigham and a special jury. Mr. Pickford, Q.C., and Mr. Byrne appeared for the plaintiffs, and Mr. Taylor, Q.C., and Mr. Langdon for the defendants.

The claim of the plaintiffs, who are architects practising in Manchester, was for 120*l.* for work done in connexion with the building of a Board school in Holland-street. The work consisted in measuring up some extras in the building. The defence was that the work was covered by the plaintiffs' remuneration as architects for the building.

The jury found for the plaintiffs for the amount claimed. The Judge refused to certify for a special jury, on the ground that a settlement might easily have been arrived at. Mr. Pickford, on behalf of the plaintiffs, stated that his clients had done all they could to settle the case out of court, but that the School Board had refused to meet them or to refer the matter to an arbitrator.

### YORKSHIRE BUILDING DISPUTE.

#### MANDATORY ORDER GRANTED.

THE case of Jackson *v.* the Normanby Brick Company, Limited, came before the Court of Appeal, composed of the Master of the Rolls and Lords Justices Rigby and Collins, on the 26th inst. In November last, the Court reversed a decision of Mr. Justice Kekewich, and made a declaration that the defendants had no right to erect, without the consent of the plaintiff, certain kilns, chimneys, and buildings, on a particular portion of the land leased to them, and of which Mr. Jackson was the reversioner; but their Lordships did not then grant a mandatory injunction, as they thought the parties might be able to come to some arrangement. They were, however, unable to come to terms, and on March 1 application was made for a mandatory order for the defendants to pull down and remove the buildings in question, but the matter again stood over, on an intimation that the defendants intended to appeal to the House of Lords.

Mr. Renshaw, Q.C., on the part of the plaintiff, now mentioned that the intention to carry the case further had been abandoned, and renewed the motion of March 1.

Mr. Warrington, Q.C., did not see his way to resist a mandatory order to pull down the kilns, chimneys, and buildings erected since the commencement of the action without the consent of the plaintiff, but asked that it should not extend to buildings for the erection of which the defendants considered that consent was given before action, although the buildings were not put up till after the writ had been issued.

The Master of the Rolls said he was satisfied that such consent as there was was due to misapprehension. The defendants were accordingly directed to pull down and remove the kilns, chimneys, and buildings they had erected since the commencement of the action, and they were further ordered to pay the costs of this application.

## MEETINGS.

### FRIDAY, APRIL 28.

*Architectural Association.*—Mr. F. W. Macey on "Specifications." 7.30 p.m.

*Royal Institution.*—Professor C. A. Carus Wilson on "Some Features of the Electric Induction Motor." 9 p.m.

*Institution of Mechanical Engineers.*—Ordinary General Meeting (concluded). Paper by Mr. H. G. V. Oldham. 7.30 p.m.

### SATURDAY, APRIL 29.

*Architectural Association.*—Seventh Spring Visit, to (1) the Church in course of erection in Charlebury-grove, Ealing. 3 p.m. (2) St. Saviour's Church, Grove-road, Ealing.

*Sanitary Institute (Demonstrations for Sanitary Officers).*—Inspection at the Sewage Outfall Works, Barking. 3 p.m.

*London and Provincial Builders' Foremen's Association (Memorial Hall Farringdon-street).*—Monthly Meeting. 7.30 p.m.

*Northern Architectural Association.*—Visit to Ryton and Newburn Churches.

### MONDAY, MAY 1.

*Royal Institute of British Architects.* — Annual General Meeting. 8 p.m.

*Surveyors' Institution.*—Discussion on the "Agricultural Holdings Bill" prepared and brought in by Mr. Channing and others. 8 p.m.

*Society of Engineers.*—Mr. J. D. Roots on "Petroleum Motor Vehicles." 7.30 p.m.

*Liverpool Architectural Society.* — Annual General meeting. Closing Address by the President, Mr. W. E. Willink. 6 p.m.

### TUESDAY, MAY 2.

*Sanitary Institute.*—Annual dinner at the Whitehall Rooms. 7 p.m.

*Royal Institution.*—Professor Silvanus P. Thompson on "Electric Eddy-Currents." I.—3 p.m.

*Society of Biblical Archæology.*—Mr. F. Legge, on "Recent Discoveries at Abydos and Negadah." 4.30 p.m.

*Glasgow Architectural Association.*—Mr. T. Ramsay on "The Electric Lighting of a Modern Building."

### WEDNESDAY, MAY 3.

*Society of Arts.*—Mr. W. H. Preece, C.B., F.R.S., on "Ætheric Telegraphy." 8 p.m.

*Builders' Foremen and Clerks of Works' Institution.*—Ordinary meeting of the members. 8 p.m.

*Royal Archæological Institute.*—The Rev. W. G. Clark-Maxwell on "Roman Towns in the Valley of the Baetis." 4 p.m.

*Edinburgh Architectural Association.*—Annual business meeting and President's valedictory address. 8 p.m.

### THURSDAY, MAY 4.

*Carpenters' Hall, London Wall (Lectures on Carpentry and Joinery).*—Mr. F. R. Farrow on "Strength and Strains in Wood." 7.30 p.m.

*Royal Institution.*—Mr. Lewis F. Day on "Embroidery." I. 3 p.m.

*Iron and Steel Institute.*—Annual meeting, to be held at the Institution of Civil Engineers, Westminster. 10.30 a.m.

*Society of Antiquaries.*—8.30 p.m.

*Institution of Electrical Engineers* (to be held at the Society of Arts, John-street, Adelphi).—Mr. P. V. McMahon on "Electric Locomotives in Practice and Tractive Resistance in Tunnels with notes on Electric Locomotive design." 8 p.m.

### FRIDAY, MAY 5.

*Royal Institution.*—Mr. W. J. Russell, Ph.D., F.R.S., on "Pictures produced on Photographic Plates in the Dark." 9 p.m.

*Iron and Steel Institute.*—Annual meeting (concluded). 10.30 a.m.

*Institution of Junior Engineers.*—8 p.m.

### SATURDAY, MAY 6.

*British Institute of Certified Carpenters.*—Meeting at Carpenters' Hall at 6 p.m. Lantern lecture on "Timber and Timber Trees" by Mr. J. Hudson Davies.

*Edinburgh Architectural Association.*—Visit to Peebles: (1) Neidpath Castle; (2) Cross Church; (3) St. Andrew's Tower.

# PRICES CURRENT OF MATERIALS:

## WOOD.*

Per Petersburg standard hundred.

| | £ | s. | d. | £ | s. | d. |
|---|---|---|---|---|---|---|
| White Sea: first yellow deals...... | 17 | 0 | 0 | 18 | 0 | 0 |
| Second do. .................... | 13 | 5 | 0 | 14 | 15 | 0 |
| Third do. ...................... | 10 | 15 | 0 | 11 | 15 | 0 |
| Battens, 40s., 30s., and 15s. less respectively. | | | | | | |
| Petersburg: first yellow deals...... | 11 | 15 | 0 | 14 | 5 | 0 |
| Second do. .................... | 10 | 15 | 0 | 12 | 5 | 0 |
| Battens, 30s. and 20s. less respectively. | | | | | | |
| Petersburg, white deals .......... | 9 | 15 | 0 | 11 | 15 | 0 |
| Do. white battens .............. | 7 | 10 | 0 | 9 | 0 | 0 |
| Riga, white deals ................ | 8 | 5 | 0 | 9 | 5 | 0 |
| Swedish mixed yellow deals ...... | 13 | 5 | 0 | 16 | 15 | 0 |
| Third do. .................... | 12 | 5 | 0 | 14 | 5 | 0 |
| Fourth do. .................... | 10 | 15 | 0 | 11 | 15 | 0 |
| Fifth do. .................... | 9 | 15 | 0 | 10 | 15 | 0 |
| Battens, 30s., 20s., and 10s. less respectively. | | | | | | |
| Whitewood, 10 to 20 per cent. less. | | | | | | |
| Finnish unsorted yellow deals .... | 9 | 15 | 0 | 10 | 5 | 0 |
| Battens, 10s. and 5s. less respectively. | | | | | | |
| Whitewood, 5 to 10 per cent. less. | | | | | | |
| Norwegian second yellow battens.. | 7 | 10 | 0 | 8 | 10 | 0 |
| Third do. .................... | 7 | 0 | 0 | 8 | 0 | 0 |
| Fourth do. .................... | 6 | 10 | 0 | 7 | 10 | 0 |
| Whitewood, 10s. less. | | | | | | |
| Danzig, Crown Deck deals, per 40 ft. 3 in. .................... | 0 | 15 | 0 | 1 | 5 | 0 |
| Brack .................... | 0 | 12 | 0 | 1 | 0 | 0 |
| St. Lawrence Pine deals, &c., per P.S.H.:— | | | | | | |
| 1st, Bright and Dry, regular sizes | 18 | 15 | 0 | 25 | 5 | 0 |
| ,, ,, oddments .. | 11 | 15 | 0 | 18 | 10 | 0 |
| 2nd ,, regular sizes | 13 | 15 | 0 | 17 | 0 | 0 |
| ,, ,, oddments .. | 9 | 5 | 0 | 12 | 15 | 0 |
| 3rd ,, regular sizes | 9 | 0 | 0 | 10 | 0 | 0 |
| ,, ,, oddments .. | 6 | 15 | 0 | 8 | 5 | 0 |
| 4th ,, regular sizes | 6 | 0 | 0 | 7 | 0 | 0 |
| ,, ,, oddments .. | 5 | 10 | 0 | 6 | 10 | 0 |
| St. Lawrence Spruce deals, &c. | | | | | | |
| First, regular sizes.............. | 8 | 5 | 0 | 10 | 5 | 0 |
| Second ,, .............. | 7 | 5 | 0 | 8 | 5 | 0 |
| Third ,, .............. | 7 | 0 | 0 | 7 | 15 | 0 |
| Fourth ,, .............. | 5 | 15 | 0 | 6 | 15 | 0 |
| Oddments and battens at 20s., 10s., 7s. 6d., and 5s. less respectively. | | | | | | |
| New Brunswick Spruce deals, &c. | 7 | 0 | 0 | 7 | 15 | 0 |
| Oddments, battens, and fourths .. | 6 | 5 | 0 | 7 | 5 | 0 |
| United States pitch pine planks and boards .................... | 9 | 5 | 0 | 12 | 15 | 0 |
| Prepared Boards, per square | | | | | | |
| 1¼ by 6½ and 7 in. 1st yellow .... | | 12 | 0 | | 15 | 3 |
| ,, ,, 2nd ,, .... | | 10 | 6 | | 12 | 3 |
| 1 by 6½ and 7 in. 1st ,, .... | | 9 | 0 | | 11 | 3 |
| ,, ,, ,, white .... | | 8 | 6 | | 9 | 3 |
| ,, ,, 2nd yellow .... | | 8 | 6 | | 10 | 3 |
| ,, ,, ,, white .... | | 7 | 0 | | 7 | 9 |
| ⅞ by 6½ & 7 in. 1st & 2nd yellow | | 7 | 9 | | 8 | 6 |
| ,, ,, ,, white | | 7 | 3 | | 8 | 0 |
| ¾ by 6½ and 7 in. 1st yellow and white (grooved, tongued, and beaded).................. | | 6 | 9 | | 9 | 3 |
| ¾ by 6½ and 7 in. 2nd yellow and white (ditto).............. | | 5 | 9 | | 8 | 0 |
| ⅝ by 6½ and 7 in. 1st yellow and white (ditto).............. | | 5 | 9 | | 6 | 6 |
| ⅝ by 6½ and 7 in. 2nd yellow and white (ditto).............. | | 5 | 3 | | 6 | 0 |
| Narrower widths at 10 per cent. less. | | | | | | |
| 3rd quality at 15 per cent. less than 2nd. | | | | | | |
| Danzig and Memel Fir Timber— per load | | | | | | |
| Best middling .................. | 2 | 10 | 0 | 3 | 10 | 0 |
| Good middling and Second...... | 2 | 0 | 0 | 3 | 5 | 0 |
| Common middling.............. | 1 | 10 | 0 | 2 | 10 | 0 |
| Undersized .................... | 1 | 10 | 0 | 1 | 15 | 0 |
| Swedish and Norwegian Balks .... | 1 | 5 | 0 | 1 | 15 | 0 |
| Baltic Oak Timber— | | | | | | |
| Danzig and Stettin—Large...... | 3 | 10 | 0 | 4 | 0 | 0 |
| Small.......................... | 2 | 0 | 0 | 2 | 5 | 0 |
| Quebec Timber per load | | | | | | |
| Yellow Pine.................... | 4 | 10 | 0 | 6 | 5 | 0 |
| Oak .......................... | 4 | 5 | 0 | 6 | 5 | 0 |
| Elm .......................... | 4 | 15 | 0 | 5 | 15 | 0 |
| Ash .......................... | 4 | 0 | 0 | 5 | 5 | 0 |
| Birch.......................... | 3 | 10 | 0 | 5 | 10 | 0 |
| New Brunswick, &c., Birch ...... | 2 | 5 | 0 | 3 | 0 | 0 |
| American Pitch Pine Timber...... | 2 | 14 | 0 | 3 | 3 | 0 |
| Wainscot, per log, 18 cubic ft.— | | | | | | |
| Crown (Eng. & Dutch) } nominal | 4 | 10 | 0 | 6 | 5 | 0 |
| Brack .............. } nominal | 3 | 15 | 0 | 4 | 15 | 0 |
| Lathwood, per cubic fathom— | | | | | | |
| Petersburg .................... | 4 | 0 | 0 | 6 | 10 | 0 |
| Riga and Danzig .............. | 4 | 10 | 0 | 5 | 10 | 0 |
| Norway Poles, per ft. run ........ | 0 | 0 | 1 | 0 | 0 | 1½ |
| Oak Staves, per mille full size pipe | | | | | | |
| Memel, Crown .................. | 210 | 0 | 0 | 220 | 0 | 0 |
| Brack .................... | 180 | 0 | 0 | 190 | 0 | 0 |
| Danzig ........................ | 165 | 0 | 0 | 175 | 0 | 0 |
| Bosnia, single Barrel (nominal).. | 28 | 0 | 0 | 30 | 0 | 0 |
| United States, Pipe ............ | 35 | 0 | 0 | 42 | 10 | 0 |
| Hogshead, extra heavy and double extra .................... | 27 | 10 | 0 | 32 | 10 | 0 |
| Indian Teake ............per load | 11 | 15 | 0 | 16 | 15 | 0 |
| British Guiana Greenheart ........ | 0 | 0 | 0 | 8 | 0 | 0 |
| Mahogany, per foot superficial— | | | | | | |
| Honduras, cargo average ...... | 0 | 0 | 4½ | 0 | 0 | 6 |
| Nicaragua, do. ................ | 0 | 0 | 4¼ | 0 | 0 | 5¼ |
| Tabasco, do. .................. | 0 | 0 | 4 | 0 | 0 | 6½ |
| Mexican, do. .................. | 0 | 0 | 3½ | 0 | 0 | 4 |
| Panama, do. .................. | 0 | 0 | 3 | 0 | 0 | 4 |
| African, do.................... | 0 | 0 | 3½ | 0 | 0 | 5 |
| Cuba, do...................... | 0 | 0 | 5½ | 0 | 0 | 7½ |
| St. Domingo, do. .............. | 0 | 0 | 5 | 0 | 0 | 7 |
| Do. Curls (good to prime) .... | 0 | 0 | 9 | 0 | 1 | 3 |
| Walnut, American (logs).......... | 0 | 2 | 0 | 0 | 4 | 6 |
| Do. do. (planks and boards) .... | 0 | 2 | 0 | 0 | 7 | 6 |
| Italian, per foot superficial ...... | 0 | 0 | 3 | 0 | 0 | 7½ |
| Black Sea, per ton.............. | 6 | 0 | 0 | 12 | 0 | 0 |
| Satin Walnut (logs) per foot cube.. | 0 | 1 | 0 | 0 | 1 | 3 |
| ,, ,, (planks and boards).. | 0 | 2 | 0 | 0 | 2 | 9 |
| Sequoia (Californian redwood), per foot cube .................... | 0 | 1 | 9 | 0 | 2 | 0 |
| Whitewood, American ......(logs) | 0 | 1 | 3 | 0 | 1 | 6 |
| ,, ,, (planks and boards).. | 0 | 1 | 6 | 0 | 2 | 9 |
| Quartered oak ,, ,, ,, .. | 0 | 2 | 3 | 0 | 4 | 0 |
| Kauri pine..................(logs) | 0 | 1 | 9 | 0 | 2 | 0 |
| ,, ,, ................(planks) | 0 | 2 | 3 | 0 | 2 | 9 |
| Jarrah ....................(planks) | 0 | 2 | 3 | 0 | 2 | 6 |
| Lancewood spars each, fresh and large .................... | 0 | 7 | 0 | 0 | 10 | 0 |
| Lancewood spars, ordinary to fair.. | 0 | 4 | 0 | 0 | 6 | 0 |
| Degame spars.................... | 0 | 8 | 0 | 0 | 12 | 6 |

## METALS.

| | £ | s. | d. | £ | s. | d. |
|---|---|---|---|---|---|---|
| IRON—Pig, in Scotland ...... ton | 2 | 19 | 1½ | 0 | 0 | 0 |
| Bar, Welsh, in London ........ | 6 | 0 | 0 | 6 | 5 | 0 |
| Do. do. at works in Wales...... | 5 | 15 | 0 | 5 | 17 | 6 |
| Do. Staffordshire, in London.... | 6 | 5 | 0 | 7 | 10 | 0 |
| COPPER—British cake and ingot .. | 79 | 10 | 0 | 80 | 0 | 0 |
| Best selected .................. | 80 | 0 | 0 | 81 | 0 | 0 |
| Sheets, strong.................. | 82 | 0 | 0 | 85 | 0 | 0 |
| Chili bars...................... | 77 | 7 | 6 | 0 | 0 | 0 |
| YELLOW METAL ..............lb. | | 7d. | | | 7½d. | |
| LEAD—Pig | | | | | | |
| Spanish ....................ton | 14 | 10 | 0 | 0 | 0 | 0 |
| English Com. Brands .......... | 14 | 15 | 0 | 0 | 0 | 0 |
| Sheet, English, 6 lbs. per sq. ft. and upwards .............. | 15 | 15 | 0 | 0 | 0 | 0 |
| Pipe ........................ | 16 | 5 | 0 | 0 | 0 | 0 |
| ZINC—English sheet ..........ton | 30 | 0 | 0 | 0 | 0 | 0 |
| Vieille Montagne .............. | 31 | 0 | 0 | 0 | 0 | 0 |
| Spelter ........................ | 28 | 10 | 0 | 29 | 0 | 0 |
| TIN—Straits .................... | 115 | 12 | 6 | 0 | 0 | 0 |
| Australian .................... | 115 | 12 | 6 | 116 | 0 | 0 |
| English Ingots ................ | 118 | 5 | 0 | 119 | 0 | 0 |
| Banca ........................ | 114 | 0 | 0 | 0 | 0 | 0 |
| Billiton ...................... | 113 | 0 | 0 | 0 | 0 | 0 |

## OILS.

| | £ | s. | d. | £ | s. | d. |
|---|---|---|---|---|---|---|
| Linseed ....................ton | 17 | 12 | 6 | 0 | 0 | 0 |
| Cocoanut, Cochin ................ | 29 | 10 | 0 | 0 | 0 | 0 |
| Do. Ceylon .................... | 25 | 15 | 0 | 0 | 0 | 0 |
| Palm, Lagos .................... | 24 | 10 | 0 | 0 | 0 | 0 |
| Rapeseed, English, pale .......... | 22 | 15 | 0 | 0 | 0 | 0 |
| Do. Brown ...................... | 21 | 5 | 0 | 0 | 0 | 0 |
| Cottonseed ref. .................. | 16 | 10 | 0 | 17 | 10 | 0 |
| Oleine .......................... | 17 | 0 | 0 | 19 | 0 | 0 |
| Lubricating U.S. ................ | 0 | 5 | 3 | 0 | 7 | 6 |
| Do. Black ...................... | 0 | 5 | 0 | 0 | 6 | 6 |
| TAR—Stockholm............barrel | 1 | 6 | 6 | 0 | 0 | 0 |
| Archangel...................... | 1 | 0 | 0 | 0 | 0 | 0 |
| Turpentine ...................... | 1 | 14 | 0 | 0 | 0 | 0 |

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* The prices for wood are shipping prices. Ten per cent., approximately, should be added in order to arrive at the current trade prices.

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# RECENT PATENTS:

### ACCEPTED SPECIFICATIONS.

### *Open to Opposition until June 19.*

[1898.] 1,105, West, Apparatus for Cutting Lines, Circles, and other Designs on Glass. 6,207, Csorba, Adjustable Trestle for Scaffolding. 8,800, Fletcher & Cutler, Safety Acetylene Hand Lamps. 8,832, O'Keenan, Electricity Meters. 9,810, McCulloch, Pumps. 10,440, Davis, Means for Supporting and Connecting Arc Lamps and other Electrical Apparatus. 11,357, Baumgartner, Devices for Draining, Separating, and Storing Rain-water shed from Roofs. 11,367, Shackleton & Ross; 12,469, Levetus; 13,029, Jackson; and 13,070, Forbes, Apparatus for Generating Acetylene Gas. 12,012, Falk, Acetylene Gas Lamp or Lantern. 12,016, Sprague, Electrical Control for Elevators. 12,038, Cardiff, Damp-resisting Washable Sanitary Water Composition or Paint. 12,309, Keene, Air Inlet Valve for Sewers, House Drains, &c. 12,489, Wilders, Sludge or Sewage Tanks. 12,722, Mam & Kinnaird, Kitchen Ranges, Stoves, &c. 13,041, Cowey, Self-closing Taps. 13,099, Sutton, Pipes, Pipe-joints, and cognate Apparatus. 13,163, Parkinson, Flush-starting Devices. 13,257, Ellis & Street, Ventilators. 13,311, Prentice, Gauge or Device for Measuring the Rate of Flow of Water. 13,323, Griffiths, Building Brick. 13,435, Farnell, Windows, Casements, &c. 17,316, Challender, Silent Flushing Apparatus. 17,830, Kuhnt & Deissler, Burners for Incandescence Oil Lamps. 18,299, Ingram, Door Fastening. 22,344, Délavau & Brérat, and [1899] 4,231, John Jon, & Wunderlich, Electrical Arc Lamps. 26,779, Myers & Driggs, Windows. 25,180, Drake, Arithmetical Calculators. [1899] 417, Nielsen, Preservative Paint or Coating Material for Pasteboard Roofing Material, &c. 580, Wilson, Telephone Station Apparatus. 1,634, Shaffer, Burners for Acetylene and similar Gas. 3,405, Schmid, Vices. 3,745, Knoch, Manufacturing Corrugated Roofing or Non-Conducting Plates from Felt, Canvas, and similar Fabrics. 3,754, Simon, Berry, & Rayner, Electrical Wall-plugs. 3,769, Petréano, Incandescent Oil or Spirit Lamps. 4,412, Fleming, Window-sashes. 4,607, O'Hara, Dredging Apparatus. 4,754, Cheetham, Hearth Tidies. 5,141, Bigwood & Hancher, Footway or Causeway Channels. 5,255, Hall, Electrical Switches. 5,291, Kraft, Fireproof Liner for Chimneys. 5,531, Keller, Pneumatic Tools.

### ABSTRACTS OF PATENTED INVENTIONS.

30,065.—HOLDERS AND SWITCHES FOR INCANDESCENT LAMPS: *J. M. Huisman & H. C. Gover.*—The plunger, carriers, &c., are carried in the insulating body of the holder, which is made in two parts; screws fasten the supply wires to the carrier and a frame, the latter whereof has a spindle with a handle and an arm to make contact with a tongue that extends from one of the plunger carriers; the side of the arm nearer the tongue is covered with insulating material, and a square cam upon the spindle engages a retaining-spring on the frame.

30,077. — BRUSHES FOR CLEANING CHIMNEYS AND FLUES: *W. Francis*—The bristles are mounted on strips or wires of steel which are twisted between two pairs of wires, strips of leather being interposed on each side; at each end of the brush is a screw-threaded piece, one piece for the handle and the other for an anti-friction wheel.

30,122.—FASTENINGS FOR SASH LIFTS AND SLIDING DOORS AND GATES: *G. R. Hill.*—For sashes, a spring-catch in the frame engages a rack upon the upper sash, thereby locking the sash until the catch is disengaged by means of a lever whose handle projects into the room, when the sash is closed the catch wipes past the rack, and a train winds up a spring, to the middle part of which is attached a bevel-wheel that turns freely upon a spindle, at the disengagement of catch the spring uncoils and so moves the sash into the opened position.

30,144.—CEILINGS, FLOORS, BEAMS, AND GIRDERS: *F. Hennebique.*—Concrete slabs are fashioned with iron ribs for forming the flooring and ceiling of a system of concrete flooring; the ribs of the slabs are turned up, that they may hold planks in place by means of cramps or boards, and the spaces are filled with cement to form girders with rods embedded in them; when the cement becomes set, the planks are taken away, and the spaces between the slabs are filled with cement.

30,145.—INCANDESCENT LAMPS: *Chemische Fabrik von Max Jasper.*—In order to make the mantle durable enough to resist vibrations it is impregnated with a solution of an alcoholic and an ether organic compound of silicon, which, on being burned by the flame, forms silicon dioxide upon the mantle; a suitable solution is made of 85 per cent. of amyl alcohol and 15 per cent. of silicic amyl ether.

30,150.—PLANING SEGMENTAL BLOCKS OF STONE: *J. Mann.*—For blocks used in constructing arches, sets of guides, whereof each pair has the shape of concentrical arcs of circles, are provided, the table having correspondingly-curved guides, and a rack which drives it from the worm-shaft, and the tools being carried upon the cross-head. In another form of the contrivance, one pair of guides is made straight, for doing straight work. The radius of the curved work depends upon its distance from the centre and upon the guides that are used, each pair of guides having a separate table.

30,207.—WATER-WASTE PREVENTERS: *V. Francois.*—There is a constant communication between the supply pipe and the closed tank; a ball-valve, whose density is less than that of water, closes the outlet. The dislodgement of the ball, which thereupon rises and floats, is effected by the operation of a disc valve, whose stem rises and strikes the ball when the pull lever is operated. For open-topped tanks the ball is put inside a cage that hangs from the operating lever. For ball-cocks the ball is connected to the end of a pivotted lever, which passes, with a little play, between pins which project from a collar mounted upon the lever of the float.

30,214.—ARTIFICIAL STONE: *G. Vögerl.*—The inventor produces an artificial stone for general building purposes, baths, roofing-tiles, &c., by mixing hydraulic cement, sand, and whole pig's bristles with water, and then moulding the mass into shapes; he also strengthens the stone with wire-netting.

30,241.—EARTHENWARE AND OTHER PIPE JOINTS: *R. Ewing.*—The joint is made by forming an eccentric shoulder upon the inner abutting end, and along the socket's side wall; when the pipe is laid, the shoulder becomes narrower at the socket's upper side; when the joint has been made by running in liquid cement, the flanges are fitted to the spigot end of the pipe, and the abutting edges are packed with clay; the socket walls between the flanges, into which the cement is poured, are circumferentially scored, and a recess is provided for the roll of clay or other plastic material.

30,285.—LOUVRE AND BAFFLE-PLATE APPARATUS: *J. Cousland.*—An angled baffle-plate whose edges are slightly curved outwards, is fixed opposite each opening within the outer casing, in the openings between the baffle-plates are fixed vertical deflecting plates that extend upwards from the shaft to the top of the ventilator and thereby prevent the air currents from striking one another, at the same time directing them to pass through the outlets; the device is described as being also applicable to invisible roof ventilators, and to louvre and other ventilators.

30,295.—ELECTRICAL LIFT AND CRANE LOCKING APPARATUS: *C. E. B. Holt.*—The inventor's object is to lock the lifts or cranes until the motor has attained its full speed; he locks the starting-lever by an L-shaped catch, which is so connected by a wire to the starting-switch that the full current is turned on, and the motor attains its full speed, before the catch liberates the lever.

30,327.—COVERINGS FOR WALLS AND CEILINGS: *H. Buyten.*—In order to produce coverings in imitation of wood with a slightly raised grain, sheets of paper pulp or other plastic material are passed between embossing rollers, or are pressed in engraved moulds, before or after either of which operations colouring matter in imitation of wood may be applied to the surface.

30,344.—FIREPROOF FLOORING: *F. H. Willis.*—That temporary centreing for concrete floors may be dispensed with, hard concrete blocks are placed upon, and cover the underside of, the bottom flanges of the joists, and thus is provided a support for the wet concrete which is then poured in.

30,416.—TELEMETERS: *J. J. Garrard.*—Between the two parts of a folding frame the inventor adjusts the sighting wires, or a transparent scale marked with crosslines, the wires being scaled to show directly, when held at a given distance from the eye, the distance of objects whose dimensions are known; the scales are made interchangeable for different objects, and the wires can be set vertically or horizontally; the instrument may be mounted upon a stick, &c.

30,477.—MOULDING DRAIN-TRAPS: *T. S. Green & S. Wragg.*—Half-moulds are forced together about a core whose vertical portion is fixed to the table, whilst its curved arm is built up of a number of curved segments, whose inner ends are kept in place by a ring carried by a forked lever, and dove-tailed projections at the outer ends interlock with recesses in an internal ring; one of the segments has parallel sides that facilitate the detachment of the trap when it has been moulded, and the two halves of the mould have spring stop-plates arranged to yield upon undue pressure and thus to allow the escape of surplus clay.

30,535.—CIRCULAR LEVELS: *W. Taylor.*—A closely fitting case which has an outwardly bevelled outer edge presses the glass against the inwardly turned lip of the outer case, the joint is made tight with a packing of caoutchouc or similar material, and a plug is used to close the hole through which the liquid is poured.

30,799.—STONE-SAWING: *E. Stead & E. Rhodes.*—The saw frame, which is carried by links from the saddles, bears sideways against anti-friction rollers upon the saddles, the frame being reciprocated by means of a crank and connecting rod, the saddles slide upon the frame, hanging by chains which pass many times around drums and pulleys, and are secured to the bottoms of the saddles; worm-gearing, ratchet gear, a slotted lever, and a cam on the main shaft drive the drums, and fast and loose pulleys are employed for quick feeding or return.

30,809.—COMBINED RULE AND SET-SQUARE: *H. S. Philippe.*—To one leg of an ordinary foot-rule is hinged a folding piece, to be attached to the other leg at any one of the notches graduated in that leg. The two legs may thus be set at various angles, and the rule also may be made to carry a double slide marked with special scales, a spirit-level, a compass, and a sundial.

30,831.—INCANDESCENT GAS LAMPS: *J. Moeller.*—For Bunsen lamps the supply pipe has a vertical section in the shape of a hyperbola; the burner has an outer casing and an inner perforated metal screen, at the top of which is a button, made of conducting material, carrying a serrated disc, whose diameter is rather less than that of the mouth of the outer case:

30,832.—Supports for Electrical Lamps: *J. Brockie.*—To the post, or similar main support, is fitted a socket whose arms carry the cylinder wherein is an insulated bolt from which the arc lamp is suspended; the globe is attached to a ring that slides around the cylinder in such a manner that it may be lifted and held up by a hook when necessary, at other times the globe rests upon a cup (upon the socket) that holds the terminals to which the lamp is connected.

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## SOME RECENT SALES OF PROPERTY:

### ESTATE EXCHANGE REPORT.

April 13.—By Walford & Wilshin.

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| Penge.—17, Queen Adelaide-rd., u.t. 50 yrs., g.r. 7l., e.r. 55l. | £450 |
| Anerley.—77, Croydon-rd., u.t. 74 yrs., g.r. 16l. 10s., e.r. 100l. | 800 |

By Messrs. Woods.

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|---|---|
| Ball's Pond.—1 to 4, St. Paul's Mansions, f.r. 195l. | 3,420 |

By Newbon, Edwards, & Shephard.

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| St. John's Wood.—17 to 23 (odd), Bolton-rd., u.t. 59 yrs., g.r. 32l. | 1,560 |
| Crouch End.—49, Park-rd., u.t. 82 yrs., g.r. 12l. 12s., r. 70l. | 1,000 |
| Kentish Town.—23 to 31 (odd), York Rise, f., r. 210l. | 2,925 |
| Highbury.—26, Hamilton-rd., u.t. 48 yrs., g.r. 7l. 10s., r. 45l. | 455 |
| Holloway.—Ingleby-rd., &c., i.g.r. 38l., u.t. 50¼ yrs., g.r. 8l. | 610 |
| Stoke Newington.—7 and 8, Lordship-grove, u.t. 63½ yrs., g.r. 7l., r. 57l. | 460 |
| Dalston.—128 and 130, Pownall-rd., u.t. 46 yrs., g.r. 7l., r. 67l. 4s. | 620 |

By Stimson & Sons.

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|---|---|
| Fulham.—23, 25, 31, and 33, Epirus-rd., f., r. 162l. | 1,855 |
| Battersea.—25 to 28, Victoria-rd., u.t. 78 yrs., g.r. 20l., r. 180l. | 2,040 |
| 54, 68, and 70, Grant-rd., u.t. 65 yrs., g.r. 18l. 18s. | 645 |
| Peckham.—1 to 7 (odd), Lidgate-rd., u.t. 65 yrs., g.r. 20l. | 920 |
| Notting Hill.—122, Elgin-cres., area 8,000 ft., f. | 890 |
| Putney.—10, Disraeli-rd., u.t. 69½ yrs., g.r. 8l. 8s., e.r. 45l. | 425 |
| Walworth.—9 and 11, Townley-st., f. | 265 |
| Islington.—1 and 2, Baron-st., u.t. 47 yrs., g.r. 30l. | 125 |

By Gendle & Co. (at Croydon).

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|---|---|
| Croydon.—15, Mayday-rd., u.t. 78½ yrs., g.r. 5l. 10s., r. 30l. | 300 |
| Lismore-rd., a freehold building site | 555 |

April 14.—By Messrs. Spelman (at Norwich).

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|---|---|
| Norwich.—6, Surrey-st., and house adjoining, f., r. 84l. | 1,810 |

By G. B. Smallpeice (at Knaphill).

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|---|---|
| Knaphill, Surrey.—Guildford-rd., freehold shop and premises, r. 20l. | 305 |
| Folk's Orchard, a freehold cottage, garden, and orchard, 0 a. 2 r. 37 p., r. 12l. | 140 |

By G. Herbert Burns.

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|---|---|
| Twickenham.—St. George's-rd., Whitelands, Rosedale, Beechland, and Glenbrook, f., r. 225l., (in lots) | 3,090 |
| Highgate.—45, Woodsome-rd., u.t. 63 yrs., g.r. 7l., r. 40l. | 430 |

By H. Chapman & Co.

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|---|---|
| Fulham.—71, New King's-rd., u.t. 90 yrs., g.r. 9l., r. 60l. | 760 |
| Blackheath.—7, Park Villas, u.t. 78 yrs., g.r. 9l. 8s., r. 55l. | 565 |
| Barnes.—119 to 127 (odd), White Hart-lane, u.t. 70 yrs., g.r. 25l., r. 164l. | 1,300 |

By Drivers (Holloway).

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|---|---|
| Finsbury Park.—1, Victoria-ter., u.t. 76 yrs., g.r. 7l., r. 38l. | 375 |
| Fulham.—46, Chesilton-rd., u.t. 81 yrs., g.r. 8l., r. 40l. | 390 |

By P. & G. Geen.

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|---|---|
| Walthamstow.—Rosebank-ter., f.g.r. 10l., reversion in 98 yrs. | 270 |
| Fulham.—35 and 37, Orbain-rd., u.t. 86 yrs., g.r. 8l. 8s. | 320 |

By Hamilton & Miall.

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|---|---|
| Herne Hill.—29 to 39 (odd), Milton-rd., f., r. 232l. | 3,660 |
| Stoke Newington.—8, Park-lane, u.t. 61 yrs., g.r. 9l., r. 40l. | 455 |
| Dalston.—233, Queen's-rd., u.t. 14 yrs., g.r. nil, r. 36l. | 225 |
| Cambridge Heath.—2 and 4, St. Jude's-st., u.t. 25 yrs., g.r. 32l. | 180 |

By R. Price & Son.

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|---|---|
| Tooting.—19, Streathbourne-rd., u.t. 91 yrs., g.r. 8l. 10s., e.r. 52l. 10s. | 610 |
| Bermondsey.—27 and 29, Anchor-st., u.t. 39 yrs., g.r. 8l. 10s. | 430 |

By E. & S. Smith.

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|---|---|
| Chiswick.—23, Sutton Court-rd., u.t. 79 yrs., g.r. 30l., r. 120l. | 1,200 |
| Islington.—4, Milner-st., u.t. 28½ yrs., g.r. 9l., r. 50l. | 375 |
| 16, Brooksby-st., u.t. 9¾ yrs., g.r. 5l. 5s., r. 42l. | 125 |
| 9a, Gordon-st., u.t. 27 yrs., g.r. nil | 165 |
| Hackney.—228, Richmond-rd., u.t. 46 yrs., g.r. 12l., r. 45l. | 350 |
| Poplar.—36, Alton-st., u.t. 77 yrs., g.r. 3l. 10s. | 200 |
| South Tottenham.—6 and 8, Osman-rd., u.t. 77 yrs., g.r. 7l. | 220 |

By Mark Hubbard.

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|---|---|
| Kentish Town.—23 and 25, Leighton-rd., f. | 1,755 |
| Leighton-rd., i.g.r. 129l. 10s., u.t. 24 yrs., g.r. 31l. 10s. | 1,225 |
| Leverton-st., i.g.r. 15l. 15s., u.t. 50 yrs., g.r. 3l. | 235 |
| 31 to 45 (odd), Leverton-st., u.t. 50 yrs., g.r. 10l., r. 278l. | 3,320 |
| Falkland-rd., i.g.r. 10l. 10s., u.t. 50 yrs., g.r. 2l. | 145 |
| 4 to 14 (even), Falkland-rd., u.t. 50 yrs., g.r. 6l., r. 206l. | 2,590 |

April 15.—By Messrs. Spelman (at Norwich).

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|---|---|
| Wramplingham, Norfolk.—A freehold and copyhold farm, 46 a. 3 r. 16 p. | £1,000 |
| Roydon, Norfolk.—A residence, with mill house and cottage, f. | 415 |
| Four freehold cottages | 190 |
| Limpenhoe, Norfolk.—The Low Farm, 43 a. 2 r. 5 p., f. and c. | 685 |
| Reedham, Norfolk.—A freehold residence and cottage, and 1 a. 1 r. 0 p. | 400 |

April 17.—By Mullett, Booker & Co.

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| Notting Hill.—38, Ladbroke-rd., f. | 3,100 |
| Hyde Pk.—47, Norfolk-sq., u.t. 59 yrs., g.r. 30l. | 620 |

By Notley & Co.

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|---|---|
| Whitechapel-rd.—Nos. 339 and 341, area 3,960 ft., f., r. 155l. | 4,100 |
| Bethnal Green.—192, Cambridge-rd., f., r. 32l. | 700 |
| Spitalfields.—18, Fournia-st., area 1,157 ft., f., r. 50l. | 1,420 |
| Mile End.—28 and 30, Cephas-st., u.t. 31 yrs., g.r. 6l. 10s., r. 60l. | 600 |

By St. Quinton & Son.

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| City of London.—33, Nicholas-lane, area 670 ft., f. | 14,550 |

By Westmore & Young.

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| Norwood.—47, Cintra Pk., u.t. 59 yrs., g.r. 6l. 15s., e.r. 45l. | 340 |

By Elliott, Son, & Boyton.

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|---|---|
| Regent-st.—Nos. 191 and 193, u.t. 22¼ yrs., g.r. 86l. 10s., r. 910l. | 12,400 |
| 215, Regent-st., u.t. 21½ yrs., g.r., &c., 37l. 15s., r. 500l. | 6,500 |
| Croydon.—8, 9, 10, and 11, Elgin-rd., f., r. 134l. | 1,720 |
| Greenwich.—5, The Circus, f., r. 40l. | 545 |
| Woolwich.—New-rd., "The Gun Tavern," i.g.r. 100l., u.t. 28½ yrs., g.r. 22l. | 1,220 |
| New Cross.—26 and 28, Florence-rd., u.t. 47½ yrs., g.r. 6l. 8s., r. 52l. | 630 |

By Mark Hubbard.

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|---|---|
| Camden Town.—47, Ferdinand-st., f., e.r. 60l. | 820 |
| Kentish Town.—Leverton-st., i.g.r. 105l., u.t. 43 yrs., g.r. 9l. | 1,640 |
| Leverton-st., i.g.r. 15l. 15s., u.t. 50 yrs., g.r. 1l. | 250 |
| Leverton-pl., i.g.r. 10l. 10s., u.t. 43 yrs., g.r. 1l. | 170 |
| 3 and 3, Leverton-pl., u.t. 43 yrs., g.r. 2l., r. 80l. | 780 |
| 16 to 24 (even), Falkland-rd., u.t. 50 yrs., g.r. 5l., r. 186l. | 2,540 |
| 3 to 13 (odd), Falkland-rd., u.t. 50 yrs., g.r. 6l., r. 204l. | 2,575 |
| 1, 3, 5, and 7, Falkland-pl., u.t. 50 yrs., g.r. 2l. | 1,010 |
| 9 to 19 (odd), Falkland-pl., u.t. 43 yrs., g.r. 6l. | 1,350 |
| 302, Kentish Town-rd., u.t. 43 yrs., g.r. 5l. r. 65l. | 1,000 |
| Lewis-st., i.g.r. 18l., u.t. 40 yrs., g.r. 10s. | 300 |
| 64 and 66, Highgate-rd., u.t. 43 yrs., g.r. 12l., r. 60l. | 760 |
| 74, Highgate-rd., u.t. 50 yrs., g.r. 4l., r. 60l. | 860 |
| Highgate-rd., i.g.r. 10l., u.t. 43 yrs., g.r. 3l. | 120 |
| Hackney.—Sandringham-rd., the Mitford Tavern, i.g.r. 100l., u.t. 67 yrs., g.r. 30l. | 1,400 |

By Elliott, Ellis, & Co. (at Plymouth).

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|---|---|
| Plymouth.—Tavistock-rd., &c., a corner plot of land, area 1,307 ft., f. | 1,150 |
| Tavistock-rd., four plots of land, area 6,026 ft., f. | 3,650 |
| Tavistock-rd., four plots of land, area 7,926 ft., f. | 5,600 |
| Tavistock-rd., &c., a corner plot of land, area 2,834 ft., f. | 2,700 |
| Tavistock-pl., &c., a corner plot of land, area 1,342 ft., f. | 750 |

April 18.—By Best & Sons.

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| New Southgate.—High-rd., the Northern Star p.-h., f.g.r. 105l., reversion in 39 yrs. | 3,950 |

By D. B. Bryett.

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| Chelsea.—2, Holbein-mews, u.t. 86½ yrs., g.r. 5l., e.r. 120l. | 1,875 |

By Chinnock, Galsworthy, & Co.

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|---|---|
| Kensington.—17, Kensington Palace-gdns., area 25,000 ft., u.t. 43 yrs., g.r. 80l. | 8,300 |
| Hyde Pk.—10, Ennismore-gdns. and 28, Ennismore-gdns. mews, u.t. 49 yrs., g.r. 195l. | 5,000 |
| Old Charlton, Kent.—1 to 10, Charlton Park-ter., r. 570l., and plot of land, area 3 r. 27 p., f. | 7,800 |
| Mitcham Common.—Tamworth Park-av., Elmhurst, r. 75l., also a plot of building land, f. | 1,800 |
| Tamworth Park-av., Tamworth House, f., r. 95l. | 1,525 |

By Debenham, Tewson, & Co.

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|---|---|
| Regent-street.—27, 28, and 29, King-st., area 2,700 ft., f, r. 450l. | 11,250 |
| Muswell Hill.—Colney Hatch-lane, Essex Lodge and 1 a. 2 r. 34 p., f. | 1,825 |
| Clerkenwell.—9 and 10, Jerusalem-court, area 1,085 ft., f. | 355 |
| Blackfriars.—27 to 30, Nelson-sq., u.t. 6 yrs., g.r. 24l., r. 220l. | 460 |
| Turnham Green.—56, Bath-rd., u.t. 75½ yrs., g.r. 9l., r. 42l. | 375 |

By S. Fortescue & Sons.

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|---|---|
| Tottenham.—74 to 80 (even), Northumberland-pk., f., r. 122l. | 2,060 |

By F. Warman.

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|---|---|
| Highbury.—94, Highbury New Park, u.t. 50½ yrs., g.r. 15l. | 990 |
| Fulham.—1 to 11 (odd), Armdale-rd., u.t. 73½ yrs., g.r. 16l. 4s. | 2,340 |
| 2 to 12 (even), and 9, Ricketts-st., u.t. 53 yrs., g.r. 42l. | 1,610 |
| 1 to 4, Roxby-pl., u.t. 53 yrs., g.r. 31l. | 325 |
| Sydenham Hill.—Panmure-rd., Camden Villa, f., e.r. 40l. | 710 |
| Stroud Green.—1, Connaught-rd., u.t. 77 yrs., g.r. 8l. 10s., e.r. 52l. | 600 |

By David Burnett & Co.

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| Stamford Hill.—80, Darenth-rd., u.t. 84 yrs., g.r. 7l. 10s. | 950 |
| Tottenham.—15 to 25 (odd), Victoria-ter., u.t. 98 yrs., g.r. 36l., r. 178l. | 1,700 |

April 19.—By J. Bott & Sons.

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| Norwood.—66, 66a, 68, and 68a, Hamilton-rd., u.t. 80½ yrs., g.r. 21l. | 575 |

By George Brinsley.

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| Stockwell.—37, Chantry-rd., u.t. 72½ yrs., g.r. 7l., r. 38l. | 405 |

By H. Donaldson & Son.

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| New Barnet, Herts.—Warwick-rd., Brandon House, f., r. 65l. | £1,090 |

By Salter, Rex, & Co.

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| Holloway.—9, Annette-rd., u.t. 65 yrs., g.r. 10l. 10s., r. 60l. | 595 |
| Kentish Town.—38 and 39, Ospringe-rd., u.t. 66 yrs., g.r. 5l., r. 98l. | 1,200 |

By Foster & Cranfield.

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|---|---|
| New Barnet, Herts.—5, Henry-rd, f., r. 30l. | 400 |
| 3 and 4, Camden-villas, f., r. 64l. | 745 |
| Victoria-rd., Ryhall Lodge, f., r. 28l. | 380 |
| Victoria-rd., Benhilton, e.r. 35l. | 685 |
| Crescent-rd., a plot of building land, f. | |

By E. W. Richardson & Son.

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| Croydon.—41, The Crescent, u.t. 90 yrs., g.r. 3l. 10s., r. 35l. | 375 |

By Joseph Stower.

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|---|---|
| Camberwell.—193, The Grove, f., r. 63l. | 1,320 |
| Battersea.—63, Park-rd., u.t. 81 yrs., g.r. 3l. r. 45l. | 400 |
| Bexhill-on-Sea.—Upper Station-rd., Maybury, u.t. 89 yrs., g.r. 8l. 5s., r. 65l. | 850 |
| Upper Station-rd., Dovercourt, u.t. 86 yrs., g.r. 7l. 19s., r. 65l. | 890 |

April 20.—By Humphreys, Skitt, & Humphreys.

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| New Cross.—5, 9, 11, 17, and 27, Nettleton-rd., u.t. 46 yrs., g.r. 25l., r. 172l. | 1,700 |
| 280, New Cross-rd., u.t. 42¼ yrs., g.r. 8l., r. 45l. | 460 |
| Catford.—11, Perry-hill, u.t. 72 yrs., g.r. 5l., r. 36l. | 400 |

By Nott & Cartwright.

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|---|---|
| Surbiton, Surrey.—5 and 6, St. Andrew's-sq., f., e.r. 130l. | 1,400 |
| Acton.—1, Essex-rd., with yard, stabling, &c., adjoining, u.t. 69 yrs., g.r. 12l., r. 130l. 6s. 6d. | 950 |
| Pimlico.—12, Alderney-st., u.t. 30 yrs., g.r. 8l., r. 60l. | 535 |

By Ernest Owers.

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| Hampstead.—7, Sherriff-rd., f., r. 62l. | 1,155 |

By H. J. Bliss & Sons.

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|---|---|
| Bethnal Green.—3, 4, 5, and 6, Totty-st., u.t. 51½ yrs., g.r. 12l. 12s. | 795 |
| 19 and 21, Stainsbury-st., u.t. 25 yrs., g.r. 6l. | 265 |
| Mile End.—151, 153, and 155, Sidney-st., f. | 1,030 |
| 55, Raven-row, f. | 350 |
| Walthamstow.—44 to 52 (even), Brown's-rd., f. | 900 |
| 39 and 41, Hoe-st., f. | 580 |
| Finchley.—1, 2, 3, and 4, Coleridge-rd., f. | 1,000 |
| 12, 13, and 14, Brownlow-rd., f., r. 78l. | 750 |

By Newbon, Edwards, & Shephard.

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|---|---|
| Hornsey.—28 and 30, Gladwell-rd., u.t. 89 yrs., g.r. 12l., r. 72l. | 745 |
| 36, Gladwell-rd., u.t. 86 yrs., g.r. 6l., r. 36l. | 360 |
| 10, Gisburn-rd., u.t. 95 yrs., g.r. 7l., e.r. 40l. | 400 |
| Dalston.—33, Shrubland-grove, u.t. 42 yrs., g.r. 4l. 4s., e.r. 35l. | 335 |
| 8 and 10, Greenwood-rd., u.t. 46 yrs., g.r. 12l., r. 60l. | 650 |
| 50, Richmond-rd., u.t. 41 yrs., g.r. 2l. 8s., r. 30l. | 320 |
| Bethnal Green.—34 to 40 (even) Viaduct-st., u.t. 19 yrs., g.r. 12l. | 510 |

By Stimson & Sons.

| | |
|---|---|
| Battersea.—45 to 53 (odd), Queen's-rd., u.t. 66 yrs., g.r. 37l. 10s., r. 240l. | 2,700 |
| Norwood.—47 to 55 (odd), Cobden-rd., f. | 1,150 |
| Walthamstow.—Lowther-rd., four plots of building land, f. | 180 |
| Camberwell.—125 and 127, Flaxman-rd., u.t. 12¼ yrs., g.r. 6l. 16s. | 165 |
| 42 and 44, Bengeworth-rd., u.t. 74 yrs., g.r. 10l. | 480 |
| Pimlico.—2, Churton-pl., u.t. 31 yrs., g.r. 6l. 10s., r. 48l. | 455 |
| 6, Ranelagh-grove, u.t. 24 yrs., g.r. 5l., r. 42l. | 390 |

By J. G. Perry (at Brighton).

| | |
|---|---|
| Brighton.—12, 13, 16, and 17, Kingsbury-st., f. | 1,525 |
| 8, 9, and 10, Baker-st., u.t. 55 yrs., g.r. 15l., r. 73l. 4s. | 955 |
| 8, Howard-rd., f. | 360 |
| 40, Marine-parade, u.t. 14 yrs., g.r. 65l., and 1, New Steine, f., r. 180l. | 1,115 |
| 58, Preston-st., f., r. 71l. | 1,570 |
| 52, Compton-av., f., r. 48l. | 740 |
| 42 to 45, William-st., u.t. 20½ yrs., g.r. 12l. 16s. | 415 |

April 21.—By W. A. Ball.

| | |
|---|---|
| Pall Mall.—22, Crown-ct., f., r. 52l. 10s. | 1,660 |
| Norwood.—33, Camden Hill-rd., u.t. 52 yrs., g.r. 6l., r. 30l. | 220 |

By J. Hibbard & Sons.

| | |
|---|---|
| New Barnet, Herts.—Bulver-rd., f., r. 30l. | 500 |
| Chiswick.—46 to 52 (even), Swanscombe-rd., u.t. 80 yrs., g.r. 18l. | 855 |
| Old Kent-rd.—11 and 13, Hornshay-st., u.t. 62 yrs., g.r. 12l., r. 60l. | 570 |
| Stoke Newington.—110, Mildmay-rd., u.t. 52 yrs., g.r. 7l., e.r. 42l. | 400 |

By Ball, Norris, & Hadley.

| | |
|---|---|
| Old Kent-rd.—5 and 6, Albany-rd., u.t. 59½ yrs., g.r. 17l., r. 70l. | 630 |
| Peckham.—7, Hillsboro, u.t. 82 yrs., g.r. 7l., r. 32l. | 305 |

By Jones, Lang, & Co.

| | |
|---|---|
| Bloomsbury.—7 and 8, Woburn-sq., u.t. 29 yrs., g.r. 56l., r. 225l. | 1,520 |
| 38, Woburn-sq., u.t. 29 yrs., g.r. 28l., r. 105l. | 800 |
| 7, Torrington-sq., u.t. 21 yrs., g.r. 12l., r. 90l. | 650 |
| Bayswater.—44, Ledbury-rd., u.t. 50 yrs., g.r. 10l. 10s., r. 75l. | 1,200 |

By Thurgood & Martin.

| | |
|---|---|
| Petersfield, Hants.—Rams Hill, two enclosures of building land, 5 a. 3 r. 25 p., f. | 1,000 |

By Reynolds & Eason.

| | |
|---|---|
| Hoxton.—Newton-st., the Bethel Baptist Chapel, u.t. 32 yrs., g.r. 4l. 4s. | 460 |
| Caledonian-rd.—106 and 108, Brewery-rd., u.t. 60 yrs., g.r. 10l. | 650 |
| Barnsbury.—23, Hollingsworth-st., u.t. 44½ yrs., g.r. 6l., r. 37l. | 300 |
| Spitalfields.—42, Brushfield-st., f., r. 60l. | 870 |

# COMPETITIONS, CONTRACTS, AND PUBLIC APPOINTMENTS.

## COMPETITIONS.

| Nature of Work. | By whom Advertised. | Premiums. | Designs to be delivered. |
|---|---|---|---|
| *Municipal Buildings and Library .... | Plumstead Vestry . . | 100*l.*; 75*l.*; and 50*l.* ...... | July 27 |

## CONTRACTS.

| Nature of Work or Materials. | By whom Required. | Forms of Tender, &c. Supplied by | Tenders to be delivered. |
|---|---|---|---|
| *Paving, &c. Works .................. | Beckenham U.D.C. .. | J. A. Angell, Council Offices | May 1 |
| *Structural Steel Work of Tower...... | Morecambe Tower Co. Ltd. ................ | R. T. Gifford Read, 1, Gt. Chapel-st. Westminster | do. |
| *Victoria Stone Paving ............. | Tottenham U.D.C..... | P. E. Murphy, 712, High-rd. Tottenham .......... | May 2 |
| Surveyor's Materials ............... | Milnrow (Lancs.) D.C. | H. Blackburn, Council Offices, Milnrow ........ | do. |
| Additions to Factory, Colchester .... | ........ | Goodey & Cressall, Archt. Victoria-chambers, Colchester................. | do. |
| Street Works ...................... | Barton-upon-Irwell R.D.C. .............. | Mr. Hooley, C.E. Union Offices, Patricroft ...... | do. |
| Artisans' Dwellings, St. Helen's-rd... | Brighton Corp. ...... | F. J. C. May, C.E. Town Hall .................. | do. |
| Bridge, Cudley ..................... | Sudbury R.D.C. ...... | J. Barker, Surv. Cudley, Derby ................. | do. |
| Sewers, Prospect-road............... | Knaresborough R.D.C. | Mr. Annakin, Surv. 44, Station-parade, Harrogate ................. | do. |
| Schools, Grove-road, Fenton ........ | Stoke-on-Trent Sch.Bd. | R. Scrivener & Sons, Archt. Hanley .......... .. .. | do. |
| Granite Road Metal.................. | MeltonMowbrayU.D.C. | E. Jeeves, Surv. Melton Mowbray ............ | May 3 |
| Street Works ...................... | Ware U.D.C. ........ | J. Goddard, Surv. Town Hall .................. | do. |
| Sewers ........................... | Mexborough U.D.C. .. | G. F. Carter, Surv. Market Hall .................. | do. |
| Sewers ........................... | Rochdale Corp. ...... | S. S. Platt, C.E. Town Hall .................. | do. |
| Asphalting, Beaumont Park ......... | Huddersfield Corp. .. | K. F. Campbell, C.E. Town Hall .................. | do. |
| Paving Works, Ellen-street ......... | Hove T.C............. | H. Endacott, Town Hall.. | do. |
| Alterations to Schools near Belper .. | Heagh Sch. Bd. ...... | B. Glossop, Bull Bridge, Arubergate ............ | do. |
| Stoneware Pipes, &c. .............. | Rochester Corp. ...... | W. Banks, C.E. Guildhall, Rochester ............ | do. |
| Sewering Bcarshaw Clough ......... | Middleton Corp....... | W. Welburn, Boro Surv. Town Hall ............. | do. |
| Additions to Asylum, Ipswich ...... | Visitors ............. | E. Buckham, Boro Surv. Town Hall.. ........... | do. |
| Main Sewers ...................... | Thames Ditton U.D.C. | A. J. Henderson, C.E. Thames Ditton.......... | do. |
| Alterations to House, Roath Market | Cardiff Corp. ....... | W. Harpur, C.E. Town Hall ............ .. .. | do. |
| Additions to Rectory, Sproutley, Hull | ........ | Botterill & Co. Archt. 23, Parliament-street, Hull .................. | May 4 |
| Fire Brigade House, Stables, &c. Wakefield-road ................ | Featherstone (Yorks.) U.D.C............. | W. A. Palliser, Engr. Town Hall .................. | do. |
| Entrance Gates, &c. Roundhay Park | Leeds Corp. ........ | City Engr. Leeds ....... | do. |
| Brick Sewers ..................... | Ardrosson (N.B.) Police Commrs. ............ | W. R. Copland, C.E. 146, West Regent-street, Glasgow ....... .... | do. |
| Shop and House, Main-street, Letterkenny ........................ | ........ | Mr. O'Callaghan, C.E. Letterkenny ......... .. | do. |
| Additions to Highfield, Batley ...... | ........ | W. Crawshaw, Archt. Branch-avenue, Batley.. | do. |
| Offices, &c. South-street............. | Bridport Gas Co. .... | Manager, Gas Offices, Bridport .. .......... | do. |
| Flint Road Metal ................... | Uckfield U.D.C. ...... | C. Dawson, Uckfield.... | do. |
| Granolithic Paving ................. | do. | do. | do. |
| *New Chapel at Asylum ............ | Glamorgan County Asylums .......... | Giles, Gough, & Trollope, 28, Craven-st. W.C...... | do. |
| Business Premises, Brotton.......... | Loftus Co-op. Soc. .... | A. F. Newsome, Archt. Albert-rd. Middlesbrough | May 5 |
| Additions to House, Hayton ........ | W. Wilson .......... | A. W. Johnston, Archt. 81, Castle-st. Carlisle ..... | do. |
| Granite Kerbing, Nightingale-lane . | Wanstead U.D.C. .... | W. Blewitt, Council's Offices, Wanstead ...... | do. |
| Additions to White Horse Inn, Elgin | .. | O. C. Doig, Archt. Elgin.. | do. |
| Villa, Linthorpe ................... | Mr. Brown ......... | A. Newsome, Archt. Albert-road, Middlesbrough .. | do. |
| Villas, Phillipsville Estate, Linthorpe | T. Phillips .......... | do | do. |
| Stone (3,000 tons) ................ | Thirsk (Yorks.) R.D.C. | C. McC. Swarbreck, Thirsk | May |
| Asphalt Works .................... | Minehead U.D.C. .... | J. Cribb, Surv. Glenmore-rd. Minehead.......... | do. |
| Schools, Haley Hill ................ | Halifax Sch. Bd....... | W. C Williams, Archt 22, Southgate, Halifax...... | do. |
| Concrete Wall, &c. Crickhowell ...... | Brecon C.C. ......... | H. E. Thomas, County Hall, Brecon.......... ...... | do. |
| *Painting, Whitewashing, &c. ....... | St. Marylebone Gdns. | F. W. Lee, Workhouse, Marylebone-rd. W....... | May 8 |
| Rebuilding Engineers' Arms Inn, Bedminster .. .......... ...... | ........ | H. Williams, Archt. 24, Clare-st. Bristol ........ | do. |
| Alterations to School, Govilon, Abergavenny ...................... | ...... | E. Edwards, Cwm, Govilon, Abergavenny .......... | do. |
| Electric Lighting Buildings......... | Darlington Corp. .... | Boro. Surv. Town Hall .. | do. |

## CONTRACTS—*Continued.*

| Nature of Work or Materials. | By whom Required. | Forms of Tender, &c. Supplied by | Tenders to be delivered. |
|---|---|---|---|
| *Yellow Deal and Jarrah Wood Paving Blocks .......... .... ....... | St. Marylebone Vestry | J. P. Waddington, Court House, Marylebone-lane | May 8 |
| *Seventy-six Workmen's Dwellings.... | Barnes U.D.C......... | G. B. Tomes, Offices, High-st. Mortlake ........ ... | May 9 |
| *Heating and Lighting Council Offices | Hemel Hempsted Corp................ | W. B. Locke, Town Hall.. | do. |
| *Alterations to Municipal Buildings .. | do. | do. | do. |
| Rebuilding Business Premises, Halesworth .................. .. | H. S. K. Stanford .... | Mr. Stanford, Halesworth | do. |
| *Alterations and Additions to School.. | Westminster Vestry | Beazley & Burrows, 17, Victoria-st. S.W......... | do. |
| *Road Making Works ............. | Willesden D.C. ...... | O. C. Robson, Offices, Dyne-rd. Kilburn ...... | do |
| *Steam Road Roller ............... | Twickenham U.D.C... | F. W. Pearce, Town Hall, Twickenham............ | May 10 |
| *Street Improvement Works.......... | do. | do. | do. |
| *Water Tank, Steel, and Builder's Work in connexion with a Water Tower .. ...................... | West Ham Union .... | Clerk Offices, Union-road, Leytonstone ...... .... | do. |
| *Pipe Sewers, Manholes, &c. ......... | Plumstead Vestry .... | W. C. Gow, Vestry Hall, Maxey-rd. Plumstead .. | do. |
| *Granite Edge and Flat Kerb and Granite Pitchers.................. | Brighton Corp. ...... | F. J. C. May, Town Hall | May 12 |
| Additions to Schools, Illogan, Cornwall .................... .... | | S. Hill, Archt. Green-lane. Redruth .............. | do. |
| *Extension of Post Office, Manchester | Commrs. H.M. Works | Office, Storey's Gate, S.W. | do. |
| Drainage Works, Minster, Derby ... | Bakewell R.D.C. .... | Sterling & Swann, Engrs. Town Hall, Chapel-en-le-Frith ............... | May 13 |
| Granite Road Metal .............. | Saffron Walden Corp. | A. H. Forbes. Boro. Surv. | May 15 |
| *New Hall, &c.................. .... | Y. W. C. A. Finchley Branch............. | W. Hollis, Estate Office, opposite Church End Station, Finchley ...... | do. |
| *Electric Light Station and Chimney Shaft ............... .......... | Bexhill U.D.C. ...... | A. H. Preece, 13, Queen Anne's Gate, S.W. ...... | do. |
| *Two Libraries, Lewisham and Forest Hill ......................... | Lewisham Vestry .... | J. Andrews, 13, Basinghall-st. E.C. .. ........... | May 16 |
| *Schools ............ ............. | Edmonton S.B. ...... | H. W. Dobb, 110, London Wall, E.C. ............. | do. |
| *Filter Bed in Kew Gardens ......... | Commrs. H.M. Works | Clerk of Works, Kew Palace, S.W. ........... | do. |
| Pipes and Gullies .................. | Leeds Corp. .......... | City Engineer, Municipal Buildings ... .......... | do. |
| *Sewerage Works, Kirby Muxloe...... | Blaby R.D.C. ........ | J. B. Everard, 6, Millstone-lane, Leicester ........ | May 22 |
| *Infirmary Wards, &c. ............. | Tendring Union ...... | F. Whitmore, Chelmsford | May 23 |
| *Electric Light Buildings ........ .. | Darlington Corp. .. | Boro. Surv. Town Hall .. | May 30 |
| *Iron or Steel Winches.............. | James Syn. Ltd....... | Offices, 18, Billiter-st, E.C. | do. |
| *Erection of Asylum.. ............. | Brecon and Radnor Asylum Com .... | Giles, Gough & Trollope, 28 Craven-st. W.C. . .. | do. |
| Business Premises, Hereford ....... | King & Sons.......... | W. W. Robinson, Archt. 10, King-st. Hereford ...... | No date |
| Alterations to Premises, Widemarsh-st. Hereford ..................... | P. Morris & Son ...... | do. | do. |
| Factory, Norwich ................. | A. J. Caley & Son, Ld. | E. Boardman & Son, Archt. Queen-st. Norwich ...... | do. |
| Improvements to Schools, Forster-st. | Nottingham Sch. Bd. | R. C. and E. R. Sutton, Archt. Angel-row, Nottingham ........ .. .. | do. |
| Alterations to Inn, Crumlin-road, Belfast.......................... | J. M'Kenna .......... | W. J. Moore, Archt. Ann-st. Belfast .............. | do. |
| Alterations to Business Premises, Doncaster ..................... | Farmers & Cleveland Dairies Co. Ltd..... | Athron & Beck, Archt. Dolphin-chambers, Doncaster ............... | do. |
| Additions to White Hart Hotel, Ashbourne ...................... | S. Evershed .......... | Garlick & Flint Archt. Buxton ............... | do. |
| Alterations to Schools............. | Arnold (Notts.)Sch. Bd. | J. R. Swift, Archt. Front-st. Arnold ............. | do |
| Vicarage and Stables, Alveley, Salop.. | ........ | A. E. L. Oswell, Archt. Shrewsbury ...... ..... | do |
| Villa, Maldon-rd. Colchester ....... | ........ | J. W. Start, Archt. Colchester ........... | do. |
| Bank Premises, Fermoy, Cork........ | Prov. Bank of Ireland Ltd. ............... | Kaye & Co. Archts. 63, Dawson-st. Dublin ...... | do. |
| Alterations to Premises, Dobbin-st. Armagh ........................ | .. | J. F. Gilcriest, C.E. Armagh ............... | do. |
| Eight Houses, Chapel Close, Kendal.. | R. F. Chorley ....... | J. Stalker, Archt. 57, Highgate, Kendal ...... | do. |
| House, Common Side, Hanging Heaton, Yorks. ...... .......... | ........ | W. Crawshaw, Archt. Branch-av. Batley ...... | do |
| Alterations to Workhouse, Barwick-in-Elmet.. ................ ....... | ...... | P. Robinson, Archt. 72, Albion-st. Leeds ....... | do. |

## PUBLIC APPOINTMENTS.

| Nature of Appointment. | By whom Advertised. | Salary. | Application to be in. |
|---|---|---|---|
| *Surveyor ......................... | Lee B. of W.......... | 300*l.* per annum .......... | May 1 |
| *Two Assistant Surveyors .......... | Staffs C.C............ | 175*l.* per annum each .... | May 9 |
| *Clerk of Works .................. | Reigate T.C.......... | 3*l.* 3s. per week ......... | do. |
| *Building Inspector .... .......... | Wood Green U.D.C. .. | 52s. 6d. week ............ | do |
| *Assistant Surveyor ............... | Whitechapel B. of W. | 3*l.* per week ............. | May 10 |

*Those marked with an asterisk* (*) *are advertised in this Number. Competitions, p.* iv. *Contracts, pp.* iv. vi. viii. x. & xixb. *Public Appointments, pp.* xix. & xixb.

| | |
|---|---|
| Aldershot.—Cambridge-rd, Hertford Lodge and a plot of land, f., r. 38*l.* ....................... | £510 |
| Cambridge-rd., Dean House, f., e.r. 35*l.* ...... | 490 |

*Contractions used in these lists.*—F.g.r. for freehold ground-rent; l.g.r. for leasehold ground-rent; i.g.r. for improved ground-rent; g.r. for ground-rent; r. for rent; f. for freehold; c. for copyhold; l. for leasehold; e.r. for estimated rental; u.t. for unexpired term; p.a. for per annum; yrs. for years; st. for street; rd. for road; sq. for square; pl. for place; ter. for terrace; cres. for crescent yd. for yard, &c.

## TO CORRESPONDENTS.

J. S. M.—A. E. (Amounts should have been stated.)

NOTE.—The responsibility of signed articles, letters, and papers read at public meetings, rests, of course, with the authors.

*We cannot undertake to return rejected communications.*

Letters or communications (beyond mere news items) which have been duplicated for other journals are NOT DESIRED.

We are compelled to decline pointing out books and giving addresses.

Any commission to a contributor to write an article is given subject to the approval of the article, when written, by the Editor, who retains the right to reject it if unsatisfactory. The receipt by the author of a proof of an article in type does not necessarily imply its acceptance.

All communications regarding literary and artistic matters should be addressed to THE EDITOR; those relating to advertisements and other exclusively business matters should be addressed to THE PUBLISHER, and *not* to the Editor.

## TENDERS.

[Communications for insertion under this heading should be addressed to "The Editor," and must reach us *not later than* 10 *a.m. on Thursdays.* N.B.—We cannot publish Tenders unless authenticated by the name and address of the sender; and we cannot publish announcements of Tenders accepted unless the amount of the Tender is given, nor any list in which the lowest Tender is under £100, unless in some exceptional cases and for special reasons.]

* Denotes *accepted.* † Denotes *provisionally accepted.*

ACTON.—For the erection of a girls' school in Creffield-road, Acton, for the Managers of Aske's Haberdashers' Schools. Mr. Henry Stock, architect. Quantities by Messrs. Widnell & Trollope:—

| | | | |
|---|---|---|---|
| Balaam Bros....... | £23,555 | Bowers & Co....... | £21,300 |
| Ferris Bros. ...... | 23,506 | H. Flint .......... | 21,184 |
| Akers & Co. ...... | 23,415 | Godson & Sons .... | 21,152 |
| A. Porter.......... | 22,777 | Gough & Co. ...... | 20,824 |
| J. Marsland ...... | 22,575 | Willmott & Sons .. | 20,798 |
| Willcock & Co. .... | 22,354 | T. J. Messom .... | 20,577 |
| W. Robinson ...... | 21,650 | Hockley & Son .... | 20,574 |
| B. E. Nightingale.. | 21,585 | Chessum & Sons .. | 20,036 |
| Turtle & Appleton | 21,530 | Patman & Fotheringham* ........ | 19,911 |
| J. Christie ........ | 21,400 | | |

ABERDARE.—For the erection of seventeen houses, Cwmaman, for the Building Club. Mr. Llewellin Smith, architect, 20, Commercial-street, Aberdare:—

| | | | |
|---|---|---|---|
| Morgan & Sons .... | £182 10 | Willis, Ystrad* .... | £162 10 |

ARDROSSAN, N.B.—For additions to the Academy, for the School Board. Mr. J. Armour, jun., architect, Irvine. Quantities by Messrs. John Dansken & Purdie, Glasgow:—

| | | | |
|---|---|---|---|
| *Digging, Masonry, and Bricklaying.*—John Inglis, Ardrossan*........ | £1,071 | 14 | 3 |
| *Carpentering and Joinery.*—Wm. Gray, Kilwinning* .............. | 591 | 2 | 11 |
| *Plumbing and Gasfitting.*—John Lambert, Ardrossan* .......... . | 199 | 6 | 5 |
| *Slating.*—Robt. Boyd, Saltcoats* .. | 180 | 9 | 7 |
| *Plastering and Cementing.*—*John Ramage, Saltcoats*.............. | 158 | 6 | 4 |
| | £2,200 | 19 | 6 |

BEDDGELERT.—For the erection of farmhouse at Llyndy, for Mr. T. E. Roberts. Mr. Thomas Roberts, architect, Portmadoc:—

| | | | |
|---|---|---|---|
| Evan E. Jones........ | £725 | Jones, Roberts, & Jones, Pwllheli*.... | £690 |

[Architect's estimate, £740]

BOURNEMOUTH.—For painting the Promenade Pier. Mr. F. W. Lacey, Borough Engineer and Surveyor :—

| | Genuine White Lead Paint. £ s. | Calley's Torbay Oxide Paint. £ s. | Ferrodor Paint. £ s. |
|---|---|---|---|
| Miller & Sons | 348 10 | 386 0 | 389 0 |
| F. T. Cutler | 342 0 | 360 10 | 378 0 |
| Shears & Sons | 350 0 | 365 0 | 365 0 |
| Jenkins & Sons* | 329 0 | 346 0 | 363 0 |
| Jones & Son | | (informal). | |

[All of Bournemouth].

BRYN (Wales).—For the erection of school buildings, for the Margam School Board. Mr. F. B. Smith, architect, Port Talbot :—

| | | | |
|---|---|---|---|
| Davies & Sons | £3,625 | C. & F. Gaen | £3,640 |
| Evan Thomas | 3,649 | Jenkins, Port Talbot* | 3,273 |

CARDIFF.—For the erection of school, Virgil-street, Grangetown, manual instruction centre and caretaker's house, &c., for the School Board. Messrs. R. and S. Williams, architects, Borough Chambers, Wharton-street, Cardiff. Quantities by architects :—

| | |
|---|---|
| Shepton & Son | £26,720 0 0 |
| D. Thomas & Co. | 26,520 0 0 |
| Price Bros. | 26,135 0 0 |
| Evans Bros. | 24,310 13 7 |
| W. H. Ingleson | 24,191 1 0 |
| W. Thomas & Co. | 24,030 0 0 |
| James Allan | 23,906 6 6 |
| Knox & Wells | 23,750 0 0 |
| W. Symonds & Co. | 23,500 0 0 |
| Lattey & Co. | 23,348 0 0 |
| Chubb & Co. | 23,100 0 0 |
| D. Davies | 22,875 0 0 |
| Turner & Sons | 22,516 0 0 |
| C. C. Dunn* | 22,200 0 0 |

[All of Cardiff.]

CARDIFF.—For the erection of wall, &c., for the Corporation. Mr. W. Harpur, C.E., Town Hall, Cardiff :—

| | | | |
|---|---|---|---|
| Knox & Wells | £646 13 0 | Richard Dinham | £593 1 6 |
| J. Allan | 639 4 3 | G. Griffiths | 580 0 0 |
| Powell & Mansfield | 637 0 0 | Handford & Ellsworthy | 575 0 0 |
| F. G. Robbins | 613 1 3 | Edgar Brown | 570 10 3 |
| Henry Gibbon | 610 9 0 | Price Bros. | 568 19 5 |
| Rees & Thomas | 610 0 0 | Thomas & Co. | 562 12 7 |
| W. H. Ingleson | 609 18 0 | J. Thomas* | 537 12 5 |

[All of Cardiff.]

CARLISLE.—For building the foundations of St. Aidan's Church, Warwick-road, for the Committee for Church Extension in the City of Carlisle. Mr. C. J. Ferguson, architect, 50, English-street, Carlisle. Quantities by the architect :—

Wm. Baty, Carlisle* .......... £759 19

COVENTRY.—For pulling down and rebuilding the "General Wolfe" public-house, Foleshill, near Coventry, for Messrs. Phipps & Co., Northampton. Mr. T. F. Tickner, architect, Coventry :—

C. H. Barber, Coventry* .......... £4,449

COVENTRY. — For the erection of residence and stabling at Kearsley, near Coventry, for Mr. C. Adcock, Coventry. Mr. F. Foster, architect, Leamington and Coventry :—

C. H. Barber, Coventry* .......... £4,750

DUDLEY.—For alterations and extensions to premises, Stone-street, Dudley, for Mr. J. Baker. Mr. A. Ramsell, architect, 7, Priory-street, Dudley :—

| | | | |
|---|---|---|---|
| Dorse & Co. | £558 | Holland & Son, Dudley* | £550 |

FRINTON-ON-SEA. — For laying a sewer in Third-avenue, for Mr. R. P. Cooper. Messrs. Homer & Co., surveyors, Estate Office, Frinton-on-Sea, Essex :—

| | | | |
|---|---|---|---|
| H. J. Linzell* | £189 | G. Abbot | £189 |

FRINTON-ON-SEA.—For alterations to house and stables, for Mr. R. P. Cooper. Messrs. Homer & Co., architects and surveyors, Estate Office, Frinton-on-Sea, Essex :—

| | | | |
|---|---|---|---|
| H. J. Linzell | £247 | F. B. Pitcher | — |
| G. Abbot* | 196 | | |

GATESHEAD. — For rebuilding the "Foresters' Arms" inn, Askew-road, for Mr. R. Newton. Mr. A. G. Kyle, architect, 145, Pilgrim-street, Newcastle. Quantities by architect :—

| | | | |
|---|---|---|---|
| J. Ross | £2,650 16 0 | T. & R. Lamb | £2,327 13 2 |
| H. & A. Arkless | 2,407 2 0 | J. Bewley | 2,253 0 0 |
| J. C. Nichol | 2,380 0 0 | Turner Bros. | 2,159 5 9 |
| J. Wales & Co. | 2,350 0 0 | Thompson | 2,118 0 0 |

GREAT YARMOUTH.—For additions to Northgate School, for the School Board. Messrs. Bottle & Olley, architects, Queen-street, Great Yarmouth. Quantities by the architects :—

| | | | |
|---|---|---|---|
| G. W. Beech | £2,255 | J. S. Read | £1,887 |
| J. Rand | 2,210 | J. Moore | 1,878 |
| A. E. Bond | 2,150 | J. Ward, North Quay* | 1,870 |
| F. Grimble | 1,905 | | |
| Carter & Wright | 1,903 | | |

*Plumbing.*

| | |
|---|---|
| R. A. Eastoe | £143 17 |
| R. H. Tooley, North Quay* | 116 0 |

GUILDFORD.—For the execution of road works, Foxenden Estate, for the Corporation. Mr. C. J. Mason, Borough Surveyor, Tuns Gate, Guildford :—

| | York-road. Section 1. £ s. d. | York-road. Section 2. £ s. d. | Victoria-road. £ s. d. | Foxenden-road. £ s. d. | Springfield-road. £ s. d. | Falcon-road. £ s. d. |
|---|---|---|---|---|---|---|
| W. Norris, Hale, Farnham | 620 0 0 | 156 0 0 | 172 0 0* | 235 0 0* | 312 0 0* | 165 0 0 |
| W. H. Wheeler, London | 937 7 10 | 249 9 9 | — | — | — | — |
| G. A. Franks, Guildford | 611 15 1* | 149 5 11* | 192 18 5 | 262 7 5 | 342 2 9 | 150 9 9 |
| Streeter, Godalming | 627 7 6 | 166 13 4 | 182 5 6 | 244 17 10 | 326 2 9 | 135 15 2* |

HALTWHISTLE.—For the erection of a dwelling-house, for Mr. R. Hastewell. Mr. H. Higginson, architect, Carlisle. Quantities by the architect :—

| | |
|---|---|
| *Builder's Work.*—Coulson & Jackson* | £1,794 |
| *Slating.*—Coulson & Jackson* | |
| *Joinery.*—Wm. Johnson* | |
| *Plumbing.*—Clark & Kitchen* | |
| *Plastering.*—A. Scudamore* | |
| *Painting and Glazing.*—R. P. Kirk, Carlisle* | |

[All of Haltwhistle.]

HORSHAM.—For additions to "Queen's Head" hotel, for Messrs. King & Sons, Limited. Mr. C. H. Burstow, architect, 6, West-street, Horsham :—

| | | | |
|---|---|---|---|
| Potter Bros. | £340 | G. Potter, Horsham* | £320 |
| Rowland Bros. | 335 | | |

ILFORD (Essex).—For stabling, with harness-room and fodder lofts, stores and manager's residence with office, for Messrs. Thorne Bros., brewers, Nine Elms, London. Messrs. Douglas Young & Co., architects, 51, Coleman-street, E.C. Quantities supplied :—

| — | Stables paved with Blue Staffordshire Paving. | Add. if Stables paved with Adamantine Clinkers. |
|---|---|---|
| Dowsing & Davis | £2,555 0 | £105 0 |
| F. Wilmott | 2,490 0 | 97 0 |
| Turtle & Appleton | 2,360 0 | 35 0 |
| W. H. Cole | 2,236 0 | 16 0 |
| H. Pridmore | 2,210 0 | 13 0 |
| F. R. Blaxton | 2,207 7 | 34 9 |
| Golder & Gregory | 2,207 0 | 11 0 |

KIRKBY-IN-ASHFIELD.—For the erection of schools, for the School Board. Mr. Lawrence Bright, architect, 9, St. Peter's Church-walk, Nottingham. Quantities by architect :—

| | | | |
|---|---|---|---|
| Wm. Bains | £5,070 | Wm. Maule | £4,935 |
| G. Caulton | 4,980 | T. Cuthbert | 4,927 |
| H. Vickers | 4,970 | H. Gilbert | 4,860 |
| T. Barlow | 4,950 | J. Oscroft, Nottingham* | 4,730 |

LEAMINGTON.—For the erection of residence at Leamington, for Mr. F. M. Spencer. Mr. R. A. Briggs, architect, Norfolk-street, Strand. Quantities by Mr. J. Gandy :—

| | | | |
|---|---|---|---|
| Bromage & Evans | £6,223 13 | Smith & Son | £4,636 0 |
| J. S. Kimberley | 5,353 0 | C. H. Barber, Coventry* | 4,599 0 |
| Parnell & Son | 4,767 0 | | |

LONDON.—For the erection of engine-house and chimney-shaft at Northern Hospital, for the Metropolitan Asylums Board. Messrs. Pennington & Son, architects :—

| | |
|---|---|
| Cross & Co. | £3,470 7 4 |
| Merredew & Wort | 3,312 0 0 |
| Wall & Co. | 3,289 0 0 |
| Chessum & Sons | 3,266 0 0 |
| General Builders, Ltd. | 3,130 0 0 |
| J. Appleby, Cornwall-road, S.E.* | 2,795 0 0 |

* Accepted with variations at £2,620.

[Architects' estimate, £1,700.]

LONDON.—For alterations and additions to the "King of Prussia," Broadway, Stratford. Mr. J. M. H. Gladwell, architect :—

| | | | |
|---|---|---|---|
| J. & H. Cocks | £915 | Welsh & Sons | £743 |
| W. J. Maddison | 825 | W. M. Norton* | 699 |
| A. E. Symmes | 800 | | |

LONDON.—For painting, &c., at St. George's Schools, Upton Park :—

| | | | |
|---|---|---|---|
| Tebbutt & Co. | £1,100 | Heard & Co. | £657 0 |
| Bamber | 895 | Wall & Co. | 650 0 |
| J. Horswill | 849 | Richards | 637 0 |
| H. C. Horswill | 835 | Vigor & Co. | 615 10 |
| Mills | 815 | J. Gibbs* | 578 18 |
| Kybett | 800 | Hoe | 550 0 |
| Woollaston Bros. | 715 | H. Brady | 539 0 |

LONDON.—For the erection of a boys' school in Westbere-road, West Hampstead, for the Managers of Aske's Haberdashers' Schools. Mr. Henry Stock, architect. Quantities by Messrs. Widnell & Trollope :—

| | | | |
|---|---|---|---|
| Balaam Bros. | £30,979 | Akers & Co. | £28,073 |
| F. & H. F. Higgs | 30,660 | Turtle & Appleton | 28,000 |
| B. E. Nightingale | 29,745 | Rudd & Son | 28,000 |
| Higgs & Hill, Ltd. | 29,200 | Patman & Fotheringham | 27,591 |
| Smith & Co. | 28,900 | Hockley & Son | 27,449 |
| J. Perkins | 28,850 | Chessum & Sons | 26,990 |
| Willcock & Co. | 28,411 | Kirk & Randall | 26,944 |
| Godson & Son | 28,363 | Gough & Co.* | 25,861 |
| Bowers & Co. | 28,221 | | |
| Gregory & Co. | 28,187 | | |

LONDON.—For sundry alterations, No. 412, Mile End-road, for Mr. Joseph :—

| | | | |
|---|---|---|---|
| Todd & Co. | £437 | Heard & Co. | £349 |
| Blow | 386 | | |

LONDON.—For the erection of factory at Upper Holloway :—

Heard & Co. .......... £2,126

[No competition.]

LONDON.—For repairs to Brockhurst, Woodside Park, North Finchley, for Lieut.-Col. Brooke. Mr. Percy L. Marks, architect :—

*Preliminary Works (1898).*

| | | | |
|---|---|---|---|
| F. Dowdall | £103 0 | Mansfield & Son | £85 0 |
| Grover & Son | 91 0 | Callow & Wright† | 68 18 |

*Second Specification (1899).*

| | | | |
|---|---|---|---|
| Callow & Wright | £365 0 | A. V. Paddison† | £326 10 |
| Grover & Son | 338 10 | | |

† Accepted subject to arrangement.

Goods supplied to builder (1899) ...... £71 8 3

LONDON.—For new premises at Royal Wharf, Townmeed-road, Fulham, for Messrs. Goldman, Phillips, & Jay. Mr. George Ashby Lean, architect, Palace Chambers, Westminster :—

| | | | |
|---|---|---|---|
| Patman & Fotheringham | £3,976 | Howell J. Williams | £3,548 |
| Wall & Co. | 3,950 | F. Jenkins | 3,540 |
| Adamson & Sons | 3,579 | L. H. R. Roberts | 3,489 |

LONDON.—For repairing and redecorating No. 46, Grosvenor-street, W. :—

| | | | |
|---|---|---|---|
| H. & E. Lea | £970 | W. H. T. Kelland | £698 |
| G. H. Rowe | 915 | R. S. Buckeridge | 655 |
| Edwards & Medway | 730 | | |

MANSFIELD.—For additions to the Forest Hospital, Southwell-road. Mr. R. Frank Vallance, Borough Surveyor, Mansfield :—

| | | | |
|---|---|---|---|
| J. Greenwood | £540 0 0 | C. G. Percival | £416 14 6 |
| S. B. Frisby | 486 0 0 | J. Ashley, Mansfield, Woodhouse* | 414 0 0 |
| Fisher Bros. | 470 0 0 | | |
| Vallance & Blythe | 442 10 6 | | |

NEWARK.—For the supply of granite (1,050 tons) and slag (850 tons), for the Rural District Council. Mr. R. Oakden, jun., Surveyor, Kirkgate, Newark :—

| | Per ton at Newark stations. s. d. |
|---|---|
| Mountsorrel Granite Co., Leicestershire, 770 tons XX granite | 8 9 |
| 280 tons X granite | 8 3 |
| Wm. Prestwich, Dronfield, Sheffield, 680 tons slag | 4 10 |
| | at Clifton station. |
| Carr & Co., Dronfield, Sheffield, 170 tons slag | 4 7 |

NORWICH.—For erecting a residence, Newmarket-road, Norwich, for Mr. E. D. Adcock. Mr. A. F. Scott, architect, Norwich :—

| | | | |
|---|---|---|---|
| T. H. Yelf | £1,765 | W. S. Dawes | £1,625 |
| R. W. Wilkin | 1,665 | T. Gill | 1,594 |
| Tyrrell Bros. | 1,650 | J. Hurn | 1,574 |
| Youngs & Son | 1,640 | J. Evans* | 1,561 |
| Scarles Bros. | 1,626 | | |

[All of Norwich.]

NORWICH.—For erecting a house and shop, Magdalen-street, Norwich, for Mrs. H. S. Woodcock. Mr. A. F. Scott, architect, Norwich :—

| | | | |
|---|---|---|---|
| Downing & Son | £1,197 | Scarles Bros. | £1,037 |
| J. S. Smith | 1,057 | Youngs & Son | 1,028 |
| T. H. Yelf | 1,050 | W. S. Daws* | 1,018 |

[All of Norwich.]

RAWTENSTALL (Lancs.). — For the execution of street works, Dean-lane, for the Corporation. Mr. A. W. Lawson, C.E., Municipal Offices, Rawtenstall :—

| | | | |
|---|---|---|---|
| John Moore | £1,791 7 | P. D. & S. D. Hayes, Stockport* | £1,681 10 |

RAWTENSTALL (Lancs.).—For the construction of pipe sewer, manholes, &c., for the Corporation. Mr. A. W. Lawson, C.E., Borough Surveyor, Municipal Buildings, Rawtenstall :—

| | | | |
|---|---|---|---|
| Wm. Jenkins | £3,436 0 0 | H. N. Davison | £2,832 18 9 |
| Thomas Turner | 3,224 3 11 | John Moore | 2,826 10 7 |
| Enoch Tempest | 3,054 4 8 | P. D. & S. D. Hayes, Stockport* | £2,671 15 8 |
| J. & J. Lee | 2,992 0 7 | | |
| Etheridge & Clarke | 2,889 3 0 | | |

SHOEBURYNESS.—For making-up St. Andrew's-road and West-road, for the Urban District Council. Mr. Harold Harris, surveyor, Clarence-street, Southend-on-Sea :—

*St. Andrew's-road.*

| | | | |
|---|---|---|---|
| W. Iles | £500 0 0 | Harris & Rowe, Lim.* | £478 6 6 |
| Buxton & Jenner | 494 5 10 | | |

*West-road.*

| | | | |
|---|---|---|---|
| Buxton & Jenner | £683 7 4 | Harris & Rowe, Lim.* | £652 5 9 |
| W. Iles | 655 0 0 | | |

[See also next page.

REDHILL.—For alterations and additions to premises, Brighton-road, Redhill, for Messrs. Ind Coope & Co., Limited. Messrs. Harrington & Ley, architects, 108, Fenchurch-street, E.C. :—

| | |
|---|---|
| Nightingale & Sons, Reigate* | £347 |

STRATFORD-ON-AVON.—For the erection of a Technical School, Henley-street, for the Committee. Mr. Arthur S. Flower, architect, 7, Gordon-place, London, W.C. Quantities by Mr. W. Thornicraft, 6, South-square, Gray's Inn, W.C. :—

| | | | |
|---|---|---|---|
| R. M. Hughes | £2,241 | 0 | 0 |
| Callaway Bros. | 1,990 | 0 | 0 |
| Smith & Sons | 1,800 | 0 | 0 |
| Fincher & Co. | 1,785 | 0 | 0 |
| J. Harris | 1,710 | 11 | 3 |
| E. T. Kennard | 1,663 | 15 | 0 |
| Geo. Whateley, Stratford-on-Avon* | £1,660 | 0 | 0 |
| Smallwood & Co. | 1,620 | 0 | 0 |

SUNBURY-ON-THAMES.—For the supply of Norway granite edge kerbing, for the Urban District Council. Mr. H. F. Coales, Surveyor, Council Offices, Sunbury:—

| | per ft. run. s. | d. |
|---|---|---|
| Mowlem & Co. | 2 | 0 |
| A. & F. Manuelle | 1 | 8 |
| Van Praagh & Co. | 1 | 7½ |
| Blichfeldt & Co., Water-lane, Great Tower-street* | 1 | 7 |

TREORKY (Wales).—For the erection of a Baptist Chapel, for the Baptist Denomination. Mr. J. Roderick, architect, Blaencwm, Treherbert, Glam. :—

| | | |
|---|---|---|
| T. W. Davies | £2,055 | 0 |
| John Rees | 2,045 | 0 |
| Jonathan Jones | 1,897 | 19 |
| Matthias J. Edwards, Treorky* | £1,800 | 0 |

WARWICK.—For the erection of supply stores, Market-place, for Messrs. Walker. Mr. F. P. Trepess, architect, 8, Jury-street, Warwick. Quantities by architect :—

| | | |
|---|---|---|
| Smith & Sons | £1,550 | 0 |
| Tallip, Warwick* | £1,438 | 10 |

* Exclusive of fittings.

WESTON-SUPER-MARE.—For the erection of stables, coach-house, &c., for Mr. F. Blackmore. Messrs. S. J. Wilde & Fry, architects, Boulevard-chambers, Weston-super-mare. Quantities by the architects :—

| | |
|---|---|
| Keen & Keen | £873 |
| C. Penny | 865 |
| H. A. Forse | 795 |
| W. M. Ruben | 785 |
| C. Addicott, Weston-super-Mare* | £780 |
| G. Sprake | 770 |

WHITBY.—For the erection of parish room, St. Hilda's-terrace, Whitby, for the Rev. Canon Austen and Committee. Mr. E. H. Smales, architect, 5, Flowergate, Whitby :—

| | | |
|---|---|---|
| *With Sureties.* | | |
| Langdale & Sons | £1,590 | 0 |
| R. Harland | 1,548 | 0 |
| John Brain, Whitby* | 1,525 | 0 |
| *Without Sureties.* | | |
| C. Winterburn | 1,670 | 0 |
| Fletcher & Gladstone | 1,463 | 5 |

WREXHAM.—For the re-erection and extension of the Central Store premises, for Mr. W. J. Williams. Messrs. J. Morison & Son, architects, King-street, Wrexham :—

| | |
|---|---|
| Wm. Owen | £2,900 |
| H. A. Jones | 2,670 |
| W. E. Samuel | £2,360 |
| Davies Bros.* | 2,235 |

[All of Wrexham.]

WREXHAM.—For (A), the execution of street works, Ruabon and Victoria roads, and (B) Construction of surface water drains, for the Town Council. Mr. J. W. M. Smith, Borough Surveyor, Town Hall, Wrexham :—

| | A | B |
|---|---|---|
| William Owen, Wrexham* | £432 18 6 | 260 8 0 |

WORKINGTON.—For the erection of a house, Gray-street, for Mr. A. E. Middleton. Messrs. W. G. Scott & Co., architects, Victoria-buildings, Workington :—

| | | | |
|---|---|---|---|
| *Building.*—Robert Brown | £256 | 0 | 0 |
| *Joinery.*—G. H. Chambers | 138 | 0 | 0 |
| *Slating.*—Lythgoe & Sons | 22 | 10 | 0 |
| *Plumbing.*—Hodgson & Co. | 50 | 12 | 10 |
| *Plastering.*—J. Lawson | 55 | 0 | 0 |
| *Painting.*—G. Davies | 17 | 2 | 6 |
| *Heating.*—Barker & Son | 23 | 6 | 0 |

[All of Workington.]

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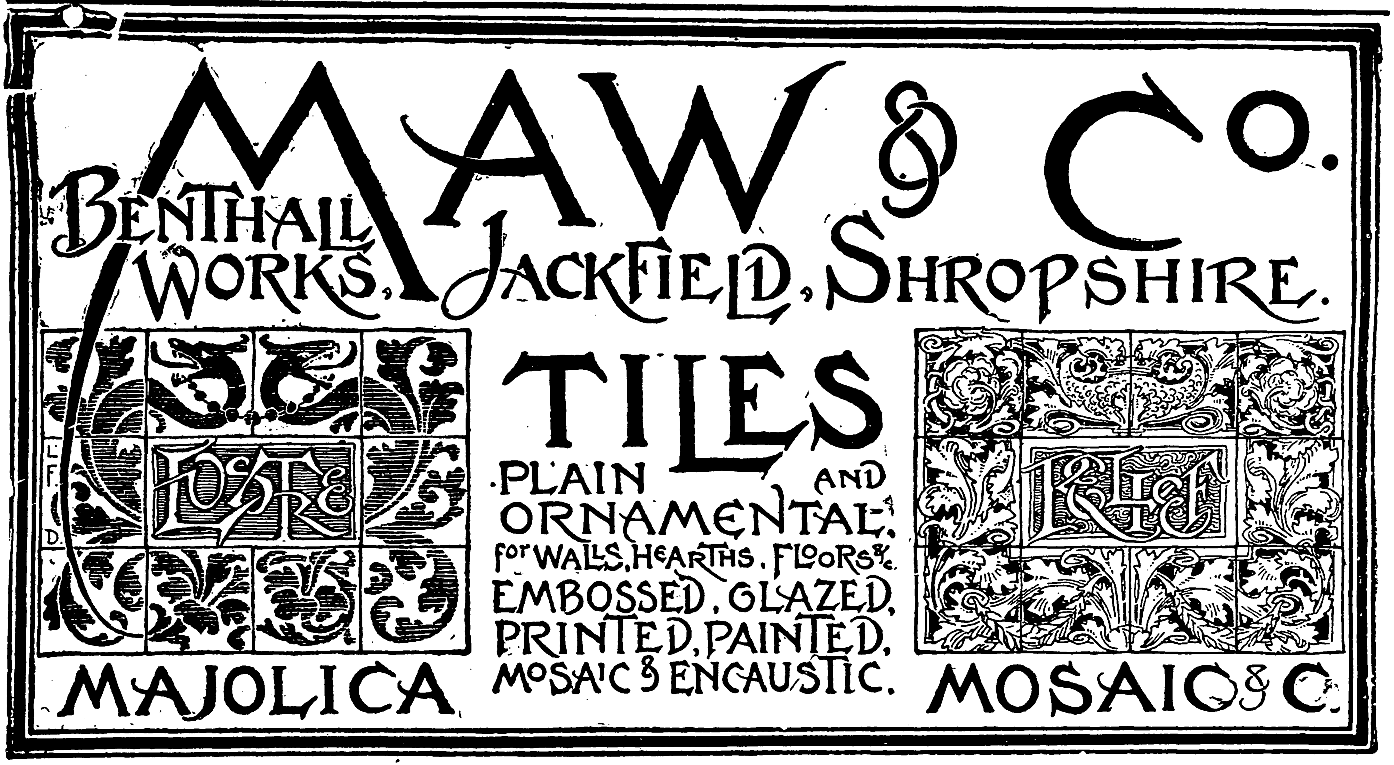

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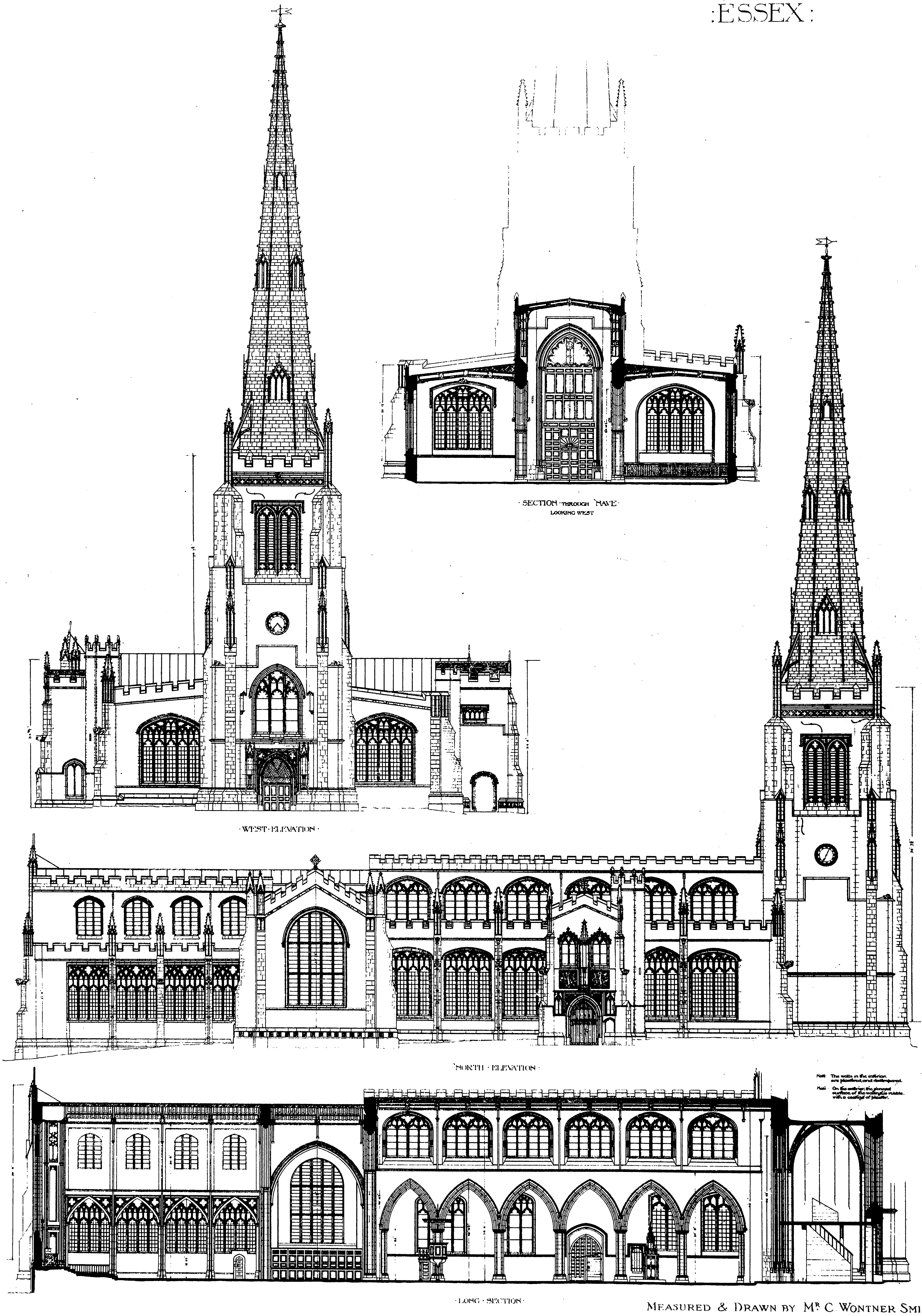
·SECTION·THROUGH·NAVE·
LOOKING WEST
·WEST·ELEVATION·
·NORTH·ELEVATION·
Note. The walls in the interior are plastered and distempered.
Note. On the exterior the general surface of the walling is rubble, with a coating of plaster.
·LONG·SECTION·

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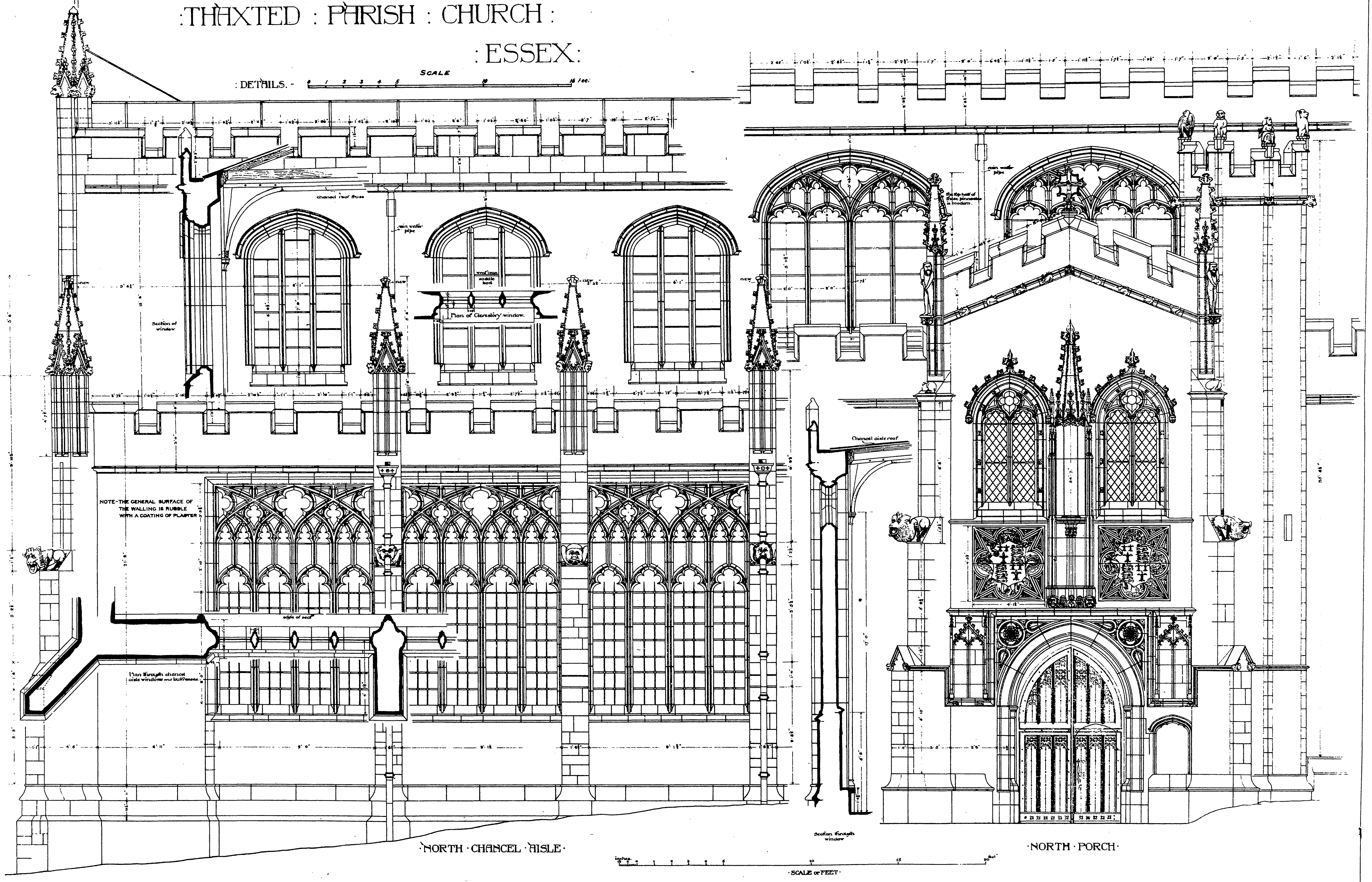
: DETAILS. -
SCALE
0 1 2 3 4 5 10 15 feet
chancel roof truss
rain water pipe
wrot iron saddle bars
Plan of Clerestory window
Section of window
new
the top half of these pinnacles is modern.
NOTE-THE GENERAL SURFACE OF THE WALLING IS RUBBLE WITH A COATING OF PLASTER
edge of roof
Plan through chancel aisle windows and buttresses
Chancel aisle roof
Section through window
·NORTH · CHANCEL · AISLE·
·NORTH · PORCH·
inches
SCALE OF FEET

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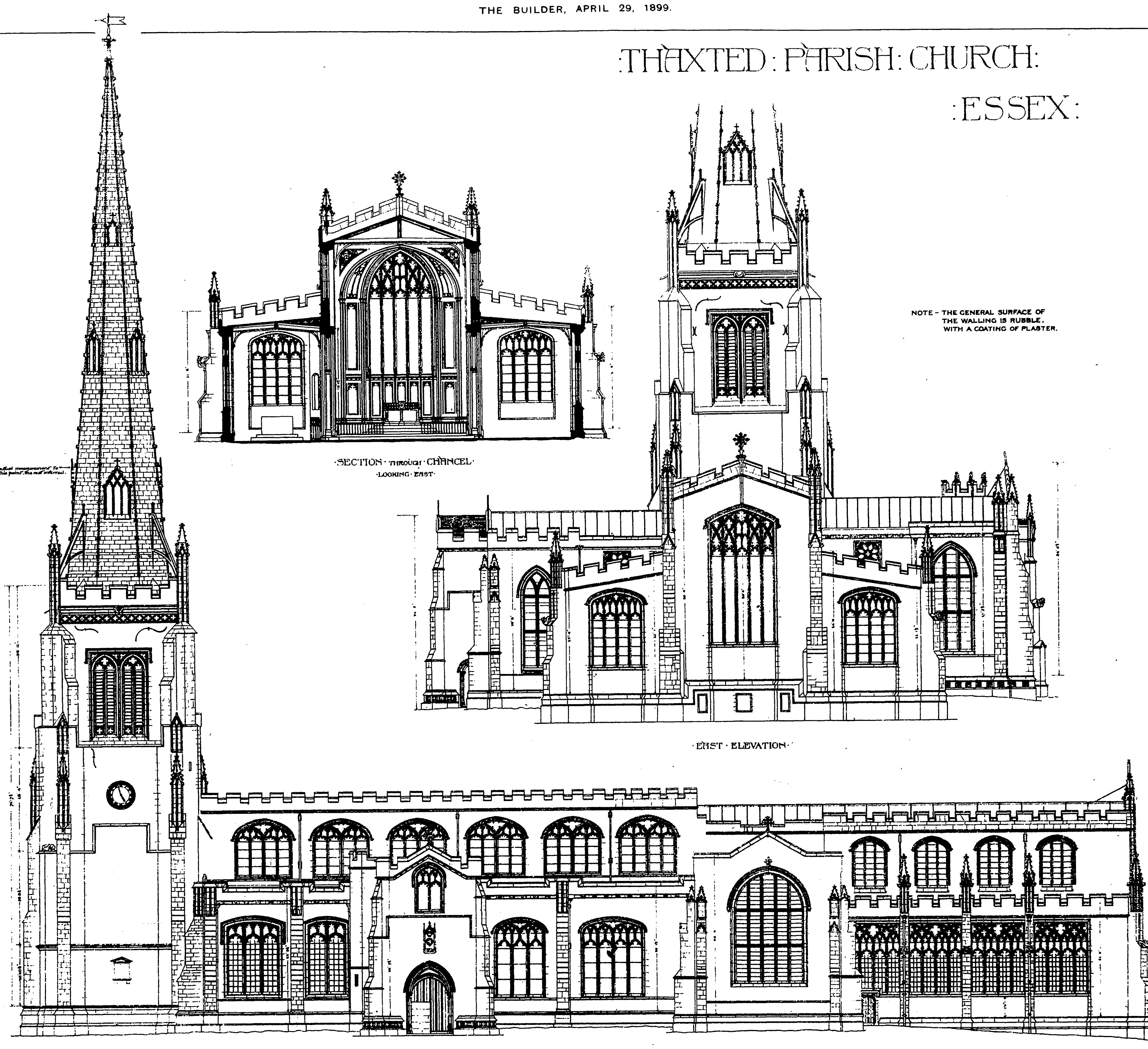

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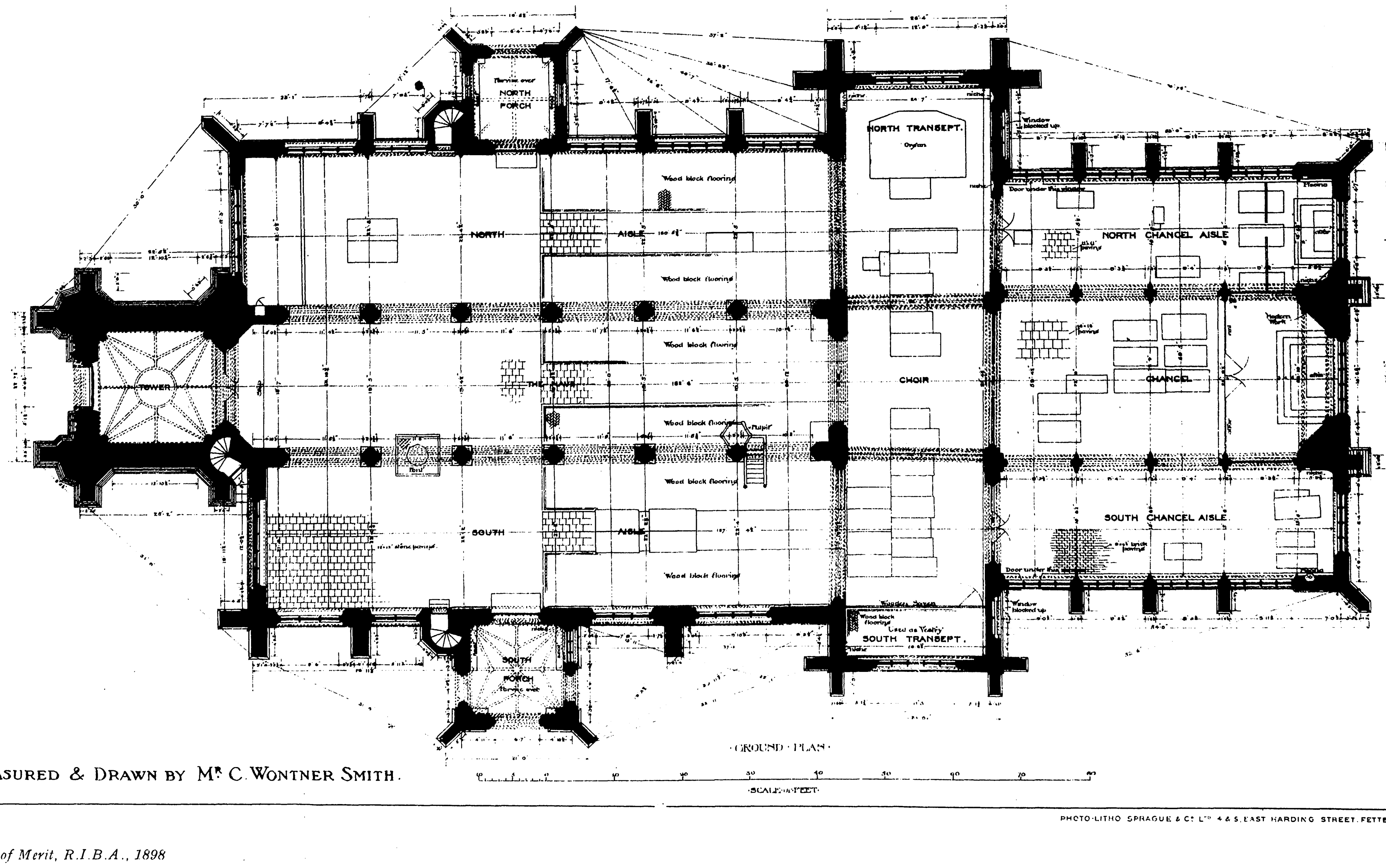
·LOOKING· EAST·

·EAST · ELEVATION·

·SOUTH·ELEVATION·


NORTH PORCH
NORTH TRANSEPT
Organ
NORTH CHANCEL AISLE
NORTH AISLE
Wood block flooring
TOWER
THE NAVE
Pulpit
Font
CHOIR
CHANCEL
SOUTH AISLE
SOUTH CHANCEL AISLE
SOUTH TRANSEPT
Used as Vestry
SOUTH PORCH

·GROUND·PLAN·

·SCALE·OF·FEET·

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# The Builder.

VOL. LXXVI. No. 2935. MAY 6, 1899.

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The Archbishop's Pa'ace, Canterbury.—Mr. W. D. Caröe, F.R.I.B.A., Architect ........................................ *Two Double-Page Photo-Lithos.*
L.C.C. Proposed Dwellings, Millbank: First Premiated Design.—Messrs. Spalding & Cross, Architects .................. *Four Single-Page Photo-Lithos.*

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### *The Royal Academy.*

THIS is evidently not a good painting year. We have already noticed that the New Gallery is below its mark; and the same must certainly be said of the pictorial portion of the Royal Academy exhibition, by far the larger and more popular element of the show. Sculpture stands at a fairly high level; not so high as in some previous years, but still showing much of interest and excellence both of conception and execution. But in painting the proportion of mediocre and uninteresting work is indeed formidable; and there is no one remarkable work—no "picture of the year"—to counterbalance this prevalent character of weakness. Nor are there any attempts at new effects or new aims in painting to interest one and provoke discussion. It is a mediocre Academy. Of course one could not but expect that the loss of Leighton and Millais would be felt for some time to come; and their only survivor of the same calibre, Mr. Watts, exhibits only a single half-length portrait.

Three pictures may perhaps be singled out as the three best of the year: Mr. Tadema's "Baths of Caracalla," Mr. Abbey's "O Mistress Mine," and Mr. Somerscales' "Off Valparaiso." Mr. Tadema's picture, indeed, would be a sensation work if he had not made so many sensations of the same kind, and if it were not, as usual, deficient in human interest. Architecturally, it is a highly interesting work. He shows us the Thermæ in all their pristine splendour and thronged by a crowd of bathers. The picture is cut in two vertically by the shaft of a great serpentine column in the foreground, below which are seated three young ladies; the middle figure, facing the spectator, admirable both as a piece of drawing and as a kind of revival of what we may fancy to have been the late Roman type of young woman; in which latter respect, however, she is entirely contradicted by the style and expression of the girl on the right, who is quite modern, and might have come out of an English parsonage. The view of the great hall beyond is finely and learnedly carried out; the marble galley, made as if floating on the water, has, we believe, archæological tradition to support it. The planes in which the bathers behind are grouped seem a little confused; at least, the perspective of the building does not show clearly why the two men near the marble galley should be twice the size of the groups nearest to them; no doubt the author has got the plan and distances all right in his head, but they do not come out quite obviously in the painting. Mr. Abbey's painting, illustrating the song from "Twelfth Night," is perhaps the most original and interesting in the collection. It shows a vine-covered loggia with whitewashed piers, through which is seen middle-distance foliage painted in rich and warm tints, forming in itself a remarkable bit of colour; in the foreground a lover in long red cloak is appealing earnestly to a lady who leans against one of the piers, and whose face is singularly expressive of feeling; by their dress and style they are lovers of the Renaissance. There is a fine and very original style about this picture, though it is not so remarkable a work as the Richard and Lady Anne of a former year. Mr. Somerscales' "Off Valparaiso" is a repetition of the *motif* he has before employed; a tub of an ocean tramp comes up under full sail towards the front of the picture, while a rowing boat crosses the foreground to intercept her. The realism of the bulgy hull splashing through the water, and the care and knowledge with which the crowd of sails with their curves and shadows are drawn and painted, show the most careful observation and painstaking execution, which may be better realised, perhaps, by comparing the work with the two very creditable examples of the commonplace of sea and ship painting to be found in Gallery II.

One of the largest and most important works of the year is also a ship picture, Mr. Wyllie's "Battle of the Nile," which among other uses may serve to remind people of the historical fact that this great naval battle was fought in the dark, after nightfall, a fact which must have given all the more dramatic effect to the great incident of the fight, the blowing up of the *L'Orient*, which is the moment selected by the painter, though the *L'Orient* is kept in the background. A small plan of the position of the ships is given beneath, with the direction of the wind indicated. This is a fine and carefully considered picture, and goes perhaps as far as silent canvas can in conveying to the mind some idea of the tremendous scene which must have been produced by the close fighting at night of these large sailing men-of-war of the old type, with their lofty hulls, towers of sail, and numerous guns, and the devastation made in the wooden hulls and rigging of the ships that had the worst of it. One of these, a dark draggled mass with all her masts overboard, is near the foreground. This, which has been bought with the Chantrey Bequest, is the most important work its author has painted, and will certainly advance his reputation.

It is a year of Jubilee pictures also; three artists having painted the scene opposite the west front of St. Paul's on the occasion of the Queen's halt there on the procession day; whether these are commissions, or the outbreak of patriotism on the part of the painters, or an appeal to the patriotic sympathies of the public, we know not; the selection of exactly the same subject by three painters can hardly be a mere accident, and can hardly have been made on purely artistic grounds. There is good reason why such events should be recorded in painting, but they do not present much scope for picture-making in the higher sense of the word. Of the three painters, Mr. Gow, Mr. Charlton, and Signor d'Amato, we think Mr. Gow has the best of it, and has produced a careful work of the kind, which will bear looking into, though neither he nor either of his two compeers have made very much of the architecture of St. Paul's, so far as it is seen. Mr. Charlton has contrived to get the picturesque figures and costumes of the Indian contingent in the foreground, with good effect.

Among the other pictures in which the human element is predominant, what can we pick out as of most essential interest? In Gallery XI. Mr. J. Young Hunter has interested artists, at all events, though probably not the general public, with "My Lady's Garden," where a mediævally-clad figure is accompanied by peacocks, who in colour and action make the best portion of the picture. M. Bouguereau sends one of his well-drawn but conventional classicisms, "Elegie," a nude female figure bowed over a stele or altar, at the foot of which sits a weeping cupid; a figure academically admirable—notice especially the drawing of the right hand and foreshortened arm; but deficient in just what such a picture should have—sentiment, sincere feeling. This quality of sincerity is not wanting in Mr. Draper's picture, "Trailing Clouds of Glory"; a child by a sunlit pillar in a church, lifting up her hands in a spiritual ecstasy. In Gallery I. also is Mr. Clausen's little idyll of peasant life, "Going to Work," a real work of art, in which figure and landscape form a complete whole. The poetry of peasant life is rather well represented this year;—in Mr. La Thangue's "Harrowing," for instance, where a man and woman pull at the harrow together in the level evening light, and his "Love in the Harvest Field," an evening scene where the general tone, cold and depressing, is rather sacrificed for the purpose of giving a glow to the moon. His "Cider Apples," too, is a good picture, not of sentiment, but of composition and sunlight and breadth of effect. In the large Gallery (III.) the supply is painfully scanty; so poor a "line" has seldom been seen; perhaps the lowest deep is reached in Mr. Goodall's absurd attempt at an illustration of Mr. Kipling's "Mandalay." Mr. Prinsep's "Cinderella," standing in the corner of the ingle-nook watching a pot boil, is an efficient figure, but hardly interesting; Mr. Abbey's "Who is Silvia" a mere piece of Renaissance costume, the principal figure stiff and unsympathetic, and by no means illustrative of Shakespeare's song. In Gallery IV. Mr. Padday (a name new to us) achieves a bit of real character in "Marooned," a work that suggests "Treasure Island," and seems to revive one of the violent phases of the life of a past epoch. "The Harvesters' Return," by Mr. E. Stott, is a small work possessing both pictorial effect and sentiment; the twilight sky a fine piece of colour. In connexion with this class of work should be mentioned Mr. Van der Weyden's charming and poetic little work, "Homeward" in Gallery II. In Gallery V. Mr. Tuke, in "The Diver," realises one of the best editions of his favourite effect of nude figures in sunlight; one is amused to recognise in the naked lad lounging in the stern of the boat the same who figures as "Cupid" in the New Gallery. Here too Mr. Dendy Sadler shows us an admirable bit of the humour of every day life in "The Christening;" notice especially the elderly *blasé* gentlemen in the background affecting an interest in the baby. But this clever artist is at his best in "The Plaintiff and the Defendant" in Gallery XI., where the two parties and their friends have got (unnoticed by the defendant) to contiguous tables during the luncheon half hour out of court; a work of true humour and not without its touch of pathos. Señor Bilbao's "Dance of the Choristers" in Seville is a work not to be passed over, so curious is its interest of scene and costume; it is carefully painted though a little heavy in effect. Mr. Draper's "Ferdinand and Ariel," in the same room, is remarkable not so much for the figures as for the weird aspect of the extended coast landscape and the strange unreal colour on the sea, giving to the scene certainly a look of an enchanted place, where you might expect strange things to happen. Mr. Hillingford's "Scots Greys among the French guns at Waterloo" is the best battle-piece of the year, but that is not saying much; the rest are wretched commonplaces; or Lady Butler's Alma picture, if not commonplace, is theatrical. Mr. Dollman gives us a good idea of Robinson Crusoe, seated on barren sand-hills and looking out to sea, his melancholy dog beside him.

In Gallery X. Mr. Byam Shaw exhibits a large and elaborate mistake in his "Love the Conqueror," which is clever enough, but only an imitation of early Italian art, the insincerity of which is too obvious. "Love" sits on a black war horse on a knoll, and around file his victims in a long procession; among whom are recognisable Dante, Shakespeare, Beethoven, and Henry VIII.; a sufficiently motley assemblage; among them are probably many other historical personages if one had a key to the group; but it is hardly worth while, for the thing impresses one as an elaborate joke. Of the nature of a joke too is Mr. Collier's "The Garden of Armida," an old title to a modern subject; Rinaldo here is in evening dress and drinks champagne with pleasing modern ladies at a modern summer garden dinner party. Practically we presume it may be taken as a portrait group; and the title does no harm. We should not have passed over Mr. Hacker's "The Golden Hour" (Gallery VIII.), a large picture of people reclining under trees in some Elysium, and noteworthy for its rich colour and fine effect of light, and a certain indefinable originality in style. One regrets to find that the exhibition contains nothing from Mr. Arthur Hughes.

Portraits make perhaps the best show among the pictures. The President's, of the Hon. Violet Monckton, at the top of the long gallery, is a stately and monumental but rather hard work. Sir W. Richmond's portrait of Miss Muriel Wilson in the same gallery is also a portrait of the stately or sumptuous order, for the production of which class of picture he has had in this case an ideal subject (unless he has flattered the lady very much); but though not hard in execution, it is rather stiff and deficient in life. Of other portraits one may specially mention Mr. Sargent's half length of Miss Octavia Hill, balanced by an equally good half-length by Mr. Shannon of Lady Mathew; still better Mr. Sargent's of Miss Jane Evans. In his portrait of the Earl of Crawford, in the same room, Mr. Orchardson has contrived, as usual, to make a portrait of a gentleman in ordinary costume the basis of a very fine study in colour, not exactly what can be met with in the real world of tailors' goods, but something a great deal better. Even with so fine a work as this, however, one is inclined to grumble at Mr. Orchardson for confining himself to portraits this year; one is too anxious to have something of a different kind from him. Mr. Riviere's portrait of Lady Tennyson, attended by her late father-in-law's old wolf hound, is very good as to the dog, but certainly does no justice to the lady. Mr. Frank Bramley's portrait of an officer is a good contrast, in its broad free style, to the flat hard uniform portraits to be found in one or two other corners of the exhibition. This and Mr. Orchardson's Earl of Crawford are valuable as showing how far the power of style goes in raising a portrait from a mere representation to a work of art.

Landscape is better represented, on the whole, than figure pictures; though there is no great work (and one may say there very seldom is at the Academy), there is a fair proportion of good landscapes. In most cases what seems to be wanted is a great style in landscape. The nearest to it is Mr. J. W. North's "Among the Galtees" in Gallery VIII., which is in a broader style than is usual with him, and has less than usual of his charming but very decided mannerisms. It is a fine painting of hill scenery, both in drawing and sentiment. Mr. Alfred Parsons, too, in "A Village by the Links" (Gallery VI.), surprises us by a solidity of treatment and a certain seriousness of style and feeling which we are not accustomed to in his works; here is also an escape from a mannerism, and one much weaker and less interesting than Mr. North's. Mr. David Murray seems to have more and more lost the feeling for breadth and unity in landscape effect; his works are what may be termed "spotty;" such a one as "Green Summer Time," for instance (Gallery III.), impresses one as a collection of details of landscape rather than a whole. Mr. H. W. B. Davis has almost repeated, in his scene "In Radnorshire," the same work which he gave us a year or two ago; a very pretty picture, but less interesting the second time than the first. "Cerig-Gwynnion," in the large room, is his most important work, with a beautifully real and delicately-handled middle distance; the smaller work in Gallery II., "Going Home," a kind of evening pastoral, is also very beautiful in its way; but it is realism—realism of a high order no doubt—rather than intellectual treatment of landscape art. Mr. Adrian Stokes's "The Old Dyke" shows his usual truth of observation but less perhaps than his usual unity of treatment; it is not one of his best works, though one of the best landscapes in the exhibition. In the same room Mr. Mark Fisher's "Valley of the Arun" illustrates some of the finest qualities of style in landscape painting; a work quite above the ordinary run of English landscape in this sense. Among other landscapes to be looked at are Mr. Waterlow's fine and poetic "Forest Oaks"; Mr. Jacomb-Hood's "Corn-flowers," a high field with outline dark against the sky, peopled by a woman and sheep; Mr. East's "A Coombe in the Cotswolds"; Mr. Reid's "A Kentish Idyll," simple to a degree in its materials, but broad in style; Mr. Arnesby Brown's "The Crest of the Hill," with a cloud hanging over it—a landscape with a broad style; various small works by Mr. Brett (who exhibits no large work this year) of which "Étretat," with the "greening gleam" in the foreground sea, is charming. Among small experiments, as they may be called, in special effects, Mr. Thaulow's "Night" is a little thing worth attention for its truth of effect and originality of style; his other work, called "Smoke," might be rather entitled "Smudge." We do not know what Mr. G. D. Leslie is about now, with his landscapes all based on variations of one prevalent tone, as in "The Peaceful Highway," where the wooden starlings of the bridge piers are approximately the same colour as the stonework, and everything else in keeping. There is a kind of charm about the work, but it seems to us to be, properly speaking, neither nature nor art.

Sea pieces are rather strong this year, in quality if not in quantity. Besides Mr. Wyllie's and Mr. Somerscales' works already mentioned, Mr. Hemy sends a most powerful painting representing "Smugglers" chased by a revenue boat through a tumbling sea, which, like the picture in the New Gallery, shows rather a new way of handling sea on the part of the artist; the whole is in a bolder style than his usual one. We have besides a smaller but admirable little work by Mr. Somerscales in Gallery I.; a fine picture of the "Yankee Clipper, *America*" apparently in an Atlantic sea—did she really cross the Atlantic with all that fore-and-aft sail spread?—and a good picture by Mr. Gouldsmith, "Sundown at Sea," a scene of dark tumbling billows with the masts and sails of a large ship rising from behind one of the heaps of water, her hull completely hidden.

Of the sculpture we shall speak more particularly on another occasion.

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## THE GHOST OF WHITEHALL PALACE.

It is a tribute to the genius of Inigo Jones that after nearly three centuries the ghost of the great design of his life, that of the Royal Palace for Whitehall, continues to haunt the imagination of students of architecture.

Let a Government building of any scale be projected, and at once a cry is raised for the realisation in some form of this grand ideal. There must be some magic in a design that is regarded as a goal to aim at, not merely by amateurs more or less gifted, but also by practised architects, amongst whom we believe Mr. Waterhouse may be reckoned; for we remember that in a note concerning a design for the abortive War and Admiralty competition it was stated that he had entertained the idea of attempting to realise something of its magnificence. As an architect of experience he perceived, what the amateur constantly overlooks, namely, the prohibitive scale of Jones's design for a modern building; finding that the offices of to-day were not to be clothed in the inelastic dress of this Renaissance palace design, he appears to have drawn up a diagram illustrating the impossibility of its floor heights of 30 ft.

We observed, with some amusement, that in a recent scheme by a noble amateur, put forward for the new War Office, it was calmly proposed to run a concrete floor at the half height, the assurance being given that this "was frequently done in Europe and America, and would not lessen the dignity of the opening or disturb the architrave." What sort of lighting would be obtained by such an unarchitectural suggestion is apparently a detail that has been ignored, so we throw out to the author of this up-to-date scheme the idea that the upper half of his floor height should be the red tape and paper depôt of the clerk below, access being provided by a spiral stairs on the model of an A.B.C. tea-shop, as underneath, say, the Grand Hotel.

Besides, however, this trifling matter of scale, the reviver of Inigo Jones's palace has a preliminary question to settle as to which design he accepts as Jones's, whether that of Campbell given in "Vitruvius Britannicus," or that of Flitcroft and Kent in the so-called "Designs of Inigo Jones." These schemes are not to be reconciled with each other, and from the choice made by the adapter we shall be able to form some idea of his appreciation of the great architect. Further, there is an overlooked design, displayed in two perspectives belonging to her Majesty, which, it may be added, alone of the three seems to have a stamp of authenticity.

The Campbell design in "Vitruvius Britannicus" is hardly to be regarded with patience. It is a miserable travesty of Jones's ideas; while the Flitcroft-Kent drawings are hall-marked eighteenth-century all over, and in every detail bear traces of unintelligent alterations and of caricature. There is a sweetness and grace of detail and proportion in the only portion of the palace that has been executed, the Banqueting House, that commands the admiration of architects who derive no pleasure from the contemplation of later and more frigid examples of Renaissance art, and in our judgment there is in the perspectives at Windsor alone any trace of this quality of Jones's design.

Beyond, however, these discrepant designs there is another and greater difficulty, namely, that the Banqueting House, as built, has a basement about 13 ft. high, while the perspective designs show the palace with the lowermost order standing on the ground. Over this basement the later copyists have stumbled terribly. Campbell shows his park front with a basement, the Banqueting House, much as built, being incorporated; but in all the other elevations he ignores it. In the Flitcroft-Kent drawings this podium is also ignored in the external elevations, but in the long section through the great court, where the Banqueting House had to be shown, a great hash is produced in the main lines of the design, the two orders and basement as built being more or less fitted into the height of the two orders, minus basement of the centre and wings of the façade.

This bungle is reproduced in the latest scheme put forward, carrying in itself a sufficient condemnation of the design. That Inigo Jones, as a close student of Roman work and a follower of Palladio, would, in a design of the rank and importance of a Royal palace, have broken his main entablatures across and used orders of such a discordant scale, is inconceivable. It seems to us indispensable for the adapter to reconcile his proposals with the existence of the basement in the part executed, on other terms than those.

This basement, or podium, is somewhat of a puzzle. If we accept the perspectives at Windsor as the original design of Inigo Jones, and agree to the date of 1618 ascribed to them, we must suppose that in 1619, when the Banqueting House was commenced, Inigo Jones found that the site, or the level of the old palace, or other cause, made such a basement necessary, and that it is an addition to the first idea. We may readily imagine that he would seize on such a feature as giving a greater dignity and importance to his orders, and as being in accordance with the main ideas of Italian design. We do not see how the conclusion can be resisted that the whole palace must have had a podium throughout had it been carried out. There would have been nothing unusual in this, for it cannot be too clearly recognised that Renaissance architecture originating in Italy has been profoundly influenced by Italian habits and climate.

The ground floor in Italy was of little value, both by tradition and climatic cause, while the *piano nobile* is the first floor, a radically different use to our own, and one which led to endless difficulties for our adapters.

Few had the courage to build such costly and useless basements as those of the Banqueting House or of Blenheim, and yet Italian use had given such value to the heavily-rusticated ground story as a podium to the order that the feature was not one to be lightly abandoned.

In a way the most English of Renaissance designs with orders is Longleat, where the Italian idea of a progressive scale in the columns is reversed, and the ground floor has the tallest order, that being the true *piano nobile*, while the columns above are heroically cut down to the scale of the bedrooms, the topmost order being the smallest. In such a case a mere plinth, involving small sacrifice, might be in scale; and there is some plausibility, on paper, in the idea of an order to each floor, but in reality few things are more futile than columns of inadequate scale, as in the Circus at Bath, for instance, where the normal heights of the stories make each order mean and petty by its lowness.

There is, therefore, no possible cheap casing up of modern Governmental offices of, say, a 13 ft. standard in height of the rooms within the noble scale of Inigo Jones's palace, with its floors of 30 ft. height, with a further obligation to employ the most valuable ground floor area in a basement or podium of æsthetic value only.

The real point, moreover, is this. What need is there to attempt such an adaptation? And what honour would it do to the great architect to thus misuse his design? The author of Covent Garden piazza, with its nobly realised barn-church and surrounding buildings, and the designer of the north side of Lincoln's Inn-fields, could as well conceive the possibilities of a nest of Governmental clerks' offices as of a Royal palace, and would, we are persuaded, have produced a design as far different for each as are the realities of the case.

Whitehall Palace remains a dream—a haunting ghost, if you will—but not a possibility, in England, because Strafford was not a Richelieu, and the execution before Whitehall decided political issues which in the contrary result might well have been expressed in such a palace as this.

Seeing that the fragment built cost in money of those days not far from 16,000*l*., and that the size of the whole would have approximated to Versailles, we can roughly estimate the social and political aspects of the scheme, realising the truth of the saying that the cost of the French palace was the Great Revolution.

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## NOTES.

The Education Debate.

It is a matter of satisfaction that the House of Commons last week discussed the education estimates in a fuller and more interested House, and in a more serious manner than usual. We have insisted over and over again that technical education cannot be really advanced unless elementary education as a whole is put on a better footing, and unless the country as a whole can be induced to take a real interest in the subject. We are inclined to think that public opinion is beginning to realise that educationally England is behind other European countries. We shall not consider that technical education is standing still if the House of Commons is beginning to show interest in elementary education. It is clear from the speech of the Vice-President of the Council that there is far too much child labour to be found in England, which prevents elementary instruction from having its full value. It is equally clear that elementary education is ended at too early an age. When these two faults are, to some extent, at any rate, done away with, technical education will grow almost of its own accord. At present national funds are largely wasted by reason of an imperfect elementary education.

**The Small Houses Bill.**

THE deputation last week, as we were going to press, to Mr. Chamberlain from the Building Societies, on the subject of the Small Houses Bill, was somewhat of a difficulty to the author of this measure. As we have pointed out, this Bill is a bit of electioneering pure and simple. As Mr. Chamberlain does not wish to offend the numerous members of building societies, he minimised the proposed Act as much as possible. He actually suggested that members of building societies, being voters, could prevent Local Authorities from putting the Act into force. He offered, in Committee, to safeguard it even to a greater extent than it is at present. If a measure such as this is needed it should have every opportunity given to it of being used; at present, those who have it in charge in Parliament seem to wish to make it as inoperative as possible. We have more than once pointed out that it can be of little use. But the placing of an electioneering advertisement in the Statute Book is not statesmanship, and the proceedings in Committee make the measure look more and more unworkable. On Monday last it passed through this Parliamentary ordeal, and has now but to pass the third reading in the House of Commons.

**The L.C.C. and the London Gas Inquiry.**

MR. H. E. HAWARD, Comptroller of the London County Council, is the second witness who has been heard by the Select Committee appointed to make inquiries concerning the different prices charged for gas within the Metropolis. Bad management, said Mr. Haward, was the cause, in his opinion, of the differences between the three metropolitan companies. Statistics were put forward which showed that the Gas Light and Coke Company have for many years paid more for coal, and obtained less for residuals, than the South Metropolitan Company, although the former company have a much larger business than the latter. Mr. Haward considers that the most serious differences between the companies are to be found in the capital charges. The following figures show the capital employed in the three gas undertakings in 1897 :—

| — | Amount "fixed" and "floating." | Per ton of coal carbonised. | Per million cubic feet of gas sold. |
|---|---|---|---|
| | £ | £ | £ |
| Gas Light and Coke | 13,107,332 | 6 2 3 | 625 |
| South Metropolitan | 3,991,069 | 4 6 3 | 450 |
| Commercial ........ | 961,304 | 3 17 11 | 412 |

The witness maintained that the Gas Light and Coke Company are seriously over-capitalised, and that to this over-capitalisation is to be traced much of the growing difference between the prices charged for gas north and south of the Thames. Witness further said that the County Council felt that the sliding scale, as it affected the Gas Light and Coke Company, had not fulfilled its object, which was to secure extra care and skill in the management of the undertaking. On the whole, Mr. Haward's evidence was a very able exposition of the case against the Gas Light and Coke Company; but we note one or two weak points, and await with interest the evidence of the gas engineers. We consider, however, that the comparison of the working of one metropolitan company with another is quite legitimate, and are glad that vague growlings and grumblings have at last given place to definite charges. We trust that the Committee will keep in view the growing importance of cheap gas as a substitute for coal, and its consequent value as a means of obtaining a clearer atmosphere.

**Victoria Station.**

THE preamble of the Bill for the enlargement of Victoria Station has been passed by the Select Committee of the House of Commons, to which it was referred. The fact is noticeable. It emphasises a necessary movement in regard to the structures of the London terminal stations which has long been seen to be inevitable. They require great enlargement. Waterloo, for example, is wholly inadequate for the traffic. Euston, which at one time was regarded as a large station, is now absurdly small. The lighting of it, the want of system, and its crowded state are really a disgrace to the great company which prides itself on being the most up-to-date railway in the United Kingdom. There is sometimes talk of a central London station. Such a station would have to be so large that its erection is an impossibility. But in a few years such stations as those which at present exist at Victoria, Euston, Waterloo, Charing Cross, and Paddington will be noticeably enlarged.

**The Alternate Current Arc.**

THE discussion on the paper of Messrs. Duddell and Marchant at the Institution of Electrical Engineers was concluded last week. As we expected, it met with a chorus of approval. Several of the speakers, however, seemed to think that the authors had invented the oscillograph. Professor Ayrton, in whose laboratory they had carried out all their experiments, corrected this impression by attributing the invention to M. Blondel. Mr. Duddell has greatly improved its design and in its latest form it is, as Professor Thompson called it, an instrumental triumph. Professor Fleming made some interesting remarks on the remarkable experiments described in the paper, in which one of the carbons was replaced by a metal rod with the result that the alternate current was transformed into a pulsating direct current, the current flowing only when the metal was the positive pole. He pointed out that this experiment threw an interesting light on the mysterious Edison effect in glow lamps, which has never been satisfactorily explained. He agreed with the authors in thinking that the unilateral arc was formed by the metal cooling more rapidly than the carbon. He also showed that the electrolytic theory was supported by the fact that the non-arcing metals zinc, cadmium, mercury, and magnesium were monatomic, and hence if the electric arc were due to the splitting up of the molecules one would naturally expect these metals not to arc. Professor Fleming stated that he had found that the maximum illumination did not coincide with the maximum current in the arc, but followed it by a perceptible interval, and also that as far as luminous efficiency was concerned, a reduction of frequency was very advantageous. Professor Ayrton read extracts from a communication by Mrs. Ayrton, in which she criticised the authors' theory as to the cause of the unilateral arc, and showed how it might arise from the fact that the vapour of the metal was formed at a lower temperature.

**Sheffield Society of Architects and Surveyors.**

THE annual Report of the Sheffield Society of Architects and Surveyors contains an account of a dispute which they have maintained, in a very firm spirit, with the Secretary of the Sheffield Master Builders' Association. The correspondence throws an interesting light on the claims now made by builders, who seem to aim at a reversal of the old order of things — that they are to command the architect, instead of the architect commanding them. The Master Builders' Association demanded nothing less than the insertion in all contracts of provision for the interference of an arbitrator in every case where there was a difference of opinion between the architect and contractor; in other words, we may say, in every case where the contractor did not find it convenient to himself to obey the architect's directions. The Council "hope that the members of the Society will in no case consent to any such form of agreement." The matter is still under discussion, however, and its further consideration is deferred for the incoming Council. If such a condition were accepted, the architect might as well give up the pretension to direct the building operations at all. The demand is perfectly preposterous.

**The Northern Architectural Association.**

THE annual Report of the Northern Architectural Association (whose headquarters are at Newcastle-on-Tyne) records an increase in the election of new members over that of last year, and in other respects shows that the Association is prospering and doing good work. The Report includes a letter written by the President of last Session, Mr. F. W. Rich, to the Secretary of the Institute of Architects, in reference to a meeting to be held in Newcastle by the Society of Architects, to discuss the question of the Statutory Registration of Architects. The object of the letter was to explain that the Northern Architectural Association did not intend to take any part in the meeting referred to, but that their abstention was not due to any objection to the principle of registration, but to the feeling that the Institute of Architects was the proper body to promote a scheme of such magnitude. The letter concludes :—

> "I am desired, however, to put on record our continued concurrence with the question of registration, and to hope that at some early date the Institute will take up the matter, and so amalgamate the already too scattered architectural societies."

We are rather inclined to think that the Institute is almost pledged to oppose registration, though we admit that there is something to be said for it from some points of view. But we would ask the Northern Architectural Association, and other bodies who are in favour of registration, to consider how it comes that the Institution of Civil Engineers are able to maintain confidence in their own body without any such method, and why it is that there is no cry for the registration of Civil Engineers. If the principle is right, it ought to be more applicable to the engineering profession than to the architectural, seeing that engineers deal solely with construction, in which it is possible to test proficiency, and not with art, in connexion with which no definite test can be applied.

**St. Dunstan's-in-the-West, Fleet-street.**

WE read that, subject to the granting of a faculty in that behalf, the rector and churchwardens and the trustees under the Act for rebuilding the church have agreed to sell for 4,500*l*. to the Law Life Assurance Society the open space on the church's west side for an extension of the Society's offices. The old church, of which there are views extant,* was repaired and reroofed in 1701, and escaped from the Great Fire. It was distinguished by a large bracket clock projecting over the pavement, made by Thomas Harris, of Water-lane (now Whitefriars-street), and an alcove with pediment, containing two savages, or wild men, that struck the chimes with their clubs, set up in October, 1671. These were removed by the Marquis of Hertford to his villa, St. Dunstan's, in Regent's Park, now occupied by Lord Aldenham. The new church, built of brick and Ketton stone, was begun in 1831 from the designs of John Shaw, F.R.S., who died on July 30, 1832, aged fifty-six, a few days after the external completion, but before the consecration of the church. His son, John Shaw, architect to Christ Hospital, finished the interior, and also designed the parochial schools and the adjacent offices, No. 187, of the Law Life Assurance Society. The tower and lantern, similar to those at Boston, St. Helen's, York, and St. George's, Ramsgate, by H. E. Kendall (1825), rise to 130 ft.; the body of the church, an octagon with recesses at the sides, has a diameter of 54 ft. in the clear, and the groined ceiling of the clear-story has an enriched key-stone. The roof is supported by eight iron spandrel beams, bound together at the centre with an iron ring. The heads of the label over the south door are considered to be faithful portraits of Tyndale and Dr. Donne; the statue of Queen Elizabeth, at the side, is a relic of Lud Gate. At Richard Marriott's, one of the stationer's shops against the old church, was first published "The Compleat Angler"; of the Izaak Walton memorial window, designed and executed by Messrs. Percy Bacon & Brothers, we gave an illustration on April 13, 1895.

**Pictures at Hampton Court Palace.**

WE understand that the authorities will transfer to the state-rooms at Kensington Palace, which are now being made ready for the admission of the public, the collection of historical pictures and portraits painted by Benjamin West for George III., which some years ago were hung in Queen Anne's Drawing-room, Hampton Court Palace, on the removal thence of Andrea Mantegna's series, "The Triumph of Julius Cæsar," into Wren's Communication Gallery, in the Fountain Court. The Drawing-room, which measures 41 ft. by 35 ft., and is 30 ft. high, was decorated for Queen Anne by Verrio, who painted the ceiling with an allegorical group of the Queen as Justice, her crown held by Neptune and Britannia, together with Plenty, Peace, &c., and the walls with the British Fleet, Prince George of Denmark, figures representing the four quarters of the globe, and so on. The wall paintings have been damaged by flock paper laid over them, and by the fastenings of the pictures. Amongst West's pictures are "The Death of General Wolfe," "The Death of Epaminondas," "Hannibal Swearing Enmity to Rome," "The Death of Bayard," "Cyrus and the Family of Astyages," and portraits of George III., Queen Charlotte, and their children. It is from this room, where Queen Anne held her drawing-rooms, that one obtains the beautiful view of the Great Fountain Garden, and the converging avenues of the House Park beyond.

**An Impressionist Exhibition, Paris.**

AT the Durand Ruel Gallery at Paris a small exhibition has been organised of the works of Impressionist painters, including pictures by Claude Monet, Pissaro, Renoir, and Sisley. It is a more important collection than the similar ones which have preceded it. Monet is represented by thirty-six pictures, of which those known as "Le Champ d'Avoine" and "Les Peupliers du Bord de l'Epte" may be called the curious visions of a colourist. The works of Renoir are almost all *genre* paintings of a very heavy and disagreeable tonality, but fine in drawing. Pissaro is represented by thirty-five paintings, the older of which betray much of the influence of Courbet. The works of Sisley show an unquestionable mastery over effects of light, especially those of later date. Nevertheless it must be confessed that the collection as a whole leaves the impression of a great deal of violent and exaggerated effect in colour, and is not restful either to the mind or the eye.

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## THE ROYAL INSTITUTE OF BRITISH ARCHITECTS:

### ANNUAL REPORT.

THE Annual General Meeting of this Institute was held on Monday at No. 9, Conduit-street, Regent-street, Mr. E. A. Gruning, Vice-President, in the chair.

The decease was announced of Herr Von Egle, Hon. Corr. Member, of Stuttgart.

### *The Spring Statutory Examination.*

It was stated that, pursuant to Section 140 of the London Building Act, 1894, an examination of candidates for certificates of competency to act as district surveyor in London was held by the Institute on the 20th and 21st ult. Of the five gentlemen who presented themselves and were examined, four passed and have been granted by the Council certificates of competency. They are as follows:—H. D. Eldridge, of Sandycoombe, East Twickenham; H. Hoyne Fox, Streatham Hill, S.W.; H. G. Leslie, Putney; C. W. Surrey, South Kensington.

The annual Report of the Council, which was adopted, contained the following passages:—

"Since the publication of the last annual Report, on May 7, 1898, twenty meetings of the Council have been held, of which the Council, elected on June 6, 1898, have held seventeen. These are exclusive of meetings held by Committees of Council. In the course of the year twenty-five Fellows have been elected, thirty-one Associates, one Hon. Fellow, one Hon. Associate, and one Hon. Corr. Member. Of the twenty-five Fellows, eleven have been elected by the Council under the new proviso to By-law 9, six being Presidents of allied societies, and five having been unanimously recommended by the Councils of allied societies. The numbers in each class of subscribing members stands as follows: Fellows, 612; Associates, 1,003; Hon Associates, 47. The only gentleman elected as Hon. Corr. Member is the Professor Felice Barnabei (Rome). The losses by death to the Institute during the past year have been as follows:—Fellows: Henry Bridgford, Henry Hewett Bridgman, Thomas Lainson, Professor Thomas Hayter Lewis, Thomas Rowe, John Gibbons Sankey, Sydney Stent. Associates: Hayward Richardson Brakspear, Edmond Egan, Sidney Alexander Ell, Charles Emanuel Evans, John Gillett Livesay, Frederick Mew, George Macfie Poole, William Reddall, Tom Turner. Hon. Associates: Sir John Fowler, Major Alfred Heales, George Andrew Spottiswoode, Judge Meadows White. Hon. Fellow: Sir Henry William Peek. Retired Fellow: James Murray. Hon. Corr. Member: Charles Garnier (Paris). In Professor T. Hayter Lewis the Council mourn an old and distinguished member. A serious loss to European architecture is that of Charles Garnier, a Royal Gold Medallist of the Institute. The Council have subscribed to the monument now being erected in Paris to his memory.

Preliminary and Intermediate examinations were held in June and November, 1898, in London, Birmingham, Bristol, Manchester, and York, and final examinations in London. The results are shown in the following tabulated forms:—

*Preliminary Examinations.*

| | Exempted. | Examined. | Passed. | Relegated. |
|---|---|---|---|---|
| Summer... | 40 | 92 | 58 | 34 |
| Autumn... | 52 | 78 | 46 | 32 |
| Total | 92 | 170 | 104 | 66 |

*Intermediate Examination*

| | Examined. | Passed. | Relegated. |
|---|---|---|---|
| Summer......... | 76 | 53 | 23 |
| Autumn......... | 48 | 32 | 16 |
| Total ......... | 124 | 85 | 39 |

*Final and Special Examinations.*

| | Examined. | Passed. | Relegated. |
|---|---|---|---|
| Summer......... | 30 | 15 | 15 |
| Autumn......... | 33 | 16 | 17 |
| Total ......... | 63 | 31 | 32 |

It will be seen that during the year 196 gentlemen have been registered as Probationers, the number of whom now stands at 1,098; and eighty-five as Students, the number of whom now stands at 303. . . .

The annual dinner this year will be held on Tuesday, June 27, in London, at the Whitehall Rooms, Hôtel Métropole.

The sanction of the Privy Council to the alterations in By-laws 9, 15, 30, and 31 was given at the Council Chamber, Whitehall, on May 19.

The revised schedule of professional charges, entitled 'The Professional Practice as to the Charges of Architects,' was finally agreed upon and adopted at a special general meeting of the Institute held on June 27.

Since the issue of the last annual Report the Aberdeen Society of Architects has been admitted to alliance with the Royal Institute.

The Council have taken public action with regard to the New Vauxhall Bridge and the London Government Bill.

The Council, having been requested by the Government to recommend a limited number of architects from whom two might be selected to prepare designs for the New Government Buildings, have been officially thanked for their services, and informed that Mr. J. M. Brydon and Mr. William Young are the architects chosen.

The Competitions Committee have had several meetings, and action has been taken with regard to the following competitions:—International Fisheries Exhibition, Aberdeen; Glasgow International Exhibition; Royal Institution, Liverpool; Tavistock-road, Plymouth; Fire Station, Bradford; Wolverhampton Workhouse; Godalming Municipal Buildings; Swindon Union Workhouse extension; Grammar School-house, Doncaster; Wandsworth and Clapham Union.

Special Committees of the Institute are at present sitting to consider respectively the following subjects: The holding of the Institute examinations in the Colonies; proposals by the Association of Technical Institutions that certain certificates of the Science and Art Department should exempt from portions of the Preliminary and Intermediate examinations; the administration of building by-laws in rural districts. . . . .

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* See the illustration (after the drawing by West and Toms, 1737), in the *Builder*, April 25, 1885; the "Mirror," 1739; and later views by Maurer, Malton, Miller, &c.

At the request of the Court of Common Council of the City of London, the Council have nominated six architects to send in designs for the new Sessions House, Old Bailey.

The Council are pleased to announce that since December 31 they have been enabled to invest 1,500*l.* in Tasmanian Government 3½ per cent. stock.

### *Report of the Art Standing Committee.*

The Art Standing Committee report that they have held seven meetings since the publication of the last report. Mr. Alfred Waterhouse, R.A., LL.D., was re-elected Chairman; Mr. Macvicar Anderson, Vice-Chairman; and Messrs. E. W. Mountford and Owen Fleming were reappointed Hon. Secretaries.

*St. Patrick's Cathedral, Dublin.*—Plans and particulars of proposed additions to St. Patrick's Cathedral, Dublin, were submitted to your Committee, who were asked to state (*a*) whether the addition of modern building to the Cathedral was legitimate and reasonable; (*b*) whether the plan submitted was sufficiently conservative and considerate towards the original plan of the thirteenth century. Your Committee (*a*) determined that, assuming additional accommodation to be necessary for the efficient performance of the services of the Cathedral, it would be legitimate and reasonable to provide it; but (*b*) suggested a modification in the proposed grouping of the buildings.

*Kew Bridge.*—Your Committee, having had this matter under their consideration, urgently recommended the adoption of granite or stone as the material for the bridge, and by the instructions of the Council, the Secretary wrote to the County Councils of Middlesex and Surrey conveying this recommendation. In reply the Institute was informed that stone would be used.

*Vauxhall Bridge.*—This subject has received further consideration, and, as the result of some correspondence between the Secretary of the Institute and the Chairman of the London County Council, the Chairman (Mr. Waterhouse, R.A.), with Messrs. Statham and Mountford (Hon. Secretary), waited upon the Chairman of the London County Council and stated their views as to the design prepared by Sir Alexander Binnie.

*Historic Buildings in London.*—At the invitation of the London County Council your Committee invited Messrs. Brydon, Mountford, and Young to represent the Institute at a conference held by the Council. The conference determined to prepare a register of all buildings of architectural or historic interest in the County of London, and a Committee was appointed, of which the Hon. Secretary of the Committee is a member.

*Florentine Monuments.*—The attention of your Committee having been directed to extensive alterations that appeared to be contemplated in the ancient quarters of Florence, steps were taken to assist the English committee who had been appointed to deal with this matter. Signatures were obtained from members of the Institute and its allied societies to a memorial of protest, which has been presented to the Municipality of Florence.

*Artistic Copyright.*—Your committee have had under consideration the questions of artistic copyright, and Messrs. Statham and Caröe were appointed to represent the Institute at the conference.

*Decoration of St. Paul's Cathedral.*—This matter is engaging the attention of your committee.

The following subjects have also received the consideration of the committee:—Portrait of Sir William Chambers; Trinity College, Dublin; the Casino at Mont Saint-Michel; the Protestant Cemetery at Rome; the Kapell-Brücke, Lucerne; and the proposed Arts and Crafts Exhibition."

The report of the Literature Standing Committee mentioned that since the election of the Committee on June 6, 1898, the Committee have held eight meetings. At the first meeting of the new Committee Mr. Alex. Graham, F.S.A., was reappointed chairman; Mr. R. Phené Spiers, F.S.A., vice-chairman; and Messrs. R. Elsey Smith and Arthur S. Flower, M.A., hon. secretaries. . . .

"The Librarian has now completed the Supplement to the Brandon Catalogue up to the end of the year 1898. The catalogue is in type, and will shortly be issued to members. It will occupy about 100 pages of printed matter, and the Committee desire to take this opportunity of expressing their appreciation of the promptness and care with which this important work has been carried out by the Librarian.

The Committee have to report the satisfaction with which they have received from the family of the late Professor T. Hayter Lewis a valuable collection of books and pamphlets for the library."

The Practice Standing Committee report that the usual monthly meetings of the Committee have been held. Mr. J. Douglass Mathews and Mr. Thomas Harris were re-elected chairman and vice-chairman respectively; Mr. J. Osborne Smith and Mr. C. H. Brodie were elected hon. secretaries, Mr. Smith taking the place of Mr. Woodthorpe, who resigned.

"The points raised on the Institute conditions of contract referred to in the last report, and also other important questions on these conditions, referred to the Committee by the Council, were very fully considered, and reports thereon sent to the Council, special attention being called to the decision in the Court of Appeal in the case of Dodd *v.* Churton (March 19, 1897) as affecting all contracts. The Lords Justices decided that the giving of extra work nullified the time for completion clause and consequent fine for non-completion.

A report was also sent to the Council on the question of the liability of architects for license as appraisers, intimating that, in the opinion of the Committee, they are not in ordinary practice liable to this tax.

The consideration of the revised schedule as to the professional charges to be made by architects was continued and concluded, and the proposed new schedule sent to the Council. After amendment by the Council, assisted by the chairman and vice-chairman of the Committee, this was finally ordered to be issued as an Institute paper at a special general meeting on June 27, 1898. The schedule, as finally amended and adopted and issued, was printed in the *Journal* of July 23, 1898.

At the request of the Committee the Council have agreed to obtain counsel's opinion as to the liability of architects under the new Workmen's Compensation Act, and a list of questions to be submitted to counsel was drawn up by the Committee.

A suggestion that the Committee should be allowed to interview and advise members of the Institute as to difficulties arising in their practice was not agreed to by the Council, on the ground that this work was already undertaken by one of their own committees.

The Committee have considered the London Government Bill and reported thereon to the Council."

The Science Standing Committee report that they have held six meetings since the publication of the last annual report, with an average attendance of eight members. Mr. P. Gordon Smith was appointed chairman; Mr. W. C. Street, vice-chairman; and Mr. H. D. Searles-Wood and Mr. Max. Clarke, hon. secretaries.

"The Committee are still awaiting the publication of the results of the experiments for the purpose of ascertaining the strength of different kinds of brickwork.

The Committee, having reported to the Council on the subject of standardising the size of bricks to the effect that they should like the matter referred back to the Committee with a view to coming to an agreement with the Brickmakers' Association to fix the standard, appointed a sub-committee to meet a sub-committee appointed by the Institution of Civil Engineers, and a joint standard was agreed to by the joint committee and referred to the Association for discussion. The joint committee have not been able to meet to consider the replies of the Association, owing to the absence from England of one of the members of the engineers' sub-committee, but it is hoped that the standard will be agreed on in the course of a few months."

The accounts of ordinary funds for 1898, prepared by Messrs. Saffery, Sons, & Co., chartered accountants, and audited by Mr. Zeph. King and Mr. F. W. Marks, the hon. auditors appointed at the annual general meeting of 1898, conclude the Report.

Scrutineers were then appointed to direct the election of Council and Standing Committees for the ensuing year of office.

A vote of thanks was accorded to Messrs. Zeph. King and F. W. Marks for their services as auditors.

### *The Statutory Board of Examiners.*

The chairman announced the resignation from the board of Mr. Francis Chambers. Mr. Thomas Blashill was appointed to fill the vacancy.

The chairman announced that the next meeting will be held on the 15th inst., when Mr. H. H. Statham will read a paper on "The Architectural Element in Engineering Work."

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## THE ARCHITECTURAL ASSOCIATION:

### SPECIFICATIONS.

An ordinary fortnightly meeting of this Association was held on Friday, last week, in the Meeting Room of the Royal Institute of British Architects, No. 9, Conduit-street, Regent-street, Mr. G. H. Fellowes Prynne, President, in the chair.

The minutes of last meeting having been read and confirmed, it was announced that Mr. A. E. Nightingale had been reinstated a member of the Association.

On the motion of Mr. E. Howley Sim, senior honorary secretary, a hearty vote of thanks was accorded to Messrs. G. B. Carvill, Gervase Bailey, and Leonard Butler for their efforts *re* the annual soirée. A vote of thanks was also passed to the ladies and other members of the cast who so ably assisted on the occasion.

Mr. Sim also proposed a vote of thanks, which was agreed to, to the Prime Warden of the Fishmongers' Company for allowing members to visit the Fishmongers' Hall on April 15, and to Messrs. H. Chatfeild Clarke and J. D. Crace for conducting the party over the Hall.

The intended visit, on the 6th inst., to the Building Trades Exhibition, at 3 p.m., was also announced.

The Chairman announced that the first meeting of the Sketching and Measuring Class would be held on May 2 at South Kensington Museum (Architectural Court).

He also stated, *re* the House List for 1899-1900,* that Mr. E. W. M. Wonnacott had been nominated by Messrs. Stonhold and Freeman as honorary librarian.

Messrs. W. A. Jeckells, A. Smithers, and W. A. Webb were appointed scrutineers in the forthcoming election of officers for the new session.

The following paper on "Specifications," by Mr. F. W. Macey, was then read by Mr. G. B. Carvill, junior hon. secretary, in the author's unavoidable absence:—

There has been so much recently written upon the subject of specifications, that it is difficult to suggest any new or original ideas, and I fear that the few remarks I have to make may be somewhat wearisome to many present, and seem like going over old ground.

But those who have not given the subject any special consideration may find some of the suggestions not wholly unprofitable.

And if further excuse is necessary, I do think that to hear a question discussed creates a more lasting impression than that of mere reading.

A specification may be either lengthy or curtailed, according to the particulars given upon the drawings. Some engineers favour a short specification and prefer to put as much written information as possible upon the drawings, one reason for this being that engineers usually supply a number of detail drawings with their contract plans, which enables them to put many notes upon those drawings. On the other hand, architects do not usually supply many detail drawings, consequently somewhat lengthy specifications are necessary.

To my mind, either method may be adopted if the requisite information be clearly given.

I can conceive of a set of plans prepared and written up so fully in detail that a specification as a separate document might become unnecessary; this sometimes happens in a certain class of work. On the other hand, I can scarcely imagine a specification so full in detail as to dispense altogether with the plans, unless it related to a very small and simple erection or to general repairs or decorations.

But without further discussing these two methods I would ask you to assume that both plans and the specification are necessary for general work; I will then suggest a form of specification which shall be curtailed and yet shall not detract from a full and clear description of all parts of the work.

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* For list of names see our issue for April 22.

A specification should not supersede the particulars given upon the drawings, but should more fully explain those parts which the drawings do not clearly illustrate, or which are in any way obscure. It is impossible to show every detail or give every particular upon the drawings, consequently a full description of those parts becomes absolutely essential in the specification.

I take it that the plans give the general arrangement of the building, and the specification should describe the details of that arrangement. The plans should have figured upon them every important dimension, such as the lengths, widths, and heights of the various distinct parts of the building; the thickness of walls; the depth and width of the concrete foundations; the sizes of floor joists, roof, and flat timbers; the widths and heights of doors and windows; and all other similar and important parts and items. It is seldom that plans to a small scale are so accurately drawn as not sometimes to be obscure with regard to the sizes of certain parts unless these parts are given in figures.

The only other particulars in writing to be put on the plans would be the names of the rooms and other parts of the building, together with any notes or references which might assist the description in the specification.

With regard to small scale drawings, do not labour the elevations by showing every brick and slate. Working drawings will be far clearer without too many lines, and there is no need to finish them like a picture.

But in the specification I would include everything except the general dimensions of the various parts of the building. Of course, the sizes of the joists and roof-timbers are always described in the specification, as well as sometimes being given on the plans; and I see no harm in stating the thickness of the various walls, the depth and width of the concrete under the walls, or any other detail of the building. A specification which is full but at the same time concise and to the point will prevent mistakes and misunderstandings when the building is in progress. Need I remark that the specification should always agree with the drawings?

Presuming, then, that the plans are before you, but not in too great detail, and that you have decided to write a rather full specification—what, then, is the first consideration?

You must have a complete knowledge of your subject—that is, a full grasp of the details of building construction and of the value and properties of materials. In other words, you must know what you want to describe, and, knowing that, you must be acquainted with the requirements attendant upon those wants; and you may take it for granted that until you are proficient in these matters you will never be able to commit to writing the proper descriptions needful to the erection of a building.

Therefore, I say that a complete knowledge of all the requirements and details of the various trades coming within the scope of the architectural profession is the first consideration to efficient specification writing; and I might also add a knowledge of the various Acts relating to buildings. But it may be said that it is impossible to know everything, and when in doubt the only way is to put a provisional amount to cover any such point, and to obtain afterwards the information from a friend or specialist. This is true, and may be the only course to adopt at the time, but ready and accurate knowledge will benefit all parties concerned. The question then arises: What is the best way to obtain such knowledge?

I know of only two ways, study and observation. What I do myself is first to read any works obtainable which bear upon any doubtful point, and I would also add that much useful information can sometimes be gained from trade catalogues. I then discuss the matter on every possible occasion with any one I come across who has any knowledge of the subject, and, further, I keep my eyes open and learn all I can from what is going on around me. You have only to pass down any street where building operations are in progress to gain many practical hints.

You now proceed to write the draft specification. This is often hurriedly written, much being left to alter and supplement when revising for fair copying. This is a great mistake. A draft specification should be written with care and thought. Being fresh to the matter, even so dry a subject creates a certain amount of interest, and if you concentrate your mind upon the subject you will be less liable to omit many small items. Therefore, let the first draft be as complete as possible.

I might suggest that when engaged upon the plans, it will be found of great assistance if notes are made of any obscure item coming under your observation at that time.

Just a reminder here. When sending out a number of fair copies, see that they all agree.

There is one matter which I should perhaps have referred to sooner. Should the quantity surveyor write the specification for the architect? In the abstract it seems absurd to ask such a question were not this practice so frequently followed. Personally, I think the architect should write his own specification, and not delegate the work to another. A quantity surveyor cannot know what is in the architect's mind, therefore it is impossible for him to describe fairly that which embodies the architect's best ideas. It is unjust to the quantity surveyor to ask him to attempt to do so. It is also unjust to the client, and the architect has no right to accept payment for work done by another. One other word with reference to the quantity surveyor.

When he takes out the quantities it is usual for him to make notes of any omitted items on the architect's specification. Should he not do so, however, the architect must run through the bills of quantities and adjust the specification to them before the contract is signed.

Reverting to the subject-matter, a full specification will save many an anxious moment. Constant disputes occur with the builder, many extras crop up owing to imperfect wording and omissions—ordinary care would prevent all this. And remember always that a specification is a legal document.

Bearing somewhat on this incomplete description of work, attention might be called to the fact that one so often sees in a specification wording to this effect:—"That the builder is required to perform a certain work all complete," or "all as required," or "as necessary." This generalising shows the architect's ignorance of what is required; and it is not reasonable to ask a man to estimate for something of which you yourself do not know the requirements. Consequently you either get an unfair estimate or an incomplete work, or else a squabble ensues with the builder as to what was intended or required. Should you ever be in this difficulty of not knowing what is necessary, then the best plan is to put a provisional amount and let the item work itself out in execution. Therefore let your terms be definite and clear. Some make a great point as to which is the correct word to use, "provide" or "supply." I think it very unimportant. There certainly is a slight difference; but, at the same time, to provide you must supply, and to supply you must provide.

Agreeing, then, upon this point that a specification must be somewhat full, and, consequently, lengthy, what then is the best way to curtail the descriptions without detracting from the merits of the document? There are several ways. Many items which will apply to several parts of the building under similar conditions may be generalised. Thus, take, for example, the skirtings to a building. A general clause applicable to all skirtings may be inserted, somewhat to this effect: All skirtings to be rebated to floors, tongued and mitred at angles, tongued at heading joints, housed into architraves, returned and mitred at ends, and fixed to double splayed narrow-framed grounds with dovetailed backings and filling out blocks, and plugged to walls.

The only further description then necessary will be to refer to each particular skirting, such as:—

Attic skirtings 7 in. by 1 in. plain deal.
First-floor skirtings 9 in. by 1¼ in. moulded deal.

And so on.

Here, then, the description of the fixings to each separate class of skirtings is avoided. In the same way the backings to door and window linings, and many other items where the conditions are similar may be generalised.

Further, if any detail drawings are supplied with the contract plans, which I fear is not often the case, a specification may be much shortened without detracting from its efficiency by merely referring to the detail drawings in question, and at the same time mentioning any particular feature not readily gathered from those drawings.

Thus, in about three lines, may be stated all that is necessary, which otherwise would perhaps occupy a dozen or twenty. But I fear, until it is the custom to supply detail drawings with the contract plans, very much cannot be made of this point.

Here is another way to shorten a specification. Take, for example, the windows to a building, one or two of which are dissimilar from the rest. I would first describe those, and then refer to all the others on all floors, in all positions, in the one item, and not describe them to each floor separately. Take, again, the external facings to brickwork. Describe any special facing first, and then the whole of the other facings to all parts in the one item without reference to special position. There are many other items which may be treated in this manner. One more suggestion. The wording itself of a specification may be much curtailed by care and practice. You will never be able to write concisely and to the point until you have written many specifications.

Do not labour the wording needlessly nor repeat yourself unnecessarily. In time the requisite language will come simply and quickly.

I want it to be understood that my remarks chiefly apply to the correct form and wording of a specification of which quantities do not form a part of the contract, or which, perhaps, have not even been supplied.

Another important point in a specification is that it should be readily understood and clear. To avoid confusion tabulate as much as possible the various parts of a complete item of work by placing each separate particular under the preceding one. It will take more paper, but then that is always a good fault, for it will make the description clear at a glance. The form of tabulation I would suggest is as follows, which illustrates the description of a roof formed with trusses.

The roof to be formed of, say, six whole trusses and two half trusses, each to be placed 10 ft. apart, and composed of the following scantlings, and the whole notched, framed, spiked, and strapped together:—

Tie beams 12 in. by 6 in., resting on 2 ft. 6 in. by 12 in. by 3 in. tooled York templates.
King posts out of 6 in. by 5 in.
Principal rafters 6 in. by 4 in.
Struts ... ... 4½ in. by 4 in.

and so on. Here it will be noticed that each separate component part of the roof is placed immediately under the preceding one until all the items have been described. Thus, at a moment, the sizes and particulars of any one special part of the roof may be seen.

This form of tabulation will be found much clearer than the method which is so often adopted of running on the particulars of the various items line after line without a break. In the same way may be tabulated the descriptions of floors, windows, doors, and many other distinct items severally composed of many parts.

As another aid to the clearness of a specification, divide the descriptions into many clauses, and do not make the clauses too long, nor omit an occasional full stop. Also keep the clauses well apart, and do not crowd them together; any item will then be quickly seen, and you will not have to question to which part of the building a description belongs.

Conceding this point that a specification should be perfectly clear at a glance, a further question arises: Should the work be divided into separate trade headings? As a general principle this is unavoidable, and I think desirable, but I would also say, without hesitation, that very many distinct items of work would be clearer and more comprehensible if the various trades relating to them were not separated, but the complete item of work described under the one heading, placed in whichever part of the specification seemed most desirable. Thus, to illustrate:—

Take an iron casement window, with wood frame, linings, and the usual glass and fittings. Ordinarily this would come under several trades; but I would describe everything connected with that window under the one heading of, say, joiner—that is, the iron casement, the wood frame, linings, shutters, and finishings, the ironmongery, and glass, and with, perhaps, a cross reference in smith, stating that the iron casements are described in joiner. The builder will see at a glance all the requirements of that window, and the client, if he peruse the specification, will also have an idea how it will look when finished. Another example: Take an iron girder. I would describe under smith and founder the girder itself, the templates, cover stone, any cement packing, felt or lead seating, and the painting. Perhaps it might be better to generalise the painting under painter in the one description applicable to all girders and covered up ironwork, and in that case a reference should be put under smith and founder. There will then be no excuse for the painting to this work escaping the builder's attention.

When describing the work to small alterations, repairs, or decorations, it is almost essential to adopt this order of running on the description, regardless of trade headings and formalities. Of course, when work is let to separate tradesmen you cannot adopt this method.

A building contract, which is often referred to in a general way as the specification, is understood to include the conditions of contract, the form of contract—that is, the actual agreement; and the specification of the subject matter embraced in the contract. The conditions of contract and the form of contract should only embody, so to speak, the actual legal requirements which, taken by themselves, do not affect the description and value of the work and materials. These strictly legal clauses I do not propose to touch upon.

But it will often be found in many specifications that under the leading conditions of contract are placed many clauses which do actually affect the amount of the estimate. This, I think, is a mistake, for at the time of tendering, a builder so often only hurriedly scans the conditions of contract, and when reading them over again, preparatory to signing the contract, may, unfortunately, find there are several items included which he has omitted to price in his estimate. The client does not always see his point, and the builder either has to bear the loss or throw up the work. This remark chiefly applies to a work for which no bills of quantities have been prepared.

But that part of the contract, or, in other words, the specification itself, of the actual work and material, should embody every item which may in any way affect the estimate: therefore, under the General Clauses, or Preliminary Items, as they are often called, I would include the following matters which are so often to be found only under the Conditions of Contract:—

The date of completion—this requirement may necessitate an extra allowance for overtime or other special employment of labour;

The mode of payment—under certain conditions the builder may require to borrow money to enable him to carry on the work between the times allotted for payment;

Keeping the work in repair for a stated period after completion—this may necessitate an allowance to cover any matter which may crop up under this item;

The insurance fees and fees to any authority should also be included under this heading of Preliminary Items, as also any other matter not coming under a trade heading which may possibly require a price.

Just a hint as to the outside cover of a specification. Put as a reminder in red ink a note of the insurance and date of completion. One is apt to forget these matters.

Then as to the marginal references. It will be found a great convenience to all parties if a marginal note is given to each distinct item of work. It will then be seen at a glance where a "bath casing" is placed, or the "spandrel framing to a staircase," instead of having to wade through pages of other subject matter. In addition to the marginal notes, I would put all the principal items under sub-headings, so to speak, in their respective trades. Such as all wood staircases under a sub-heading of "Staircases" in Carpenter and Joiner; similarly all casement windows under a sub-heading of "Casement Windows," and all other such divisions of work. And when you come to the many minor items which only require a separate clause to each, these might be put under the one sub-heading "Other Items" or "Other Fittings." These sub-headings should be written across the page.

As to numbering the clauses. This, I think, very important. It will be found of great assistance to be able to refer to the number of a clause in a letter when calling the builder's attention to any special part of the work, as also in the case of cross-references when referring from one part of the specification to another. Each separate clause need not necessarily be numbered, but only each distinct item of work which may embrace several clauses.

As to marginal sketches to illustrate rather involved parts of the specification, I think in many cases these will be found very useful. I would then suggest that the lithographer take them direct from the architect's sketches. If the specification is typewritten or fair copied in the office, then either do all the sketches yourself or else see for yourself that they are copied correctly.

Where should provisional amounts and prime cost items come in a specification? Should each amount come under the trade in question to which it refers, or should they all in a body be put together? I think no hard and fast rule can be applied to this, but small provisional amounts should run on with the subject-matter to which they refer; and distinct and perhaps more costly provisional amounts, and of which there may be no other description in connexion, should be all placed together under the one heading "Provisional Amounts," either immediately following the preliminary items or else at the end of the specification.

The general run of "Prime Cost Items" usually apply more to small matters, and these, I think, should follow the items to which they refer. But if of any considerable amount I would then put them also under the heading "Provisional Amounts."

Should a specification have an index similar to that provided with a technical or scientific work? I think this would be very useful, and it certainly would make a specification a more complete and handy document. The index need only refer to the principal items.

Sometimes it is difficult in a specification to locate the description of a particular part when there is no distinct mark or name on the drawing. Some employ the points of the compass; this is very well if they will apply, but when you get a position perhaps centrally situated, it rather fails in its object. I prefer in such cases to put a number or a letter, and that perhaps in a circle, against the part in question, and so refer to it in the specification. Many of these references will not be required, as the drawings will generally be sufficiently clear to locate the descriptions by referring to the ordinary parts of the building by name or position.

Should an old specification be referred to when describing the work relating to another building? I think only so far as the general clauses are concerned, such as those under the preliminary items, the preambles to the various trades, and the other general covering clauses under those trades. But the details of the work I would write entirely in the first place without any reference whatever to a former specification. All detail descriptions cannot be exactly alike, and you will be far more likely to put in any necessary variation of the detail in question if you think it out as you go along, than if you copy an old description and alter it afterwards to suit, because when you copy an item you cannot properly be thinking out the details yourself.

To obviate omitting, so to speak, any of the general items common to all work, have by your side a form or tabulated index of the items coming under the various trades. This can be looked down at a glance and all the items extracted which may be required.

There is one word in a specification of which the meaning is often disputed. It is the word "best" when applied to workmanship and materials, especially to materials, and is, I grant, somewhat ambiguous. But I would not use such terms as "best finest," "extra best," "super best," "best best," and so on, but merely employ the word best once and for all, and attempt to define its meaning.

Here is a suggested definition of this word:—The word "best," as applied to materials, articles, and workmanship shall mean that there is no superior quality of material or finish of article in the market, and no better class of workmanship obtainable.

In fact, by defining this word "best," it will only be necessary to mention it in the one clause when stating that all materials and workmanship are to be of the best quality and class.

We are all apt to fall into the error of describing certain materials mechanically, such as timber from a market which has long since been entirely exhausted, or stone from a worked-out quarry, or we use misleading and exaggerated language, "timber free from knots," demanding what, in our own minds, we never expect to obtain! We should only specify what we can get, what we mean to have, and then see that we get it.

At the same time we must not lose sight of the fact that our endeavour must be to obtain the most suitable and best material procurable in the market and that the work when executed shall be a credit to all.

As to the question of sub-contracts, this, I fear, would take some time to discuss, but, as a general rule, let a sub-contract go through the general contractor; but when this is impossible then make the sub-contractor subject to all the conditions of the main contract equally with the general contractor, and in the main contract stipulate that the general contractor is to give every facility to the sub-contractor and allow him the use of his scaffolding and plant.

Having now, so far, settled the general scope and bearing of a specification, the next step is to put the various items into order and place. As I have before said, we cannot do better, generally, than divide the specification into separate headings or trades as they are called. As to the order in which these trades should be placed, I do not think that very important, only let each trade, if possible, come in the order in which the building would be erected.

Thus the specification would be started with the preliminary items or general clauses, under which heading would come every item that would apply to the building generally as a whole. Then would follow the trade of excavator, this being the first start of the actual work. Then the trades embracing the structural parts of the building, such as bricklayer or mason, whichever trade would chiefly apply to the walls. In like manner you would go on constructing the building on paper until it was roofed in, when the trades taking the interior fittings, finishings, and requirements would follow, and finally the decoration and painting.

As to what items each particular trade should embrace, or how many trades the specification should be divided into, that to some extent would be a matter of convenience and clearness, consequent on the nature of the building in question. Thus, if pavior is a considerable item, make it a separate trade, but if a very minor point then the paving may come under the trade of bricklayer. Again, if the drainage is a large item, I would make that a distinct trade, instead of putting it as it is often done, under excavator. Further, floor and wall tiling might either come under pavior, bricklayer or plasterer, as each of these trades, in certain parts of the country, is performed by the same class of workmen. Many other items may be treated in the same manner.

Each trade is started with a preamble or the general clauses mostly applicable to all the items under that trade, such as the description of the various materials, and the general covering clauses referring to similar parts of the work in different positions; after which follow in detail the actual items of work. Strictly speaking, a preamble is an introduction or preface, but in a specification the term is applied in the sense of denoting the general clauses and descriptions at the beginning of each trade.

Going more fully into the various items of almost similar description under each trade, I think the best plan, in most cases, is to describe all the items of a similar nature to each floor separately, from the lowest to the topmost story, continuing with other similar items on each floor. But if the description of any item will apply equally over the whole of the building, describe it so, without reference to each separate floor, and thus save useless repetition. As to the exact order of the various items under each trade, I would put them as far as possible in that order in which they would be built. But there is no hard and fast rule to follow in this respect, as in many cases it will be clearer to run them on, regardless of that order.

When describing the items do not omit to mention the class of material, thus state the particular quarry and bed of stone, give the class of wood for the timber and joinery work, and state whether it is rough or wrot. A general clause, such as this, "that all exposed faces of timber and joinery work except where otherwise mentioned are to be wrot," will save repetition of this word "wrot."

State if you mean Portland or other kind of cement; the word Portland is often omitted.

And all other descriptions of materials should be clearly defined.

Reverting once more to what is considered the best order in which to place the items of work under the various trades, I know that this is one of the chief difficulties of the beginner, and I will suggest an arrangement for some of the principal items. I have before mentioned that, as a rule, it is best to specify the items in that order in which the work will be built, but that it is not always possible to carry out that order. But I would say that whatever order you once adopt, always follow in all your specifications and in all its parts, so that you will know yourself where to find an item.

I have also said that each trade in every case should start with a preamble, or the general clauses and description of materials.

Now to take the principal items under the various trades respectively.

In *Preliminary Items.*—I do not think any particular order is essential, but it would be as well to keep the clauses in that order which would mostly run with the order of the work to the building. If old buildings have to be removed, the description would come under this heading of preliminary items. But if a housebreaker is employed then this work would form a separate and distinct contract by itself.

In *Excavator* take the surface excavation first, then the deep excavation, such as that to basements and cellars; then the general excavation to the foundations and the attendant items, such as planking and strutting, filling and ramming; and finally any other small or particular items. Then describe the concrete foundations, after which the surface concrete and any brick rubbish under, then the concrete floors, roof, and stairs. If the walls of a building are in concrete I would take these immediately after the concrete foundations, of which they then would almost form a part.

Under drainage describe the manholes first, then the pipes with the concrete, then the gullies and other similar items.

The items under the trade of pavior are so simple that any order might serve, but take first the important items of internal paving, and follow on with the smaller items, and finish with the external paving.

In *Bricklayer* commence with the general walls of the building, then the damp-course, hoop iron, and other attendant items. Then those parts in cement, such as rough arches, trimmer arches, piers, sleeper walls, half-brick walls, and dry areas. Then the external facings and pointing, gauged or other external arches, dressings, mouldings and ornaments, external glazed brickwork, or flint facings. Then the internal facings and pointing, glazed brickwork, and wall tiling. Boundary and retaining walls and such-like distinct items should come last, and be described separately and completely by themselves. Terra-cotta facings might either come with the other external facings or be kept as an item by itself after the description of the other general work, and before such items as boundary or other walling.

In *Mason* commence with the rough stone such as templates and corbels, if not elsewhere described, and follow on with the thresholds, sills, copings, internal pavings, staircases, hearths, and chimney-pieces. Then the external paving, steps, and curbs. If the walls are built or faced in stone I would describe these first completely, with all the labours, mouldings, and ornaments on them, and then follow on with the rough stones and internal items, and finally with the external items, such as paving, steps, and curbs. I would not trouble to keep all stone of a similar nature under the one heading, unless it should happen to come in that order.

Many make carpenter and joiner two trades. In a large work perhaps it is better to separate them, but in a small work I should certainly keep them together. But it is immaterial whether they are separated or not as long as the descriptions are clear. Personally, I prefer them generally under one heading; you will perceive the reason from the order of the items I will now give you under these trades.

Lintels, bressummers, posts, cradling, floor and ceiling joists and plates, sound boarding roof or flat timbers, felt, battens, gutters, and all external joiners' work to the roof or flats, except windows, doors, and skylights, such as rolls, fascias, barge-boards, and such-like items.

Then would come quartered partitions, followed on with flooring, windows, skylights, external doors, internal doors, framed partitions, skirtings, dadoes, wall and ceiling panelling, staircases, sinks, water-closets and bath casings, and other internal fittings, such as shelves, cupboards, and such-like domestic fittings.

Fencing, weather-boarding, or other outside work should be complete items by themselves, and come last.

Half-timber work, with all its attendant items, might, I think, come after the description of the rough timbers.

I would not separate hard woods from soft woods, but describe them as they come on each separate story.

In Smith and Founder take this order, lintols, chimney bars, straps, girders, floors, columns, roofs, carriages, iron windows, gutters, stack pipes, external railings and gratings, stoves and ranges and heating. Heating may come under heating engineer.

Under Slater and Tiler, roofs first, then vertical slating or tiling, shelves, cisterns, and such like smaller items.

In Plumber take gutters, flashings, and other roof finishings, flats and their gutters and finishings, then drinking water supply pipes, cisterns, sinks, lavatories, baths, and fittings. Then water-closet supply pipes, cisterns, water-closets, slop sinks, urinals and fittings, soil and ventilating pipes, hot water circulation.

*Zincworker and Coppersmith.* — Take flats, gutters, and finishings, pipes, lightning conductors.

In Plasterer describe first the general plaster work to ceilings, partitions, and walls, then follow with cornices, coves, centre flowers. Then those parts in cement, and, finally, the external plaster or cement work, or if preferred take the external work first.

*Glazier.*—External glass to skylights, windows, doors, then internal lights and screens, and pavement lights last.

*Painter and Paperhanger.*—Internal work to ceilings, walls, wood and ironwork, and polishing. Then external painting to wood, iron and cement work.

As to the order in the trades I have not mentioned such as bellhanger, gasfitter, and electric lighting engineer, which are not generally of any considerable variation, there is very little to suggest, but keep the order of the work, such as the main items first and fittings afterwards.

I might mention that the order adopted in bills of quantities is not precisely the same in all parts as that of a specification. The order in quantities is placed to an extent to facilitate the pricing, and the order in the specification should be to distinguish quickly the position of the work.

One word before I come to the last part of this paper. If the prices in a bill of quantities are not to be taken into account in the settlement of extras and omissions or if quantities have not been supplied, then a schedule of items should be provided for the builder to fill in and be attached to the specification and form part of the contract upon which variations may be valued.

I have now, I think, stated the various points which are necessary to be observed for efficient specification writing, and I will just mention a few matters which are worthy of attention and which are not always found to be clearly stated in a specification, but are sometimes omitted altogether, taking preliminary items first.

Always state that the plant and temporary erections are to be removed when directed, such as the scaffolding, hoarding, shoring, clerk of work's office, and any other items temporary in their character. The provision of these items is usually stated in the specification, but their removal is not always mentioned.

State if the hoarding is not to be let to an advertisement contractor.

Clearly define what you mean by prime cost and provisional amounts.

State if the employer's business is to be carried on during building operations.

Mention that the contractor is to give due facilities to other tradesmen who may be employed on the premises, and also that the contractor is to allow such other tradesmen the use of his scaffolding and plant.

State to whom any coins or curiosities found on the premises or during the excavations are to belong.

If the contractor has done any work previous to signing the contract, then embody this work in the contract, otherwise an extra may be claimed for some small items, which at the time of signing the contract were understood to be included in the contract amount.

*Excavator.*—Where the foundations in a length of walling are not all one level, require the excavation to be in steps and not on the rake. Stipulate that there should be no excavations for ballast or sand unless necessary for the actual excavations, as this may affect the stability of the building.

Specify that brick rubbish be put under surface concrete which receives wood-block flooring or paving. There will then be less liability of damp coming through. In clay soils require the foundations to be taken down below the action of the weather. This may necessitate the foundations being taken down some 4 ft., 5 ft., or 6 ft. below an otherwise good bottom. Specify a proportion of coke-breeze, slag, or gypsum in concrete fireproof construction. It will the better resist the action of fire.

State that all foul earth and cesspools are to be removed and the excavation filled up with clean rubbish or concrete. Encase new drain pipes in concrete. If a slight settlement occurs, they will then the better hang together. Half channels in manholes are better formed in cement than with half pipes. A cleaner flow of sewage can thereby be obtained.

Then as to the items under bricklayer. Do not forget to mention these points: To tie the walls in; to build external walls hollow, if possible, but in damp situations certainly; and specify the lead covering over the heads of doors, windows, or arches coming within the hollow space. This will prevent the wet being communicated to the inner thickness of the hollow walls. Describe a weather joint externally to brick walls. Build the brickwork up in even heights and fill up all the joints. Let the sand be free from dirt and the water clean. Sea water or sea sand may be used where dryness is not essential. Build chimney stacks, where they appear above the roofs, either partly down from the top, or else wholly in cement, preferably the latter. Build all parapet walls and the brickwork immediately under the eaves a certain distance down in cement, and a second damp course here and to chimney stacks will not be amiss. Half-brick walls should, of course, be built in cement. Boundary fence walling should have a damp course, and preferably be built in cement.

In retaining walls against earth do not omit the weeping drains or other device for taking off the accumulating water at the back.

Smoke flues should not be too large—9 in. by 9 in. is sufficient for most fireplaces; and gather the brickwork quickly over the fireplace openings.

Build all stoves around solid, and fill up the boxings to chimney pieces. Fires have often occurred through neglect of this precaution. Do not put too long a description to terra-cotta work because it may be the custom.

Put a straight joint between connecting walls and a heavy tower, and do not attach a large chimney shaft to the main structure.

*Mason.*—Stone templates should be of considerable area and tooled and not left rough. In fact, any stone upon which work is built should be tooled as a least labour on it.

Do not forget the cement packing between the rivet heads on the top of flange girders and the cover stones.

Stone hanging steps are almost better placed in position and pinned in after the building is up, sand courses being left in the brickwork for this purpose.

In stone columns or pilasters the apophyges should be worked on the shafts. The effect is better.

Portland cement will stain delicate marbles and some limestones.

*Carpenter and Joiner.*—When possible, employ wood block flooring on the lowermost floors next the ground. The ordinary joists and flooring for this position are more liable to decay. In this latter case let the joists and plates be of oak.

Put cast-iron shoes or stone bases to all solid door frames.

Bed window sills on to the stone sills in white lead, and do not omit the iron tongue.

The cleats to roof trusses and horns on solid door frames are sometimes forgotten.

Snow boards to roof gutters will often prevent wet penetrating when the snow melts.

Open casement windows outwards if you want to be perfectly sure of keeping out the wet.

The ends of timbers, where bedded in walls should have a circulation of air around them.

A little sap on the edges of timber exposed to the air will not be any very great source of weakness, and it will not be likely to affect the rest of the timber.

All gutters should be wide enough to walk along. Small angle fillets at the junction of horizontal and vertical planes of a roof flat will make better work than if the leadwork be turned up sharply. This remark will also apply to lead gutters.

In some cases it is almost preferable to put a p.c. amount for the ironmongery to each door, window, or other fitment, and select the class of ironmongery afterwards.

*Slater and Tiler.*—Tiles and slates without boarding under should be torched.

*Smith and Founder.*—Let rain-water pipes stand out about 1 in. clear of the walls.

*Plasterer.*—Timbers over 3 in. wide should have the arrises taken off before the lathing is nailed on; this will enable the plastering to get a better key.

The walls at the backs of skirtings or any other wood work should be plastered over to prevent vermin harbouring.

The outside of all flues between timbers, floors, and where in the roof, should be roughly rendered over. This will be a preventive against fire.

Single laths should not be lapped at the joints, as is often done.

*Plumber and Gas Fitter.*—Do not omit the exhaust pipe to hot water circulation, or to the heating arrangements.

Keep all hot and cold water pipes well away from each other, and from the action of frost.

All pipes, whether gas or water, should be readily accessible, and if possible on the face of the walls.

The furring up of hot water pipes is chiefly found between the boiler and the circulating cylinder or tank. This portion of the piping should be easily accessible for cleansing.

All horizontal gas pipe should be laid with a fall to prevent any condensed liquid remaining in any part of the pipes, and thereby affecting the efficiency of the gas supply.

It is a good plan to fix all internal pipes about ¾ in. clear of walls, especially hot water pipes.

Do not work the hot water supply and heating arrangements from the same boiler. Failure is almost certain.

*Glazier.*—All glass subject to jars should be bedded in wash-leather or india-rubber as well as in putty.

I might mention that one of the best methods for glazing skylights is merely to seal the glass on a bedding of putty and then to sprig it in and paint the joint over with the woodwork of the bars. It is perfectly water-tight and there is no putty on the weather side to get out of order. This plan is much adopted in horticultural buildings, both vertically as well as in the top light glazing. The laps of the glass to top light should be cut to a curve. The water being directed down the centre of the glass and away from the rebates in the bars.

*Painter.*—External painting, if done in the spring or autumn will give a more satisfactory result.

No painting, papering or other decoration should be done while there is a suspicion of dampness about the building.

All ironwork should be well painted over before it is buried or covered up.

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The Chairman, in opening the discussion, said that Mr. Macey's book was sufficiently known to them to lead them to expect a paper full of information. They had not been disappointed. At the same time there were portions of the paper which ought to be criticised. He might say at once that the paper contained a good deal that they already knew; a great deal of it was commonplace, though that, perhaps, was inevitable in a paper of the kind. They were told, for instance, to understand what they wrote about in a specification—that, of course, was obvious—and that deficiencies were to be made up by the provisional amount; he very much doubted the wisdom of that. As to Mr. Macey's method of getting information for his specification, if they were going to write a specification they ought to know more about the subject than was implied by getting information from friends or trade catalogues—by looking about for hints, and peeping through a knothole of a hoarding. Mr. Macey, of course, thoroughly understood the subject; but it did seem a curious thing to recommend them to take great care that copies of their specification agreed with the originals! That was so very obvious that he could hardly believe that any man who was an architect and a business man would fail to see to that. Then, as to the intentions of an architect: Surely an architect's plans and details were his specification, and they ought to be so clearly drawn that there would be no doubt as to his intentions. Writers of specifications should remember that those specifications were written simply to explain those plans; they were not meant to be a jumble of a lot of technical terms more or less understood, but were to be written so that a surveyor or foreman could at once understand the drawings and details which were given him. Therefore, the plainest possible language should be used in the fewest possible pages. A point Mr. Macey emphasised, to a certain extent, was that specifications should be drawn very much more under headings than under trades. In his, the speaker's, experience it was most useful to write as much as possible under headings, *i.e.*, a certain class of windows or doorways could be put under a definite heading and referred to in an index. When quantities were taken out, the architect's specification was as much a guide to the surveyor as it was to the foreman. It was the architect's instruction to the surveyor. As to Mr. Macey's remarks as to whether the quantity surveyor should write the specification for the architect, the architect's specification, when the quantities were taken out, was more often than not written by the quantity surveyor. He was not at all advocating that the quantity surveyor should write the architect's specification, far from it; but he felt that the architect should so clearly have the planning of his building in his mind, that his notes—not written *in extenso*, but sufficiently full for any man who understood his work—should be quite sufficient for any surveyor to take up the quantities from, and also to amplify, if necessary, the specification that he might write. Apart from his own practice, he was referring to what men like Mr. Street had done. Their specifications were amplified by the quantity surveyor in cases where quantities were taken out. He knew it was considered to be a mistake to pretend to be defending the practice of surveyors writing specifications, but that was all humbug. If the architect was in sympathy with his work, he would make his intention clear to the surveyor. The important point was that the surveyor must thoroughly understand the architect and his work if the quantities were to be taken out by him. Quantities had become almost a specification, and the more the surveyor understood the architect and his work the less likely it would become for him to make a mistake when he amplified an outline specification given him by the architect. When the architect wrote a proper specification, no surveyor's notes were required. Preliminaries should head the items they apply to, and a general description should follow the preliminaries. The paper had contained many valuable hints and, however much one might differ from Mr. Macey as to the manner in which he had put his ideas, they could not forget that he was a master of the subject, and the Association was much indebted to him for his paper. As to a schedule of prices in cases where there were no quantities, it was important to have a schedule of prices attached to the different items. It avoided much trouble at the end and was easy of settlement.

Mr. Henry Lovegrove, in proposing a vote of thanks to Mr. Macey (and to Mr. Carvill for reading the paper), said he agreed generally with the paper, though he was with the Chairman in thinking that if possible—if time permitted—an architect should write his own specifications. To a man who had been taking out quantities for years for an architect, and who knew his work thoroughly, a series of notes did very well, but it seemed to him (the speaker) that the specification should as much express the mind of the architect as the drawings, though in these days of rush and hurry when quantities were going to be prepared it was not always the rule to make contract drawings. Some surveyors said that they sometimes had rough tracings given to them to prepare the quantities and to write the specification from. The London School Board sent with the drawings for new schools a general printed specification—a kind of model specification—and the surveyors to the Board altered the specification to fit each particular building, sometimes taking out many pages in making the alterations. That was a comparatively easy thing to do in the case of a school of the usual type—to cost 25,000*l*., say; but it would not be an easy matter to boil it down to suit the case of an alteration of 1,500*l*. He had been very glad to hear Mr. Macey lay stress on figuring plans. For years past he had had many drawings pass before him and he had found it very awkward to deal with those that were not figured. When this was not done it took some time to go over the plans and see, for instance, what the various dimensions were to be. Some architects' plans were admirably figured: the widths of rooms and other dimensions were given, and it was easy to understand these points at once; but he was afraid that the plans of five out of six architects were very badly figured. He advised young architects to see that their plans were always figured, and especially to see that the heights of the sections were given. As to the names of rooms, it was a capital plan, in very large buildings, to number the rooms consecutively; and in the specification particular rooms could be referred to by number. It was better to do that than to refer to "drawing-room," or "dining-room," &c. There were some excellent remarks in the paper about not making working drawings pictures. Some eminent architects were content to make their drawings look nice; and they found that a few lines—not enough to obscure the detail, made a drawing look effective. He quite agreed with what the Chairman had said about getting information from a friend or a specialist, and that reminded him of a story about an eminent engineeer, who had so much ability that other engineers who needed information used to lunch with him. During luncheon they put questions and got valuable information. When he first joined the Association he was in the office of an eminent church architect who hated specification work, which he put off to the last minute. After a time he (the speaker) got into the office of another architect who was most careful. That gentleman wrote with his own hands every word of a specification, and when the drawings were sent to the quantity surveyor they were a perfect description of the building. There were not half a dozen words added by the quantity surveyor when the specification was returned. Care in the preparation of a specification was, of course, essential, and in illustration of that he knew of a case of a merchant receiving a bill of 150*l*. for extras because the word "glazed" had been omitted from the description "white glazed bricks." As to full or short specifications, it depended on the nature of the work, and, as Mr. Macey had said, upon the number of the drawings. Engineers' drawings were wonderfully detailed: every little detail was shown on their drawings, but one drawback to them was the white lines on blue paper. As to the words "provide" or "supply," "provide" was an unfortunate word. The word "provisional" should follow in brackets. As to Mr. Macey's remarks about provisional sums, details were not thought of until long after a contract was settled; hence there were many discussions between the architect, builder, and client. It was a capital clause in the paper about alterations, repairs, and decorations. In altering a building it was almost impossible to properly describe the work required if it were separated entirely into trades. He did not follow what was said about the insurance being put on the cover of the specification. That would probably be given in the preliminary clauses as an item to be priced in the quantities. As to scaffolding, &c., being removed from a site, a client was often put to a considerable expense in removing worthless things when this was not provided for. Temporary offices were sometimes left a long time on the site. As to tiling and slating without boards, he always put boarding under slates and tiles. They had all had experience of difficulty with a roof that the average builder put up without boarding. As to smoke flues, they should not be too large, and he could not understand why architects made them so. Nine by nine was much better. As to open casements, when they opened inwards there was the danger of spoiling the curtain-hangings, and when they opened outwards there was the weather to be considered. As to hot-water pipes, in large buildings the hot-water engineer should provide junctions and bends with screw-caps so that the pipes could easily be cleared of fur. He did not like the system of glazing referred to by Mr. Macey. He preferred patent glazing to ordinary glazed skylights. Ordinary wooden skylights were sure to let rain in after a time.

Mr. F. T. W. Goldsmith seconded the vote of thanks, and said that perhaps Mr. Macey did not deal sufficiently with specifications from the architect's or builder's point of view. He agreed with the Chairman that a specification was a direction to the foreman as to the method of carrying out the work shown in the drawings. If any constructive detail was not made clear by the general plans, or could not be made clear by the details which would be sent later, but which ought to be sent with the general drawings, then the specification could be called into requisition. Any particular method which the architect would like adopted in the work should be particularly noticed in the specification, and each trade should have headings describing minutely the manner in which certain works have to be done, and the interpretation of the terms used in that trade. There were plenty of terms used by specification writers that very few builders or foremen know the meaning of exactly, and they should, by means of the specification, be put in possession of such exact information as would prevent misunderstandings. Where there was a chance of the contractor showing that better work had been done than was specified, there was a tendency to take advantage of it. The specification should be so clear that there would be no room left for dispute. As to the grouping of similar items, that was important. It was important that such items as doors and windows, and other articles of similar design, should be described in a carefully-drawn clause, and the numbers of the rooms in which they occurred given afterwards, and any slight variations noted. There was a disposition to regard a specification as a kind of stepping-stone to bills of quantities, but if they could not write a specification independently of a bill of quantities, it was not much use writing it at all, for if an architect who wrote a specification depended upon the quantity surveyor's subsequent assistance, it would be far better for him to draft carefully-considered notes and give them to the quantity surveyor, who would be better able to deal with them from his point of view in the bills of quantities. Mr. Macey thought it ridiculous to specify timber free from knots. He (the speaker) did not think so, bearing in mind the kind of timber occasionally seen in buildings. The definition gave the architect a pretty free hand. As to the drawings and the specification being taken together, the one interpreting the other, and where no quantities were provided, he thought that a clause similar to the following might be advantageously included in the specification :—"That where any item of work is not mentioned in the preceding [or following] specification, and such items can obviously be inferred, from either the drawings or the specification, to be necessary for the reasonable or proper completion of the job, the builder is to perform such work without extra charge." A hinge, for instance, is specified, and the screws might not; but they were obviously implied. In his experience he found that builders did not object to such a clause. A schedule should be part of every specification ; it was a splendid check upon a builder who was inclined to overcharge. As to arranging trades under headings, he thought it would mean a lot of overlapping.

Mr. Banister F. Fletcher said the subject was a rather amusing one, for every now and then it came up for discussion, and every one said that architects ought to write their own specifications, and then gave excuses for not doing so. There was no doubt that a quantity surveyor could, as a rule, write a specification better than an architect ; whether he should do so was another matter ; but no man was so well able to write a specification as he who had taken out the quantities for the building. A great part of the paper seemed to be taken up with a description of building construction, and as such it hardly came within the subject of specifications, except that it enforced the point that unless they knew how to construct a building they would not know how to construct a specification. A large part of the paper seemed to refer to specifications which were prepared in cases where there were no quantities. That was a system of building of which one saw little in London, because builders objected to tender without them. The system of tabulation mentioned in the paper was one which should always be practised. The man who used the specification most was the builder's foreman, and he was never allowed to see the quantities. Architects were supposed to write their own specifications, but if they had to do all that they were expected to do he was afraid they would have to strike. If one wrote the specification in trades, he did not see how they were to include, say, a description of a casement and all belonging to it. A difficulty would be in getting a proper index in that case. He did not believe in type-written specifications, and he had never seen a type-written specification that did not show a good many blunders. It was far better to have the specification lithographed or printed. Old specifications, if used with care, could be employed with advantage, he thought. He did not think that, in the case of timber, it was usually specified to be "free from knots," though it was specified to be free from large loose, or dead knots. Very few architects, he believed, or builders for the matter of that, knew where the different timber came from. He had been using Carolina pine recently, and that was practically without knots. The best way to learn how to write a specification was, he thought, to go through a course on quantities; it was a great help, not only in regard to specifications, but in refreshing one's knowledge of building construction. As to engineers' drawings, as far as he knew, engineers generally got their estimates in without quantities ; therefore their drawings must be very plainly figured and finished up. As to the word "proper," it was much too often used in specifications. He did not think that because architects did not usually write specifications that it ought to be inferred that they could not. The fact was that they did not take the trouble as they could much better rely on detail drawings to express their wishes. If an architect could find a thoroughly competent man, there was no reason why he should not be relieved of such work as specification writing. In books on the subject, specifications were treated in a very encyclopædic way, but he doubted if clients got better buildings where the specifications were very full. The best specification was the short one.

Mr. C. H. Brodie said he could show Mr. Fletcher a few dozen satisfactory type-written specifications. Type-writing depended for success upon the person who did it. As to Mr. Goldsmith's remarks about screws not being specified where hinges were mentioned, he (the speaker) had never seen a decent specification which did not mention the screws in reference to hinges. As to Mr. Macey's paper, it was all very well to pooh-pooh the statement that they should see that the specification agreed with the drawings ; but it was a very necessary remark to make in such a paper, because very often they did not agree. The specification, when it came from the typewriter or lithographer, should be compared with the original copy by the writer of it. He did not agree that a specification was a legal document, and most certainly it should not be in legal phraseology. They should by all means tabulate (viz., take doors, for instance, and show how they are to be finished), but he should most certainly keep to the trades for a description of new work. It was easier, too, to write a specification if it was kept strictly to the trades. As to the use of the word "best," the late Mr. Ewan Christian once remarked in that room that when he said "best" he meant best and was not using a trade term. He did not agree with Mr. Macey in recommending that drains should be encased in concrete.

Mr. G. M. Nicholson said that in writing a specification where the surveyor and the architect knew each other well, the surveyor knew what the architect wanted in most points ; and where special instructions were needed, a few short notes by the architect would be sufficient. There were many clauses in a specification which applied to almost all buildings, and it was unnecessary for the architect to waste his time in copying these out on every contract. Writing a specification in trades made it much shorter, as items like templates, linings, architraves, glass, &c., could be described generally to cover all items, instead of repeating them with each particular case in which they occurred. Vague clauses like "unless otherwise described," should be avoided unless great care was taken, as it sometimes happened in the same specification that one found "Render float and set all internal walls unless otherwise described," and also "Finish the internal walls with fair face and twice limewhite unless otherwise described," which left it quite uncertain as to the work to be done. As to mistakes in typewritten specifications, it was his experience that they generally arose from badly-written drafts.

Mr. Max Clarke said he entirely disagreed with definitions of "best" ; so far as specifications were concerned, they were all unnecessary. "Best," as applied to timber, iron, steel, and Yorkshire stone would make the use of those materials, as regards cost, prohibitive. The best Bangor slates were really unobtainable unless they were made specially. If Mr. S. Flint Clarkson's ideas[*] were put into practice difficulties in regard to "best" would not occur. As regards specifications, if the quantity surveyor knew the architect, the architect's notes were quite sufficient. They were a specification in brief ; but if the architect did not know the quantity surveyor, then he must fill pages of foolscap with queries which the architect must answer. There were two kinds of specifications—one encyclopædic, for use in the office, and the other for the foreman. The foreman's specification had no business whatever to have the date of completion of the work mentioned in it, or the mode of payment, though there was some reason for the inclusion in it of anything about keeping in repair. Points as to insurance should be also included in the specification. He disagreed with Mr. Macey when he said that the planking of the foundations should be put at the end of "excavator." That was essentially one of the items to go in the preliminary part ; it applied to every part of the excavations. As to clearing-up after building, it was important to see that clearing-up the rubbish was arranged for. A builder could remove all his material and yet leave the building and the site covered with rubbish ; he should clear up the rubbish, not only at the completion, but as it arose, so that it might not hamper the work generally. Mr. Macey had suggested that foundations should be carried down a sufficient depth in clay soil, but that was a point which was entirely outside the stipulation of a specification. They had no right to compel a builder to carry the foundations down any depth beyond that shown on the drawings unless they were prepared to pay for it. Mr. Macey omitted to mention that zinc or galvanised iron nails should be used in plaster walls or ceilings ; where other nails were used they showed through. A very large number of bad specifications were prepared, he thought, whether the architect or the quantity surveyor wrote them.

The Chairman, in putting the vote of thanks to the meeting, said he did not want to be misunderstood. He did not advocate that an architect should leave the specification entirely in the hands of the surveyor ; but he thought that a surveyor who thoroughly understood the architect's work could amplify the architect's notes, or the architect's shorthand specification. Those notes were quite sufficient when the surveyor understood the architect. Mr. Macey said, in his paper, that all gutters should be wide enough to walk upon. Fancy that in a small house! It must be a mistake. [A member: He referred to lead gutters]. If so, that is not clear in the paper. As to copies of the quantities not being given to the foreman, he always gave the clerk of works an unpriced copy of the bill of quantities. The clerk was thus enabled to keep in touch with the actual work put in and to keep an account of it. He still held that in restoration work heads were better than trades; it saved an amount of explanation and expense, saved extras, and was often a help to the foreman.

The vote of thanks was then put and heartily agreed to.

Mr. Carvill briefly replied, remarking that the paper proved that there was room for an improvement in an architect's specification. He thought it advisable to avoid old stock specifications.

The Chairman announced that the next meeting will be held on May 12, when Dr. G. V. Poore will read a paper on "Soil and Aspect in Relation to the Dwelling-House."

The meeting then terminated.

LADY HOLLES'S SCHOOL, RED CROSS-STREET.—The Fire Brigade Committee of the London County Council are about to purchase for 31,000*l*. the school site and buildings, No. 38, for the erection of a station, in lieu of that in Whitecross-street. The school was founded for sixty girls of the parish of St. Giles-without-Cripplegate, under the will of Lady Eleanor Holles, dated September 26, 1707, and endowed with one house in Spital-square and eighteen in Fort-street, near the old Artillery Ground, Bishopsgate Without.

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[*] See the *Builder* for November 13, 1897, for Mr. Clarkson's paper, "A Proposal for Classifying Builders' Work."

## ARCHITECTURAL ASSOCIATION SPRING VISITS:

### VISIT TO EALING.

On the 29th ult. Ealing was visited by a party of about two dozen members of the Architectural Association. The first object of the visit was to see a Roman Catholic Church, in course of erection from the designs of Mr. F. A. Walters. Of this only two bays are at present being erected, and they are not yet roofed in. The plans, however, were inspected, and they show what will be a fine church with an internal total length of 200 ft., a nave 25 ft. wide in the clear, and narrow side aisles, bringing the width within the walls to about 35 ft. The design shows a pair of transept towers, an arrangement to be seen at Exeter Cathedral and at Ottery St. Mary, Devon. The style of the church is in a refined and correct Gothic, as far as could be judged.

After leaving this building the party visited St. Peter's Church (Anglican), built some time ago by Sedding. This is an interesting building showing in every part the mark of an artist's individuality. The church is said to have been finished after Sedding's death by Mr. H. Wilson or, at any rate, that gentleman is partly to be credited with the work. There are but few points to which exception can be taken, the chief of which appears to be the way in which a sort of "false" parapet over the nave arcades pierces through what would otherwise be a very large and continuous slope of slated roof. The effect is not happy, and perhaps the designer may have himself been dissatisfied with it. There is a tower to be built at the north side in a transeptal position. This will doubtless improve the general effect very much. There is an unusual feature in the interior, namely, a triforium where most small churches would have had a clearstory. This it is which creates the large expanse of roof above referred to. Its effect internally is very good. The aisles beneath this triforium are flat ceiled and very fully lighted by long (laterally) square-headed traceried windows. There is a very large west window set back from the face of the west front and strengthened by traceried buttresses set at right angles to two large mullions in it. This and all the windows are glazed with plain glass with oblong panes in the lower parts and ornamental leading in the tracery. The whole is very graceful and refined. The chancel is raised about six steps above the level of the nave and is enclosed with a parapet wall of dull polished Purbeck marble and white stone in alternate bands. This parapet curves back in the centre where the steps lead up. The piers of the nave, the niches, and canopies, and all the details have a freshness and individuality that is very pleasant to perceive. The doors are externally covered with repoussé brass plating, and on the western door is inserted in this plating a bronze cast apparently from a design by Mr. Pomeroy.

The third object of the visit was a new church, almost complete but not yet consecrated, which has been erected from the designs of Mr. G. H. Fellowes Prynne, who very kindly placed the plans for inspection and conducted the party over it. It is a large and apparently inexpensive structure, the nave being 112 ft. 6 in. long by 48 ft. wide, with narrow passage aisles. The chancel is 41 ft. 9 in. long. The materials are chiefly red brick, both within and without, with stone dressings. The woodwork is pine stained green, the roof being ceiled in barrel form with narrow widths of pine and stained but not varnished. A gallery on each side of the chancel has panelled pine fronts stained green and varnished, with a not unpleasing effect. There is a rood beam of oak which is level with the springing of the chancel arch, and consequently very highly placed. On it are a cross with a figure of our Lord carved in some white wood, perhaps limewood, and on either side a figure in the same material. The floor of the nave is paved with pitch-pine slabs laid in various patterns. That of the chancel has Rust's vitreous mosaic in plain expanses with marble step treads. The church is lit by electricity, and the pendants are of wrought-iron partly gilded. The heating is by hot-water pipes laid in channels in the floor and covered by gratings, and there are supplementary radiators in the transepts to north and south. The latter occupy the space of the two easternmost bays of the nave. There is also a baptistry at the west end of semi-circular form, and a morning chapel on the east side of the south transept, or what would be the east sice if the church were truly orientated, which it does not appear to be.

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## THE INTERNATIONAL BUILDING TRADES EXHIBITION.

### SECOND ARTICLE.

The "Smoke-abatement" section is one of considerable interest. Although not consisting of many exhibits, it nevertheless has some good devices, which appear to more or less solve the difficulty of smoke abatement. There seem to be three principal methods by which inventors have endeavoured to produce smokeless fires—first, the use of anthracite coal; second, the replenishing of the fire at the entrance, so to speak, of the fresh air to the point of combustion; third, the supply of an increased air supply.

Mr. E. E. Pither shows what is called the "Ever Radiant" stove, burning anthracite, and a kitchener burning small soft coal otherwise known as smudge coal, or slack, the principle of combustion being in both cases of a similar character. Coal is added on the top of the fire, but the visible portion of the fire is divided from the combustion chamber by a baffle of iron and fire-brick which diverts the flame and products of combustion downward so that the gases given off by the fresh fuel passes through the hot fire, and perfect combustion with practically no smoke, after the fire is once started, is the result. It is claimed that an economy in fuel as well as the abatement of smoke is ensured by this method, and as there can be no doubt that the fuel is more perfectly consumed the claim seems to be a just one.

Messrs. Richmond & Co., Limited, have what they call the "Quaker Grate," of which the salient features are a wire gauze blower and rocking bars which facilitate the entry of air into the fire, and so cause more perfect combustion. The wire gauze blower does not obscure the light of the fire, and although the visible portions of the fire are rather dull, there appears to be an improved combustion.

The same firm have some good examples of gas cooking-stoves, in which cleaning is made easy by removable burners and other fittings.

The Automatic Furnace Syndicate, Limited, show a machine for feeding large furnaces for boilers, kilns, &c., in which the fuel is supplied to the furnace below the burning fire by the operation of a screw worked by a motor. This, therefore, is a device which produces more perfect combustion by adding the fresh fuel below the fire.

The Domestic Crater Company, Limited, show a small device in the form of an arched grating intended to conduct the air to the centre of the fire, and heat it in its passage. By this means either anthracite or soft coal can be burnt, and some amount of good is done by what is virtually an extension of the grate surface.

Messrs. Henry Rossell & Co., Limited, have an automatic smoke preventer for use with boiler furnaces, which consist of a series of louvred shutters opened and shut by the action of a cataract cylinder. The shutters are turned automatically when the furnace door is opened for firing, and as the fresh fuel gradually becomes incandescent, so the louvred shutters gradually close by the action of the cataract cylinder. This, therefore, is an invention aiming at increased air supply to the fire at a time when it is most needed.

The Incandescent Fire Mantle and Stove Company, Limited, show an invention which has been before the public for some time, consisting of light wire net-work, in which are fitted a number of earthenware funnels; these accordingly project into the interior of the fire, and it is asserted supply air to the interior of the combustion area. This contrivance seems to work best either with coke or anthracite.

The Automatic Fuel Economiser Company show another small device intended for domestic use. The automatic economisers are hollow box-like pieces of cast-iron intended to heat the air, and also admit a greater quantity to the interior of the fire. They are usually placed at the back and side of the fire, and thus endeavour to effect the same object as the incandescent fire mantle, but from the opposite direction.

The London Warming and Ventilating Company, Limited, have about the largest show in this section. A grate, with special draught for burning anthracite coal, and a "salamdre" closed stove with mica front, and an arrangement at the base for automatically regulating the draught. This burns either anthracite or coke. In fact, the exhibits of this company are chiefly directed to the burning of anthracite, and it is claimed that the increased cost of the coal is more than made up by the smaller amount used. The same firm also show what is called "Ye Old Yule Log" gas fire, which, by the aid of asbestos shavings, similates the burning of the yule log, although the fuel employed is gas. The best feature about this, from an æsthetic point of view, is that the dogs in connexion are many of them very well designed. The same firm, acting as agents for the Masbro' Foundry Company, Limited, also show one of their ranges with the barbarous name of "Stokezi," but with a clever and useful contrivance for feeding the fire from the bottom.

The Dowsing Radiant Heat Company, Limited, have an exhibit in the Smoke-abatement section, showing the possibility of using electricity for warming purposes. The electric radiator consists of a number of ground-glass incandescent lamps, with polished copper screen behind from which the heat is radiated. The possibility of warming by electricity without smoke is undoubted, but the cost is quite another matter.

Messrs. S. Clark & Co. show their well-known hygienic siphon gas-stoves.

The Belcher Smoke Preventer Company show several of their instruments for use with boiler furnaces, which may be shortly described as intended to inject air into the furnace by a steam injector, supplying, therefore, air and water vapour to the fuel in combustion.

The Electrical section is not very large, and does not contain anything strikingly novel with the exception perhaps of the exhibits of the Simplex Steel Conduit Company, who propose to substitute steel tubes for the ordinary wood casing of electric wiring, whether for exposed or buried conduits. The possibility of this has been thoroughly worked out, and all kinds of junctions have been devised for meeting various requirements, one great merit of which is that inspection is provided for at bends and junctions. It is also a point in favour of the system that the labour in fitting up is so much reduced that steel conduits can compete successfully in price with ordinary wood casing.

Extensive exhibits of fittings are shown by Messrs. Julius Sax & Co., Limited, Messrs. Drake & Gorham, the Edison and Swan United Electric Light Company, and J. M. Doughty; and as special features we may mention the arrangement of an electric water gauge for tank alarms by Messrs. Sax & Co., and the "Jandus" arc lamp, which is enclosed in opal glass globes, shown by Drake & Gorham, whilst the Edison and Swan Company have as special features apparatus for cooking and heating by electricity and a bicycle with a lamp worked by a small dynamo on the back-wheel. The Dowson Radiant Heat Company, Limited, repeat here their exhibit of an electric radiator to which we have referred in speaking of the Smoke-abatement Section.

Messrs. Johnson & Phillips have examples of various forms of electric cables and insulated wires.

Mr. Arthur Koppel has a model of a portable electric railway, showing how a light railway for use in factories can be worked by the overhead trolley system.

The exhibit of F. W. Potter & Co. has but slight connexion with electricity, as the ventilating fans shown are worked by an electric current, though similar electric fans are shown in the main section of the exhibition by other firms. At the same stall are also shown "steel lead" stair treads, which consist of steel wire netting embedded in lead, and resemble closely a similar form of tread in the main section, shown by the Lytes Metallic Woven Stair Tread Company, which appears to answer the same purpose, but uses rather less lead.

In sanitary fittings there are many good and well-known exhibits, and also some few novelties. Mr. A. T. Cooper shows a useful and simple idea in the form of Brazier's taps for stopcocks, in which the stopcock is arranged with a bib or other tap on each side, so that either or both sections of the pipe can be drawn from or emptied when the stopcock is closed. Mr. Ernest Smith shows an iron joint for stoneware pipes and connexions for main sewers and house drains, the essential feature of which is the provision of iron sockets and spigots cemented to the stoneware pipe, and a joint formed by a loose strip of lead, subsequently caulked by hand after the joint is made.

Mr. T. B. Davis has an improved siphonic closet with a good after-flush. He also shows various forms of other sanitary fittings, quick-waste valves, and gun metal work for baths.

The Valveless Syphon Company have several forms of siphon cisterns, the merit of which consists in the practically noiseless action attained.

There are several exhibits of opalite and other imitative forms of opaque glass wall tiling.

The Mansfield Patents Company have several ingenious devices connected with sanitary work, the most striking of which is their connexion for lead and earthenware pipes, consisting of a fireclay block, covered on the inside and ends with lead, so that the earthenware pipe may be cemented to earthenware, and the lead soldered to lead. The same firm have also a good gulley and air-tight cover, and valveless siphon cistern.

The Nottingham Patents Company have a useful form of inspection and test-pipe for drains. It may be described as consisting of a double junction on a single length pipe. so that drains may be cleaned or inspected from the surface of the ground, without the expense of an ordinary manhole chamber.

Lowe's Patent Sanitary Pipe Joint Syndicate exhibit their system of making joints which was described in our issue of December 25, 1897, and has satisfactorily stood the test of two years' use.

The well-known firm of Shanks & Co. show their baths, but no novelty with the exception of a new quick-waste valve.

Mr. D. Hurst has an automatic water-closet, which does away with the necessity of ball-tap siphon cistern and pull, a flushing cylinder being arranged which is fitted with valves and compressed air-chamber actuated by the weight on the seat, and appears to be a useful invention.

Anderson's Patent Pipe Coupling Syndicate have a coupling for lead pipes, or lead and iron, which does away with the necessity of wiped joints at a decreased cost and increased efficiency and safety, and which possesses besides the great advantage of easy disconnexion and inspection or repair, if needed, to the lead pipe.

The modern idea of fixing rain-water pipes at a distance from the wall is rendered easy by Baker's patent drip lug, in which the lug is cast on and forms part of the socket or length of rain-water or soil-pipe.

A bewildering variety of reversible and safety window-sashes are shown by several exhibitors. The N.A.P., of course, exhibit their well-known and well-tried specialities.

Messrs. W. G. and L. England show a form of slide and reversible sash windows.

Mr. J. C. Moore has some sashes fitted with ingenious devices covered by several patents, which provide a satisfactory form of easily-cleaned double hung sash.

The Easy Cleaning Window Company also have some ingenious devices for effecting this object, and so also has the well-known Mr. Robert Adams, who besides shows some good automatic check-action spring hinges and sash balances, in which a coiled steel spring is used in place of the ordinary lines and weights for double-hung sashes, thus offering a solution of the great difficulty of using double-hung sashes with mullioned windows.

Interesting samples of Kauri pine and Jarrah are shown by Messrs. Foy, Morgan, & Co., and a collection of various kinds of timber, hard wood and soft, by Messrs. W. & C. Johnson.

Wood-block flooring is represented by Messrs. Charteris & Longley, who also exhibit an interesting model illustrating the patent process which they adopt for seasoning timber by a special treatment of steam and cold air, that is efficient without unduly dessicating the wood.

Fire-resisting materials are represented by Messrs. Frederick Jones & Co. with their silicate cotton and fibrous plaster; The United Asbestos Company with their well-known Salamandie decorations; The Fireproof Partition Syndicate with the Cunnah-Wright patent, dovetailed, corrugated iron sheets, and the Cunnah-Wright patent laths, both of which are useful and economical bases for plastering. Messrs. Broadbent also show how silicate cotton or slag wool may be used, and so also do Messrs. Anderson & Son and Messrs. McNeill & Co., the well-known manufacturers of roofing felt.

Messrs. Dowson, Taylor & Co., show some self-closing armoured fire-resisting doors which are constructed on the principle largely used in America, the door being of solid wood covered with tin or tinned iron. The self-closing is brought about by the fusion of a soft metal attachment or "cut-out" in the line supporting the balance weights. On the "cut-out" fusing the balance weights drop and the door closes by its own weight. There is very little doubt that a wooden door covered with sheet tin is superior to the ordinary iron so-called fireproof door which invariably buckles in a conflagration.

There are some examples of ventilating apparatus, though not very much that is new.

Messrs. Ewart & Son have some hydraulic ventilators, as well as a fixed gill automatic ventilator, and their revolving or archimedean screw type. Messrs. Thomas Ash & Co. show Cooper's patent "Acme" ventilators, which are a form of self-acting extract ventilator, that is simple and cheap in construction, and should be efficient in action. Mr. B. Hainsworth has also some upright fixed gill self-acting ventilators, and others which are a combination of these with a protected double cone.

The well-known Blackman ventilating fan is shown, and so also is the "Cyclone Air Propeller" of Matthews & Yates of similar type.

Good examples of stoves and ranges are exhibited by Messrs. Ashton & Green; Yates, Haywood, & Co., and Moorwood, Sons, & Co., the latter especially, having interesting examples of cooking ranges and hot plates for large institutions.

Mr. Thomas Potterton shows once again his patent range boilers, with some slight improvements for utilising the kitchen range as a source of supply for hot water heating in the house.

The well-known Welsbach Incandescent Gaslight Company have an exhibition of their gas-lighting system, and so also have the Incandescent Accessories and Maintenance Syndicate, who lay themselves out for anti-vibration and other devices for preserving mantels, and also an improved form of argand burner intended to give a steady and bright light that may without a mantel compete with the true incandescent.

There are several examples of damp courses ranging through various degrees of excellence, from the true asphalt of the Limmer Asphalt Company to some almost worthless examples of felt. Callender's Bitumen Damp Course and Sheeting and the Patent Vulcanite Roofing Company's material may be mentioned as examples of useful and satisfactory damp courses, formed of a combination of fibrous and bituminous material.

The British Luxfer Prism Syndicate show some of their window glass and pavement lights, including some interesting examples which have been subjected to the action of fire—indicating that their glazed partition offers a considerable amount of resistance to the spread of a conflagration.

There are several exhibits of wood-working machinery and gas engines by well-known firms.

The exhibition of sanitary ware, and glazed clay goods generally, is a good one, many of the leading firms being well represented. Mr. George Jennings has a large stand on which a number of specialities for which his firm is noted are displayed. In addition to damp-proof courses, grease traps, drain pipes, baths, sinks, &c., there are a few novel or interesting exhibits. There is the "patent joinder" for stopping up the ends of drain pipes, the special advantage of which is that the "joinder" can be readily knocked off without interfering with the terminal pipe, so that when an extension is desired the additional pipes can be readily fixed. The "London Grate" is also worthy of note. The main features of this as distinguished from ordinary warming and ventilating grates are that all metallic heating surfaces are avoided, and instead of the air being highly heated by contact with hot metallic conducting surfaces, it is moderately warmed by prolonged contact with fairly well-heated and imperfectly conducting surfaces of fire-clay. As the air is admitted it enters the lowest portion of the warming chamber; from this, flowing alternately through the openings, it is gradually warmed by contact with the fire-clay back and flanges of the warm-air chamber until it is finally discharged either at the top of the stove, or, if preferred, through a warm-air shaft conducting to an outlet near the ceiling. The mantelpiece and supports are of iron. The same firm also shows the "Cambridge grate," especially useful in dormitories and hospital wards. With this, so long as the flue is warm, the air withdrawn from a room when the fire is out is replaced by fresh air equally warmed by its passage through the ventilating body of the grate, which is much hotter than the flue, and remains warm for some hours after the fire is out.

Messrs. Doulton & Co. have a large exhibit of their clay goods used in building, including sinks, lavatories, bath fittings, blue bricks, pipes, and the like. A special feature is the show of decorative architectural materials, such as enamelled stoneware, salt glazed decorated stoneware, glazed faïence and enamelled faïence.

Messrs. Stiff & Sons have a particularly fine Corinthian cap in buff terra-cotta, showing what delicate and minute undercuts may be executed in a good terra-cotta clay by expert manipulators. There is also a carefully executed arch panel, in which the members come out very clearly. Some figures, too, in the same buff terra-cotta, serve to illustrate the uniformity of the clay employed and the excellence of the firing. Messrs. Stiff have the usual assortment of drain and channel pipes, sinks, &c., in stoneware, for which the firm is noted.

Messrs. George Skey & Co., of Tamworth, have a large exhibit of sanitary specialities and appliances, chiefly in glazed stoneware, also terra-cotta chimney tops, fire-bricks, blue bricks, stoneware pottery, &c. Amongst the novelties here is Cullis & Beaven's patent "combined sink standard and waste," in stoneware. This sink may be supported by one or two hollow standards, which provide the means of conveying the waste-pipe. In the double form one of the standards, depending upon circumstances, contains the sink-pipe, which may be of stoneware or metal. The sink is so constructed that the trap or pipe can traverse the entire length of the standard, and thus be adjusted to the outlet of any sink, whether it be in the corner, or middle, or end of the sink. The side of that standard which contains the waste-pipe remains open for purposes of inspection. "Skey's Improved Channel and Gully Trap," as exhibited, enables the sink waste to discharge 18 in. away from the gully, instead of over it. In addition to preventing (to a large extent) sewer gas from entering the house through the sink-pipe, through leakage of the trap, or otherwise, this method provides accommodation for collecting water from the bath, as well as rain-water. The channel is a special feature in this arrangement; it is recessed or under-cut throughout its entire length, on both sides, to prevent the bath or rain-water from splashing or running over the edge. This channel allows grease from the sink to chill before reaching the gully in order to minimise the possibility of choking the drain-pipes. This method is certainly ingenious, but the channel might, with advantage, be longer than 18 in.; there would, in most cases, be accommodation for that, and there would be less possibility of sewer gas entering the house through the medium of the bath-pipe, which is nearer the gully trap than is the sink outlet—at least in the examples shown to us. Of course, this observation applies only in the case of the gully trap getting out of order. Messrs. Skey also exhibit "Trew's Grease Trap," which collects the grease in a perforated receiver placed above the outlet bend in such a position as that the top of the receiver is just above the water level.

Messrs. Jos. Cliff & Sons, Baltic Wharf, Waterloo Bridge, have a large exhibit of architectural terra-cotta, glazed bricks, faïence mouldings and panels, Hall's patent hanging tiles, locking tiles, porcelain baths, lavatories, drain-pipes, &c. Messrs. Candy & Co., of Newton Abbot, have a large stall on which is displayed numerous examples of salt-glazed bricks, buff vitreous terra-cotta stoneware pipes, and many other of the firm's well-known manufactures.

Messrs. John Knowles & Co., St. Pancras, show "Vitrifine" stoneware pipes, three 6-in. specimens of which, selected haphazard from the firm's ordinary stock, have been tested, and indicate that these pipes can withstand a pressure of from 250 lbs. to 625 lbs. per square inch before bursting. The "anti-vap" street gully, also exhibited, affords a deep well for all sediment, so that it does not require cleaning out very often. The outlet is high, and it has a large trap with a comparatively small surface of water exposed, so that in times of long drought the drain shall not be unsealed by evaporation. The trap is easily accessible for cleaning purposes by the use of an ordinary tool from the ground level. The "Wyvurst" patent channel junctions, terminals, and inlets for inspection chambers also form part of Messrs. Knowles & Co.'s exhibit. A stoneware junction pipe is shown, indicating the durability of the material; it has been exposed thirty-seven years at the firm's St. Pancras depôt. Amongst many other exhibits at this stand, we notice "Callender's bitumen damp course," an excellent material, employed in many large buildings.

Messrs. C. W. Outram & Co., of Woodville, near Burton-on-Trent, have an assortment of their sanitary earthenware, including lavatory basins, urinals, stands, &c. A special exhibit is the "Aquarius" closet, in which, amongst other things, the outlet may be turned in any direction. Around the outlet a recess or groove is formed in the earthenware, into which the end of the special fitting supplied is inserted. Liquid cement is poured into the groove, thus making a tight joint.

Mr. James Woodward, of Swadlincote, has an interesting stand on which are shown several specialities, and examples of stoneware pipes and connexions. "Freeman's Patent Inspection Chamber" is exhibited in section, so that its special features may be readily seen. In addition to being an ordinary inspection chamber, this presents a glazed surface to the sewage, certainly an improvement over methods which expose cement faces to the sewage, as the cement is liable, in most instances, to be impregnated with the fæcal matter. In Freeman's patent all exposed surfaces are glazed. The "Improved deep-socket Archer joint" is shown by the same firm. The chief feature in this is the employment of clay or plastic placed round the shoulder and recess of the spigot end of the pipe inserted to be joined. This clay, being firmly fixed when the two pipes are joined together, prevents leakage from within, by reason of its impermeability. In the same way, the clay round the shoulder prevents water, &c., from getting into the pipes or setting up decomposition in the cement. After several pipes have been tapped home with this clay dressing, the joints are run with liquid Portland cement. The interior frill of clay is removed with a half-circle rake immediately after each pipe is driven home. Cups of clay are placed round the cement holes before the joints are run. By these improvements, the whole joint is practically impervious. Another interesting exhibit here is "Ewing's X-entric shoulder pipe," by means of which a strong gas and water-tight joint is easily made. A roll of clay or plastic is placed round the bottom of the socket before the pipe is driven home. The socket is then packed with Portland cement in the usual way. Mr. Woodward also has a good assortment of other clay goods, amongst which we noticed some glazed bricks having the glaze remarkably uniform, and of good, even colours.

On the stand of the Nottingham Patents Company, of Nottingham, we noticed an inspection and test-pipe for drains. This can be fixed at the end of a set of drains, or in any other position, with the mouth of the double combined junction upwards; pipes are then fixed into the mouth of the junction and carried upwards to the level of the ground and sealed over. By this method a drain-cleaning machine may be inserted into the pipe at the ground level, thus saving time, and expense of breaking open the ground. In the same firm's "Patent air inlet valve for drains," the valve is made of aluminium to prevent corrosion, and giving more freedom in working.

In addition to the assortment of bricks shown by the Somerset Trading Company there are the "Patent Rainbar Plaintiles." These are manufactured from selected Bridgwater tile-clay, and have a transverse bar on the upper surface of the tile and a transverse groove in the under-side. These are designed to prevent draught under the tiles, as well as snow and rain-drift.

Messrs. Jos. Wedgwood & Sons show the application of glazed wall-tiles to internal and external decoration in a small house erected for the purpose. There is also a collection of vases, besides specimens of tiles for walls, floors, &c.

Messrs. Broad & Co., of South Wharf, Paddington, exhibit "engineering bricks," white, glazed, blue, red, and stock bricks, as well as gully and grease traps, sinks, &c. Messrs. Gibbs & Canning, of Glascote, Tamworth, have a good selection of architectural terra-cotta and a large variety of sanitary and other ware. Messrs. J. Mitchell & Co., Drury-lane, have a central stand on which is an assortment of sanitary stoneware goods. In the "Siphon" closet, a speciality, there is no air nor water jet, nor double trap. It is about to be placed on the market. In a large white enamelled fire-clay urinal stall the flushing holes are made in the ware and not in a metal pipe, the object being to prevent corrosion and discoloration. The Ames Crosta Sanitary Engineering Company, of Nottingham, exhibit stoneware pipes, water gullies, and the like. The Farnley Iron Company, Leeds, have a good selection of fire-clay sanitary sinks, baths, and other sanitary goods, and glazed bricks. Amongst other exhibitors of sanitary stoneware are Messrs. Hall & Boardman, of Swadlincote; Messrs. Oates & Green, of Halifax (who have a large number of their well-known specialities); Mr. John Burn, of Hartlepool; Messrs. G. & F. Couzens, of Cardiff; and Messrs. Geo. Howson & Sons, of Hanley. Messrs. Stanley Bros., of Nuneaton, have erected a little house, faced with salt-glazed bricks, and also have a good selection of terra-cotta, pipes and connexions, tiles and vases.

The manufacture of clay goods is illustrated in the exhibition by brickmaking machines, some of which are at work; by designs and models of kilns; also by tools and the ordinary outfit of the brickyard. We noticed a model of Ashby & Batley's patent brick dryer exhibited by Messrs. Hooper & Co., of Southampton.

The Newellite Glass Tile Company, Cannon-street, exhibit specimens of the tiles both fixed and loose. The special feature in these is the bitumen backing, which, by reason of its elasticity, tends to prevent the glass facing from cracking through changes in temperature.

Amongst exhibitors of plaster decorations are Mr. H. E. Gaze, of Hinde-street, Manchester-square, in whose material jute fibre and plaster of a special kind is employed; the reliefs were remarkably sharp. The Ventura Syndicate, Walbrook, show fibrous plaster slabs, Hitchins' patent, by which lathing is dispensed with. The Granite Silicon Plaster Company, King's-road, St. Pancras, have erected a small house, displaying the possibilities of the material, which dries quickly and sets very hard. Messrs. S. Wright & Co., Amhurst-road, Hackney, have an assortment of their fireproof and fibrous plaster slabs and decorative work in fibrous plaster. Messrs. F. McNeill & Co., of Bunhill-row, exhibit asphalted roofing felt, damp proof course, pipe coverings, and the like.

### THE EXHIBITION OF ROAD-MAKING MATERIALS AND APPLIANCES.

In one portion of the gallery at the Agricultural Hall is to be found the collection of samples of road materials and a few appliances for road maintenance to which we have before referred as likely to be an interesting feature of the exhibition. It is, perhaps, the first specifically organised attempt to collect such things and arrange them so that persons interested in that branch of engineering and surveying work can take effective stock, without loss of time, of the valuable materials which are produced from stone quarries for road and street construction.

In conjunction with the exhibition of materials a series of lectures have also been arranged as follows:—On Friday, April 28, Mr. H. P. Boulnois, M.Inst.C.E. (one of the Inspectors of the Local Government Board), lectured on the "History of Road-making," and Mr. J. V. Elsden, F.G.S., lectured on "Road Metal;" these gentlemen dealing with Sections A, B, C, and D of the Exhibition. The remaining Sections are as follows:—

E. Road Drainage.
F. Traction on Roads.
G. Machinery Used in Connexion with Roads.
H. Covers for Access to Sewers, Pipes, or Conduits and Cocks.
I. Materials for Town Carriageways.
J. Tools Used in Road-making.
K. Kerbs and Gutters.
L. Footways.
M. Roadmen's Clothes.
N. Trees Planted on Roads.
O. Tramway Tracks and Appliances.
P. Name Plates.
Q. Direction Posts and Milestones.
R. Kiosques, Shelters, and Seats.
S. Lamp Columns.
T. Dust and Orderly Bins in or under Streets.
U. Water Standposts and Fire-alarm Posts.
V. Literature of Road and Street Construction, Cleansing, and Maintenance.

The gentlemen who have been selected to lecture on these subjects are—

Mr. S. Stallard, Surveyor to the Maidstone District Council,

Mr. J. Patten Barber, Chief Surveyor to the St. Mary's Vestry in Islington,

Mr. H. T. Wakelam, County Surveyor of Middlesex,

Mr. F. Smythe, Surveyor to the Finchley Urban District Council, and

Mr. J. W. Bradley, Borough Engineer of Wolverhampton.

The programme is therefore a very complete one, and the gentlemen who have to deal with it highly qualified.

Mr. Elsden's paper, delivered to a considerable attendance of surveyors and others interested in the subject, dealt very much and very clearly with the petrological branch of the matter, explaining the precise composition of some of the more important igneous stones exhibited, and dealing with mineralogy in a manner suitable to his audience. We do not imply that there was anything particularly novel in the substance, but neither the occasion nor the time admitted of introducing matter which would have entailed much controversy. He alluded to some extent to the experiments which were carried out about a year ago by the Hornsey Local Board to test the durability of certain stones in a machine designed by Mr. De Courcy Meade, the City Surveyor of Manchester, who was formerly Engineer to the Hornsey Board. We notice that the machine is not very dissimilar to that originally designed and constructed in France and utilised by the Department des Ponts et Chaussées, and consists of hollow cylinders fitted inside with angle irons and rotated at the speed of one revolution in three seconds for about seven hours. The tests are of two kinds, one in which the metal is rotated in a dry state, and the other in which water and stone rotate together. In each case 4 lb. weight of broken stone was used, and the percentage of loss by attrition ascertained and recorded, the lowest percentage presumably giving the most durable stone. In the discussion which followed the reading of this paper, there seemed to be a strong tendency to set aside as worthless these mechanical tests, and to rely on nothing but what is called practical experience.

But how strangely misled we frequently find ourselves in practice, and how difficult it is to assign the correct cause to the actual result. That being so, it seems to us an error to dispense with mechanical aids, notwithstanding the absence of some of the conditions of destruction or attrition which are inseparable from the life of a road-stone. But the published tables of the Hornsey Board are by no means conclusive of the relative value of the stones tested, more especially as in some cases the loss by attrition was greater, whilst sometimes it was less, when water was used than in those cases where the stone was rotated in a dry state, an anomalous result which would seem difficult of explanation. It is, of course, not easy to secure precisely uniform conditions for such tests, but, as one swallow doth not make a summer, so does it seem unwise to accept conclusions derived from tests on such small quantities of stone for such short periods. We think that the Hornsey and other Local Authorities would do well to prosecute further tests of this nature.

There was another machine, a new one, introduced to notice by Mr. Boulnois in the course of his lecture, called "The Viagraph," the invention of Mr. John Brown, of Belfast, and obtainable from E. S. Smith, of Liverpool. This is a tell-tale to measure the badness of a road, and we draw attention to it because it is an ingenious implement, and may be for some purposes of practical utility. It automatically records on paper attached to a drum the actual longitudinal section or profile of the surface of a road or pathway for any required distance by means of two pencils, one of which is fixed and records on the paper a horizontal line, whilst the other, connected with a toothed wheel, records the variations of the surface above or below that line. This wheel is fastened between a pair of parallel straight edges, and by a constant pressure on the road surface takes the actual line of the cups or hollows, whilst the machine is drawn along the roadway like a sledge. The sum of the depths of all these unevennesses for any given distance constitutes the record of badness for purposes of comparison with that of other roads. It was apparently made in the first instance to ascertain how bad some of the Irish roads were in comparison with those on this side of the Irish Channel, and, if so, how much worse they were. With this object a very good road near Leatherhead was selected, and was indicated to show unevenness aggregating to about 12 ft. per mile, whilst some Irish main roads, such as that between Belfast and Lisburn, gave an aggregate of from 114 ft. to 120 ft. per mile. On the paper the full depth of a depression is recorded, whilst the horizontal scale is ⅛ in. to a foot. These strips of paper, if properly attested, might be produced, if necessary, as evidence in cases of litigation, but the meeting seemed to think that on this side of the Channel the vigorous protests of cyclists were sufficient rousers of public opinion, and that surveyors are not likely for some time to come to be provided with such a luxury as a viagraph.

Amongst the exhibitors of road metal we noticed examples of the various sizes of macadam and assorted screenings from such important quarry owners as, for igneous rocks, Brundrit & Company, and Darbishires, of Penmaenmawr; the three Clee Hill Companies from Shropshire, viz., Field & Mackay, the Clee Hill Dhu Stone Company, and the Clee Hill Granite Company, all of whom now charge uniform prices; Ellis & Everard, of Wakefield and Bardon Hill, in the Charnwood Forest district, near Leicester; the Enderby and Stoney Stanton Granite Company, of Narborough, also in Leicestershire; the Mountsorrel Granite Company (a very complete exhibit of their excellent and well-known metal); Ireland & Knight, of Atherstone; the London Basalt Company; Mowlem & Co., with Guernsey granite; W. H. Murray & Co., with "Ronez" granite from Jersey; the Pwllheli Granite Company, of Runcorn, with Welsh granite; Richards & Blewitt, of Rowley Regis; J. Runnalls, of Penzance, with their Penlee Elvan, which Mr. Elsden says is not an Elvan, but a Basalt, like Rowley or Clee Hill; the Shap Granite Company, from Westmoreland; Summerson & Co., from Durham; Tapp & Jones, of Corbett granite, from near Towyn, N. Wales; and Wainwright & Co., of Shepton Mallet.

In metamorphic stone the Cherbourg Quartzite Company exhibit the metal which is now so extensively used in Kent and Sussex; and in mountain limestones the Buxton Lime Firms Company; the Chirk Castle Company, of Llangollen; the Stoney Combe Company, of Newton Abbott, and W. Woodhouse, of Barrow-in-Furness, have contributed samples. In Kentish rag, Messrs. Chittenden & Simmons have a good exhibit.

Several surveyors have also sent samples of the stones which, presumably, suit them best, and they make a satisfactory adjunct to the show. There is also a special Irish section. Most of these quarry owners, and some others, notably, Blichfeldt & Co. with Norwegian granite, also exhibit setts, in which commodity there appears to be at present a boom, owing chiefly to the demand for new tramways. We recollect, not so very long ago, when the case was just reversed, when mountains of dressed setts were lying stacked and uncalled for in many parts of the country, and general depression prevailed. Happily for quarry owners, the foreigner cannot do much in this matter to relieve the difficulty, and whatever concrete may do for ordinary pavements, it does not seem to help for tramway setts.

Of the manufactured, or artificial, stones for pavements, &c., we have, amongst others, exhibits from the Adamant Stone and Paving Company of finely-crushed Aberdeen granite, the Sanitary Block and Tile Pavement Company, London, who illustrate eleven prominent features and characteristics for their block paving, and twelve for their tiles; the Patent Victoria Stone Company, and the Patent Indurated Stone Company.

To Mr. Yabbicom, the City Engineer of Bristol, the organisers of this exhibition should be especially grateful for setting up examples of street pavements and footways in various materials, and of channelling and apparatus generally in use now in Bristol, a city which is stated to have undergone much advantageous reform in recent years under his hands.

In asphalte pavings we noticed the extensive exhibits of the French Asphalte Company, of London, with their compressed rock asphalte and also with their mastic asphalte; and of the Trinidad Lake Asphalte Company.

There are also a variety of wood-paving exhibits, notably those of jarrah wood, by Palfreman, Foster, & Co., of London; and of greenwood, by Alcott, of Pall Mall. We trust that attention to this branch of the subject will tend to decrease the stenches of Piccadilly and Knightsbridge. There is an interesting set of slabs constructed of clinker obtained from destructor furnaces made up with cement (in the proportion of 2 clinker to 1 cement), exhibited by Mr. Lovegrove, the Engineer to the Hornsey Urban District Council, together with a statement of the tensile strains of briquettes of the same composition; they are on the whole sufficiently satisfactory from several points of view, notably in cost.

An attempt is being made, and has been fairly commenced, to make a universal collection of prepared samples of road stones, and in a series of pigeon-holes connected with the "Quarry" section these samples can be seen and examined. It is proposed to make this the nucleus of what may ultimately become an extremely valuable collection for purposes of comparison, and the elementary education of students.

In the Road Drainage section a good collection of street and road gullies in stoneware and iron are furnished by the Albion Clay Company, of Burton-on-Trent; the Ames Crosta Sanitary Engineering Company, of Nottingham; Ham & Baker, of Westminster; W. H. Murray & Co.; and others. And there are several useful exhibits by Surveyors to Corporations and District Councils.

There is on show a model of a very useful-looking road-roller, the invention of Mr. Cuthbert, a road surveyor at Dalbeattie, N.B., patented and called the "Cyclists' Road-Roller"; and Messrs. Aveling & Porter, of Rochester, show one of their well-known steam-rollers, which do duty also as traction engines and for driving stone-breaking machines; they have also on show a Morrison's scarifier. C. Burrell & Sons, of Thetford, have contributed a combined road-roller and scarifier, which seems to possess considerable merits. In Tramway Appliances there is a very interesting selection from the constructions of Blackwell & Co., of Westminster, for electric tramways. And there is a good collection of literature bearing on the subject generally, especially by E. & F. Spon & Co., of London. When we had concluded our survey, we were happy to find in the Miscellaneous Section a "Sir Walter Raleigh" chair in which to rest, and what it had to do with a road material exhibition did not at all concern us.

We may, on the whole, very heartily congratulate those gentlemen who have organised and supported this portion of the exhibition on the excellence of the exhibits, and the beneficial nature of its character; and we trust that the enterprise of those who have so contributed will meet with the reward that it deserves.

It is quite impossible to mention every exhibit in detail, and we will conclude our notice by mentioning the names of the following exhibitors:—Edwin Palmer (patent wire supported travelling cradle), Sissons Bros. & Co., Limited (Hall's patent sanitary washable distemper), Jas. Austin & Sons (Imperial sash-lines, &c.), Rowland Hodges (door checks and springs, fanlight openers, &c.), Anaglypta Company (relief decorations), Sydney Butler (wood-working machinery, &c.), Kirchner & Co. (wood-working machinery, gas engines, &c.), Cluse, Limited (art brass work, lock furniture, &c.), the Warrington Bond Iron Syndicate. The London Stereoscopic and Photographic Company have been appointed sole photographers to the exhibition.

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In the "Coal Smoke Abatement" Section of the Exhibition, the jury appointed by the "Coal Smoke Abatement" Society have made the following awards:—*Bronze Medals*—Mr. E. E. Pither, for Radiant Stove, and London Warming and Ventilating Company for Anthracite drawing-room stove. *Highly Commended*—Mr. E. E. Pither for Cooking Range. *Commended*—Messrs. Richmond & Co. for Quaker Grate for Coke (Webber & Price's Patent); Domestic Grates Company for Coke Fire; the Dowsing Radiant Heat Company for Electric Radiator; and Mr. W. P. Berwick, for flaming fire-brick for coke fire. The Report is signed by Messrs. Raphael Medola, F.R.S.; H. A. Des Vaux, M.D.; Stephen H. Ferry, M.Inst.C.E.; Ernest Newton; and G. Wyld, M.D.

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## THE BUILDING TRADE DISPUTE.

THE quarterly meeting of the Council of the National Association of Master Builders of Great Britain and Ireland was held at Birmingham on the 27th ult. Alderman Holdsworth, of Bradford, presided, and there was a large attendance of delegates from all parts of the country. The proceedings lasted four hours, and were private.

The agenda was long, amongst the items being:—

1. To consider the desirability of having closer relations with the Scottish Building Trades Federation and other kindred associations.
2. To discuss the present position of the plasterers' lock out, the action taken in regard thereto, and to receive the reports of the deputation appointed to meet the operatives in conference.
3. To authorise a general meeting of the association being summoned for the purpose of making a levy, and, if necessary, to define the procedure in connexion with the plasterers' dispute.

In a supplementary agenda the following additional items were added:—

(a) To consider the question of a general lock-out of all trades in connexion with the plasterers' dispute, and to make a recommendation to the various affiliated associations thereon; and

(b) To consider a recommendation to appoint a general organising secretary.

The only information supplied to the representatives of the Press at the close of the meeting was the following resolution, which, it was declared, had been carried unanimously:—

> "That this meeting recommends the National Association to ask the whole of the building trades operatives' unions for a definite assurance that they have no sympathy with, and will not support in any way, the National Association of Plasterers in the present dispute, and that, if such an assurance is not forthcoming from all of them by May 6, the question and the terms of a general lock-out shall be settled at a meeting of this Council.'

No appointment, it was stated, had been made for any subsequent meeting.

A return was submitted showing that the number of men locked out was 4,116, and that the approximate number of members of the National Association of Operative Plasterers was 10,558.

The Secretaries of the United Operative Bricklayers' Societies, the United Stone Masons' Societies, the Amalgamated General Union and Associated Societies of Carpenters and Joiners, the Amalgamated Slaters' Society, the United Operative Plumbers' Society, the National Association of Operative House Painters and Decorators, and the Builders' Labourers' Union, each received a letter on the 1st inst. from Mr. Hassall, the Secretary of the National Association of Master Builders, conveying to them the terms of the resolution passed at Birmingham. Mr. Hassall states that his Association requires a definite assurance from the building trades' operatives' unions that they will not support the Plasterers' Union in the present dispute.

A meeting, convened by the London district committee of the N.A.O.P., was held at the Memorial Hall, Farringdon-street, on the 1st inst., when the District Secretary stated that the cost of sending back the foreign plasterers was 83*l*. The lock-out, he added, had cost the district 336*l*., an average of 42*l*. 1s. 3d. per week. This sum is exclusive of the money spent in carrying on the ordinary work of the district. The lock-out pay to the London members had been paid from the general funds of the society, and amounted to 3,000*l*. It was decided to ballot the members as to arranging a levy so as to give a bonus of 5s. to the locked out men. The General Secretary informed the meeting that there were sufficient funds in hand to carry on the dispute for six or seven weeks longer without calling on the trustee.s

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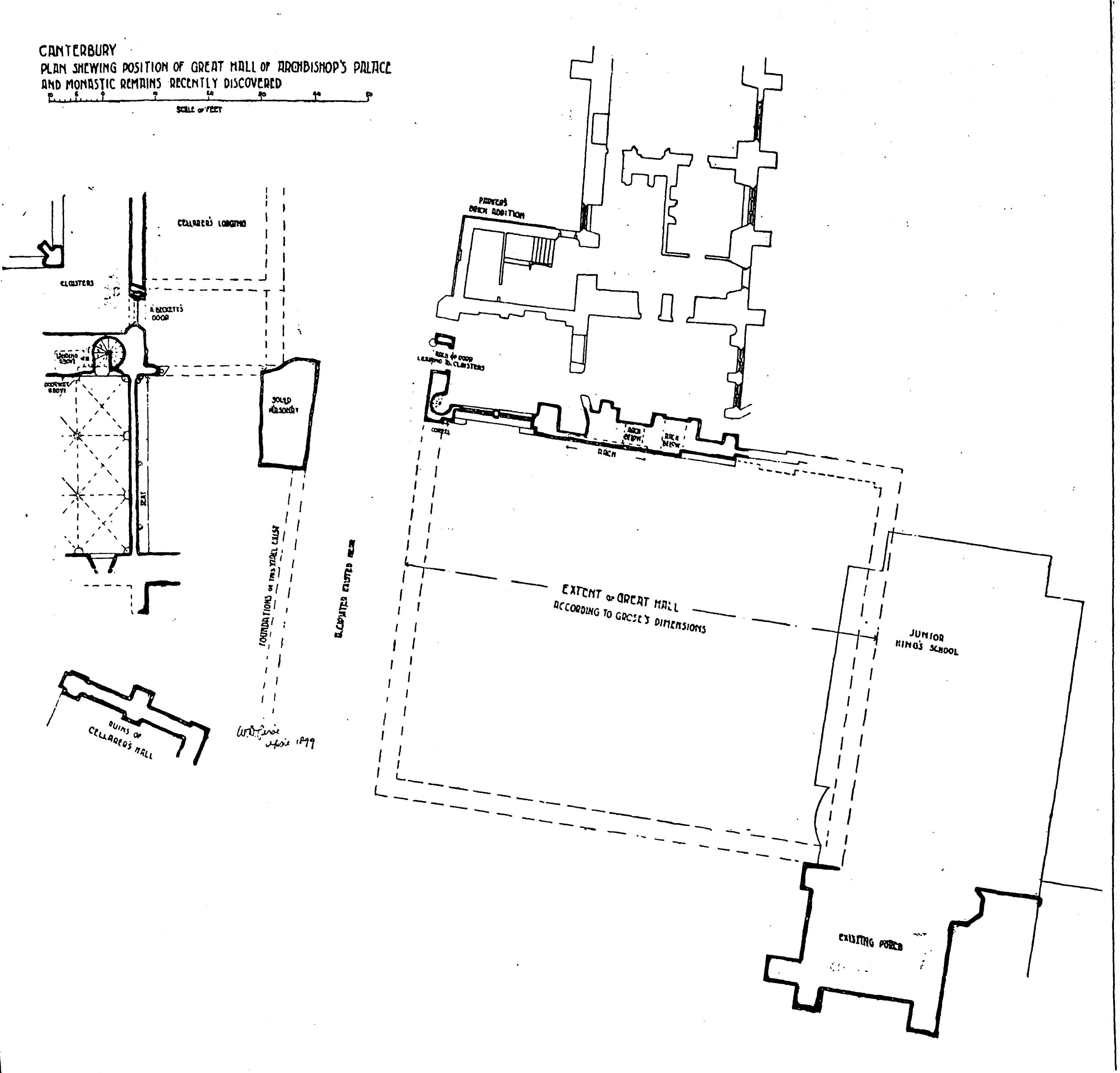
QUEEN ELIZABETH'S LODGE AT CHINGFORD.—The Corporation of London at their last meeting resolved to spend 700*l*. on the restoration of Queen Elizabeth's Lodge at Chingford. For the last three or four years the large upper room of the lodge, known as the banqueting room, has been utilised by the Essex Field Club as a local museum for the purpose of illustrating the natural history and archæology of the Epping Forest parishes. Mr. J. Oldrid Scott will superintend the reinstatement and repairs.



CANTERBURY
PLAN SHEWING POSITION OF GREAT HALL OF ARCHBISHOP'S PALACE
AND MONASTIC REMAINS RECENTLY DISCOVERED

# Illustrations.

## THE ARCHBISHOP'S PALACE, CANTERBURY.

AT our request, Mr. Caröe, the architect for the rebuilding of the Archiepiscopal Palace at Canterbury, has sent us the drawings illustrating it (at present in the Royal Academy) and the following historic and descriptive sketch of the buildings, old and new :—

"The ancient palace of the Primates of England at Canterbury has undergone many vicissitudes. Only a somewhat forlorn fragment remains, and in no sense expresses its former magnificence. The late Mr. Cave Browne and Professor Willis have put together materials from which a brief history may be extracted, while the building itself has by investigation yielded up something of its form.

The palace is stated to have been originally the Royal residence of Ethelbert, who, on his conversion in 597, bestowed it upon Augustine. Bede and William of Malmesbury allude to it, the latter relating its sacking by the Danes in 1011, and its destruction by fire in 1067. Lanfranc rebuilt it (1070-89) and it was occupied by à Becket in its form as left by the great founder of the Norman monastery. The far-reaching reconstruction of the thirteenth century, however, seems to have swept all before it, and the sole remnant of masonry which met Becket's gaze as he passed to the martyrdom is the outer arch of the north-west cloister door, called à Becket's door upon the plan.

Lanfranc's work was extended or entirely remodelled by Walter (1193-1205) and Langton (1207-1228), to whom the Great Hall is ascribed, erected for the purpose of affording more worthy hospitality to pilgrims of high estate who visited the shrine of the Martyr. It is not certain that any surviving part yet traced out dates back beyond this work of Walter's. The position and extent of this hall can be laid out conjecturally almost with exactitude.* By excavation, the foundations of all its walls would, doubtless, be readily disclosed. The south external wall still stands in part, but has been turned literally inside out, for it now forms the north external wall of the chief extant remnant of the palace. The hall was a vaulted structure, and was heavily buttressed at each respond, with a vice — in part remaining — near its south-east corner. This appears upon the plan, upon which the subdivision of the bays and the recesses for the windows can also be traced. The fenestration was by coupled windows in each bay, each of two lights. Portions of the wall ribs, caps and bases to the vaulting shafts, and the complete sill of one of the windows in Purbeck marble, much dilapidated, are still *in situ*.

Adjoining the east wall of the hall, and, therefore, between it and an embattled wall which separated it from the monastery, the existence of a cloister is recorded.

The chief entrance to the hall was from a courtyard to the north, approached by a great gateway, still existing, but enveloped by modern houses.

Adjoining the north-west wall of the hall was the tower porch, the lower stages of which exist incorporated in the gaunt brick building of the Junior King's School, which now partially occupies the site of the hall. Subsidiary buildings, probably kitchens, &c., were already attached to the Great Hall on its south side in the thirteenth century. These were subsequently considerably enlarged to something of the form in which we now see them, but were further extended southward with a return wing projecting westward from the south end, the ruins of which are shown upon the view, and will be retained.

In 1344 and 1349 there are records of the dilapidated condition into which the fabric had been allowed to fall, Archbishop Ufford's executors having to pay his successor Islip no less than 1,100*l*. by way of dilapidation money. Here we find an enumeration of the rooms then existing as follows :—

The Great Hall, the Small Chamber of the Archbishop, the Great Chamber with its kitchen, the Hall of St. Thomas, the Chamber next the Great Chamber, and two other chambers between the Great Hall and Great Chamber, the Great Kitchen, the Great Gate with stables.

Morton (1486-1501) is stated to have added buildings, and Warham (1503-1533) entertained no less distinguished guests here than Henry VIII., Catherine of Arragon, and Charles V. of Germany.

He contemplated grander additions to the fabric, but in disgust with the citizens over

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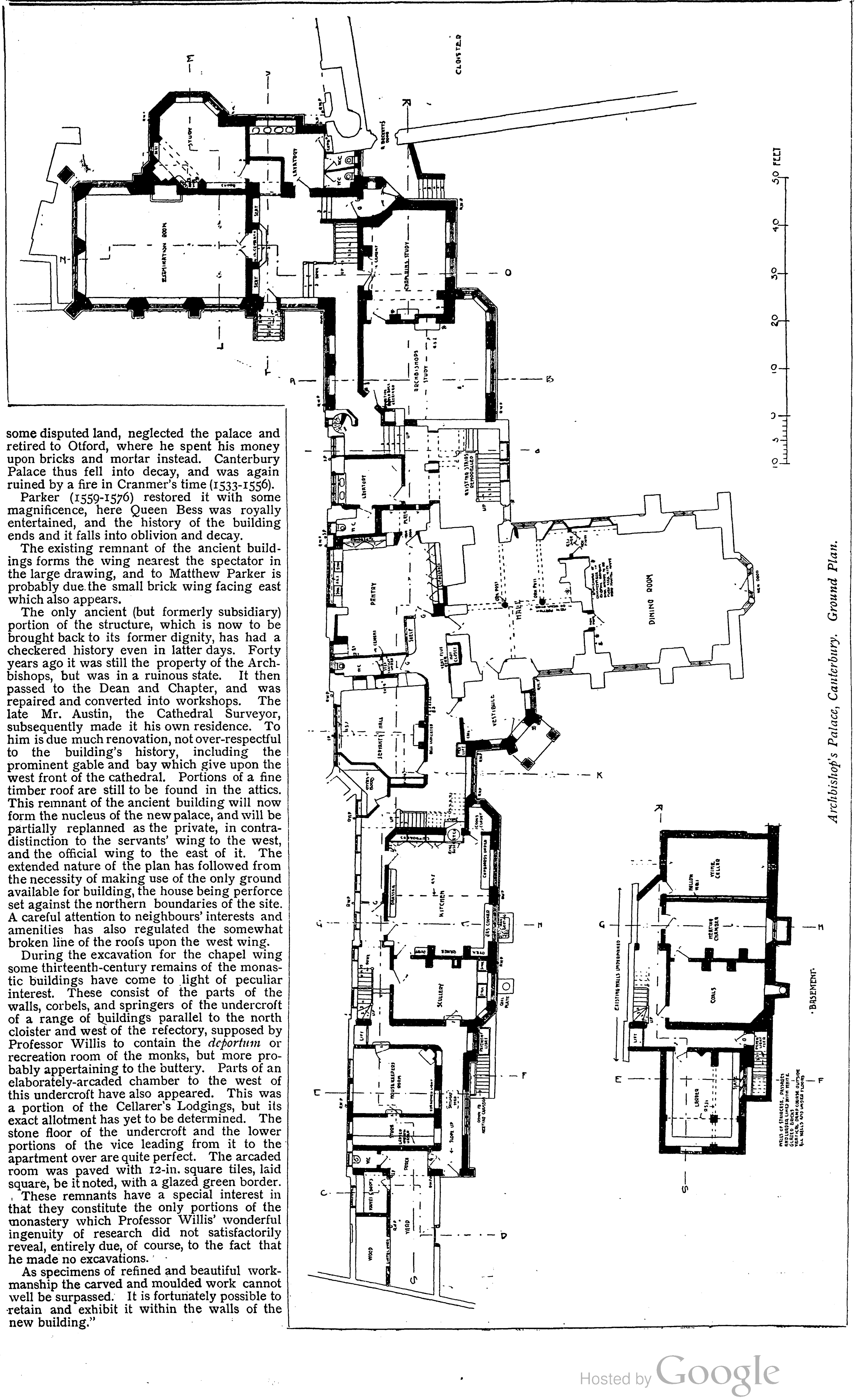
* Unfortunately, by a mistake of the architect's draughtsman, the plan of the existing remains was sent to us with the writing the reverse way of that on the plan of the new work. We are therefore compelled to print it the other way, so that it must be reversed to trace its connexion with the complete ground plan.



*Archbishop's Palace, Canterbury. Ground Plan.*

some disputed land, neglected the palace and retired to Otford, where he spent his money upon bricks and mortar instead. Canterbury Palace thus fell into decay, and was again ruined by a fire in Cranmer's time (1533-1556).

Parker (1559-1576) restored it with some magnificence, here Queen Bess was royally entertained, and the history of the building ends and it falls into oblivion and decay.

The existing remnant of the ancient buildings forms the wing nearest the spectator in the large drawing, and to Matthew Parker is probably due the small brick wing facing east which also appears.

The only ancient (but formerly subsidiary) portion of the structure, which is now to be brought back to its former dignity, has had a checkered history even in latter days. Forty years ago it was still the property of the Archbishops, but was in a ruinous state. It then passed to the Dean and Chapter, and was repaired and converted into workshops. The late Mr. Austin, the Cathedral Surveyor, subsequently made it his own residence. To him is due much renovation, not over-respectful to the building's history, including the prominent gable and bay which give upon the west front of the cathedral. Portions of a fine timber roof are still to be found in the attics. This remnant of the ancient building will now form the nucleus of the new palace, and will be partially replanned as the private, in contradistinction to the servants' wing to the west, and the official wing to the east of it. The extended nature of the plan has followed from the necessity of making use of the only ground available for building, the house being perforce set against the northern boundaries of the site. A careful attention to neighbours' interests and amenities has also regulated the somewhat broken line of the roofs upon the west wing.

During the excavation for the chapel wing some thirteenth-century remains of the monastic buildings have come to light of peculiar interest. These consist of the parts of the walls, corbels, and springers of the undercroft of a range of buildings parallel to the north cloister and west of the refectory, supposed by Professor Willis to contain the *deportum* or recreation room of the monks, but more probably appertaining to the buttery. Parts of an elaborately-arcaded chamber to the west of this undercroft have also appeared. This was a portion of the Cellarer's Lodgings, but its exact allotment has yet to be determined. The stone floor of the undercroft and the lower portions of the vice leading from it to the apartment over are quite perfect. The arcaded room was paved with 12-in. square tiles, laid square, be it noted, with a glazed green border. These remnants have a special interest in that they constitute the only portions of the monastery which Professor Willis' wonderful ingenuity of research did not satisfactorily reveal, entirely due, of course, to the fact that he made no excavations.

As specimens of refined and beautiful workmanship the carved and moulded work cannot well be surpassed. It is fortunately possible to retain and exhibit it within the walls of the new building.”

## LONDON COUNTY COUNCIL MODEL DWELLINGS FOR THE MILLBANK SITE.

We publish this week the plans of Messrs. Spalding & Cross, who obtained the first premium in the competition recently instituted by the London County Council for the best designs for model dwellings, or dwellings for the poorer class, on their site at Millbank.

The following particulars are extracted from the architects' report sent in with the drawings :—

"In order to ensure the free circulation of air, in view of the fact that the site may be, at any future time, practically enclosed on two sides by lofty neighbouring buildings, it has been found advisable to place the tenements in two distinct blocks of buildings, five stories in height, with their lines of frontages abutting respectively on Earl-street and the vacant land, the surplus portion of the site being utilised as a courtyard or recreation ground. A centrally-placed cottage building for the supply of hot water and for clothes drying has been provided, and also a spacious workshop or bicycle store. The larger block of dwellings, fronting Earl-street, contains the following accommodation, viz. :—

Five two-roomed tenements.

Thirty three-roomed tenements.

The smaller block of dwellings, fronting the vacant land at the eastern boundary of the site, contains (No. 20) two-roomed tenements.

The following detailed description of the general arrangement and construction applies equally to both two-roomed and three-roomed tenements.

Each tenement is approached by means of the general staircase, from the landing of which access is obtained to the private entrance lobbies of the various self-contained tenements, consisting of a living room, having a floor area of not less than 160 ft. superficial, overlooking the street and fitted with a dresser, with two shelves, potboard and cupboard, and a self-setting range for an open or close fire. A bedroom, or bedrooms, having a minimum floor area of 106 ft. superficial, fitted with a hanging cupboard for clothes and a mantel register stove. A scullery, overlooking the courtyard and disconnected from the living and bedrooms by the ventilated entrance-lobby and the adjoining balcony, containing a floor area of not less than 45 ft. superficial, and fitted with a stoneware sink, a draining-board, a plate-rack, a six-gallons copper and an open cottage range, so that, if thought desirable, the scullery could be used as a kitchen.

The scullery, the water-closet, the galvanised iron coal-box, and food store, the dust-pails, &c., are all accessible from the balcony, to enable any necessary sanitary inspection or replenishment of stores to be made without disturbing the privacy of the inmates and to allow of any household washing and clothes drying being carried on without discomfort.

*Construction.*—The buildings generally would be constructed of fire-resisting materials—all the walls being of brick, and the floors formed throughout with steel joists filled in with coke breeze concrete. The roofs would be boarded and felted and covered with green slates.

All external walls would be faced with Lawrence's red facing bricks above a high dado of salt glazed bricks. Light red terra-cotta would be used for the copings to the gables, the window cills, and the front doorways, &c.

The walls of the staircases, sculleries, and water-closets would be faced with salt-glazed bricks throughout.

The walls of the entrance lobbies, living rooms, and bedrooms would be plastered, in the cases of the lobbies and living rooms, above the dado, which would be of salt-glazed brick. The staircases, balconies, &c., would be of granolithic. The window balconies would have wrought-iron flower-guards, and the yard balconies wrought-iron fence rails as shown upon the drawings. The water-closets would be fitted with the 'Oatley' patent overflow soil and anti-siphonage pipe junction, so that should one water-closet become blocked, the others would not be put out of action or the water-closets at a lower level flooded. The rain-water pipes and sink wastes would discharge into gullies having cleaning caps to enable all short lengths of drains to be cleaned. The general drainage arrangements are planned in accordance with the revised by-laws proposed to be made by the Council. The whole of the water used would be stored in 'Alexander's' patent self-cleansing air-tight cisterns placed in the roof-space immediately over the staircases, and easily accessible. The arrangements suggested for the general supply of hot water and for clothes drying are clearly indicated on drawing No. 2. The general dust-bins would be of galvanised iron."

St. Mary Woolnoth, Lombard-street.—It is rumoured that the Bishop of London has in preparation a scheme for uniting the benefices of St. Mary Woolnoth and St. Edmund the King, Lombard-street, and for pulling down the former church and selling the site. A railway-station has recently been constructed beneath the church, but its removal would be a yet greater vandalism.

## THE SURVEYORS' INSTITUTION.

The annual provincial meeting and conference in connexion with the Surveyors' Institution was opened on the 26th ult. at the Council House, Bristol. There was a representative gathering of members from various parts of the country. The arrangements were admirably carried out by the following gentlemen on the Somerset, Gloucester, and North Wilts Provincial Committee :—Messrs. H. A. Hood Daniel, P. Munro, P. Addie, T. Scammell, W. Sturge, R. F. Sturge, A. P. I. Cotterell, and T. Sturge (Bristol), C. R. Wainwright, E. M. Hippisley, and H. Spackman (Somerset), H. W. Bruton, J. J. Harle, and R. Anderson (Gloucestershire), H. H. Smith, H. B. Napier, and L. H. Marshall (North Wilts). The members were received at the Council House by the President of the Institution, Mr. Robert Vigers, and when they had assembled in the Conference-room the Mayor (Mr. Herbert Ashman) temporarily took the chair for the purpose of affording an official welcome.

On the motion of Mr. Robert Vigers, the members of the Institution thanked the Mayor for his remarks, and for the great trouble he had taken in connexion with the visit of the Institution to Bristol.

The chair was afterwards occupied by Mr. Robert Vigers.

Mr. William Sturge, a past President of the Institution, read a paper dealing with past and present Bristol. Having given some historical information relating to the city, he said that "Bristol is admirably supplied with water. The Bristol Water Works Company obtained an Act of Parliament in 1846 authorising them to obtain supplies from springs at Chewton Mendip, fourteen miles from Bristol, as well as from other sources, and to construct reservoirs at Barrow Gurney, five miles from Bristol. Several more recent Acts have been obtained in order to increase the supply. The company's three store reservoirs at Barrow occupy about 130 acres, and are placed at an elevation which admits of the flow of water by gravitation to all but the highest parts of the city. There is a low service reservoir at Clifton, from which the water is pumped to a high service reservoir on Durdham Down. There are also a deep well and pumping station at Chelvey, ten miles from Bristol, to supplement the supply in dry seasons, with the result that through the drought seasons of recent years a constant supply was maintained. In view of the increasing population of the city, the company are now constructing a reservoir of several hundred acres at Blagdon on the river Yeo, twelve miles from Bristol. The total expenditure of the company on works is about 1,680,000*l.*, and the water revenue is about 114,000*l.* per annum. I have acted as the company's surveyor in the purchase of land and wayleaves for pipes from the date of its formation to the present time. The city is well lighted with gas ; the total capital of the Bristol Gas Company is 1,426,950*l.* ; the gross revenue is 134,636*l.* The present price of gas to consumers is 2s. 4d. per 1,000 cubic ft. The Corporation has erected electric light works in Temple Backs and some of the leading thoroughfares, and many shops and places of business are lit with the electric light. . . .

As might be expected in an ancient walled city, the streets of Bristol were much too narrow for the requirements of modern traffic. For many years after the construction of the principal railway station in Temple Meads, the only approach to the centre of the city was by Temple-street, a narrow and mean-looking thoroughfare. Redcliff-street, the principal carriage access from the west, was so narrow that the heavy traffic often blocked the street. Between the year 1866 and the present time great improvements have been carried out under various Acts of Parliament by means of loans for terms of years, raised on the security of the borough rates. These improvements, notably Victoria-street, New Baldwin-street, Redcliff-street, Perry-road, Colston-street, and many minor schemes have been carried out at the cost of upwards of half a million, of which outlay a large proportion has been recouped by the sale of salvages.

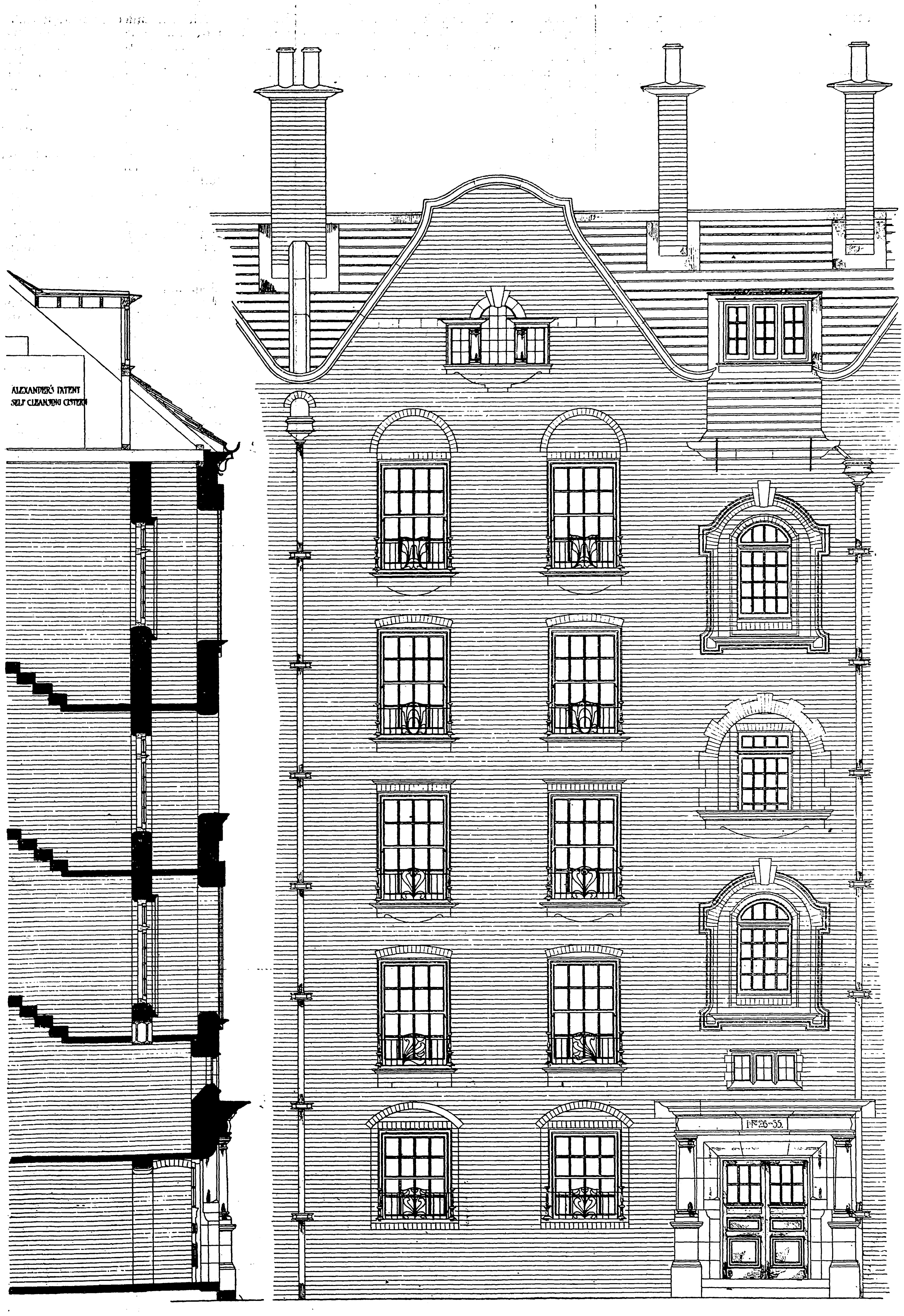
There is in Bristol no great dominating proprietor able to dictate the tenure on which land shall be granted for building. By far the greater part of the property is held by a numerous body of proprietors on freehold tenure free from ground rent, or subject only to a small quit rent. The system of granting land for building on leases for ninety-nine years does not prevail, and is regarded with such disfavour that for residential purposes this tenure is almost unknown. The usual practice is to grant land for building in perpetuity subject to ground-rents locally known as 'fee farm rents.' Well-secured ground-rents could formerly be purchased for twenty, twenty-two, or twenty-five years' purchase ; they now freely realise from twenty-eight to thirty years' purchase. The Corporation of Bristol is the largest property owner in the city, owning property producing about 20,000*l.* per annum, besides the docks and markets. Some of their property is granted on the antiquated tenures prevalent two centuries and a century and a half ago. Queen-square and Prince-street, and other places were granted on leases for forty years, renewable for ever on payment once in every fourteen years of 'one full year's rack rent or yearly value,' subject to applications for renewal being made within one year after the renewal becomes due, and to the premises being kept in repair. The effect of this tenure is to bar almost all improvements for fear of increased fines. Much of the Corporation property was formerly held by lessees for lives, and previously to the year 1849 it was the practice to put in new lives on payment of an arbitrary fine, but this was not compulsory. In that year all the lessees were offered to commute their life leases into the term of seventy-five years absolute, on payment of an additional reserved rent calculated on the difference in value. Many, but not all, the lessees availed themselves of this offer. There are still a few outstanding life leases, which are allowed to fall in hand as the lives drop. A good deal of property in the ancient city is owned by charitable foundations and parochial vestries, which, owing to the delay and restrictions in granting building leases, is for the most part the least improved property in the city.

The value of property in the principal business streets has very largely increased during the last twenty years ; in Corn-street and Clare-street, where most of the banks and insurance offices are situate, transactions have taken place at from 50*l.* to 65*l.* per yard super, including buildings a century old, in most cases taken down to clear the site. In one case of a corner plot, about 110*l.* per yard was paid. In New Baldwin-street the average ground-rent has been 10s. per yard, and one corner plot 13s. 4d. per yard. In Wine-street (the chief seat of the drapery trade), a plot of vacant land containing 204 square yards realised by auction last year the ground-rent of 250*l.* per annum, equal to 1*l.* 4s. 6d. per yard, which at thirty years' purchase amounts to 36*l.* 15s. per yard in fee. An adjoining plot of 251 yards, with larger frontage, realised the ground-rent of 380*l.* per annum, equal to 1*l.* 10s. 3d. per yard, worth, at thirty years' purchase, 45*l.* 7s. 6d. per yard in fee. The rents of shops and business premises in the main streets have been steadily rising. A house in Clare-street, which sold for 6,000*l.* ten years ago, has just been re-sold for 9,000*l.*, an advance of 50 per cent. On the other hand, the rents and selling value of residential property in Clifton have depreciated 20 to 25 per cent. within the last twenty years, especially those of the larger and older houses, not adapted to modern requirements. In the case of more modern houses, I think the heavy ground-rents (often equal to one-fourth of the rack-rent) affect the market value. There is less disposition than formerly to purchase houses for investment. Waterside property has increased in value. Under the compulsory powers of the 'Bristol Dock Act, 1897,' the Corporation purchased last year 11a. 3r. 0p. of waterside property for 69,350*l.*, being at the rate of 5,900*l.* per acre."

Mr. T. M. Rickman (London), Vice-President, proposed a vote of thanks to Mr. Sturge for his paper, and Mr. John Shaw (Derby), Vice-President, seconded the motion, which was heartily agreed to, and Mr. Sturge replied.

Mr. Howard Martin (London) then read a paper on Mr. Chamberlain's Bill to enable workmen to purchase their dwellings. In the discussion the following gentlemen took part :—Messrs. Daniel Watney (London), Past President, who proposed a vote of thanks ; Mr. R. Horsfall (Halifax), Mr. T. T. Wainwright (Liverpool), Mr. D. Ward (Plymouth), and the President. The general feeling was that the Bill was unworkable and that building societies were doing all that was necessary.

The vote of thanks was agreed to and Mr. Martin replied.


ALEXANDER'S PATENT
SELF CLEANSING CISTERN
No 26-55.

*The Proposed Millbank Model Dwellings. Detail Elevation.* [*See preceding page.*

After luncheon, a paper by Mr. W. M. Acworth, barrister-at-law, on "The Railway and the Farmer," was read by Mr. Julian C. Rogers, the Secretary of the Institution.

A dinner was held in the large hall of the Grand Hotel in the evening, and was attended by a numerous company. The President (Mr. Vigers) occupied the chair, and among those present were His Honour Judge Austin, Col. G. W. Raikes, Messrs. Wm. Sturge (Past President), E. J. Taylor (Acting Town Clerk), J. T. Lane (City Treasurer), D. Watney (Past President), T. H. Yabbicom (City Engineer), J. Shaw (Vice-President), T. M. Rickman (Vice-President), G. Langridge, R. Horsfall, A. Buck, R. F. Sturge, T. Dyke, F. W. Newton, T. T. Wainwright, H. Martin, C. H. Bedells, H. M. Grellier, and others.

The following day excursions were made to Tintern Abbey, Chepstow Castle, Wells, and Glastonbury, and places of interest in Bristol and its vicinity.

At the ordinary meeting in London, on Monday, at the temporary offices of the Institution, Savoy-street, Victoria Embankment, a discussion took place on the "Agricultural Holdings Bill," prepared and brought in by Mr. Channing and others.

The annual dinner in connexion with the Junior meetings will take place at the Monico, Egyptian Saloon, Shaftesbury-avenue entrance, W., on Tuesday, May 30, at 7 p.m.

## THE LONDON COUNTY COUNCIL.

THE usual weekly meeting of this Council was held on Tuesday, at the County Hall, Spring Gardens, Lord Welby, Chairman, presiding.

*Loans.*—On the recommendation of the Finance Committee it was agreed to lend the St. Luke, Middlesex, Vestry 5,000*l*. for the construction of underground conveniences; the Chelsea Guardians 11,060*l*. for the purchase of land as a site for a workhouse, and the Guardians of Stepney Union 10,550*l*. for the purchase of a site for schools.

*The Annual Estimates.*—The Council then considered and adopted the annual estimates. The county rate is to be reduced by a halfpenny in the pound. The principal item of increased revenue is a profit of 78,935*l*. from the Council's tramways. The debt of London has increased since the existence of the Council by 4,000,000*l*., but about half of that amount is invested in remunerative undertakings.

*By-laws as to the Drainage of Buildings.*—The Council then considered the proposed new by-laws as to the drainage of buildings, the whole of which we printed in our issue for April 1 last. The proposed by-laws were agreed to, with the following alterations:—

The substitution of the word "metal" for "cast iron" in all cases.

The deletion of the words "semi-vitrified ware" in all cases.

In By-law 3, Appendix I., after the words "shall cause such pipe or channel to discharge," insert the words "into the open air."

To By-law 8 (IV.) add, "Or if the drain exceed 4 in. in internal diameter by a sectional area not less than that of a pipe 4 in. internal diameter."

The withdrawal for the present of (VI.) from the same by-law. Another form of wording is to be submitted by the Public Health Committee.

The deletion from By-law 11 of the schedule as to thickness and weight of soil pipes and the substitution of the old schedule (which the Committee proposed to repeal).

In By-law 11 (soil pipes, material) after the words "soil pipe in drawn lead," insert the words "with proper wiped plumber's joint."

The omission of By-law 22.

The proposed repealing by-law (Appendix II.) was also agreed to, with the exception of the schedule as to soil pipes, which, as stated above, was re-incorporated in By-law 11.

Mr. Leon, the Chairman of the Committee, moved, and it was agreed, "That the Council do make by-laws under Section 202 of the Metropolis Management Act, 1855, in the terms set out in Appendix I. to this report."

It was also agreed to include in the by-laws the following:—"The word 'person' shall include anybody, whether corporate or incorporate."

*King's Scholars' Pond Sewer Pumping Station.*—The Main Drainage Committee recommended, and it was agreed, that the tender of Messrs. C. W. Killingback & Co., amounting to 1,970*l*. 13s. 6d., for effecting alterations near the outlet of the King's Scholars' Pond sewer into the Thames be accepted.

*Theatre, Camden Town.* — The Theatres and Music Hall Committee brought up the following:—

"We have considered ten drawings, nine dated 14th and one dated 26th April, 1899, submitted on behalf of Mr. E. G. Saunders, of a theatre which it is proposed to erect in High-street and Crowndale-road, Camden Town. The total boundary of the site is 501 ft., of which 220 ft. front to thoroughfares of a width greater than is required by the regulations. To comply strictly with the regulations 250 ft. 6 in. should front to these thoroughfares, but to compensate for the difference of 30 ft. a frontage of 75 ft. is given to a cul-de-sac which is about 22 ft. in width. We are of opinion that the site is a good one and may be accepted. The theatre will accommodate 1,590 people, and as regards its arrangements and construction the drawings show the regulations to have been complied with in all respects." They recommended, and it was agreed, that the ten drawings be approved on certain conditions.

Having transacted other business the Council adjourned.

## IMPROVEMENTS AT COVENT GARDEN THEATRE.

WITH the end of this week, various improvements at Covent Garden Theatre will practically be completed, and, in order to avoid any exaggerated expectations (owing to the unauthorised and exaggerated reports of what is being done), the following particulars are given, which may be taken as authoritative.

As far as the auditorium is concerned, a new red silk proscenium curtain is to be provided, and will be hung on the lines of a so-called "Wagner" curtain. The porch, vestibule, grand staircase, and saloon, are being redecorated, and the electric light has been installed in the saloon. A new smoking lounge is being erected over the porch from the designs of the surveyor to the Duke of Bedford. This lounge will also be electrically lighted.

Of various minor improvements in front of the house, the whole of the sanitary arrangements have been remodelled and an installation on modern principles provided.

In respect to the stage, the scene stores have been re-modelled and a large "wing" store formed. This will facilitate the change of scenes.

The most important alteration of the stage is the full installation of electric light in four colours—white, red, blue, and yellow being used—and the supply is to be taken from two distinct sources with the view of meeting emergencies. The system accords with the ordinary practice of the London stage and has been put in by Mr. Bowles. A new feature, arranged by the directors is, however, the position of the regulator room below the stage, with a full view of the scene.

The whole of the works have been carried out at great pressure under the personal direction of the Directors, and of Mr. Edwin O. Sachs, their technical adviser. Possession of the Opera House was given to the syndicate on March 25, so that the property has been in the hands of the syndicate for one month only.

There will be no new stage machinery this season, nor will the auditorium be lighted by electricity; the time at the disposal of the directors having been too short for these works.

## *COMPETITIONS.*

CARTWRIGHT MEMORIAL HALL, BRADFORD. Lord Masham visited Bradford on Tuesday to approve the plans for the Masham-Cartwright Memorial Hall, towards the erection of which in Lister Park, Bradford, he has contributed 400,000*l*. He approved the selection made by Mr. Alfred Waterhouse, R.A., and the awards for the plans were announced as follows:—1st premium (150*l*.), Mr. J. W. Simpson and Mr. J. Milner Allen, 10, New Inn, Strand, W.C.; 2nd premium (100*l*.), Mr. A. R. Jemmett, 21, Great College-street, Westminster; 3rd premium (50*l*.), Mr. W. A. Pite and Mr. R. S. Balfour, 3, Upper Montague-street, W.C. The designs will be on view from the 8th inst. to the 13th, in the Museum, at the Technical College, Bradford.

GRAMMAR SCHOOL HOUSE, DONCASTER.—Mr. Alfred Aitchison, nominated by the Royal Institute of British Architects, has adjudicated upon these designs in competition and has awarded the first premium of 50*l*. to Messrs. R. & W. Dixon, of Barnsley; second premium (25*l*.) to Mr. J. B. Royle, of Green-lanes, Finsbury Park, N., and the following were honourably mentioned: — Messrs. Seward & Rawcliffe, of Preston, Lancashire; L. H. Dutch, John Dalton-street, Manchester; Taylor & Son, of Aylesbury; James Withers, of West Bromwich; F. W. Edwards, Newhall-street, Birmingham; Sharpe & Quail, of Old Trafford, Manchester.

SHOREDITCH TOWN HALL.—At a meeting of the Shoreditch Vestry on Tuesday the Town Hall Committee reported that in response to advertisements four sets of designs had been received for the proposed extension of the present town hall buildings. After careful consideration of the various designs the committee stated that, subject to the conditions of the competition, they placed as first in order of merit design No. 2, and as second design No. 3, and they recommended the Vestry to confirm that award. In proposing the adoption of the recommendation Mr. Hall recalled the fact that the Vestry had offered 50*l*. for the set of designs placed first, and 25*l*. for those allocated by the committee as second in order of merit. The recommendation of the committee was then put to the meeting and was adopted. It then transpired, on the opening of the sealed envelopes, that the author of No. 2 design was Mr. W. J. Hunt, 12, Bedford-gardens, Kensington; and of No. 3 design, Messrs. Spalding & Cross, of Cheapside. The author of No. 1 design was found to be Mr. C. Bell, of Cannon-street; and of No. 4 design Mr. C. E. Jackson, 39, Wigmore-street. The Vestry decided to leave for future consideration the question of a final selection of the design for the extension of the town hall.

## *ARCHITECTURAL SOCIETIES.*

EDINBURGH ARCHITECTURAL SOCIETY.—On the 26th ult., Mr. Frank W. Deas read a paper entitled, "Notes on Romanesque and Byzantine Churches of South-east Italy." Mr. Alfred Greig, Vice-President, occupied the chair. After briefly sketching the history and character of the Province of Apulia, typical churches of the eleventh, twelveth, and thirteenth centuries were described. The work under review owed its charm to a blending of Romanesque, Byzantine, Saracenic, and Norman elements. Many exteriors remain untouched, but examples of interiors are fragmentary. The buildings are of the Basilican type, consisting of naves with wide aisles and apsidal east ends and transepts, the height of the nave, but not breaking the aisle walls on plan. The nave is usually roofed with wood, and the aisles groined. Domes occur, but not frequently. The arcades are heavy, with small arches and many pillars. Window openings are small. Buttresses occur only as pilasters on the west fronts. Thus the exteriors are simple and broad in treatment, setting off to good advantage what carving occurs. The carved ornament is greatly in advance of contemporary work elsewhere. Figure sculpture is still on a low level, however. The paper was illustrated with diagrams and lime-light views.

LIVERPOOL ARCHITECTURAL SOCIETY.—The annual meeting of the Liverpool Architectural Society was held on the 1st inst. in the Law Library, 41, Castle-street, Mr. W. E. Willink, the President, in the chair. The annual report, submitted by Professor Simpson, hon. sec., showed that the number of members was 136, compared with 131 last year. There were fifty-nine Fellows, thirty-seven Associates, nineteen students, and twenty-one honorary members. The balance-sheet, presented by Mr. James Dod, hon. treasurer, showed that there was a favourable balance of 138*l*. 7s. 8½d. as against a balance in hand last year of 67*l*. 10s. 4½d. The election of officers resulted as follows:—President, Mr. E. A. Ould; vice-presidents, Messrs. William Owen and J. Woolfall; hon. secretaries, Professor F. M. Simpson and Mr. Arnold Thornely; hon. treasurer, Mr. James Dod; and hon. librarian, Mr. J. W. Blakey. The Council were appointed as follows:—Messrs. J. W. Blakey, T. E. Eccles, A. P. Fry, Henry Hartley, P. C. Thicknesse, W. E. Willink, J. Woolfall, F. E. P. Edwards, and E. P. Hinde. The outgoing President, Mr. Willink, afterwards delivered his closing address, in which he congratulated the members of the Society upon the success which had attended the work of the past year.

# Correspondence.

*To the Editor of* THE BUILDER.

## ARCHITECTURE A FORGOTTEN ART.

SIR,—Not very long ago certain Royal Academicians and other praiseworthy gentlemen beat the air, flogged the Institute, and hugged themselves over the conundrum of whether architecture was "a profession or an art." The performance was an interesting one, but I doubt if it settled much; such discussions seldom do, as facts remain unaltered by them, *e.g.*, the designer of St. Paul's Cathedral was called a "surveyor," the decorator of the same building is called an "artist," and architecture is called an "art"; but where are we after all

The design of St. Paul's is good, its decorations are bad, and architecture is such a poor thing that the President of the Royal Academy of Arts did not think it worth while even to mention her at the "Academy Banquet" last Saturday. It is a small matter no doubt, but very curious. Any poor little daub which may find its way on to the walls of the Academy is a work of art, and its author is an artist; but architecture is a forgotten art!

Painting and sculpture were well taken care of by Sir Edward Poynter. In his reference to the coming Paris Exhibition he expressed a hope that the fine art section would be of a quality to place our school of painting and sculpture in the most favourable light (I hope so too). Later, music and the drama were held up as being "the complement to the arts of painting and sculpture," but nothing was said of architecture, which at least used to be the oldest of the fine arts represented by the Royal Academy.

Two fine paintings have been added, we were told, by Government aid, to our National collection, and we are all proud to hear it. (I wonder how many "artists" ever cross the threshold of the National Gallery). Two fine buildings, however, are about to be erected in Whitehall by the Government; are these to be no addition to the art treasures of the nation? If not, had not the Academy better see to the matter at once?

I quite see that from the very nature of the work of the architect it is impossible adequately to represent it on the walls of Burlington House. I do not see, however, why architecture should be so thinly represented in the ranks of the Royal Academicians, neither do I see why work which is at least as good as that of the painter and sculptor, should be so constantly overlooked by the Academy.

Cannot the gentlemen to whom I first referred persuade the President of the Academy that architecture really is an art still? This should not be a very difficult task, as I am told Sir Edward's father was an architect himself.

LEONARD STOKES.

## THE EDINBURGH ADVERTISEMENTS BILL.

SIR,—Will you permit me, with reference to your sympathetic note on the advertising clauses in the Edinburgh Bill, to offer a reassuring explanation?

The only power denied to the Corporation is one which they did not ask for—that is to say, a censorship of individual posters; subject to certain equitable conditions with regard to existing interests, the municipality have obtained powers which, in the judgment of this Society, will be of far-reaching efficacy for the prevention of disfigurement.

We regard the decision of the Select Committee as the permanent recognition of the principle which for five years we have been struggling to assert, and we can confidently trust to time for the application of it elsewhere in conformity with local requirements.

Our warmest thanks are due to the Lord Provost and the Corporation who have fought our battle with so much spirit and wisdom.

RICHARDSON EVANS,
Hon. Sec. National Society for Checking the Abuses of Public Advertising.
1, *Camp View, Wimbledon Common.*

## BRICK STREET PAVING.

SIR,—With reference to your paragraph in last week's issue on the above subject, I should like to make a slight though important correction as to the abrasion test carried out by me. The bricks placed in the tumbler or rattler were equal to 15 per cent. of its cubic contents, but some of these were of other than Messrs. Woolliscroft's manufacture.

It is important in testing for abrasion and impact that the cubic capacity of the bricks or filling should bear some relation to the capacity of the rattler, and your note might lead readers to suppose that only five bricks were put in, whereas there were nineteen used in the test.

If any of your readers are interested in the subject of "brick-paving for roads," they can see three samples, made by different well-known firms, laid and in use in Upper-street, Islington, a short distance beyond the Agricultural Hall. These pieces of paving have been laid by the Islington Vestry under the superintendence of Mr. J. P. Barber, M.Inst.C.E., their Surveyor, and time will prove whether the merits claimed for this class of paving, which is now being so largely adopted in America, are justified. At any rate the experiment will doubtless be watched with interest not only by engineers and surveyors having charge of highways but the public who use the roads.

JOHN T. EAYRS, M.Inst.C.E.

## FOUNDATIONS NEAR THE SEA.

SIR,—Perhaps some of your numerous readers will answer the following queries, viz.: What is the best treatment for foundations at a seaside resort, when you have to contend with quicksand and beds of shell, caused by the back-wash from the sea? I shall be much obliged to any professional brother who has had any experience of the kind if he will give me his ideas. FRANK HOLMES.

# The Student's Column.

## ARCHITECTURAL HYGIENE.

### XVII.—VENTILATION (*continued*).

### 6.—INLETS.

THEIR *Position and Size.*—There is a considerable difference of opinion as to whether the inlets should be at the top of the room or low down, but the best position seems about 6 ft. from the floor level, and if possible on the same side of the room as the fireplace.

Inlets should be so arranged as to draw the air from a pure source. They should be short and accessible, otherwise they collect dirt and vermin, for what is the use of admitting air if before it reaches the apartment it becomes fouled by accumulations of dirt? The air is introduced about 6 ft. from the floor, so as to give the air an upward direction above the heads of occupants. Inlets should be well distributed, so that all parts of the room may be air cleansed. The incoming air should, of course, be warmed in winter, but in ordinary houses where this is not done the inlets should be distributed so as to diffuse and mix with the air of the room before it reaches the occupants. Inlets should be capable of partial closing.

Air may be introduced through a Sherringham's ventilator (fig. 201), which is much better than an ordinary grating, because it is provided with flaps falling inwards, and with cheeks, so that the air is forced upwards first and then diffused. The "Harding" diffuser can be placed in its mouth, and this spreads the stream of the air.

Figs. 202 and 203 show respectively a view and section of a very good inlet ventilator patented by Mr. Joseph Leather, of Liverpool. It is on the same principle as the "Sherringham," but is a decided improvement on it. It will seen by the section fig. 203 that the cheeks are divided into four compartments, the bottom two being covered with perforated zinc, marked D in the figure.

This is to stop the air from coming into the room in too draughty a course, and tends to drive the air up in a vertical direction through the two upper compartments, and at the same time prevents any dirt or rubbish from getting into the room. The ingress of the air can be regulated by the movement backwards and forwards of the flap.

Figs. 204 and 205 show another example of an inlet ventilator, which is called the "Venetian Louvre Ventilator," and it is also patented by Mr. Joseph Leather.

Fig. 204 shows the ventilator open, and the working arrangement is as follows:—

The centre top and bottom louvres A, B, and C are fixed, and by pulling the handle down the two louvres D and E (which move in conjunction on a plate fixed to the centre F) are brought on to B and C, as shown in fig. 205, which shows the ventilator closed.

This form can be recommended, and it has the advantage of being arranged in the thickness of the wall, and no flap is visible on the inside of the room when the ventilator is open. Both these forms of ventilators are being extensively used in London and the provinces.

A "Tobins" tube inlet (fig. 206) is an upright tube placed at the side of the room, formed of 1¼ in. boarding, and lined with zinc. Its top should be at least 6 ft. from the floor, so as to prevent people feeling a draught. It is provided with a butterfly valve to regulate the admission. The disadvantage is the long tube, which is difficult to clean. The top is covered with perforated zinc, marked H in the figure.

We cannot condemn too strongly the placing of hot-water pipes below a floor level, covered by gratings; such ducts become the receptacles of all sorts of filth, which dries into dust and is carried about by the air current set up, and contaminates the atmosphere to be breathed.

A form of inlet which should be provided to every room is made by placing a deep bead on the ordinary sash window (as shown in fig 207), the air being admitted between the meeting rails in a vertical direction. Fig. 208 shows the introduction of fresh air at the head of the window. The supply can be regulated by the soffite lining having a hinged flap.

When the temperature of the outer air is below 45 deg. it is found by experience that inlets get closed unless the air is warmed. This is done by passing it over ventilating radiators, which are illustrated in examples given in another chapter. In smoky towns, the incoming air is often cleansed by passing it through a screen of cotton wool, or horsehair and fibre, upon which in some cases a sheet of water is poured at short intervals. This screen arrests the impurities, which are washed off by the water.

*Size of Inlets.*—Dr. Corfield states that 24 square inches is the sectional area which should be allowed as an inlet for each person; so that one square foot is required for six persons. Therefore six air bricks of the effective area of 24 square inches would be sufficient for six persons. Such an allowance seems excessive, and in fact is seldom obtained in practice. It is considered advisable to give the inlets a larger area than the outlets as this reduces the velocity of the inflowing current. In calculating the size of the openings, the actual opening only must be counted, deducting bars and other obstructors, &c. The late Professor Jacob was of opinion that in calculating the size of openings, one square inch of unobstructed space will, as a maximum, admit 125 cubic feet of air per hour; on this basis eight square inches would admit 1,000 cubic feet, which in rooms not continuously occupied and introduced at a velocity of not more than 5 ft. per second may be considered sufficient for each person. This, however, is just one-third of Dr. Corfield's calculation.

The tendency is for inlets to be too small, considering the low motive power in natural ventilation. The Education Department require inlets of a minimum allowance of 2½ square inches per child.

The Army regulations provide for inlets and outlets varying from 10 to 20 square inches per head; but in all cases the ratio of inlets and outlets to cubic space are as 1 is to 60.

*Hood's Rule.*—For ordinary rooms provided with a good fireplace, Hood propounded a practical rule based on experience, taking into account the size of the room, the number of occupants, and the gas burners, &c.:—

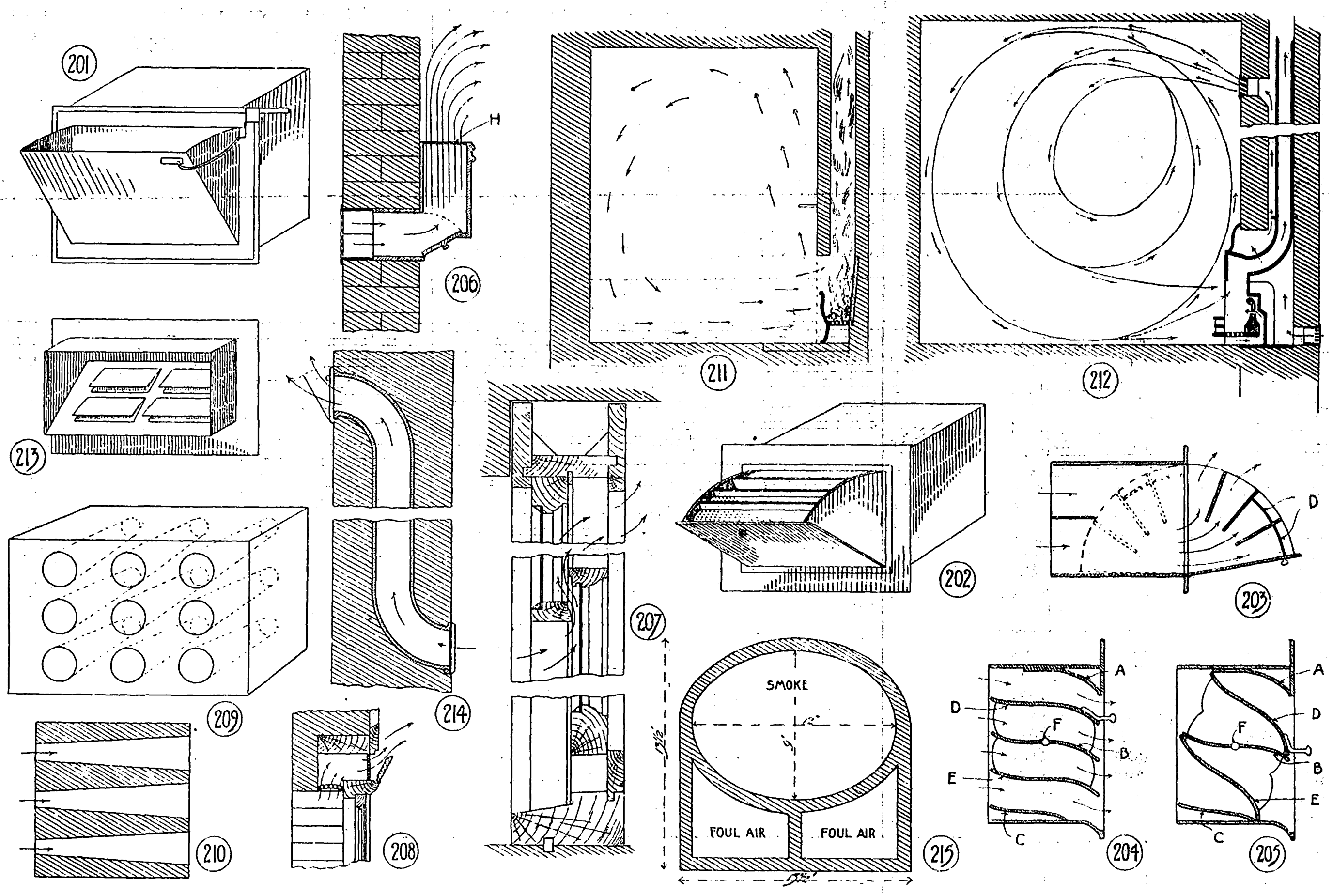
| Size of Room. ft. ft. | Number of Occupants. | Number of Gas Burners. | Net Size of Ventilator. in. in. |
|---|---|---|---|
| 10 by 10 | 2 or 3 | 2 | 9 by 3 |
| 16 by 12 | 3 or 4 | 3 | 9 by 6 |
| 20 by 16 | 4 or 5 | 4 | 9 by 9 |

Figs 209 and 210 show a view and section of Ellison's air inlets. The principle used is to make cone-shaped holes with the small end situated on the exterior, so as to prevent any draught.

Fig. 214 shows an inlet by Messrs. Doulton. It is of earthenware, and 4 in. in diameter. The top is fixed with a hinged flap, which can be regulated as desired.

### 7. VENTILATION OUTLETS.

*Their Position and Size.*—The position of an outlet depends on the inlet. In a general way, it should be removed as far as possible from it. The natural outlet of a room is the fireplace, where there is (or should be) always an up current. The fireplace, however, draws the air out of the bottom of the room, computed at an average velocity of 4 ft. or 5 ft. per second, and we cannot get



*Illustrations to Student's Column.*

away from this factor in ventilation which is provided for us in every room. This factor induces many authorities to suggest "downward" ventilation, the foul air being drawn out at the bottom of the room. The air currents in a room with an ordinary fireplace are shown in fig. 211. As has been pointed out, in an ordinary room with closed doors and windows the air is drawn along the floor to the fire, part goes up the chimney to help the process of combustion, part, in consequence of its warmth and impetus, flows towards the ceiling. As it cools in traversing the ceiling towards the opposite wall it descends until again warmed. It follows, therefore, that in order to equalise the temperature of the room, the best place to introduce air is in the chimney breast wall above the mantelpiece.

The amount of air that a fire requires is large, and where no heating system is in use quantities of cold air are drawn in to supply this need through cracks of doors and windows, to such an amount that draughts are the result. Although rather trenching on the subject of heating, yet it may be as well to mention here that although cold air may be introduced above the chimney mantel, warmed fresh air can also be introduced there by means of Galton's ventilating grate (fig. 212), in which the air is introduced in a separate flue and passed round a heating surface before entering the room. Such air-tubes, however, require constant cleansing.

Even when air is not introduced to the room it is often advisable to supply fresh air to the fireplace itself in order to aid combustion without drawing cold air from the cracks in doors and windows. The Education Department require an air flue of 72 square in. to each fireplace.

Besides the fireplace opening, outlets may be formed into the smoke flue near the ceiling level. Fig. 213 shows a "mica flap" outlet, which is generally employed in such a situation to prevent a back draught. Thin sheets of mica are hinged on to a frame from the top, and so arranged that the slightest pressure from the flue closes the outlet, and so prevents the entry of smoke into the room. On the other hand, foul air readily escapes. The noise made by the mica flaps, however, is very irritating.

If it is desired, however, to extract air from the top of the room, it is better to have a separate foul air flue, which costs little in a new building. This is warmed by being close to the smoke flue, and consequently has a steady up-current.

Another method is by *ventilating flue pipes*, as shown in fig. 215. These are made by Messrs. Doulton in conjunction with flue pipes (which are used instead of the ordinary "parged and cored" flue). They are made of different sizes and shapes, with either one or two air flues as desired. One outlet is, as a rule, considered more efficient than several. The size of outlets and extracting power of flues have been dealt with.

The Education Department require outlets equal to at least two square inches per child, leading into a separate air chimney carried up in the same stack as the smoke flues.

One maxim to remember is that an outlet must have motive power by heat or exhaust, otherwise it will frequently act as a cold inlet.

*Extracting Power of Flues.*—Hood arrived at some practical results by experiment as to the extracting power of flues, and we cannot do better than give his table. All that is necessary to make the calculations is to know the temperature of the outer air and that in the vitiated air shaft.

It is to be noted that although the quantity of air extracted depends on the height of the shaft, yet it does not increase directly as to its height, which is due to loss of heat by the ascending air and friction.

TABLE

showing the quantity of air extracted per minute by a ventilating shaft whose area is one square foot; fresh-air inlets being equal in area or a trifle larger:—

| Height of ventilating shaft in feet. | Excess of temperature of air entering the ventilating shaft above the external air. | | | | | |
|---|---|---|---|---|---|---|
| | 5° | 10° | 15° | 20° | 25° | 30° |
| 10 | 116 | 164 | 200 | 235 | 260 | 284 |
| 15 | 142 | 202 | 245 | 284 | 318 | 348 |
| 20 | 164 | 232 | 285 | 330 | 368 | 404 |
| 25 | 184 | 260 | 318 | 368 | 410 | 450 |
| 30 | 201 | 284 | 347 | 403 | 450 | 493 |
| 35 | 218 | 306 | 376 | 436 | 486 | 531 |
| 40 | 235 | 329 | 403 | 465 | 518 | 570 |
| 45 | 248 | 348 | 427 | 493 | 551 | 605 |
| 50 | 260 | 367 | 450 | 518 | 579 | 635 |

As an example, suppose that the height of the shaft is 40 ft., which would be an average height for an ordinary dwelling-house, and the difference in temperature between the outer air and the vitiated air in the shaft be 20 deg., then the discharge would be 465 cubic feet per minute. As the amount of air extracted is greatest in winter, when the difference between the inner and outer air is greatest, the calculation should be made for summer ventilation, and the ventilator may be regulated by mechanical means or by a special form of grating.

### 8. NATURAL VENTILATION

is that mostly in general use for ordinary buildings, and consists in the removal of foul air and the admittance of fresh by natural means, such as by doors, windows, fireplaces, &c.

In natural ventilation the forces relied upon to supply rooms with fresh air are (1) the wind, which, on the calmest day in England, moves at a velocity of one mile per hour; and (2) the difference in the specific gravity of the inside and outside air.

Nature assists in ventilation, as before explained, because air, when heated, expands and rises, and consequently heated and fouled air given off by the body rises, and can be removed from the apartment by foul-air flues, if fresh air is admitted to take its place. Thus, if cold air is introduced at the lower part of the room and an extract for heated air formed at the top, a natural means of ventilation is provided. Natural ventilation is, however, too much subject to atmospheric conditions to be reliable, and is practically only serviceable in ordinary houses.

### 9. ARTIFICIAL VENTILATION

includes any system dependent on mechanical means of propulsion and extraction, and may be divided into two systems, viz., the *plenum* and the *vacuum*. In the *plenum* system propulsion is adopted, by which means fresh air is driven into rooms by means of fans or air pumps, and the foul air thus forced to find its way out. This appears to be by far the most satisfactory method. Several examples will be illustrated later on.

The *vacuum* system consists in producing strong up-currents in special extracting shafts by means of either a furnace, gas jets, hot water pipes, or steam coils, steam jets, or by fans, or exhaust pumps worked by steam or electricity. By this means the foul air is drawn out of the room and fresh air is allowed to enter.

From the observations of Carnelly, Haldane, and Anderson, conclusive evidence has been arrived at proving the superiority of artificial over natural ventilation; as the following table shows. In this case the buildings experimented on were schools :—

| — | Natural Ventilation. | Mechanical Ventilation. |
|---|---|---|
| Per cent. of windows open | 22 | 3 |
| Cubic feet of air space per head | 168 | 164 |
| Temperature (Fahrenheit) | 55·6° | 62° |
| Carbonic acid (per 1,000 volumes) | 1·86 | 1·23 |
| Organic matter (volumes of oxygen required per million volumes of air) | 16·2 | 10·1 |
| Microbes (per litre) | 15·2 | 16·6 |

The great difficulty in the application of artificial and mechanical ventilation is the cost and occasionally the liability to get out of order; on the other hand, it possesses the great advantage of constancy under every change of atmosphere, and is, or should be, completely under control as to the supply and source of fresh air, its filtering, purification, temperature and humidity.

All public buildings should be heated by mechanical means.

Of the plenum and vacuum systems, the "plenum" is considered by experts to give the best results, because by employing propulsion the air can be cleansed, tempered, and brought to a proper hygrostatic condition. This can be ascertained by the hygrometer (which is an instrument for measuring the moisture of the atmosphere), and forced in directions most suitable, whereas by the vacuum or extraction method neither of these purifying agencies is available, and the source of the supply is not under the same control. Moreover, it is now generally admitted than employing the "plenum" and "vacuum" in one scheme is a mistake.

In the examples which will be placed before the student both methods are shown.

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## BOOKS RECEIVED.

Water Supply and Sewage Disposal in Rural Districts. (Office of *The Lancet*).

Handbook of Saw Mill and Wood Converting Machinery. By M. Powis Bale. (William Rider & Son).

Fire Tests with Glass.—(No. 20 of Publications of the British Fire Prevention Committee.)

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## *GENERAL BUILDING NEWS.*

Mission Church, Litherland, Lancashire.—The dedication services in connexion with St. Mark's, Litherland, a mission church connected with St. Phillip's, were inaugurated on the 25th ult. The building, which is only temporary, and will in due course be replaced by a permanent church, is a building of iron, erected by Messrs. E. F. Blakeley & Co., under the direction of the architect, Mr. George Bradbury. The church will accommodate 500 persons.

Additions to St. Mary's Church, South Milford, Yorkshire.—The Archbishop of York dedicated on the 24th ult. a new organ chamber and choir vestry at St. Mary's Church, South Milford. The new building, which is on the south side of the chancel, is designed in the late Decorated Gothic style by Messrs. Demaine & Brierley, architects, of York, and it has been built of local wall stones, with Huddlestone stone dressings.

Re-opening of Fraserburgh Free Church, Aberdeen.—The Free Church is now out of the hands of the decorators, and was re-opened on the 23rd ult. The church was erected from designs by Messrs. Pirie & Clyne, architects. Messrs. James Garvie & Sons, Aberdeen, were entrusted with the decorations.

Wesleyan Chapel, Earlswood, Surrey.—The foundation stones of the new Wesleyan Chapel and Sunday School have just been laid at Earlswood. The chapel will be capable of seating 200, and the school-room, with two class-rooms and an end gallery, provides for 300 children. Mr. T. R. Hooper is the architect, and Mr. J. J. Carrick, of Redhill, the builder. The cost will amount to 2,150*l*.

Church, Ballycotton, Ireland.—The foundation stone has just been laid of the new church at Ballycotton. Mr. G. C. Ashlin, Dublin, is the architect. It is estimated that the building will cost 5,000*l*. Mr. J. J. Coffey, Middleton, has been appointed contractor, with Mr. E. Shinnick as clerk of works, and Mr. E. Quinn, Limerick, foreman. Externally the church will be 98 ft. long and 50 ft. wide. The height of the aisle walls will be 12 ft. from the floor level, and that of the nave walls 25 ft. 6 in., and to the apex of the roof 37 ft. The turret will be 60 ft. high. The structure will be faced with pitch-faced ashlar in random courses, having cut limestone dressings to windows and doors, and similar string courses. The pillars to the nave arcade, which are six in number, will be of Aberdeen granite on Portland stone bases, with moulded Portland stone caps. The roof will be open timbered pitch-pine.

Restoration of North Creake Church, Norfolk.—The church of North Creake has, step by step, been restored and added to. The more recent work has been a new floor of marble to the chancel, a carved oak chancel screen, new panels on the chancel walls, clergy stalls, new lamps, and a carved canopy to the font. The architects were Messrs. Hicks & Charlewood, of Newcastle. The carved work was by Mr. Hedley, Newcastle; the painting by Messrs. Percy Bacon Bros., London; the marble floor by Messrs. Emily & Son, Newcastle; and the panel work by Mr. Himson, Wells-next-the-Sea. The wrought iron lamps were from Thornham.—*Eastern Daily Press.*

Catholic Church, Mountain Ash, Glamorganshire.—A church, dedicated to the Blessed Virgin and "Our Lady of Lourdes," has been erected between the Miskin and the centre of the town, near the new Workmen's Hall and Institute, on the side of the hill overlooking the valley. The church is from the designs of Mr. Bernard Smith, of London, and was built by Messrs. Collins & Godfrey, Tewkesbury, at a cost of 1,000*l*. The building is in Gothic style, and has in the east end a three-light window. The church is composed of a nave 63 ft. long and 28 ft. wide, and a sanctuary 19 ft. long by 17 ft. wide, in addition to which there are a priests' sacristy, acolytes' sacristy, baptistry, vestibule, and organ gallery, the latter being at the west end. The roof of the building is of pitch pine, with battlemented mouldings resting upon corbels. The church is heated with hot air and lit with incandescent gaslight. The Stations of the Cross are placed around the church. The sanctuary is enclosed by a carved oak rail. The altar is built of Pons stones.

Catholic Church, Beccles.—The foundation-stone of St. Benet's Minster was laid at Beccles recently. The work in hand comprises only a portion of the church, designed in the Norman style by Mr. F. E. Banham, architect, and consists of north façade, nave, baptistry, porch, and confessionals. The church will be built of Ancaster stone with Bath stone dressings, Bath stone being used entirely for the interior. Mr. F. J. Allen's executors are the contractors.

Congregational Church, Harringay.—Plans have been prepared by Mr. W. D. Church for a new Congregational church in Green-lanes, Harringay. The estimated cost of church and schools, with class-rooms, infant-room, church-parlour, organ, and furniture is about 9,500*l*.

Re-opening of Breaston Church, Derbyshire.—The Bishop of Derby (Dr. Were) re-opened, on the 26th ult., the Church of St. Michael, Breaston, which during the past few months has been considerably altered and restored. The designs were prepared by Messrs. R. Evans & Son, of Nottingham. A stone organ chamber and vestry have been built in place of the brick vestry, and an oak screen, in harmony with the other fittings of the church, has been erected in the chancel, which has also been tiled. The walls have been re-plastered, and the whole of the roof has been stripped off, and the woodwork repaired, whilst a new oak roof has been provided for the south aisle. New choir stalls have been built in the chancel, but these are only of a temporary nature. Mr. Charles Baines, of Newark, for whom Mr. Askew Browning has acted as superintendent, was the contractor for the work.

Wesleyan Church, Fairhaven, Blackpool.—The corner stones of a new Wesleyan Mission Church were laid recently at St. Annes. The new building is part of a scheme of development which the Lytham and St. Annes Wesleyan Methodist Circuit have taken in hand. It is ultimately intended to erect on the site a complete church, schools, and manse, at a cost of 7,000*l*. For the present, however, it is only intended to erect a mission church, at a cost of about 900*l*. The new building, which is from designs by Mr. Frank Chappell, of Lytham, is being erected by Messrs. Dixon & Co., Liverpool. Seating accommodation will be provided in the church for 225, and in the school for 125; and three vestries will be included.

Dundee Parish Council New Offices.—The Offices Committee of Dundee Parish Council met on the 21st ult., and considered sketch-plans of the new premises proposed to be erected in West Bell-street. The plans were approved of, and Mr. Alexander, the architect, was instructed to prepare front elevation and finished plans for submission to the Council.

Victoria Hospital, Richmond, Yorkshire.—The Richmond and District Victoria Hospital, erected as a memorial of the Queen's Diamond Jubilee, was opened recently. The site, which was given by the Marquis of Zetland, is at the top of the Queen's-road. The building is one story high, and comprises two wards, each having three beds, for males and females respectively. There is also a special ward with a single bed. In the "Rose Cottage" portion of the premises there are two rooms for special cases, and a bedroom and sitting-room for the nurse. The architects for the building were Messrs. Clark & Moscrop, of Darlington.

Building in Aberdeen.—Aberdeen continues to extend rapidly, and at present most branches of the building trade are extremely busy. Two new churches are being put up in the Stocket district, and three new public schools are being built in different parts of the city. Among buildings almost finished are the following:—Large warehouse in Bridge-street, Messrs. Harper & Sutherland, architects, Aberdeen; spirit merchant's warehouse, Regent-quay, and reconstruction of Queen's Restaurant, Union-street, Mr. A. M. Mackenzie, A.R.S.A., architect, Aberdeen; ice factory, Poynernook-road, granite works at Ashgrove-road and Balmoral-road, and extension of City Hospital, Mr. John Rust, architect. Among buildings just begun are:—hotel, Guild-street; boot factory, Leadside-road; museum, &c., at new Botanical Garden; and various villas at Rubislaw Den. Messrs. Pringle & Slessor, masons, have commenced the reconstruction of a large warehouse at Bridge-place and Windmill-brae, which was destroyed by fire on April 22. Mr. John Rust, Aberdeen, is architect for the work, which will cost about 9,000*l*. Contracts have been entered into for construction of a district hospital at Stocket, just beyond the city boundary, Mr. J. D. Watson, County Engineer, being architect, and the estimated total cost being 3,619*l*. 7s. 9d. A new cemetery is intended to be laid out at Craigieshaw, from designs by Messrs. Walker & Duncan, C.E., Aberdeen; and it is also proposed to enlarge Trinity Cemetery. Mr. W. Kelly, architect, reports that the cost of reconstructing and enlarging the East Poorhouse would be 30,000*l*., while the expense of building a new poorhouse for all the indoor ordinary paupers in the city would be 54,900*l*., including cost of ground.

Glass-roofed Shipbuilding Yards, Wallsend.—Mr. Sam Deards, of Harlow, has just completed a large glazing contract at Messrs. Swan & Hunter's shipbuilding yards, at Wallsend, Newcastle-on-Tyne. The firm has erected two lofty buildings, large enough to enable them to build the largest kinds of merchant vessels afloat under cover, the dimensions of each being 500 ft. long by 75 ft. wide, 80 ft. high to the eaves, and 120 ft. high to the apex of the roofs, and these two buildings have been entirely covered with glass of ¼ in. thickness, weighing with the patent steel bars over 300 tons. The system of glazing is this: A specially prepared bar in T steel is made, having a centre web with turned up sides, so as to form a groove or gutter on either side to carry the squares of glass, and over the centre web is fixed a lead capping, which is held down by pins of copper every 9 in. or 10 in. and these, acting as springs, give and take to every change of temperature and every need of expansion and contraction. The glass is so arranged and fixed that every square can be taken out and replaced from the inside.

Tower Buildings, Morecambe.—Two of the contracts in connexion with the new tower buildings at Morecambe have been let, and the erection of shops, restaurants, smoke-rooms, entrance to pavilion, &c., facing the bay, is now in progress. The buildings occupy the site of what was once Calton Lodge Estate, have a frontage to the bay of 315 ft., and the gardens, with tower, terraces, alcoves, conservatories, and refreshment-rooms, cover the remainder of the grounds. The tower itself, which forms the chief feature of the buildings, will have a total height of 238 ft. The engineer for the tower is Mr. R. J. Gifford-Read, of Westminster, and the architects for the whole are Messrs. W. H. and A. Sugden, Keighley. Contracts Nos. 1 and 2 have been let to Mr. John Edmondson, of Morecambe. The clerk of works is Mr. George Paterson, of Patricroft. The contract for the tower will be let early this month, and it is anticipated that all will be completed and ready for opening towards the summer of 1900.

Art Gallery and Library, Bury, Lancashire.—The new art gallery and library, at Bury, designed by Messrs. Woodhouse & Willoughby, Manchester, has just been opened. When completed, the structure will comprise three stories, consisting of basement floor, ground, and first floors, with a sub-basement under the portion at the rear. The building comprises two separate sections, viz., the Art Gallery (placed on the first floor) and the public library, &c. (on the ground floor). The first floor is to be entirely devoted to the Art Gallery, and will be entered by the main staircase through the sculpture hall, from Moss-lane, and is arranged in a sequence of five rooms. The contractors for the erection of the building are Messrs. Thompson & Brierley, of Bury.

Working Men's Homes, Burton-on-Trent.—At a meeting of the directors of the Burton-on-Trent Artisans' Dwellings Company on Monday, tenders were accepted for the construction of the first block of forty houses to be erected on the land the company have taken from the Marquis of Anglesey, between Horninglow-road and Wyggeston-street. The land will provide accommodation for 150 cottages. Mr. T. Jenkins, of Burton-on-Trent, is the architect.

Bank, Dublin.—A building in Upper Dorset-street, Dublin, will shortly be opened for business by the Hibernian Bank. It has been in course of construction for several months, the site being at the corner of what was formerly known as White's-lane, and the new premises have been erected by Mr. Kevin Toole from plans prepared by Mr. W. H. Byrne, C.E.

Theatre, Richmond, Surrey.—A theatre is being erected on Richmond Green. The main entrance will be approached by a flight of five steps leading into a vestibule, with a ticket office on the right. The entrance to the stalls will be along a corridor, while the boxes and dress circle will be reached by a marble staircase. At the back of the dress circle tier there are to be two private boxes, the tiers being carried on cantilevers. The stage, which will be 30 ft. deep by 51 ft. wide, with an opening of 27 ft., will be separated from the auditorium by a fire-proof curtain. The manager's room will be situated on the left of the stage. Electric light will be provided throughout. The architect is Mr. Frank Matcham.

Mission Hall, Kendal.—The foundation stone has just been laid of a mission hall at the junction of Syke with Lower Fellside. Mr. J. Thompson, of Kendal, is the architect.

Roman Catholic Oratory, Chathill, Northumberland.—On the 27th ult., at Ellingham Hall, Chathill, Northumberland, the seat of Sir John de Marie Haggerston, a new Roman Catholic oratory was opened. The oratory has been built from a design by Messrs. Dunn & Hansom, architects, Newcastle.

Baths, Leeds.—The fifth public bathing establishment erected by the Leeds Corporation was opened recently. It is situated in Meanwood-road, on a portion of the old West Riding Athletic Ground, and has cost the city 13,000*l*., this sum being inclusive of 3,000*l*. paid for the site. The features of the building are very similar to those of the other Corporation Baths that have been provided during the past four years. As the latest institution of its kind, however, it possesses one or two improvements upon the older establishments, and is, besides, more commodious. There are first and second-class swimming baths of considerable dimensions, also ten slipper baths for each class, five of those on the first-class side being for ladies. The special advantage possessed over the other places is the greater space at disposal. This has enabled each section to be extended. The boiler-house, too, being practically on the same level, and lighted from above, is in a better situation. Oak has been adopted instead of a softer wood; and in the first-class slipper baths the furniture is of American walnut instead of pitch pine. Amongst other improvements are—the transfer of the vapour baths from the second to the first-class side, thus equalising the work of the attendants, and leaving the whole of the ten slippers available for slippers only; the placing of the supply pipes beneath the floor of the bath-rooms (they are brought up separate to each bath); the waiting-rooms (only provided at Holbeck and Meanwood-road) are placed at the entrances to the various rooms, instead of being, as at Holbeck, beyond those entrances, therefore out of the way; the soap-baths have been reduced in size to give room for a shower-bath (this alteration is to be made at all the other places); the end gallery is also introduced at Meanwood-road, as at Holbeck and Hunslet. The waste pipes of slippers have been trapped. Messrs. W. Hanstock & Son, of Leeds, were the architects.

## *STAINED GLASS AND DECORATION.*

Memorial Window, County Hospital Chapel, Dorchester.—A memorial east window has just been dedicated in this chapel. It has been carried out by Messrs. Lavers & Westlake, of London.

Memorial Windows, St. Catherine's Church, Horse Fair, Birmingham.—Seven stained-glass windows have just been erected in the apse of this church. The subjects are scenes from the Apocalypse. The work has been executed by Messrs. John Hardman & Co., under the direction of Mr. Dunstan J. Powell.

## *FOREIGN.*

France.—The engineer for the Paris Metropolitan Railway has addressed to the Municipal Council a report, showing that the work is now in progress throughout the whole length of the proposed course. The end sections, at the Champs Elysées and the Avenue de la Grande Armée especially, are the most forward; but the general rate of progress is such that there is hope of completing the railway for the Exhibition year.——The late Charles Yriarte has left to the libraries of the Institut and of the Ecole des Beaux-Arts an interesting collection of original documents relating to the Venetian artists of the fourteenth, fifteenth, and sixteenth centuries, also several copies made by him in the archives of the principal towns of Italy.——The remains of the Bastille tower, recently discovered in the works of the Metropolitan Railway, are to be placed on the Quai Celestins, at the intersection of the Pont Sully and the Pont du Quai Henry IV.——The magnificent tapestries in the Church of Saint Rémi, at Reims, are now being repaired at the Gobelins manufactory.——M. Pascal, architect, is now engaged in carrying out the works of the Bibliothèque Nationale, for which Parliament has voted the sum of 1,200,000 francs. The façades on the Rue Colbert and the Rue Vivienne, which are to be completed in two years, will have the simple and severe architectural character of the façade which flanks the Rue Richelieu.——The Conservatoire des Arts et Métiers has just started a competition for the execution of a candelabra for electric lights, to replace the ugly one which now lights the Place du Carrousel, which is shortly to be converted into a garden.——M. Esparbès, architect to the town of Luchon, has been commissioned by the Municipality to rebuild the well-known bathing establishment in that locality.——The works for the railway from Dieppe to Havre are being actively carried on and it is expected they will be completed by the middle of next year.——The death of M. Louis Frederic Benoit is announced, at the age of sixty-eight. He studied architecture at the Ecole des Beaux-Arts at Lyons under the direction of Chenavard, and he gained the first prize in 1852. Besides many private works, we may mention the building of the churches of Leguy, and of the Rédemption at Brottiaux, and the restoration of the church of St. Nizier. He had been a member of the Société Centrale des Architects since 1871.

Durban. — Durban Corporation are at present laying out the new esplanade, which will be about two miles in length, and cost 100,000*l*. Massive railings are being erected the entire length, and a band-stand will also be included in the scheme. The site of this will be opposite the new Marine Hotel. The hotel commands an excellent view of the bay. The first section of the building involves an expenditure of 10,000*l*., and the whole scheme a cost of 25,000*l*. Work in connexion with the first section is now proceeding, and will be finished, it is expected, early in May. The buildings will have a frontage of 230 ft. to Gardiner-street, and of 105 ft. to the Bay Embankment. Mr. W. E. Robarts is the architect, and Mr. W. F. Johnstone the contractor.—*South Africa.*

## *MISCELLANEOUS.*

Professional and Business Announcements.—The partnership hitherto existing between Mr. J. S. Gibson and Mr. L. B. Russell, architects, 4, Gray's Inn-square, has been dissolved. Mr. Gibson will continue to practise at No. 4, and Mr. Russell at No. 11, Gray's Inn-square, W.C.——Mr. Walter Lawrence, builder, Waltham Abbey, has taken his son into partnership, and the business, as from May 1, will be carried on under the name of Walter Lawrence & Son.

Bradford Master Builders' Association.—At a meeting of the Bradford Master Builders' Association, held on the 25th ult. in the Stone Exchange, a presentation was made to Mr. John Schofield, who, owing to failing health, recently retired from the position of secretary, which he had held for eighteen years. Alderman William Holdsworth, President of the National Master Builders' Association, occupied the chair. The presentation consisted of a silver tea service, with tray, bearing a suitable inscription, and the gift was accompanied by a framed illuminated address testifying to the Association's appreciation of Mr. Schofield's valuable services, and expressing the high esteem and best wishes of the members for himself. Alderman Holdsworth made the presentation. Mr. Schofield warmly thanked the members for their gift, and for their uniform kindness during a long connexion with the Association, which had had such a pleasant termination. Since he was appointed secretary in January, 1881, the Association had maintained the interests of the building trade in all its varied phases. There had been encounters with the operatives' organisations; these had been sometimes of an antagonistic character, and sometimes a settlement had been reached by friendly consultation. It was pleasant to know that wages in all branches of the trade had been advanced, and that various alterations had been effected beneficial to the operatives. To himself personally it was always pleasant to find that the Association favoured the policy of sanctioning the payment of fair wages, and in other ways helping the operatives to better conditions.

Improvements at Victoria. — A Committee of the House of Commons of which Mr. Hoare is Chairman, has been sitting recently to consider the Various Powers Bill of the London, Brighton, and South Coast Railway. The Bill, among other things, empowers the company to construct two short lines of railway, the one at Deptford and the other between Holmwood and Crawley, to carry out various widenings of their present line, to raise fresh capital, and to reconstruct their station at Victoria by widening it from the southern side of the Grosvenor Hotel along the Buckingham Palace-road. The Chairman on Monday said that, with reference to the Duke of Westminster's petition, the Committee would hear counsel on the clauses, and the point would be reserved until then. With regard to the Grosvenor Hotel, provided the amended plans with regard to the interference with the wells were adhered to, the Committee would not further alter the clauses in the bill. Subject to these reservations, the preamble of the bill, so far as it had reference to Victoria, was found to be proved.

Holborn to the Strand.—The Select Committee, presided over by Mr. A. H. Brown, which has been sitting for the consideration of the scheme of the London County Council for the construction of a new thoroughfare from the Strand to Holborn, resumed the investigation on the 27th ult. Alderman Samuel Green, Fellow of the Surveyors' Institution, said he now acted as one of the surveyors to the Board of Trade. He believed the Strand would be improved very materially. He knew of no situation in London where improvement could be so fairly recognised to-day as on the south side of the Strand.—Mr. Ram, for the Strand District Board of Works, next proceeded with his case. Mr. Arthur Ventris, Engineer and Surveyor to the Board, stated that the effect of the Bill in the first year would be to raise the rates in the district of St. Mary-le-Strand from 6s. 1d. to 9s. 3d. After the first year the revaluation would be made, and the new rate would be spread over the whole of the Strand, which would reduce the rate to 6s. 7d., or 6d. above the present amount. His Board thought that, as they were to be responsible for the maintenance of part of the street, they should have a voice in its construction. Their demand in this respect was based on the experience of the Strand district in connexion with wood paving. Sir Alexander Binnie had said that the life of a soft wood pavement was seven years, but owing to the way the Strand Board did the work they found that such a pavement could be made to last much longer.—Mr. R. Vigers, President of the Surveyors' Institution, said it was only reasonable that the County Council should make good the loss to the rates of the several parishes through the construction of works until the new property was rated.—On Tuesday it was announced that the committee had decided to pass the preamble of the Bill, subject to the following conditions:—That the preamble is proved so far as regards the Strand and Holborn improvements; that the land south of the Strand be excluded from the betterment area, also the property of the *Financial Times*; that the number of years in which betterment may be proved be limited to ten, namely, seven for works and three for improvement; that the Dane's Inn property remain as proposed in the Bill; that the making of the road remain in the hands of the County Council; that it is not proposed to reinsert in this Bill Section 133 of the Lands Clauses Act, but that the Sardinia-street works of the Metropolitan Electric Supply Company be reinstated in such a way that there be no interference with the business, and on such a site as will protect them from any proceeding for making a nuisance. With regard to clause 20, the committee think some Government authority should give a certificate of approval before property is taken under the valuation provided under Section 21 of the Housing of the Working Classes Act, 1890.

Art Union of London.—The annual general meeting of members of the Art Union of London was held on the 27th ult. in the lecture hall of the Society of Arts, John-street, Adelphi, the Marquis of Lothian, the President, being in the chair. The report stated that the subscription for the year had enabled the Council, after setting aside 1,246*l*. for works of art presented to subscribers, to appropriate 506*l*. 5s. for the purchase of prizes to be drawn for that day, making, with those awarded to unsuccessful members of ten consecutive years' standing, a total of 170 prizes. The Chairman, in moving the adoption of the report, said the Society had, since its foundation, expended 487,000*l*. in prizes and works of art. He thought it was not too much to say that if it had not been for the Society the beautiful art of line engraving would have disappeared altogether. It was now trying to encourage etching, especially of landscape, in which direction the public taste now seemed to lie. He was glad that the question of hideous additions to London was being taken up. He thought that an expert committee ought to have control over the proposals for new public works in London. He was glad that public interest was being aroused on the subject of the decoration of St. Paul's Cathedral. It was said that the mosaics were of a Byzantine character, and were, therefore, not suitable. With that he entirely disagreed. If the small domes were to be filled with mosaics he could conceive of no better way of doing it than the way in which it was done now. As to the decoration of the stonework, he thought it must be obvious to every one that if the small domes had been filled with mosaics and the stonework around left untouched, the work would have appeared very patchy and anything but effective. But there was a medium in all things, and he could not help thinking that too much colouring had been made use of in the decoration of the stonework. He trusted that in the future there would be less gilding and less colouring used.—Mr. Sebastian seconded the motion, and the report was adopted. The Dean of St. Paul's was elected a Vice-President and the members of the Council for the ensuing year were also elected. The drawing for prizes of works of art for the year 1898-99 subsequently took place.

Artistic Copyright.—In the House of Commons, on the 28th ult., Lord Monkswell, in moving the second reading of the Copyright (Artistic) Bill, said under it American artists would be given the same rights in their works in this country as English artists enjoyed in America. The Bill would give copyright in an original work of art during the artist's life and for thirty years thereafter. The Bill was read a second time and referred to a Select Committee.

Commons Preservation Society.—A meeting of the Executive Committee of the Commons Preservation Society was held at 1, Great College-street, Westminster, on Wednesday, the 20th ult. The Right Hon. G. J. Shaw-Lefevre presided. Deputations from the Bradford Corporation and from the Shipley Urban District Council waited upon the Society with respect to the provisions in the Bradford Corporation Tramways and Improvement Bill, opposed by the Society on the ground of the proposed enclosure of 100 acres of Baildon Moor. Of this area it was intended to convey 50 acres to the lord of the manor in part satisfaction of his manorial rights over the moor, the other 50 acres to be sold by the Corporation to recoup themselves for the purchase and improvement of the remainder of the moor. In consequence of the Society's opposition the Corporation waived the provision entitling them to sell 50 acres, but declined to strike out the clause authorising the allotment to the lord of the manor. After hearing at length the arguments brought forward by the representatives of the Bradford Corporation in favour of the Bill, and of the Shipley Urban District Council against it, the Society, while recognising the desire of the Corporation to preserve the moor, decided to continue its opposition. It was felt that the compensation to be given to the lord of the manor was excessive, and that no reasons had been given to justify the departure from the principle always acted upon by the Society that no enclosure of suburban common lands, as defined by the Commons Act of 1876, should be allowed to be carried out without opposition. It was agreed to secure the moving of the following Instruction in the House of Commons, "That it be an Instruction to the Committee to whom this Bill is referred to omit all provisions from the Bill authorising the enclosure of any part of Baildon Moor." Amongst other Bills considered were the East London Water Bill, the L. B. & S. C. R. (Various Powers) Bill and the Highland Water Power Bill. Communications were read alleging that the works for providing water power and electrical generating stations contemplated under the last-named Bill would seriously disfigure the natural beauty of Lochs Leven and Ericht. The matter was referred to the Parliamentary Amenities Committee. A Bill will shortly be introduced into Parliament at the instance of the Society for the purpose of simplifying the machinery for the regulation of commons under the Commons Acts, and for the better protection of common land.

National Registration of Plumbers.—The annual meeting of the District Council for Glasgow and West of Scotland was held on Tuesday, at Glasgow. The Vice-President of the Council, Mr. John Gordon, architect, was in the chair. The annual report gave full details of the educational work carried on by the Council in theoretical and practical plumbing classes in Glasgow and Ayr, and dealt with other matters connected with the registration movement. After the adoption of the report and elections to fill vacancies on the District Council, Sir John Neilson Cuthbertson presented the bronze medal of the Worshipful Company of Plumbers and the various prizes and certificates gained by journeymen and apprentices in the Glasgow and West of Scotland District in connexion with the exhibition held in Glasgow last year, afterwards delivering an address to the prizetakers and the younger members of the trade.—Sir Jas Russell, M.D., presided over the annual meeting of the East of Scotland District Council, held in Edinburgh last week. The Chairman, in moving the adoption of the report, said that they had now recognised for some years that to render the movement effective, and to secure for the public the benefit it was calculated to give them, registration was necessary. It was not intended to compel any one to come into the movement, but it was felt to be absolutely necessary that those who came under a guarantee of competency and discipline should have their status marked out by Parliamentary imprimatur.

United Builders' Labourers' Union. — The annual report states that the work of the Union has been largely augmented by the introduction of the Workmen's Compensation Act, which they have found a measure "fruitful of litigation." They however congratulate themselves that they have been enabled to avoid litigation to a great extent as compared with other trades. They have felt that the best interests of the injured workman is secured by a mutual discussion of his case, which usually ends in more satisfactory compensation being secured to the injured in preference to the cumbersome and expensive legal methods of settlement. They have settled by this means sixty-five cases during the year, and secured a sum of 768*l*. 6s. 2d., which is an average of over one case settled a week.

Land and House Purchase Provident Society.—The report of this society states that it is making steady progress in the acquisition of properties for its members, though "still greatly hampered for want of capital." The committee state, however, that they consider that "a very good nucleus for the formation of a powerful and useful institution has been established, and are confident that there is an enormous future before the society for the providing of well-built sanitary workmen's cottages, the tenant members acquiring their homes out of moneys they would otherwise pay away as rent, such homes, when free, to the thrifty and provident, becoming equivalent to an old age pension."

The New Government Buildings. — In the House of Commons on Tuesday, Mr. Allhusen asked the First Commissioner of Works whether the designs by Mr. Young and Mr. Brydon for the new Government buildings had been definitely approved by the committee; and, if not, whether he would procure and place in the tea-room of the House a sketch of a design for the new War Office buildings, which had been adapted at the suggestion of Lord Wemyss from the existing designs by Inigo Jones for a Royal palace in Whitehall. Mr. Akers-Douglas: The designs of Mr. Young and Mr. Brydon were approved by her Majesty's Government before they were submitted to the House. I have carefully considered the sketch elevation prepared at the suggestion of Lord Wemyss, and I regret that, although externally attractive, as a design for a Royal palace it is unsuitable for Government offices. There would be no useful purpose served in placing this design in the tea-room, unless it is accompanied by a plan and sections showing the nature and arrangement of the accommodation it would provide. In answer to Mr. John Ellis, Mr. Akers-Douglas said the plans were placed in the tea-room for the inspection and criticism of hon. members. Certain alterations in matters of detail have been suggested, and these suggestions will be carefully considered. Generally, the plans have been most favourably received, and I shall proceed with the work without any unnecessary delay.

St. George's Church, Liverpool.—We hear that the Liverpool Corporation have agreed to accept the site "with or without the tower," so that it is to be hoped this means that the tower will be preserved.

## *CAPITAL AND LABOUR.*

Barnsley Building Trades.—The disputes on wages questions in the Barnsley building trades have been under consideration, and the joiners have come to terms with their employers and work will go on as usual. The difficulties with the masons and bricklayers have not yet been settled. The masons' employers demand alterations of working conditions in the matter of apprentices, and to allow stone dressed elsewhere than on the works to be used as it is in other towns; and the bricklayers' employers demand changes in the apprentices' regulations. In each case a strike is threatened.

The Wages of Sheffield Carpenters and Joiners.—A conference was recently held between representatives of the Master Builders' Association of Sheffield and the representatives of the organised carpenters and joiners, to consider the workmen's request for an advance of one halfpenny per hour on their present rate of wages, and an alteration of several working rules. The result of the conference was that, pending the settlement of rules, the advance asked for was granted.

The Bricklayers' Strike at Felixstowe.—The strike of bricklayers at Felixstowe has been amicably settled. The strike, it may be remembered, originated in the refusal of the masters to concede 8d. per hour immediately, being an advance upon 7d. The masters offered 7½d. immediately, 7¾d. in September, and 8d. in January. The men have accepted 7½d. to commence on the 1st inst., and 8d. on September 1. A question was asked by the men if the masters would reinstate the strikers. The masters replied that they would be only too pleased to do so as matters progressed, but the work was at present too disorganised to make a general reinstatement.

Northern Counties Federation.—A meeting of the Newcastle Master Builders' Association was held on the 28th ult., to receive the result of the ballot taken in the district of the Northern Counties Federation—(1) As to whether there should be a general lock-out of all branches of the building trade in the Federation, unless the plasterers' dispute is forthwith settled; and (2) whether there should be a general lock-out of labourers in the Northern Counties in the employment of members of the Federation in case the disputes at Sunderland, Middlesbrough, and Gateshead are not settled. These disputes, arise out of demands by the men that wages shall be advanced to a standard of 7d. per hour, instead of 6d. to 6½d. as at present. The men have been out at Gateshead and Sunderland, and a lock-out of other branches has been threatened by the employers. The ballot, it was reported to the meeting, was in favour of both propositions submitted, but in view of the resolution passed at Birmingham the previous day by the National Association it was decided to suspend local action for a week, and see what course the National Association would take.

Strike of L.C.C. Paviors.—On the 1st inst. a strike took place among the paviors employed by the London County Council upon the tramway in Kennington Park-road. The men—about a dozen in number—threw down their tools at breakfast time and left work to enforce their demand for more wages. Under the old system, when the repairs were let out to contractors by the tramway company, the paviors were paid 10d. an hour on piecework, but the County Council standard for the same work is only 9d. an hour. A protest is made against this rate of payment, and the men declare they will not return to work until the old wages have been restored. They allege that the trade-union rate of wages is 10d. per hour. Another grievance of the men is that three days' pay is retained by their present employers, which comes hard on those just starting after having been out of work any time. But it is explained that the wage sheets are now always made up to Wednesday night, so the rules only affect the new hands. With 2,000 workmen of this class, a strict adherence to the regulations is, of course, necessary.—*Daily Chronicle*.

Hull Building Trades Dispute.—At a meeting of the Yorkshire Executive of the Building Trades' Employers' Federation, held in Leeds on the 28th ult., the President (Mr. Spink, Sheffield) in the chair, the following resolution was passed: "That in consequence of the action of Hull operatives, who have struck, and refused to work along with non-union men, this Federation instructs the Hull Affiliated Association to lock out 25 per cent. of their union men to-day (Saturday), and, failing a settlement of the dispute by May 5, the Yorkshire Federation call upon the federated masters in Yorkshire to lock-out 25 per cent. of the union men in their employ on May 6."

Newport (Mon.) Carpenters Locked Out.—The whole of the carpenters of Newport, numbering about 150, were on the 29th ult. given two hours' notice by their employers that they were to discontinue their services. This is the upshot, it is stated, of a number of the carpenters taking sides in the plasterers' dispute.

Building Trade Dispute at Cardiff.—A large number of the members of the Operative Society of Stonemasons struck work on Monday. The strike is owing to the members of the Cardiff Master Builders' Association refusing to amend the working rules and to grant a ½d. an hour advance in wages.

Building Trade Dispute at Wolverhampton.—The six months' notice given to the Wolverhampton master builders by the labourers for an advance from 5½d. to 6d. per hour in the rate of wages paid in Wolverhampton and district expired on Saturday last. On the previous evening a deputation from the labourers' society met a sub-committee of the masters' association, but the negotiations proved abortive.

Advance of Wages to Joiners, Manchester and Liverpool.—The threatened dispute in the Manchester and Liverpool joinery trades has been settled by the employers in Manchester district conceding an advance from 9d. to 9½d. per hour. When the demand was made the masters offered a farthing, and a farthing in October, and the Liverpool employers gave notice of a reduction of a farthing.

Strike of Masons at Barnsley.—The negotiations which have been going on for some time past in connexion with the building trades of Barnsley have not been sufficient to prevent a rupture. The masons of the town came out on Saturday. Three months ago the joiners, masons, and bricklayers, acting simultaneously, gave notice for an advance of ½d. per hour in wages, to make the pay of joiners and masons 8½d. per hour, and bricklayers 9d. per hour. The employers at the same time gave notice in each case for an alteration in the working rules. The joiners, as already reported, came to an agreement with their employers recently, and are prepared to work on. The masons and the bricklayers did not settle, but the chief dispute is, it seems, with the masons. The employers gave notice of an alteration of the rule relating to the use of sawn and dressed stone. At the present moment, and for years past, in other towns it has been the custom to allow machine-sawn and dressed stone to be used, but the Barnsley masons have opposed that, and have had a rule that sawn stone should not be used in any building, except for window sills and one or two other minor details; but that all stone should be hand-dressed on the place where the building was actually in progress. Notice to make an alteration in the apprenticeship rule was also given. Several meetings have taken place. The masters had no objection to grant the advance of wages if the alterations in working rules were allowed, and especially if the restriction of the amount of work done, which has greatly increased the cost of building in recent years, was removed. The men declined to allow any alteration whatever. The rule as to sawn stone, which is really an attempt to fight against the introduction of machinery to the building trades, was especially objectionable. This rule in the past has been the subject of many strikes. The contractors have long wished for an alteration of the rule. Now, acting in conjunction with the Building Trades Federation as they do, it has been decided that this special local restriction must be given up, and as the men express themselves as determined to stick to the rule and to maintain it, the struggle may be a long one. So far as the bricklayers are concerned, the question of apprentices seems to be the chief difficulty. The labourers are in the same position as the masons, refusing alterations of rule and other matters. But however other branches of the trade may settle, or otherwise, they cannot go on working long if the masons' strike continues.—*Sheffield Telegraph.*

Building Dispute, Swansea.—There are little signs of a settlement of the dispute between the master builders and the joiners and plasterers at Swansea. The six months' notice expired on the

29th ult., and meetings were held that evening to endeavour to avert a strike. Nothing conclusive was arrived at. After the meetings of men and masters on Saturday evening the masters received deputations from both the joiners and plasterers. With regard to the joiners an informal suggestion was made by one of the men's representatives that the matter should be submitted to arbitration. This suggestion was received in an encouraging manner by the masters, of whom there was a sufficient representation present to make consent assured. The men, however, had to consult before agreeing. A suggestion was made by one of the masters that the men should go in on the 1st inst. for another month pending the decision of the matter by arbitration, but there is no reason to believe but that this course will be adopted. The plasterers were afterwards received, but no arrangement could be effected, and it is pretty clear that this section will stop work.—*Western Mail.*

BUILDING TRADE DISPUTE, WAKEFIELD.—About eighty journeymen carpenters and joiners at Wakefield struck work on the 1st inst. The men assert that last November they gave their employers six months' notice for an advance of their wages from 7½d. to 8d. per hour, and they also asked for a signed code of working rules. They have now determined not to return to work until the masters sign rules agreed to a fortnight ago.

THE BUILDING TRADE DISPUTE, SUNDERLAND.—The strike of builders' labourers at Sunderland was practically settled at a conference between the employers and the men on the 1st inst. The men's committee recommended them to resume work at the old rate of wages, and asked the masters to withdraw their recent demand for a reduction of ½d. per hour.

STRIKE OF MASONS, ROTHERHAM.—A dispute has occurred in the Rotherham building trade. Three months ago the members of the Rotherham Lodge of the Friendly Society of Operative Masons gave formal notice of their intention to demand fresh terms from their employers. They asked :—(1) That the wages be advanced 1d. per hour—to 10d. for "bankers"; and 1½d. per hour—to 10½d. for "fixers," all the year round ; (2) that the winter rules be—during November, to start at 7 and cease at 5 ; December, 7.30 to 4.30 ; first two weeks in January same time, remainder 7.30 to 5 ; first two weeks in February, 7 to 5, last fortnight full time. The new conditions were sought to be brought into force on the 1st inst. On Friday last week the Master Builders' Association met a deputation of the men, and discussed the primary question, viz., that of an advance of wages. The employers asked that the notices should remain in abeyance until the notices handed in by the Sheffield masons expired in June next, the feeling being that both towns should act alike in regard to terms. The answer of the deputation was to the effect that they had no power to comply with the request. On Saturday all the masons recived their back pay with their wages, and on the 1st inst. they were out on strike.—*Sheffield Telegraph.*

BUILDING TRADE DISPUTE, GOSPORT.—Three hundred labourers, chiefly connected with the building trade, struck work at Gosport on Monday for an advance of wages from 5d. to 6d. per hour. The works principally affected are those in connexion with the fortification contracts, which are held by local builders.

STRIKE OF CARPENTERS AND JOINERS, BELFAST.—The dispute which has arisen in the local building trade between the Belfast Builders' Association and the Amalgamated Society of Carpenters and Joiners reached an acute stage on Monday, when a large number of men came out on strike. On January 31 last the Builders' Association submitted to the men a number of rules regarding the trade, to come into operation on and after May 1. The men declined to accept the proposed rules, holding out to the rules which had previously been in force, and as a protest against the alterations, which involved a reduction in wages of a penny per hour, ceased work on Saturday afternoon, when the notices expired. The total number of men out on Monday was between 200 and 250, and the dispute affects ten firms in the city. Three or four firms have given in.

PLASTERERS AND BRICKLAYERS, NORTH WALSHAM.—The plasterers and bricklayers of the North Walsham branch society went out on strike on the 1st inst. on the refusal of the masters to sign the society rules and raise wages from 5½d. to 6½d. per hour.

GRIMSBY BRICKLAYERS AND THEIR WAGES.—In accordance with the decision arrived at some time ago, a small deputation from the Grimsby branch of the Bricklayers' Society has waited upon most of the master builders at Grimsby respecting the men's demand for increased wages. With but one or two exceptions the masters received the deputation favourably, and expressed their willingness to arrange matters amicably. It is, therefore, expected that terms will be arrived at without any trouble.—*Eastern Morning News.*

STONEMASONS' WAGES, WHITBY.—A meeting of the Whitby branch of the Operative Society of Masons was held at the Whitby Arms Hotel on the 1st inst. to hear the report presented by the delegates. Mr. R. Bulmer occupied the chair.—The Chairman, during the course of his remarks, dwelt upon the courteous manner in which the demands of the Society had been met by employers in the entire town and district. They had, he said, been under three months' notice from employers, which notice expired on May 1, but after only partial suspension of work the employers had conceded an increase of three-farthings, which would raise the pay from 7¾d. to 8½d. per hour, the week to comprise 49½ hours. The hour system of work was also to be commenced, and the old "day" system discarded.

## *LEGAL.*

### DISPUTE AS TO STRUCTURAL ALTERATIONS IN A PUBLIC-HOUSE.

THE case of Peter *v.* The Plymouth Breweries, Limited, again came before Mr. Justice North in the Chancery Division on the 28th ult. (the case was reported in the *Builder* of last week), on a motion by Mr. A. E. Peter for an injunction until the trial restraining the defendants from altering or interfering with the structure of the "Exmouth" public-house, at the corner of Union and Manor streets, Stonehouse, so as to prevent or prejudice the carrying on upon the premises of a licensed victualler in alleged breach of a covenant in a lease.

It appeared from the statement of Mr. Vernon Smith, Q.C., that the plaintiff was the freeholder of the "Exmouth" public-house, which was in a crowded thoroughfare. On September 28, 1891, he granted a lease of the house to Mr. Miller (through whom the defendants claimed) for thirty years from September 29, 1891, at a rent of 120*l.* a year. It was then a licensed house but the licence had since been forfeited. There were covenants by the lessee that he was during the term of the lease to keep in all respects in good repair all and every portion of the interior, and to yield up the premises on the expiration of the term to the plaintiff in good repair ; and he was not to permit any improper conduct on the premises so as to afford any ground for the discontinuance of the licence. That lease was assigned to defendants in 1894 and they sublet to a tenant named Wright in the same year. It was suggested afterwards that there was not sufficient lavatory accommodation, and there were also complaints as to the way in which the business was carried on. In September, 1897, the licence was refused at the Brewster Quarter Sessions, and also again refused in the autumn of 1898. On September 16, 1898, the defendants applied to the plaintiff for his consent to a structural change of premises, so as to make them adaptable for a shop, but the plaintiff refused. On March 2 plaintiff found out that the defendants had converted the premises into a shop, and he accordingly issued his writ in this action. The defendants had removed partitions and so forth in the interior of the ground floor, and they proposed, in addition to other things, to make one large window in lieu of two windows and a door in Union-street.

Mr. MacNaghten, Q.C., for the defendants, submitted that no case had been made out for an *interim* injunction. If the judge ordered the defendants at the trial to put the premises back into their original condition they were quite willing to abide by any such order, but they desired to carry on the business of a shop in the meantime pending the hearing of the action.

In the result it was arranged that the motion should stand for trial, the defendants undertaking to abide by any order the judge might make at the trial as to restoring the premises to the condition in which they were before the defendants' recent alterations, and also undertaking to apply for a licence at the next sessions, the costs of the motion to be costs in the action.

### THE WORKMEN'S COMPENSATION ACT.

A CASE under the Workmen's Compensation Act, 1897, was heard at the Salford County Court on the 27th ult., by Mr. Adshead Elliott, sitting as Arbitrator. The claim was put forward by Jane Mason, widow of Frederick William Mason, of Morecambe, who was killed on February 10 by falling from a scaffold in the Lyceum Theatre, Eccles, which was then in course of erection. Mason was in the employ of Messrs. A. R. Dean & Co., decorators and manufacturers, Birmingham, who were sub-contractors under Messrs. Moore & Sons, builders, Eccles, and the claim was made against Messrs. Dean & Co., the particulars stating that the accident was due to a defective scaffold. Mr. Overend Evans represented Mrs. Mason, Mr. Byrne appeared for Messrs. Dean & Co., and Mr. Jordan represented Messrs. Moore & Sons.

Mr. Overend Evans detailed the circumstances under which the accident occurred, and this was followed by an argument on the question of liability. The claim was against Messrs. Dean & Co., but it was contended that if an award were made against them they could recover the amount from Messrs. Moore & Sons, the original contractors. Mr. Jordan therefore requested the arbitrator to decide whether he could take any part in the present proceedings, as, if an award were made, he would not be in a position to dispute the amount in any subsequent proceedings which might arise between Messrs. Moore & Sons, and Messrs. Dean & Co.

The Arbitrator, while refusing to try the issue as between the two firms, ruled that Mr. Jordan could take part in the present proceedings.

Mr. Cambell, of the firm of Cambell & Horsley, the architects of the Lyceum Theatre, stated that Mr. R. Flanagan, the building owner, contracted with Messrs. Dean & Co. direct for the decorative work, so that they were not sub-contractors under Messrs. Moore & Sons.

Mr. Byrne : Whose business was it to provide the scaffold ?—Messrs. Dean said they wanted the scaffold provided free of charge.

Who erected the scaffold ?—Messrs. Moore & Sons.

Who paid for the erection ?—Mr. Flanagan.

Then it was put up by Moore's, and Moore's were paid for it ?—Yes.

The Arbitrator said he had no power to decide any question of Messrs. Moore & Sons' liability.

Mr. A. T. Moore, one of the contractors, said the scaffold was stronger than usually employed for such work.

Mr. Byrne said the only point he raised was under Section 7 of the Act. He submitted that the painting and decorating of the ceiling was not part of the construction of the building. The building was constructed before the ceiling could be painted. He contended that to make an award the arbitrator had to find that the persons at the time of the accident were engaged constructing the building.

Mr. Overend Evans said it was perfectly obvious that a plasterer was a man who did work which was really part of the construction of the building. The fibrous plaster used by the defendants was therefore used in the construction of the building.

The Arbitrator said that if he made an order against Messrs. Dean, they must be deemed undertakers of the work of construction.

Mr. Evans said they were the undertakers of a particular branch. Apart from that there was constructive work being done by somebody, and the building was above 30 ft. high, and there was scaffolding.

Mr. Byrne submitted that Messrs. Moore & Sons were the undertakers, and that Messrs. Dean & Co. were neither undertakers nor sub-contractors. The man was employed by Messrs. Dean, and the action must be against his immediate employers, but they were not undertakers or constructors.

The Arbitrator said the accident happened in the course of the man's employment. He was employed by Messrs. Dean & Co., and there was no doubt that at the time the building was above 30 ft. high, and that scaffolding was in use for the purpose of constructing the building. When the building was incomplete and the scaffolding was still up, and the painting happened to be the first painting, he held that he was employed on a building above 30 ft. high, which was in course of construction. It was a most important point, and he would be willing to state a case for Mr. Byrne if required. The amount of compensation would be £300, the widow to have £20 right away, and the remainder to be invested.

Mr. Evans consented to that.—*Manchester Courier.*

### CASE UNDER THE LONDON BUILDING ACT:

LOVEGROVE *v.* NORTH LONDON RAILWAY COMPANY.

MR. HADEN CORSER at the Worship-street Police-court on April 27 heard a summons taken out by Mr. Henry Lovegrove, District Surveyor of South Islington and Shoreditch, for neglect to give notice before erecting a water-closet on vacant land for the use of a tenant of some railway arches. The district surveyor required notice, and that the front wall should be of brick—the other three sides being walls of old buildings.

The roof had not been put on, and the defendants, finding that they could not sustain their claim for exemption, pleaded that the erection of a door and a length of iron and wood was a screen only and not a building. The magistrate took this view and dismissed the summons, but would not allow costs.

### CASE UNDER THE PUBLIC HEALTH (BUILDINGS IN STREETS) ACT, 1883.

THE case of Jenkins *v.* The Merthyr Tydvil District Council came before a Divisional Court of Queen's Bench, composed of Justices Lawrance and Channell, on the 29th ult. in the form of a special case stated by the Stipendiary Magistrate of Caerphilly Higher, Glamorganshire, in the matter of the conviction of Mr. E. M. Jenkins on an information laid by the Merthyr Tydvil District Council against him for contravention of Section 3 of the Public Health (Buildings in Streets) Act, 1883. The facts were, shortly, these :—On June 27 last an information was laid against the respondent for that he had without the written consent of the District Council erected and brought forward in Union-street, Dowlais, a house or building beyond the front main wall of the house or building on either side. Section 3 of the Act of 1883 repealing in part Section 156 of the Public Health Act, 1875, makes it an offence to do this, and provides that any person offending against this enactment should be liable to a penalty not exceeding 40s. for every day during which the offence is continued after written notice in this behalf from the Urban Authority. At the hearing no evidence was given that any such written notice as was required by the section had been given to the respondent, and the magistrate, therefore, on August 4, discharged the information. A second information was then laid on September 26, which charged the continuation of the offence after written notice, and, upon the notice being proved, the respondent was convicted. The question now for the Court was whether the conviction was bad on the ground of the respondent having been previously acquitted by the magistrate. On his behalf it was contended that the first information having been dismissed, the matter was *res judicata* and the conviction wrong.

Their Lordships, however, held that as nothing had been determined by the first summons the matter on the occasion of the second summons was not *res judicata*, and dismissed the appeal.

Mr. S. T. Evans, M.P., appeared for Mr. Jenkins; and Mr. Macmorran, Q.C., and Mr. Plews for the District Council.

## ACTION BY ARCHITECTS.

ON the 1st inst. the case of Perry & Reed *v.* Burney & Grimes and another, came before the Lord Chief Justice and a special jury in the Queen's Bench Division. It was an action by the plaintiffs, a firm of architects carrying on business in John-street, Adelphi, to recover 1,030*l.* 15s. 11d. for professional services rendered. The defendants, of 243, Strand, and another defendant, Mr. Albert Mathams, were the owners of the "King's Head Hotel," Margate, and they in September, 1897, consulted the plaintiffs with regard to alterations they proposed making in the structure of the hotel. It was stated that the amount they were prepared to spend was about 8,000*l.* After some negotiation, it transpired that it would be necessary, in rebuilding the frontage of the hotel, to set back the wall, and this involved extra expense. The plaintiffs prepared the plans and submitted them to the Licensing Committee and Town Council, and they were in due course passed. Tenders for the work were then invited, and the lowest that was received was 14,790*l.* The defendants considered this was too much, and refused to spend more than 10,000*l.*, and asked the plaintiffs to reduce their estimate. The plaintiffs then prepared fresh plans, and they applied to the defendants for payment on account. No notice was taken of this application, but Mr. Mathams referred the plaintiffs to the other defendants, Messrs. Burney & Grimes, Mr. Mathams stating that he had sold his interest in the hotel. Messrs. Burney & Grimes declined to pay the amount claimed on the ground that the plans were to be prepared on the basis that the alterations to be made were not to cost more than 8,000*l.*, but they paid 100*l.* into court to meet the claim against them.

In the result, the jury awarded the plaintiffs 800*l.*

Judgment accordingly.

Mr. Tindal Atkinson, Q.C., and Mr. Whateley appeared for the plaintiffs; and Mr. Foote, Q.C., and Mr. Montague Lush for the defendants.

## ARBITRATION CASE UNDER THE WORKMEN'S COMPENSATION ACT.

HIS Honour Judge Whitehorne, at the Birmingham County-court on the 27th ult., conducted an arbitration under the Workmen's Compensation Act between Henry Stevens, carpenter and joiner, of Arden-road, Saltley, and Smith, Stone, & Knight, Limited, paper-makers, Landor-street. Mr. Vachell (instructed by Mr. O'Connor) appeared for the applicant, and Mr. Cross for the respondents.—The applicant claimed 1*l.* per week during incapacity, or a lump sum of 200*l.*, as compensation for the loss of his right eye by an accident on August 13 last, whilst in the respondents' employ. Liability was admitted by the respondents, and the question for decision was the amount of the compensation. Applicant had been in the employment of the respondents for twenty-five years. He was struck on the eye by a chip of steel flying from a sledge-hammer in use by another workman. The eyelid and eyeball were perforated, and the vision totally destroyed. His average wages for twelve months before the accident were 2*l.* 8s. a week. He had not been able to work since, but the respondents had paid him 1*l.* a week for nineteen weeks. He had received 12s. a week from his society, together with 50*l.* for the loss of his eye.—Mr. Cross stated that Mr. Smith was willing to take applicant back at full wages on a two years' agreement, and let him do what he pleased.—Applicant: I am quite willing to go, but I cannot work.—Mr. Cross: We are quite prepared to trust you to do what is reasonably right and proper.—Dr. Evans, of the Eye Hospital, and Dr. Priestley Smith said the applicant's vision would never be as good as it was before, and his efficiency as a workman was greatly decreased, but he was competent to do rough work, and his sight would improve with practice.—Mr. Cross submitted that the applicant was entitled to no special compensation for the loss of his eye, or for any suffering he had undergone; his claim was strictly limited to loss of wages, and he was entitled to only half of the difference between what he is now able to earn and his earnings before the accident, with a maximum compensation of £1 a week. — Mr. Vachell contended that the Act gave jurisdiction to the Court to allow compensation for pain and suffering, the words in the first section being "personal injury."—His Honour came to the conclusion that Mr. Cross was right, and that the object of the Act was to give compensation for injuries in so far as they affected the wage-earning capacity of the workman. He fixed the compensation to be paid to the applicant at 16*l.* to the present time (in addition to the 19*l.* already paid to him), and the maximum allowance of 1*l.* a week from now. The offer of the respondents to take the applicant back into their employment at his old wages was most benevolent, but he had to deal with legal rights. If the respondents carried out their benevolent purpose, they would be entitled, in their weekly payments to applicant, to take credit for the amount of the award.—*Birmingham Gazette.*

## ACTION AGAINST A BRIGHTON BUILDER FOR ALLEGED TRESPASS.

THE case of Gonnella *v.* Olliver came before a Divisional Court of Queen's Bench on the 3rd inst., on the appeal of the plaintiff, Mr. V. Gonnella, of 93, Bonchurch-road, Brighton, from the decision of the County Court Judge of Sussex, giving judgment for the defendant, a builder, also of Bonchurch-road, Brighton.

It appeared that the plaintiff brought the action to recover from the defendant damages for an alleged trespass by interfering with a wall which the plaintiff asserted was not a party wall. In August, 1898, the defendant sold to the plaintiff the house No. 93, Bonchurch-road, but after the sale the defendant asserted, and proceeded to assert, his right to use one of the walls of the house as a party wall for an adjoining building. Plaintiff contended that an exclusive right to the wall in question had been conveyed to him by the defendant, who reserved no right to use it for the purpose of further building on the house adjoining, which at the time of the conveyance was non-existent. The learned County Court judge held that the wall was a party wall, and gave judgment for the defendant, and their lordships now affirmed his decision and dismissed the appeal with costs.

Mr. Boxall appeared for the plaintiff (appellant), and Mr. Lowe for the defendant (respondent).

## MEETINGS.

### FRIDAY, MAY 5.

*Royal Institution.*—Mr. W. J. Russell, Ph.D., F.R.S., on "Pictures produced on Photographic Plates in the Dark." 9 p.m.

*Iron and Steel Institute.*—Annual meeting (concluded). 10.30 a.m.

*Institution of Junior Engineers.*—8 p.m.

### SATURDAY, MAY 6.

*British Institute of Certified Carpenters.*—Meeting at Carpenters' Hall at 6 p.m. Lantern lecture on "Timber and Timber Trees" by Mr. J. Hudson Davies.

*Edinburgh Architectural Association.*—Visit to Peebles: (1) Neidpath Castle; (2) Cross Church; (3) St. Andrew's Tower.

### MONDAY, MAY 8.

*Bristol Society of Architects.*—Annual General meeting. Mr. F. W. Wills on "Speculative Builders and their little ways."

### TUESDAY, MAY 9.

*Royal Institution.*—Professor Silvanus Thompson on "Electric Eddy-Currents." II.—3 p.m.

### WEDNESDAY, MAY 10.

*Surveyors' Institution.*—Annual Dinner, King's Hall, Holborn Restaurant. 6.30 p.m.

### THURSDAY, MAY 11.

*Carpenters' Hall, London Wall (Lectures on Carpentry and Joinery).*—Professor T. Roger Smith on "Temporary Structures: Floors, Shoring." 7.30 p.m.

*Royal Institution.*—Mr. Lewis F. Day on "Embroidery." II.—3 p.m.

*Institute of Builders.*—Dinner, Marble Salon, Grand Hotel, Trafalgar-square.—6.30 p.m.

*Society for the Encouragement of the Fine Arts.*—Second Conversazione, at the Galleries of the Royal Institute of Painters in Water Colours, Piccadilly.

### FRIDAY, MAY 12.

*Architectural Association.*—Dr. G. V. Poore on "Soil and Aspect in Relation to the Dwelling House."—7.30 p.m.

### SATURDAY, MAY 13.

*Institution of Junior Engineers.*—Visit to the Royal Arsenal, Woolwich. Train leaves Charing Cross 9.20 a.m.

## RECENT PATENTS:

### ACCEPTED SPECIFICATIONS.

### *Open to Opposition until June 26.*

[1898] 6,719, Howl, Drying Bricks and other Plastic Articles. 8,941, Hastwell, Composition for Use in Treating Sewage, &c. 8,961, Heinz & Heinz, Apparatus for Soldering. 9,208-9, Winter, Stoves. 9,226, Lauri, Self-Cleaning Burner for Acetylene Gas. 9,294, Munn, Ventilators. 9,722, Blackie, 15,179, Delmouly, and [1899] 3,551, De Szepczynski, Generation of Acetylene Gas. 10,245, Boltone, Automatical Cut-in and Cut-out. 10,276, King, Windows. 10,278, Walmsley & Kenyon, Pilot Jets for Incandescent Gas Burners. 10,483, Abbott & Bill, Electrical Switches. 10,619, Clemens, Mitering Machines. 10,658, Johnson & Nichols, Gypsum or Plaster of Paris. 10,815, Windham, Burning of Acetylene Gas. 10,818, Hookham, Electricity Meters. 10,897, Gregory, Oil Burners for Lighting or Heating. 11,014, Hay, Lifts, Hoists, &c. 11,478, Simpson, Soldering and Brazing. 11,741, Carter, Ladders. 12,191, Bartenstein, Reflectors chiefly designed for Incandescent Electrical Lamps. 12,368, Cook, Means for Opening Sash Windows Inwardly. 13,060, Page, Curl-ended Nails. 13,298, Shore, Devices for Withdrawing, Collecting, and Sterilising Dust, &c. 13,536, Fauck, Boring Wells. 13,560, Dover & Phipps, Coating Surfaces with Celluloid, &c. 13,594, Miley, Fast Head Stocks of Lathes. 13,667, Hewetson & Lambert, Guard or Shield for Machines fed by Feed-rollers, for Circular Saws, &c. 13,697, Wynne-Roberts, Filter Beds for Filtering Sewage Water, &c. 13,711, Voile, Means for Destroying Soot in Chimneys. 13,969, Wydts & Rochefort, Trembler Interruptors for Electrical Currents. 14,012, Brown, Electrical Light Fittings. 14,265, Kinnell, Valves for Heating Installations. 14,964, Robinson, Circular-saw Guards. 15,449, Cotgreave, Removable and Adjustable Shelvings and their Fittings. 15,596, Rule, Automatical Fire Alarms. 17,071, Offenbacher, Decorated Glass. 19,770, Verbeke, Metallic Mantles for Gas Burners. 20,594, Brisselet, Locks and Keys. 24,592, Thornton, Door Silencer. 25,106, Baker, Rock-boring. 26,082, Bundy, Workmen's Time Recorders. [1899] 1,092, Seeberger, Elevators. 2,059, Stephan, Continuous Treatment of Size by Boiling it. 2,133, Doody, Operating Window Sashes. 3,217, Anderson, Portable Hob Grate. 3,760, Jaeger, Dry-slaking of Lime. 3,799, Sepulchre, Oil-heating Stoves. 4,279, Wernecke, Delivery or Discharging Devices for Moulding Presses, &c. 4,520, Luther, Wood Polish. 4,699, Clayton, Ceiling-rose for Electrical Lights, &c. 5,030, Maccoun, Control Apparatus for Electrical Hoists or Elevators. 5,204, Bremer, Framework Holder for Use in the Construction of Floors. 5,328, Goodfellow, Self-closing Gates, Doors, &c. 5,509, Harris, Saw-blades for Stone-sawing Machines. 5,727, Cornish, Bricks. 5,739, Lamont, Mortising Chisel. 5,810, Thatcher, Roofing Tiles. 5,941, Rice, and 6,024 and 6,026, Allgemeine Elektricitäts G., Electrical Incandescent Lamps.

### ABSTRACTS OF PATENTED INVENTIONS.

19.—CHIMNEY AND VENTILATING SHAFT TOPS: *J. D. Wright.*—A pipe, having a spiral outlet, is made by bending a wide strip spiral-wise and with overlapping edges, whilst holes are made in the side to promote the draught; for a ventilator a hood can be added.

28.—BURNERS FOR GAS AND VAPOUR: *J. McConechy.*—The union jet burner, for acetylene and rich oil-gas, has its top made flat or convex, and under the gauze is put absorbent material for removing aqueous vapour.

33.—WASTE WATER FLUSHING: *G., J., & M. Clarke.*—In order that the customary projecting lips may be dispensed with, the back of the tipper is made straight, and a rubber is provided against which it strikes when it is tipped.

67.—HOLDERS FOR ELECTRICAL LAMPS: *H. C. Gover, C. F. Proctor, & W. G. Pipkin.*—Of the two parts in which the insulating-body for a bayonet holder is made, one has two recesses which contain the plunger carriers, and the cylindrical casing of the holder keeps the two parts together, in conjunction with a conical cover which is screwed on to it. By another arrangement each of the two equal halves of the insulator is recessed to receive one plunger carrier, and in another form the plunger carriers can be inserted into the insulator from the top. The plunger carriers are fitted with the wires before they are put into the insulators.

102.—FIREPROOF SHUTTERS AND DOORS: *J. H. McGrouther.*—For doors or shutters that separate the well of a hoist from the successive floors, or prevent the spread of fire, the panels are loosely fitted between the stiles and rails in order that they may expand, and to diminish their warping or buckling when exposed to heat or flame. The rails and stiles are made of bars and distance-pieces, bolted together, and are arranged so that the bars on one side of the panels break joint with those on the other side. The bars, panels, and distance-pieces may be built up of layers, or the panels may slide, by slots, on washers or distance-rings through which the rivets or bolts pass.

110.—ANTI-FOULING COMPOSITIONS AND PAINTS: *W. Peel.*—Gum euphorbium is dissolved in fusel oil or other solvent, and is then mixed with slaked lime and coal tar; to the mixture is added gum dammar dissolved in benzine; then are added oxide of zinc, graphite, and a pigment, after which the admixture is thinned with turpentine, &c.

119.—A FROSTED OR CRYSTALLINE VARNISH: *Blundell, Spence, & Co., and S. Hill.*—For a varnish that shall produce a frosted or crystalline appearance to glass, talc, or other transparent material, or to a painted surface, the inventors make a mixture of pale varnish (three parts), tung oil (one part), and small quantities of resinates or stearates of lead, lime, manganese, and essential oils.

192.—SUPPORTS FOR ELECTRICAL LAMPS: *O. C. White.*—The clamp is fitted on to the base by means of a flange and screw, and has a split yoke that receives a circular block, which is fastened by a clamping bolt and carries a long curved tube with open bushed ends; on the tube's free end is a ball that is clamped adjustably to another ball by side-pieces and a bolt covered with an insulator. A lamp holder may be attached to the latter ball, or be hinged to a tube that slides in the ball, and is secured by springs and a sliding ring.

237.—EXTINCTEURS: *A. C. Rowe.*—The machine discharges liquid or gas according to the position in which it is held; the main vessel, and a bottle whose heavy lid is made air-tight with a liquid seal, contain solution of carbonate and acid, respectively, an inversion of the vessel causes the lid to fall, and the carbonic acid gas thus produced escapes into a second vessel where it is dried by the impact of the gas jet against the vessel's side, and is thence discharged upon the fire, provision being made for reducing the jet's velocity and for preventing air from being carried with it; liquid is discharged upon the re-inversion of the machine.

284.—A SUBSTITUTE FOR EMERY WHEELS: *C. M. Pielsticker.*—These are fashioned, by heat and pressure, from a compound which is formed by heating New Zealand iron-sand in a crucible with carbonaceous matter, and adding a phosphorous-yielding sustance, the red-hot mass is then poured into cold oil, or water covered with cold oil, and a binding material, such as vulcanized rubber is used in the process of moulding.

317.—DIAPHRAGM VALVES FOR CISTERNS, &c.—*J. Jones.*—The object of the invention is to make the central portion of the diaphragm follow the plunger and not adhere to the end of the supply pipe; the diaphragm's central part is screwed to the plunger, or the latter may

# COMPETITIONS, CONTRACTS, AND PUBLIC APPOINTMENTS.

## COMPETITIONS.

| Nature of Work. | By whom Advertised. | Premiums. | Designs to be delivered. |
|---|---|---|---|
| *Masonic Hall | Aldershot Masonic Hall Co. | 30*l*. and 10*l*. | No date |

## CONTRACTS.

| Nature of Work or Materials. | By whom Required. | Forms of Tender, &c. Supplied by | Tenders to be delivered. |
|---|---|---|---|
| Sewers, Bedwas, Wales | St. Mellons R.D.C. | J. Powell, Union Offices, Newport | May 9 |
| Station Buildings, Donabate | G.N.R. Co. (Ireland) | T. Morison, Amiens-st. Terminus, Dublin | do. |
| Schools, Crookes | Sheffield Sch. Bd. | Holmes & Watson, Archt. Sheffield | do. |
| Sewerage Works | Todmorden T.C. | C. R. Pease, Surv. Town Hall | do. |
| Cottage, Buckfastleigh Station, Devon | G.W.R. Co. | G. K. Mills, Paddington Station | do. |
| Seventy-six Workmen's Dwellings | Barnes U.D.C | G. B. Tomes, Offices, High-st. Mortlake | do. |
| Fire Station, Market Meadow-road, St. Mary Cray | Bromley R.D.C. | W. J. Winter, Surv. Station-rd. Sidcup | do. |
| *Road Making Works | Willesden D.C. | O. C. Robson, Offices, Dyne-rd. Kilburn | do. |
| Sewerage Works | Oldham Corp. | Boro Surv. Town Hall | May 10 |
| Alterations to Workhouse | Bangor Union | R. Davies, Archt. Bangor | May 13 |
| Church, Milford, Cork | ——— | M. A. Hennessy, Archt 74, South Mall, Cork | do. |
| Paving Works | Burnley Corp. | G. H. Pickles, Boro Surv. Town Hall | do. |
| Drainage Works | Southam R.D.C. | F. P. Trepess, Surveyor, Warwick | do. |
| *Tarred Limestone Paving | Paddington Vestry | G. Weston, Vestry Hall, Harrow-rd. W. | May 15 |
| *Road Making | Hanwell U.D.C. | S. W. Barnes, Church-rd. West, Hanwell, W. | do. |
| Additions to Workhouse | Herne Common (Kent) Union | J. E. Burch, 39, Castle-st. Canterbury | do. |
| Three Villas at County Asylum, Morpeth | Northumberland C.C. | J. Cresswell, County Archt. Moot Hall, Newcastle-on-Tyne | do. |
| Chapel, Wath-upon-Bourne | Primitive Methodist Connexion | W. G. Smithson, Archt. 13, Bond-st. Leeds | do. |
| *Electric Light Station and Chimney Shaft | Bexhill U.D.C. | A. H. Preece, 13, Queen Anne's Gate, S.W. | do. |
| *Two Libraries, Lewisham and Forest Hill | Lewisham Vestry | J. Andrews, 13, Basinghall-st. E.C. | May 16 |
| *Schools | Edmonton S.B. | H. W. Dobb, 110, London Wall, E.C. | do. |
| *Sewering, Levelling, Paving, &c. | Bromley U.D.C. | Surveyor, Council Offices, Bromley | do. |
| Street Works | Chertsey U.D.C. | J. F. Stow, Surv. Windsor-st. Chertsey | do. |
| Electric Lighting Materials | Fleetwood U.D.C. | T. Barton, Engr. Ainsworth-st. Blackburn | do. |
| *Making-up Road | Tottenham U.D.C. | P. E. Murphy, 712, High-rd. Tottenham | do. |
| *Paving | Greenwich B. of W. | 141, Greenwich-rd. S.E. | May 17 |
| *Eight Cottages and Construction of New Street | L. & N. W. & G. W. Joint Rlys. | Engr. Shrewsbury Station | do. |
| Chapel, Llandegfan | ——— | J. Owen, Archt. Menai Bridge | do. |

## CONTRACTS—*Continued.*

| Nature of Work or Materials. | By whom Required. | Forms of Tender, &c. Supplied by | Tenders to be delivered. |
|---|---|---|---|
| Electricity Buildings, Doughty-rd. | Grimsby U.D.C. | M. Petree, C.E. Town Hall-square | May 20 |
| *Sewerage Works, Kirby Muxloe | Blaby R.D.C. | J. B. Everard, 6, Millstone-lane, Leicester | May 22 |
| *Infirmary Wards, &c. | Tendring Union | F. Whitmore, Chelmsford | May 23 |
| School, Trowbridge | ——— | G. Fleetwood, Archt. 2, New-court, Lincoln's Inn, London, E.C. | do. |
| *Chimney Shaft and Alteration to Boiler House | Metropolitan Asylums Board | Office, Norfolk House, Norfolk-st. W.C. | May 24 |
| *Painting, Repairs, Cleaning, &c. | St. George's Union | E. T. Hall, 57, Moorgate-st. E.C. | do. |
| *Pulling-down and Removal of Buildings | Islington Vestry | Vestry Hall, Upper-st. N. | do. |
| *Repaving with Jarrah Wood | Hampstead Vestry | Surveyor, Vestry Hall | May 25 |
| *Sinking a Well | Greenwich Union | T. Dinwiddy, 12, Croom's-Hill, Greenwich | May 26 |
| Baths | Cheltenham Corp. | J. Hall, C.E. Municipal Offices, Cheltenham | May 30 |
| Asylum, Talgarth, Wales | ——— | Giles, Gough, & Co. 28, Craven-st. Charing Cross | do. |
| *Iron or Steel Winches | James Syn. Ltd. | Offices, 18, Buliter-st, E.C. | do. |
| *Erection of Asylum | Brecon and Radnor Asylum Com. | Giles, Gough & Trollope, 28, Craven-st. W.C. | do. |
| *Installation of Telephones, Fire Alarms, Call Bells, Clocks, &c. | L.C.C. Asylums Com. | R. W. Partridge, Office, 6, Waterloo-place, S.W. | May 31 |
| *Electric Light Installation | Islington Guardians | W. Smith, 65, Chancery-lane, W.C. | June 1 |
| *Repair and Redecoration of Chapel Buildings | Woodberry Down Chapel | W. Bradbear & Co. Canonbury Station, N. | No date |
| Rebuilding St. Peter's, Bury | ——— | M. Taylor, Archt. 2, St. Ann's Churchyard, Manchester | do. |
| Additions to Shop Premises, Park-rd. Bradford | .. | J. Young & Co. Archt. 62, Market-st. Bradford | do. |
| Works at Gilstead Hall, Bingley | Mr. A. England | Isitt, Adkin, & Hill, Archt. Bradford | do. |
| Alterations to House and Shop, West-end, Morecambe | J. Wright | Marshall Bros. Archt. Back-crescent, Morecambe | do. |
| Theatre, Stockton-on-Tees | ——— | H. May, Archt. 24, North John-st. Liverpool | do. |
| Two Houses, Alma-road, Rotherham | ——— | G. H. Johnson, Archt. 38, High-st. Rotherham | do. |
| Alterations to Golden Otter Inn, Newcastle | ——— | A. P. Farthing, Archt. 21, Pilgrim-st. Newcastle | do. |
| Three Cottages, Cherry-st. Warwick | ——— | R. Hutton, 17, Jury-st. Warwick | do. |
| Workshops, Baltimore Works, Longton | ——— | W. Wood, Archt. Stafford-st. Longton | do. |
| *Painting, &c. | War Dept. | R. E. Office, N. Aldershot | do. |

## PUBLIC APPOINTMENTS.

| Nature of Appointment. | By whom Advertised. | Salary. | Application to be in. |
|---|---|---|---|
| *Clerk of Works | Reigate T.C. | 3*l*. 3s. per week | May 9 |
| *Building Inspector | Wood Green U.D.C. | 52s. 6d. week | do. |
| *Clerk of Works | Peterboro T.C. | 3*l*. per week | May 11 |
| *Clerk of Works | Bethnal Green Vestry | 4*l*. 4s. per week | do. |
| *Chief Clerk | Camberwell Vestry | 140*l*. rising to 150*l*. | May 12 |
| *Orders Clerk | do. | 90*l*. rising to 130*l*. | do. |
| *Road Surveyor | Croydon R.D.C. | 400*l*. per annum | May 17 |
| *Surveyor | Metropolitan Asylums Board | 500*l*. per annum | May 19 |

*Those marked with an asterisk* (*) *are advertised in this Number. Competitions, p.* iv. *Contracts, pp.* iv. vi. viii. x. & xxii. *Public Appointments, pp.* xix. & xxii.

pass through the former—which has a flange or collar with a facing; a slot in the end of the plunger engages the actuating lever.

327.—WALL COVERINGS: *J. E. Farrow.*—During the process of printing, perforations are made in the edges of the paper-hangings in order to facilitate the removal of the plain portions or trimmings; the perforations are of varied shapes, and are formed to inter-lock when the edges are joined, thus making the patterns or designs fit properly together.

374.—BALL AND FLOAT VALVES: *O. H. Wagner.*—The valve receives a reciprocating motion from the rotation of the tubular portion of the supply valve by means of the float lever and a pin which carries rollers that engage with grooves, a sleeve which is fitted upon a reduced portion of the neck of the casing prevents the detachment of the rollers, and an extension from the valve enters a recess in the cap.

384.—LOCKS AND LATCHES: *W. S. Johnson.*—For decreasing friction the latch bolt of a rim or mortise lock or latch moves between roller guides, or is itself fitted with rollers, a hinged plate or double fore-end, which covers the oil-holes made in the fore-end of the case, is held in position by a removable screw, and can be turned back when the lock is to be oiled.

427.—EXCAVATORS: *E. Bock & L. N. Jackson.*—On trucks is mounted a bridge, or girder, which carries an engine and boiler, a pair of bucket chain excavators, and a crane at each end for moving forward the rails and trucks; the excavators, one on each side of the bridge, are connected so that the overhanging bucket mechanism needs not to be counterbalanced, and the length of the bridge can be altered by means of detachable end-sections.

433. WORKSHOPS: *P. W. Gates.*—Two of four lines of main shafting are carried upon wall brackets near the floor to drive counter-shafting in wall-shafting, whilst the other two are placed underneath the floor and drive shafting supported by columns; a travelling crane runs overhead upon girders supported by wall-brackets, and in the case of a low roof a break is made in the lines of the columns which carry the shafting.

462.—CONDUITS FOR ELECTRICAL CONDUCTORS: *G. H. Nisbett.*—The conduits or mains, made of glazed earthenware, &c., in sections, are set to contain either bare or lightly insulated or armoured conductors of any pattern, the troughing, having an outer section, either circular or rectangular, is preferably rounded upon its lower inner surface, and has movable or fixed bridge-pieces upon which the conductor rests, the remaining space may be filled with bituminous material; one cable or more may be put into each of the troughs, which are jointed together, their lids being cemented into position. For making branches the section ends are chamfered.

## SOME RECENT SALES OF PROPERTY:

### ESTATE EXCHANGE REPORT.

| | |
|---|---|
| April 19.—By R. & A. G. THOROWGOOD (at New Barnet). | |
| New Barnet, Herts.—Lancaster-rd., two plots of building land, f. | £417 |
| April 20.—By W. BROWN & Co. (at Great Missenden). | |
| Prestwood, Bucks.—Enclosures of land with farm buildings thereon, 58 a. 2 r. 4 p., f. | 1,900 |
| By ELLIOTT, ELLIS, & Co. (at Plymouth). | |
| Plymouth.—173 and 174, Union-st., area 6,220 ft., f., r. 100*l*. | 6,000 |
| 2, Union-ter., area 2,625 ft., f., r. 35*l*. | 1,250 |
| By J. G. Medcalf (at Market Deeping). | |
| Market Deeping, Lincs.—An essential oil distillery and manufactory, with residence; also the Hall Farm and other lands, 292 a. 1 r. 19 p., f. and c. | 15,100 |
| Enclosures of land, 41 a., f. and c. | 830 |
| A freehold house and shop, also a plot of garden ground, 1 a. 2 r. 35 p. | 485 |
| A freehold house and 5 a. 0 r. 4 p. | 630 |
| A freehold house, also eight cottages | 1,085 |
| Langtoft, Lincs.—A freehold and copyhold farm, 83 a. 0 r. 29 p. | 2,800 |
| Two parcels of land, 20 a. 2 r. 5 p., f. and c. | 710 |
| By A. DOWELL (at Edinburgh). | |
| Dunkeld, Perthshire.—The Estate of Cardney, 1,074 a. | 15,050 |
| April 21.—By TAYLER & GERRISH (at Chipping Sodbury). | |
| Old Sodbury, Glos.—Trueman's Farm, 41 a. 0 r. 29 p., f. | 2,845 |
| By WINTERTON & SONS (at Lichfield). | |
| Whittington, Staffs.—The Hill Farm, 78 a. 2 r. 37 p. f. | 3,900 |
| Hall Croft Close, 4 a. 0 r. 10 p., f. | 350 |
| Moorshutt and Old Foot Closes, 14 a. 1 r. 29 p., f. and c. | 560 |
| The Tracehays Closes, 30 a. 0 r. 24 p., f. | 1,275 |
| The Whittington Hurst Farm, 95 a. 1 r. 18 p., f. | 2,900 |
| April 22.—By JAMES D. O'BRIEN (at Sligo). | |
| Annaghloy, co. Sligo.—The Estate of Annaghloy and Muck Island, 165 a. | 2,655 |
| April 24.—By MAY & PHILPOT. | |
| Brixton.—169, Leander-rd., u.t. 90½ yrs., g.r. 10*l*., r. 60*l*. | 575 |
| By J. G. PERRY. | |
| Clapham.—85, Blomfelde-rd., u.t. 63 yrs., g.r. 7*l*. 14s., r. 52*l*. 10s. | 465 |
| 11, Grafton-sq., u.t. 67 yrs., g.r. 8*l*., r. 48*l*. | 465 |
| 31, Cautley-av., u.t. 85½ yrs., g.r. 14*l*. 5s., r. 55*l*. | £505 |
| 33, Sibella-rd., u.t. 63 yrs., g.r. 12*l*., e.r. 70*l*. | 720 |
| 67 and 69, Old Town, and two cottages in the rear, u.t. 22 yrs., g.r. 60*l*., r. 157*l*. | 540 |
| 18, 19, 20, 21, and 23, Crescent-grove, u.t. 73½ yrs., g.r. 60*l*., r. 295*l*. | 2,620 |
| By J. C. PLATT. | |
| Battersea.—38, Savona-st., f. | 270 |
| Hammersmith.—57 and 59, Richford-st., u.t. 71 yrs., g.r. 13*l*. | 410 |
| Westbourne Pk.—38, Lancaster-rd., u.t. 64½ yrs., g.r. 10*l*. | 455 |
| Dartford, Kent.—6 and 8, Lowfield-st., f., r. 84*l*. | 1,930 |
| By THOMAS, PEYER, & MILES. | |
| Fenny Stratford, Bucks.—The Fenny Stratford Brewery, with wharfage and nine public and beer-houses, f. | 14,550 |
| By Messrs. KEMSLEY. | |
| Romford, Essex.—Crow-lane, enclosure of building land, 28 a. 0 r. 15 p., f. | 6,100 |
| Theydon Bois, Essex.—Red Oaks and 2 a., f. | 1,600 |
| Hackney.—Clarence-rd., &c., i.g.r. 45*l*., u.t. 39 yrs., g.r. 6*l*. 4s. | 740 |
| Stapleford Abbotts, Essex.—Grove House and 22 a. 0 r. 20 p., f. | 1,350 |
| Two freehold cottages, and 1 r. | 150 |
| Two cottages and enclosures of land, 7 a. 0 r. 6 p., f. | 405 |
| Dagenham, &c., Essex.—Two parcels of land, 3 a. 0 r. 1 p., f. | 150 |
| By PHILIP DAVIES (at Presteigne). | |
| Presteigne, Radnor.—Litton Cottage Farm and lands, 8 a. 2 r. 6 p., f. | 280 |
| High-st., a freehold residence | 460 |
| By P. COOPER & SON (at Aberdeen). | |
| Auchterless, &c., Aberdeenshire.—The Estate of Blackford, 1,381 a. | 19,475 |
| April 24 and 25.—By GEORGE T. SMITH (at Devizes). | |
| Devizes, Wilts.—The Estcourt Estate, about 467 a., f. (in numerous lots) | 25,998 |
| April 25.—By THEODOR BUHL. | |
| Chipstead, Surrey.—Starrock-lane, The Firs, and 9¼ a., f. | 3,700 |
| By EASTMAN BROS. | |
| Anerley.—18 to 26 (even), St. Hugh's-rd., u.t. 68¼ yrs., g.r. 25*l*. | 620 |
| Blackfriars.—78, Blackfriars-rd., u.t. 27 yrs., g.r. 17*l*., r. 112*l*. | 750 |
| By HARMAN BROS. | |
| Shepherd's Bush.—284, Goldhawk-rd., u.t. 64 yrs., g.r. 33*l*., r. 133*l*. | 750 |
| 64, Wood-la., f., r. 50*l*. | 710 |

| | |
|---|---|
| 20 to 23, Caithness-rd., u.t. 67 yrs., g.r. 26*l.*, r. 143*l.* | £1,230 |
| Harrow, Middlesex.—1, 2, and 3, Wealdstone-ter., f., r. 117*l.* | 2,680 |
| By MERRETT & MOULD. | |
| Hounslow, Middlesex. — Hounslow-rd., South Lodge, and 1 a. 0 r. 1 p., f. | 600 |
| By HAMPTON & SONS. | |
| East Liss, Hants.—Lingwood, and 7 a. 3 r. 11 p., f. | 6,000 |
| Rickmansworth, Herts.—Scots Hill, and 1½ a., f. | 3,000 |
| By C. W. DAVIES. | |
| City-rd.—8, Colebrook-row, f., e.r. 70*l.* | 1,150 |
| King's Cross.—4, 5, and 6, Providence-row, f. | 500 |
| Highbury.—87 and 89, Highbury Hill, u.t. 60½ yrs., g.r. 25*l.*, e.r. 120*l.* | 1,010 |
| Dalston.—103, 105, and 107, Dalston-la., u.t. 83 yrs., g.r. 62*l.* 10s. | 865 |
| Bath-row, Dalston Chambers, u.t. 83 yrs., g.r. 7*l.*, r. 50*l.* | 480 |

*Contractions used in these lists.*—F.g.r. for freehold ground-rent; l.g.r. for leasehold ground-rent; i.g.r. for improved ground-rent; g.r. for ground-rent; r. for rent; f. for freehold; c. for copyhold; l. for leasehold; e.r. for estimated rental; u.t. for unexpired term; p.a. for per annum; yrs. for years; st. for street; rd. for road; sq. for square; pl. for place; ter. for terrace; cres. for crescent yd. for yard, &c.

## PRICES CURRENT OF MATERIALS :

### WOOD.*

Per Petersburg standard hundred.

| | £ | s. | d. | £ | s. | d. |
|---|---|---|---|---|---|---|
| White Sea : first yellow deals | 17 | 0 | 0 | 18 | 0 | 0 |
| Second do. | 13 | 5 | 0 | 14 | 15 | 0 |
| Third do. | 10 | 15 | 0 | 11 | 15 | 0 |
| Battens, 40s., 30s., and 15s. less respectively. | | | | | | |
| Petersburg : first yellow deals | 11 | 15 | 0 | 14 | 5 | 0 |
| Second do. | 10 | 15 | 0 | 12 | 5 | 0 |
| Battens, 30s. and 20s. less respectively. | | | | | | |
| Petersburg, white deals | 9 | 15 | 0 | 11 | 15 | 0 |
| Do. white battens | 7 | 10 | 0 | 9 | 0 | 0 |
| Riga, white deals | 8 | 5 | 0 | 9 | 5 | 0 |
| Swedish mixed yellow deals | 13 | 5 | 0 | 16 | 15 | 0 |
| Third do. | 12 | 5 | 0 | 14 | 5 | 0 |
| Fourth do. | 10 | 15 | 0 | 11 | 15 | 0 |
| Fifth do. | 9 | 15 | 0 | 10 | 15 | 0 |
| Battens, 30s., 20s., and 10s. less respectively. | | | | | | |
| Whitewood, 10 to 20 per cent. less. | | | | | | |
| Finnish unsorted yellow deals | 9 | 15 | 0 | 10 | 5 | 0 |
| Battens, 10s. and 5s. less respectively. | | | | | | |
| Whitewood, 5 to 10 per cent. less. | | | | | | |
| Norwegian second yellow battens | 7 | 10 | 0 | 8 | 10 | 0 |
| Third do. | 7 | 0 | 0 | 8 | 0 | 0 |
| Fourth do. | 6 | 10 | 0 | 7 | 10 | 0 |
| Whitewood, 10s. less. | | | | | | |
| Danzig, Crown Deck deals, per 40 ft. 3 in. | 0 | 15 | 0 | 1 | 5 | 0 |
| Brack | 0 | 12 | 0 | 1 | 0 | 0 |
| St. Lawrence Pine deals, &c., per P.S.H. :— | | | | | | |
| 1st, Bright and Dry, regular sizes | 18 | 15 | 0 | 25 | 5 | 0 |
| ,, ,, oddments | 11 | 15 | 0 | 18 | 10 | 0 |
| 2nd ,, regular sizes | 13 | 15 | 0 | 17 | 0 | 0 |
| ,, ,, oddments | 9 | 5 | 0 | 12 | 15 | 0 |
| 3rd ,, regular sizes | 9 | 0 | 0 | 10 | 0 | 0 |
| ,, ,, oddments | 6 | 15 | 0 | 8 | 5 | 0 |
| 4th ,, regular sizes | 6 | 0 | 0 | 7 | 0 | 0 |
| ,, ,, oddments | 5 | 10 | 0 | 6 | 10 | 0 |
| St. Lawrence Spruce deals, &c. | | | | | | |
| First, regular sizes | 8 | 5 | 0 | 10 | 5 | 0 |
| Second ,, | 7 | 5 | 0 | 8 | 5 | 0 |
| Third ,, | 7 | 0 | 0 | 7 | 15 | 0 |
| Fourth ,, | 5 | 15 | 0 | 6 | 15 | 0 |
| Oddments and battens at 20s., 10s., 7s. 6d., and 5s. less respectively. | | | | | | |
| New Brunswick Spruce deals, &c. | 7 | 0 | 0 | 7 | 15 | 0 |
| Oddments, battens, and fourths | 6 | 5 | 0 | 7 | 5 | 0 |
| United States pitch pine planks and boards | 9 | 5 | 0 | 12 | 15 | 0 |
| Prepared Boards, per square | | | | | | |
| 1¼ by 6½ and 7 in. 1st yellow | | 12 | 0 | | 15 | 3 |
| ,, ,, 2nd ,, | | 10 | 6 | | 12 | 3 |
| 1 by 6½ and 7 in. 1st ,, | | 9 | 0 | | 11 | 3 |
| ,, ,, ,, white | | 8 | 6 | | 9 | 3 |
| ,, ,, 2nd yellow | | 8 | 6 | | 10 | 3 |
| ,, ,, ,, white | | 7 | 0 | | 7 | 9 |
| ⅞ by 6½ & 7 in. 1st & 2nd yellow | | 7 | 9 | | 8 | 6 |
| ,, ,, ,, white | | 7 | 3 | | 8 | 0 |
| ¾ by 6½ and 7 in. 1st yellow and white (grooved, tongued, and beaded) | | 6 | 9 | | 9 | 3 |
| ¾ by 6½ and 7 in. 2nd yellow and white (ditto) | | 5 | 9 | | 8 | 0 |
| ⅝ by 6½ and 7 in. 1st yellow and white (ditto) | | 5 | 9 | | 6 | 6 |
| ⅝ by 6½ and 7 in. 2nd yellow and white (ditto) | | 5 | 3 | | 6 | 0 |
| Narrower widths at 10 per cent. less. | | | | | | |
| 3rd quality at 15 per cent. less than 2nd. | | | | | | |
| Danzig and Memel Fir Timber— per load | | | | | | |
| Best middling | 2 | 10 | 0 | 3 | 10 | 0 |
| Good middling and Second | 2 | 0 | 0 | 3 | 5 | 0 |
| Common middling | 1 | 10 | 0 | 2 | 10 | 0 |
| Undersized | 1 | 10 | 0 | 1 | 15 | 0 |
| Swedish and Norwegian Balks | 1 | 5 | 0 | 1 | 15 | 0 |
| Baltic Oak Timber— | | | | | | |
| Danzig and Stettin—Large | 3 | 10 | 0 | 4 | 0 | 0 |
| Small | 2 | 0 | 0 | 2 | 5 | 0 |
| Quebec Timber per load | | | | | | |
| Yellow Pine | 4 | 10 | 0 | 6 | 5 | 0 |
| Oak | 4 | 5 | 0 | 6 | 5 | 0 |
| Elm | 4 | 15 | 0 | 5 | 15 | 0 |
| Ash | 4 | 0 | 0 | 5 | 5 | 0 |
| Birch | 3 | 10 | 0 | 5 | 10 | 0 |
| New Brunswick, &c., Birch | 2 | 5 | 0 | 3 | 0 | 0 |
| American Pitch Pine Timber | 2 | 14 | 0 | 3 | 3 | 0 |
| Wainscot, per log, 18 cubic ft.— | | | | | | |
| Crown (Eng. & Dutch) } nominal | 4 | 10 | 0 | 6 | 5 | 0 |
| Brack } nominal | 3 | 15 | 0 | 4 | 15 | 0 |
| Lathwood, per cubic fathom— | | | | | | |
| Petersburg | 4 | 0 | 0 | 6 | 10 | 0 |
| Riga and Danzig | 4 | 10 | 0 | 5 | 10 | 0 |
| Norway Poles, per ft. run | 0 | 0 | 1 | 0 | 0 | 1½ |
| Oak Staves, per mille full size pipe | | | | | | |
| Memel, Crown | 210 | 0 | 0 | 220 | 0 | 0 |
| Brack | 180 | 0 | 0 | 190 | 0 | 0 |
| Danzig | 165 | 0 | 0 | 175 | 0 | 0 |
| Bosnia, single Barrel (nominal) | 28 | 0 | 0 | 30 | 0 | 0 |
| United States, Pipe | 35 | 0 | 0 | 42 | 10 | 0 |
| Hogshead, extra heavy and double extra | 27 | 10 | 0 | 32 | 10 | 0 |
| Indian Teake per load | 11 | 15 | 0 | 16 | 15 | 0 |
| British Guiana Greenheart | 0 | 0 | 0 | 8 | 0 | 0 |
| Mahogany, per foot superficial— | | | | | | |
| Honduras, cargo average | 0 | 0 | 4½ | 0 | 0 | 6 |
| Nicaragua, do. | 0 | 0 | 4¼ | 0 | 0 | 5¼ |
| Tabasco, do. | 0 | 0 | 4 | 0 | 0 | 6½ |
| Mexican, do. | 0 | 0 | 3½ | 0 | 0 | 4 |
| Panama, do. | 0 | 0 | 3 | 0 | 0 | 4 |
| African, do. | 0 | 0 | 3½ | 0 | 0 | 5 |
| Cuba, do. | 0 | 0 | 5½ | 0 | 0 | 7½ |
| St. Domingo, do. | 0 | 0 | 5 | 0 | 0 | 7 |
| Do. Curls (good to prime) | 0 | 0 | 9 | 0 | 1 | 3 |
| Walnut, American (logs) | 0 | 2 | 0 | 0 | 4 | 6 |
| Do. do. (planks and boards) | 0 | 2 | 0 | 0 | 7 | 6 |
| Italian, per foot superficial | 0 | 0 | 3 | 0 | 0 | 7½ |
| Black Sea, per ton | 6 | 0 | 0 | 12 | 0 | 0 |
| Satin Walnut (logs) per foot cube | 0 | 1 | 0 | 0 | 1 | 3 |
| ,, ,, (planks and boards) | 0 | 2 | 0 | 0 | 2 | 9 |
| Sequoia (Californian redwood), per foot cube | 0 | 1 | 9 | 0 | 2 | 0 |
| Whitewood, American (logs) | 0 | 1 | 3 | 0 | 1 | 6 |
| ,, ,, (planks and boards) | 0 | 1 | 6 | 0 | 2 | 9 |
| Quartered oak ,, ,, ,, | 0 | 2 | 3 | 0 | 4 | 0 |
| Kauri pine (logs) | 0 | 1 | 9 | 0 | 2 | 0 |
| ,, ,, (planks) | 0 | 2 | 3 | 0 | 2 | 9 |
| Jarrah (planks) | 0 | 2 | 3 | 0 | 2 | 6 |
| Lancewood spars each, fresh and large | 0 | 7 | 0 | 0 | 10 | 0 |
| Lancewood spars, ordinary to fair | 0 | 4 | 0 | 0 | 6 | 0 |
| Degame spars | 0 | 8 | 0 | 0 | 12 | 6 |

### METALS.

| | £ | s. | d. | £ | s. | d. |
|---|---|---|---|---|---|---|
| IRON—Pig, in Scotland ton | 3 | 3 | 9 | 0 | 0 | 0 |
| Bar, Welsh, in London | 6 | 0 | 0 | 6 | 5 | 0 |
| Do. do. at works in Wales | 5 | 15 | 0 | 5 | 17 | 6 |
| Do. Staffordshire, in London | 6 | 5 | 0 | 7 | 10 | 0 |
| COPPER—British cake and ingot | 79 | 10 | 0 | 80 | 0 | 0 |
| Best selected | 80 | 0 | 0 | 81 | 0 | 0 |
| Sheets, strong | 82 | 0 | 0 | 84 | 0 | 0 |
| Chili bars | 76 | 5 | 0 | 0 | 0 | 0 |
| YELLOW METAL lb. | | 7d. | | | 7½d. | |
| LEAD—Pig | | | | | | |
| Spanish ton | 14 | 5 | 0 | 0 | 0 | 0 |
| English Com. Brands | 14 | 10 | 0 | 0 | 0 | 0 |
| Sheet, English, 6 lbs. per sq. ft. and upwards | 15 | 10 | 0 | 0 | 0 | 0 |
| Pipe | 16 | 0 | 0 | 0 | 0 | 0 |
| ZINC—English sheet ton | 30 | 15 | 0 | 0 | 0 | 0 |
| Vieille Montagne | 31 | 5 | 0 | 0 | 0 | 0 |
| Spelter | 28 | 10 | 0 | 29 | 0 | 0 |
| TIN—Straits | 120 | 5 | 0 | 0 | 0 | 0 |
| Australian | 117 | 15 | 0 | 118 | 5 | 0 |
| English Ingots | 120 | 0 | 0 | 121 | 0 | 0 |
| Banca | 114 | 0 | 0 | 0 | 0 | 0 |
| Billiton | 113 | 0 | 0 | 0 | 0 | 0 |

### OILS.

| | £ | s. | d. | £ | s. | d. |
|---|---|---|---|---|---|---|
| Linseed ton | 17 | 12 | 6 | 0 | 0 | 0 |
| Cocoanut, Cochin | 29 | 10 | 0 | 0 | 0 | 0 |
| Do. Ceylon | 25 | 15 | 0 | 0 | 0 | 0 |
| Palm, Lagos | 24 | 10 | 0 | 0 | 0 | 0 |
| Rapeseed, English, pale | 22 | 15 | 0 | 0 | 0 | 0 |
| Do. Brown | 21 | 5 | 0 | 0 | 0 | 0 |
| Cottonseed ref. | 16 | 10 | 0 | 17 | 10 | 0 |
| Oleine | 17 | 0 | 0 | 19 | 0 | 0 |
| Lubricating U.S. | 0 | 5 | 3 | 0 | 7 | 6 |
| Do. Black | 0 | 5 | 0 | 0 | 6 | 6 |
| TAR—Stockholm barrel | 1 | 6 | 6 | 0 | 0 | 0 |
| Archangel | 1 | 0 | 0 | 0 | 0 | 0 |
| Turpentine | 34 | 10 | 0 | 0 | 0 | 0 |

## TO CORRESPONDENTS.

S. F. H. (Amounts should have been stated.)

NOTE.—The responsibility of signed articles, letters, and papers read at public meetings, rests, of course, with the authors.

*We cannot undertake to return rejected communications.*

Letters or communications (beyond mere news items) which have been duplicated for other journals are NOT DESIRED.

We are compelled to decline pointing out books and giving addresses.

Any commission to a contributor to write an article is given subject to the approval of the article, when written, by the Editor, who retains the right to reject it if unsatisfactory. The receipt by the author of a proof of an article in type does not necessarily imply its acceptance.

All communications regarding literary and artistic matters should be addressed to THE EDITOR; those relating to advertisements and other exclusively business matters should be addressed to THE PUBLISHER, and *not* to the Editor.

## TENDERS.

[Communications for insertion under this heading should be addressed to "The Editor," and must reach us *not later than* 10 *a.m. on Thursdays.* N.B.—We cannot publish Tenders unless authenticated by the name and address of the sender; and we cannot publish announcements of Tenders accepted unless the amount of the Tender is given, nor any list in which the lowest Tender is under £100, unless in some exceptional cases and for special reasons.]

* Denotes *accepted.* † Denotes *provisionally accepted.*

ABER.—For the erection of forty houses at Aber, Bargoed, for the Powell Duffryn Steam Coal Company, Limited. Mr. Geo. Kenshole, architect, Duffryn House, Ystrad Mynach :—

| | | | |
|---|---|---|---|
| T. Evans | £10,549 0 | J. C. Richards | £7,889 10 |
| Jenkins & Sons | 8,270 0 | Williams & Sons | 7,840 0 |
| D. W. Rosser | 8,265 0 | Davies Bros. | 7,613 3 |
| Marsh & Wride | 8,210 0 | James & Sons, Penygraig, Rhondda Valley* | 7,555 0 |
| W. Harris | 8,107 0 | | |
| Lewis Davies | 8,075 0 | | |
| Morgan & Sons | 8,045 13 | | |
| Jones Bros. | 8,026 10 | | |

ASHTON-UNDER-LYNE.—For alterations and extensions to the New Jerusalem school and church. Messrs. J. H. Burton & J. A. Percival, architects, Ashton-under-Lyne :—

Edwin Marshall, Ashton-under-Lyne (amended tender)* £689

[Eight tenders were received.]

CARDIFF.—For the erection of club premises, Barry, for the Conservative Club Company, Ltd. Mr. G. Thomas, architect, Queen's Chambers, Cardiff. Quantities by the architect :—

Richards & Evans, Barry* £2,475

[Revised estimate ]

EAST MOLESEY.—For erecting three pairs of semi-detached villas and a detached villa for Mr. J. H. Bray, Bridge House Estate, East Molesey. Mr. H. Knight, architect, London :—

Chase & Son* £6,155

EAST MOLESEY.—For erecting a detached villa. Mr. H. Knight, architect, London :—

Braid, Pater, & Co.* £1,120

ESHER.—For erecting five villa residences, for Mr C. C. Wyllie. Mr. H. Knight, architect, London :—

Wheatley & Sons* £8,100

ESHER.—For erecting six detached villas, Claremont Park Estate, Esher, for the Hon. C. J. Foley. Mr. H Knight, architect, London :—

Braid, Pater, & Co.* £5,500

GUILDFORD.—For the erection of new residence at Warwick Bench, Guildford. Messrs. Peak & Lunn, architects, Guildford :—

Martin & Co., Tonbridge, Kent* £1,702

LEWES (Sussex).—For the erection of a cattle ring in the market, for Mr. J. R. Thornton. Messrs. Findlay & Roques, architects and surveyors, London :—

| | | | |
|---|---|---|---|
| Knight | £249 15 | Errey* | £227 |

LONDON.—For rebuilding 125 and 126, Long Acre, for Mr. C. W. Woollard. Mr. E. R. Burch, architect, 1, Gresham-buildings, Basinghall-street, E.C. :—

| | | | |
|---|---|---|---|
| Bywaters | £7,390 | A. Bush | £7,035 |
| Patman & Fotheringham | 7,296 | Killby & Gayford | 6,835 |
| Lawrence & Sons | 7,120 | Blyton & Sons | 6,770 |
| Kirby | 7,050 | F. G. Minter, Westminster* | 6,700 |

LONDON.—For the erection of shops and stabling at High-street, Clapham. Mr. Francis P. Bacon, architect :—

| | | | |
|---|---|---|---|
| Hoskins | £4,741 | Howell J. Williams | £3,250 |
| Godson & Sons | 4,378 | W. Tout | 3,025 |
| Faulkner & Sons | 3,929 | | |

LONDON.—For the erection of a block of residential flats, Globe-road, E. :—

Holt & Sons, Croydon £24,108

LONDON.—For new staircase and alterations, Suffolk-lane, Cannon-street, for Messrs. James Truscott & Son. Mr. G. Gordon Stanham, architect, 100B, Queen Victoria-street, E.C :—

J. Appleby, Cornwall-road, S.E.* £3,355

LONDON.—For reinstatement after fire, of warehouse, 12, Finsbury-street, E.C., for the executors of John Mirams. Mr. G. Gordon Stanham, architect, 100B, Queen Victoria-street, E.C. :—

| | | | |
|---|---|---|---|
| F. & H. F. Higgs | £1,643 | Turnbull & Son | £1,450 |
| Killby & Gayford | 1,628 | J. Greenwood | 1,371 |
| Patman & Fotheringham | 1,573 | J. Appleby, Cornwall-road, S.E.* | 1,282 |

LONDON.—For new staging and alterations for Messrs. J. Liversidge & Son :—

J. Appleby, Cornwall-road, S.E.* £200

LONDON.—For alterations and additions at 28, Kensington High-street, W., for Mr. A. De Maria :—

Buckeridge Bros.* £1,181

LONDON.—For erecting a warehouse, Carey-street, Westminster, for Messrs. Coppin Bros. & Co. Mr. H. W. Budd, architect :—

| | | | |
|---|---|---|---|
| Carmichael | £4,196 | Mowlem & Co. | £3,129 |
| Patman & Fotheringham | 3,993 | Martin, Wells, & Co. | 3,049 |
| Snewin Bros. & Co. | 3,204 | Brookling | 2,997 |
| | | Bush | 2,857 |

LONDON.—For pulling down and rebuilding "Prospect House," Enfield Highway, N., for Messrs. Truman, Hanbury, & Buxton, Limited. Mr. Bruce J. Capell, architect, 139, Whitechapel-road, E. :—

Lawrence & Son, Waltham Abbey* £3,061

LONDON.—For alterations to the "Green Dragon" public-house, Fleet-street, for Mr. T. R. Manders. Mr. H. Knight, architect, London. Quantities by Mr. H. Branch, 25, Cheapside :—

Nicks & Co.* £5,300

LONDON.—For alterations to the "Blue Anchor" public-house, Fenchurch-street, for Mr. C. W. Shannaw. Quantities by the architect, Mr. H. Knight :—

Lascelles & Co.* £1,800

LONDON.—For alterations to the "Rose and Crown" public-house, Ship Tavern-passage, Gracechurch-street, for Messrs. Seaton & Webb. Quantities by the architect, Mr. H. Knight :—

Turtle & Appleton* £3,700

[*See also next page.*

---

* The prices for wood are shipping prices. Ten per cent., approximately, should be added in order to arrive at the current trade prices.

LONDON.—For erecting Starr's Restaurant, Shoe-lane, for Messrs. Watney, Coombe, Reid, & Co. Mr. H. Knight, architect, London. Quantities by Mr. H. Branch, 25, Cheapside, E.C. :—

Chase & Son* .......................... £3,970

LONDON.—For alterations to Nos. 272 and 274, Edgware-road, for the executors of the late E. Grove. Mr. H. Knight, architect :—

Chase & Son* .......................... £590

LONDON.—For alterations to "The Golden Anchor," Golden-lane, E.C., for Mr. G. Monger. Quantities by the architect, Mr. H. Knight :—

Barlow & Roberts* ...................... £1,340

LONDON.—For rebuilding Nos. 71 and 72, Aldermanbury, E.C. Mr. H. Knight, architect, London :—

Braid, Pater, & Co. ...................... £5,000

LONDON.—For alterations to the "Manchester Hotel," Aldersgate-street, for the "Manchester Hotel" Company. Mr. H. Knight, architect, London. Quantities by Mr. H. Branch, 25, Cheapside :—

B. E. Nightingale* ...................... £2,300

LONDON.—For alterations to the "King's Head," Old Jewry, for Mr. C. J. Shannaw. Mr. H. Knight, architect, London :—

Lascelles & Co.* ...................... £300

LONDON.—For the erection of shop and business premises, No. 124, High-street, Clapham, S.W., for Mr. J. A. Taylor. Mr. Herbert Brinsley, architect, 30 and 31, New Bridge-street, E.C. Quantities by Mr. Henry Bushell, 33, New Bridge-street, E.C. :—

| | | | |
|---|---|---|---|
| Lyle Manufacturing Company | £5,915 | Holliday & Greenwood | £5,155 |
| Freeman & Son | 5,915 | Woodward & Co. | 5,100 |
| J. & C. Bowyer | 5,293 | George Parker | 4,890 |
| John Greenwood | 5,237 | J. V. Olver, London* | 4,771 |

LONDON.—For decorations to the interior of Latimer Chapel, Mile End, E. :—

Heard & Co.* .......................... £110

LONDON.—For rebuilding the "Jolly Gardeners" beer-house, York-road, Battersea. Mr. F. A. Powell, architect, 344, Kennington-road :—

| | | | |
|---|---|---|---|
| Burman | £1,669 | W. Smith | £1,579 |
| Parsons | 1,645 | W. Hammond* | 1,490 |
| W. Smith | 1,625 | | |

LONDON.—For alterations and additions to the "Duke of Cumberland," High-street, Kensington, for Mr. G. L. Mosley. Messrs. W. E. Latchford & Co., surveyors, 51, High-street, Clapham, S.W. :—

| | | | |
|---|---|---|---|
| Hibberd Bros., Ltd. | £2,380 | Barker & Co., Ltd., Kensington* | £1,797 |
| W. R. Williams | 2,189 | | |

MILFORD HAVEN (South Wales).—For the erection of a vicarage at Milford Haven, for the Rev. E. J. Howells. Messrs. Wood & Gaskell, architects, Milford Haven, and No. 1, Finsbury Circus, E.C. Quantities by Mr. Henry Bushell, 33, New Bridge-street, E.C. :—

| | | | |
|---|---|---|---|
| K. Cole | £1,997 | Phelps & Owen, Milford Haven* | £1,895 |
| Cole & Sons | 1,950 | | |

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SHEFFIELD.—For alterations to premises in Ellin-street, Sheffield, for the Ecclesall Industrial and Provident Society, Limited. Messrs. Hall & Fenton, architects, 14, St. James'-row, Sheffield. Quantities by the architects :—

| | | | | | |
|---|---|---|---|---|---|
| C. Portas | £374 | 5 | Martin & Hughes | £319 | 0 |
| Hy. Boot | 367 | 0 | C. H. Gillam | 316 | 10 |
| Chas. Farrow | 348 | 11 | Abby & Son | 308 | 10 |
| Vasey & Son | 339 | 0 | T. Margerrison | 304 | 0 |
| Allen & Banks | 335 | 10 | Hancock, Horam-road* | 273 | 0 |
| E. Neson | 332 | 0 | | | |
| A. Turner | 330 | 0 | | | |

WESTBURY-UPON-TRYM.—For the execution of sewage outfall works, for the Barton Regis Rural District Council. Mr. A. P. I. Cotterell, C.E., 7, Baldwin-street, Bristol. Quantities by Engineer :—

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| A. J. Beaven | £18,300 | 0 | 0 | Weldon, Birmingham* | £12,084 | 12 | 11 |
| A. Krauss | 15,870 | 0 | 0 | Smith&Sons† | 11,499 | 14 | 0 |
| Meredith | 14,495 | 0 | 0 | J. & T. Binns (informal) | 10,444 | 8 | 10 |
| Shattock | 12,733 | 0 | 0 | | | | |

† Withdrawn.

WHITCHURCH (Cardiff).—For the erection of semi-detached villas at Station-road, Whitchurch. Mr. D. Pugh-Jones, architect, Grongar House, Llandaff :—

T. Taylor, Pontypridd* .................. £1,140

WOLVERHAMPTON.—For the erection of schools, Gatis-street, for the St. Andrew's School Managers. Mr. F. H. Lynes, architect, Lichfield-street, Wolverhampton :—

| | | | |
|---|---|---|---|
| Willcock & Co. | £2,850 | H. Gough | £2,670 |
| F. W. Beard | 2,835 | J. Herbert, Hartley-street* | 2,645 |
| F. L. Jones | 2,834 | G. Cave | 2,587 |
| T. Tildesley | 2,688 | | |
| T. Skett | 2,685 | | |

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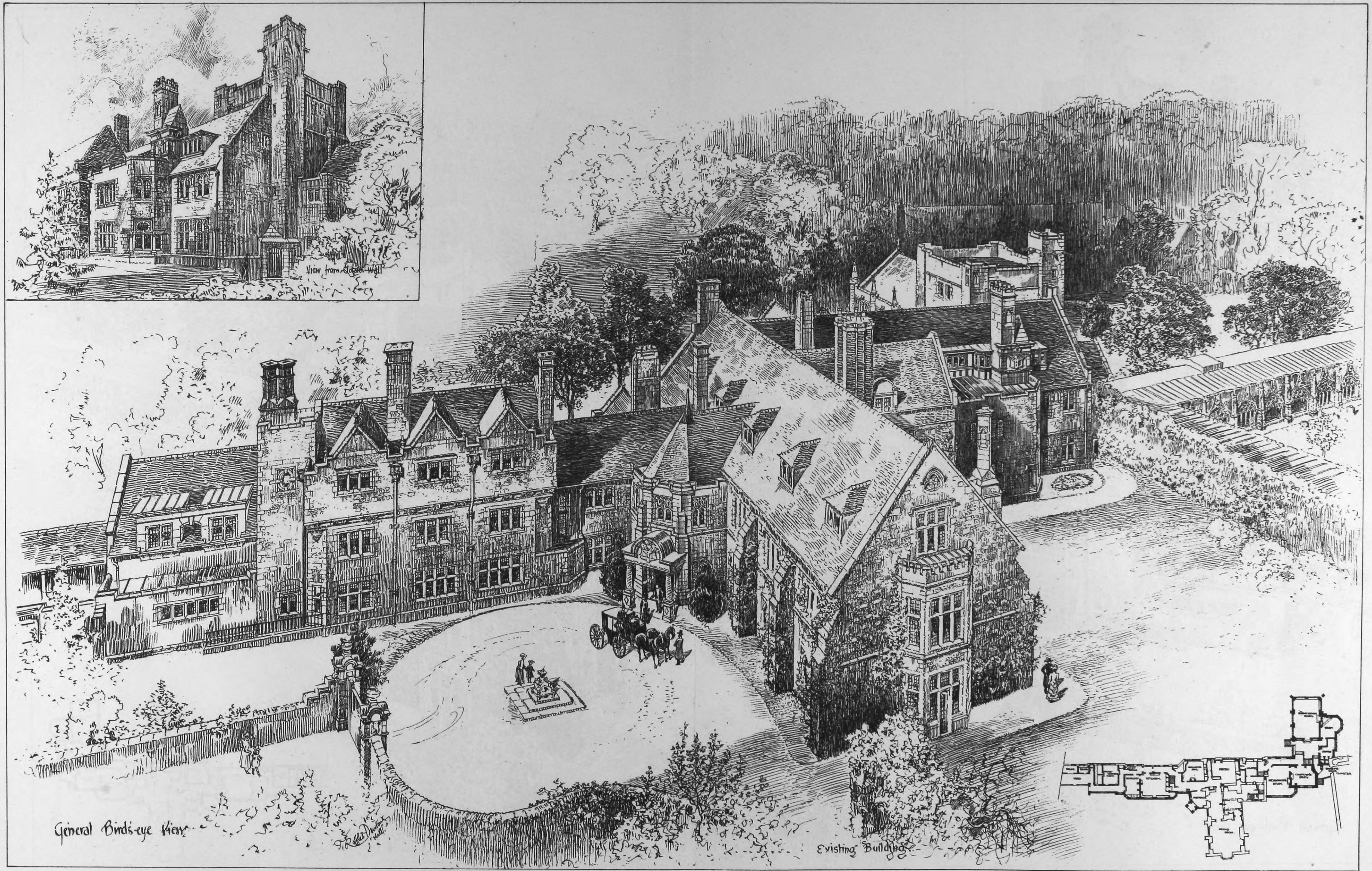
View from Cloister Wall
General Bird's-eye View
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Existing Building

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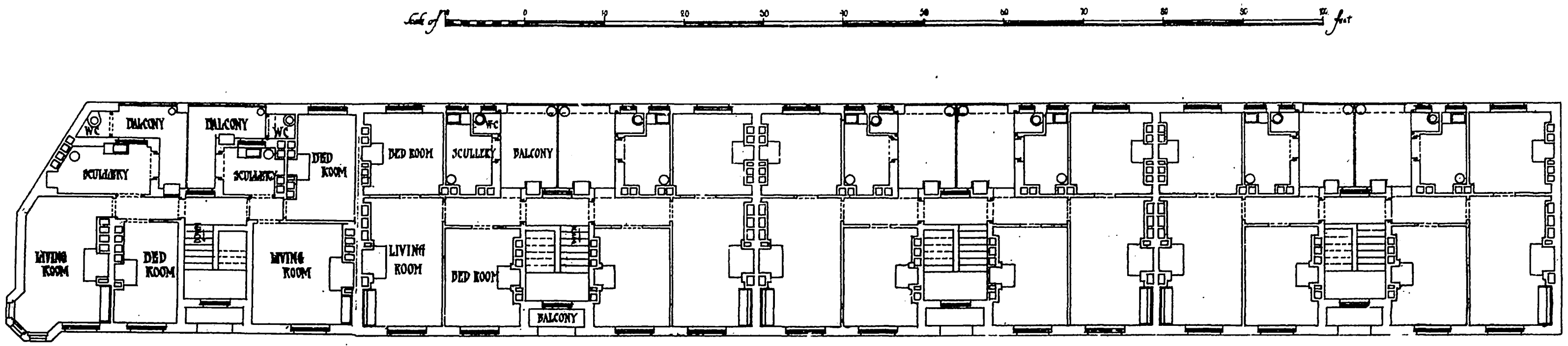
Scale of feet
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80
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BALCONY
WC
SCULLERY
BALCONY
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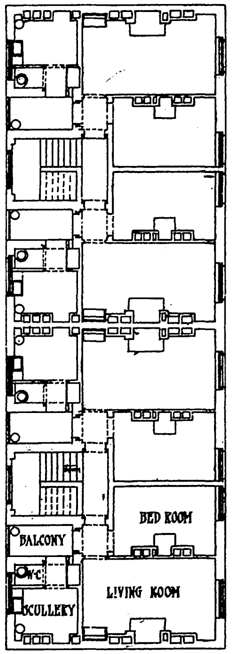
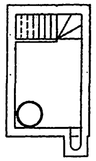
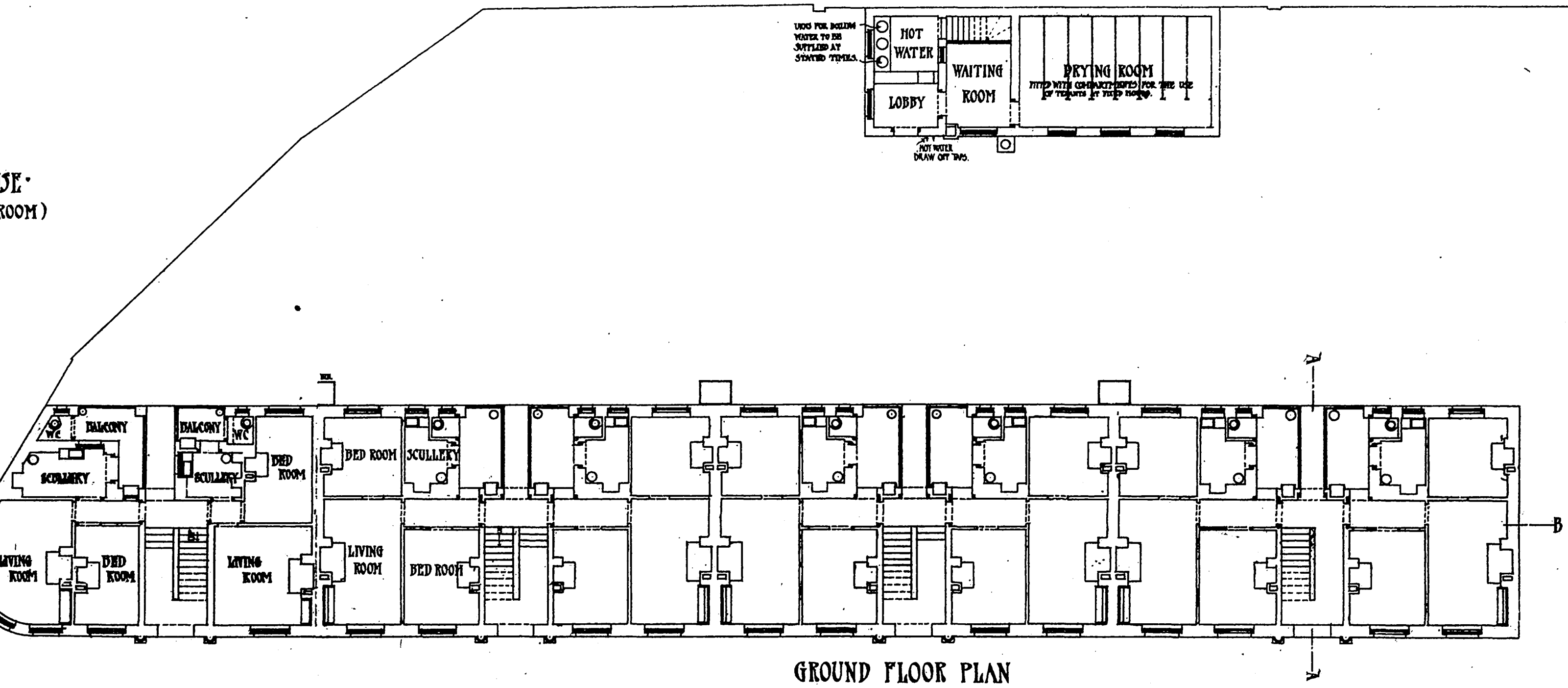
WC
BED ROOM
BED ROOM
SCULLERY
WC
BALCONY
LIVING ROOM
BED ROOM
LIVING ROOM
LIVING ROOM
BED ROOM
BALCONY

FOURTH FLOOR PLAN

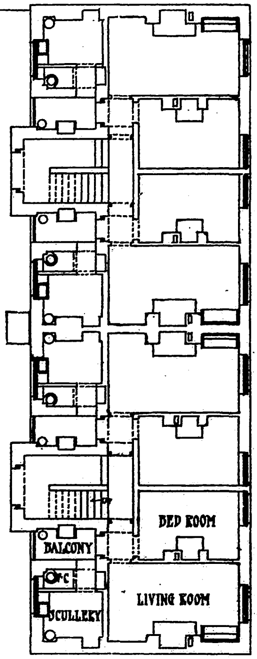

BED ROOM
BALCONY
WC
LIVING ROOM
SCULLERY



·BOILER HOUSE·
(UNDER WAITING ROOM)


URNS FOR BOILING WATER TO BE SUPPLIED AT STATED TIMES.
HOT WATER
LOBBY
WAITING ROOM
DRYING ROOM
FITTED WITH COMPARTMENTS FOR THE USE OF TENANTS AT FIXED HOURS.
HOT WATER DRAW OFF TAPS.
WC
BALCONY
SCULLERY
BALCONY
WC
SCULLERY
BED ROOM
BED ROOM
SCULLERY
LIVING ROOM
BED ROOM
LIVING ROOM
LIVING ROOM
BED ROOM
A
A
B

GROUND FLOOR PLAN


BED ROOM
BALCONY
WC
LIVING ROOM
SCULLERY

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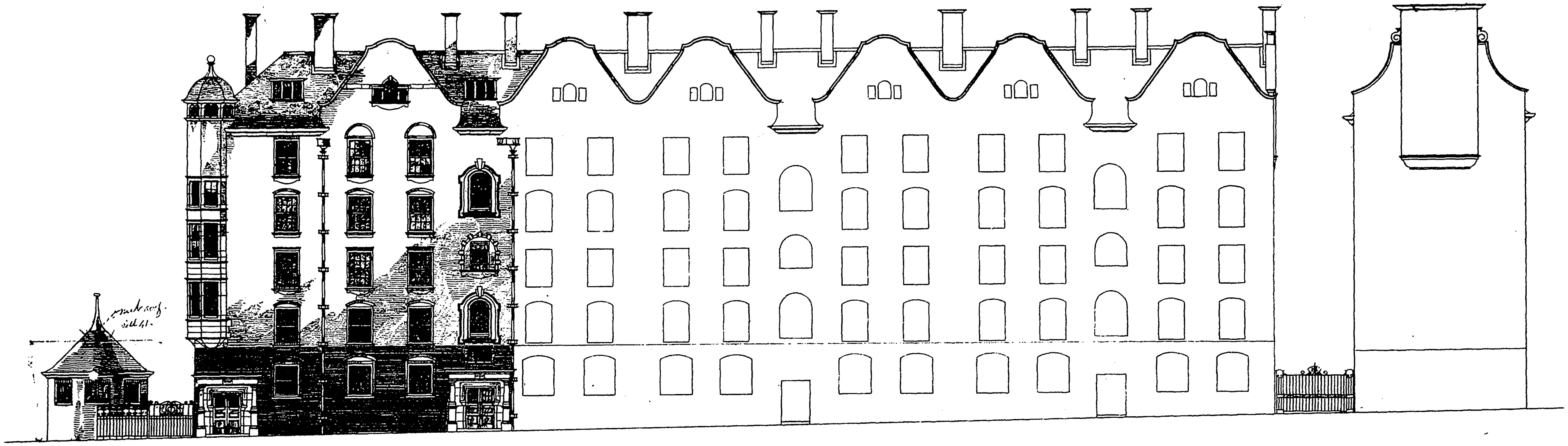
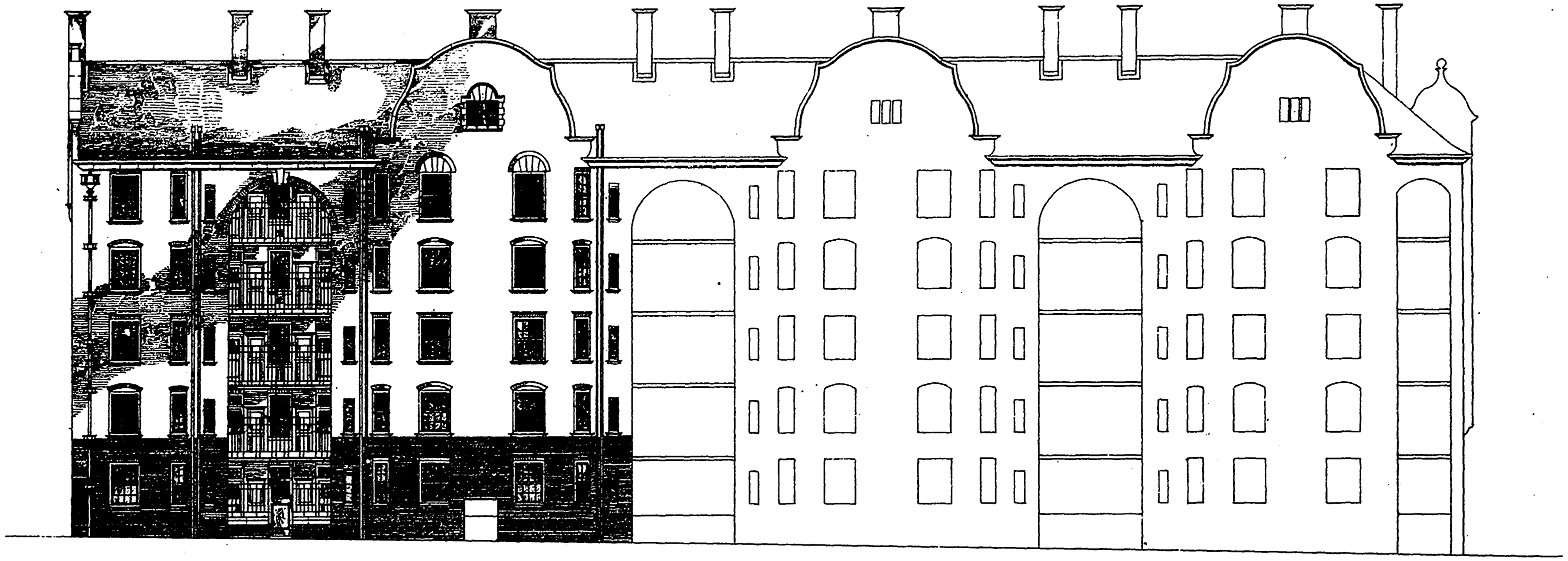


THREE ROOMED TENEMENTS - FRONT ELEVATION



THREE ROOMED TENEMENTS - ELEVATION TO COURTYARD

Scale of 10 0 10 20 30 40 50 60 70 80 90 100 feet

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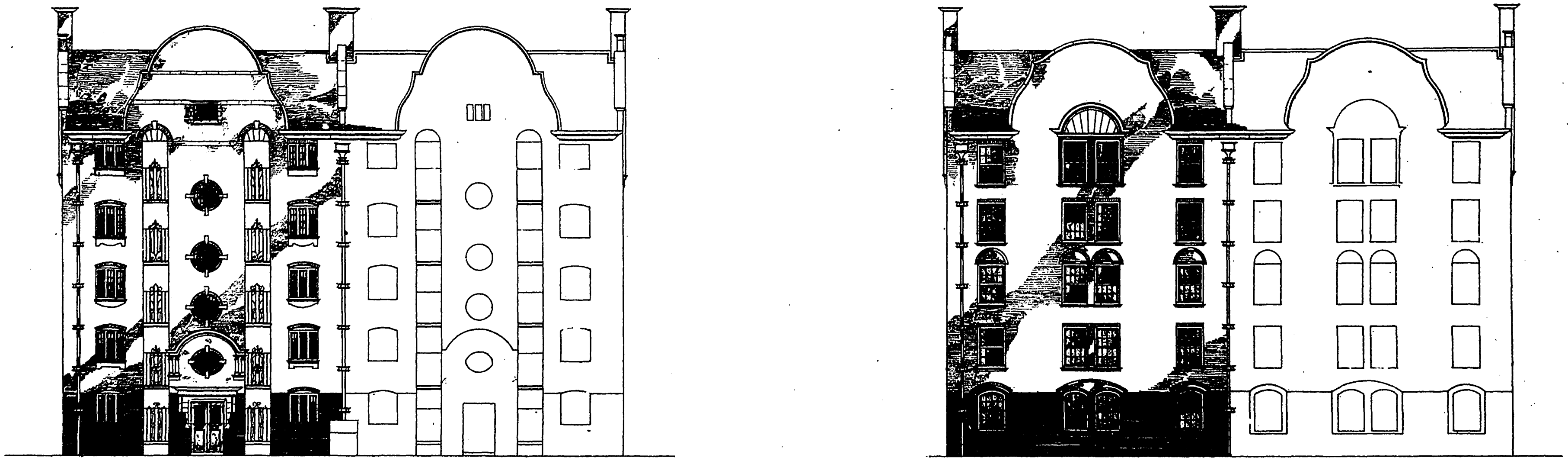
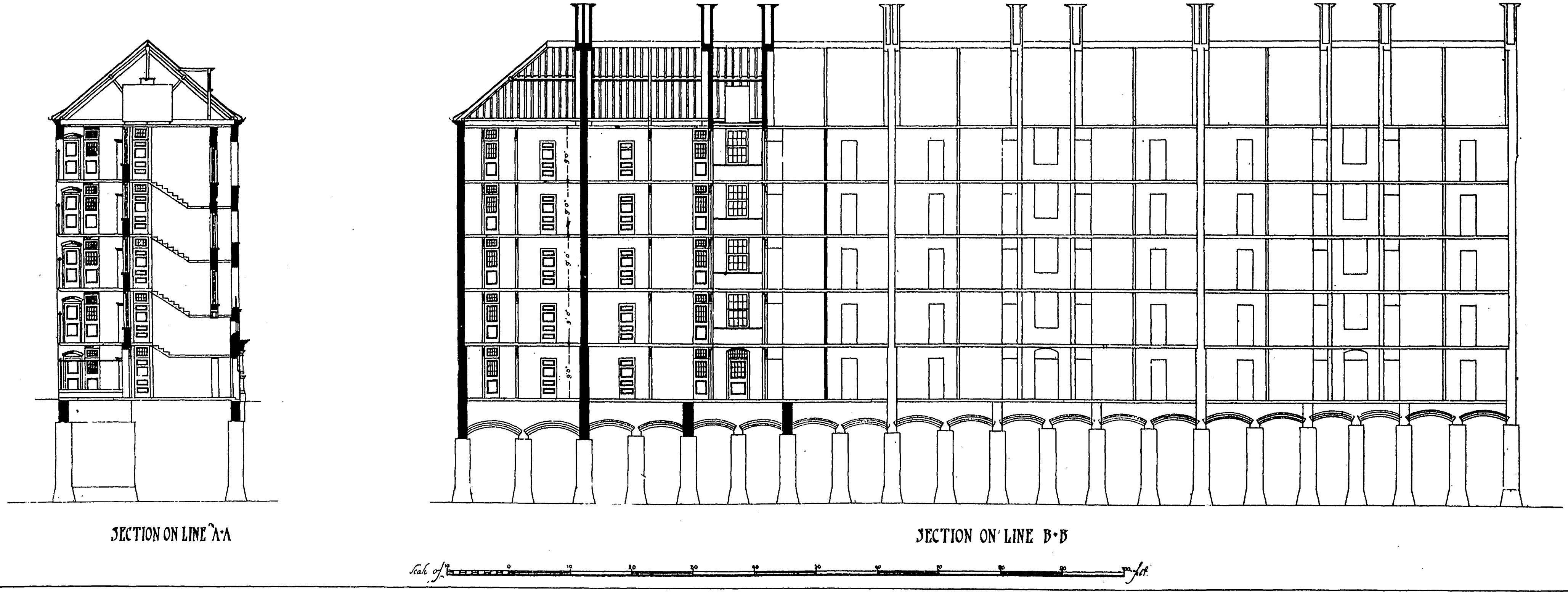


TWO ROOMED TENEMENTS - ELEVATION TO COURTYARD

TWO ROOMED TENEMENTS - ELEVATION TO VACANT LAND



SECTION ON LINE A·A

SECTION ON LINE B·B

Scale of feet
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90
100

PHOTO-LITHO. SPRAGUE & Cº Lᵀᴰ 4 & 5, EAST HARDING STREET, FETTER LANE, E.C.

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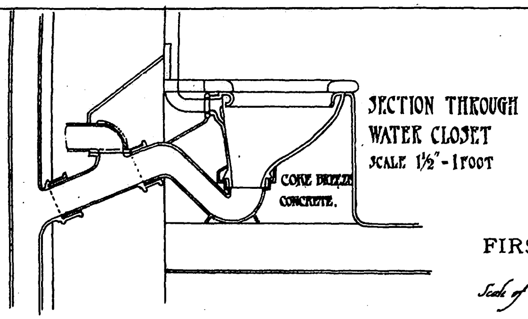
COKE BREEZE CONCRETE.

SECTION THROUGH
WATER CLOSET
SCALE 1½"-1 FOOT

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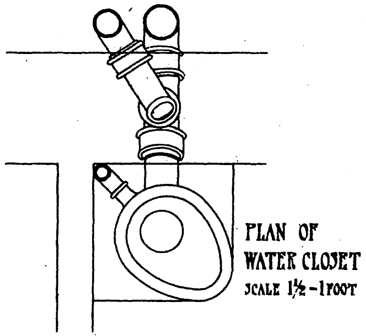
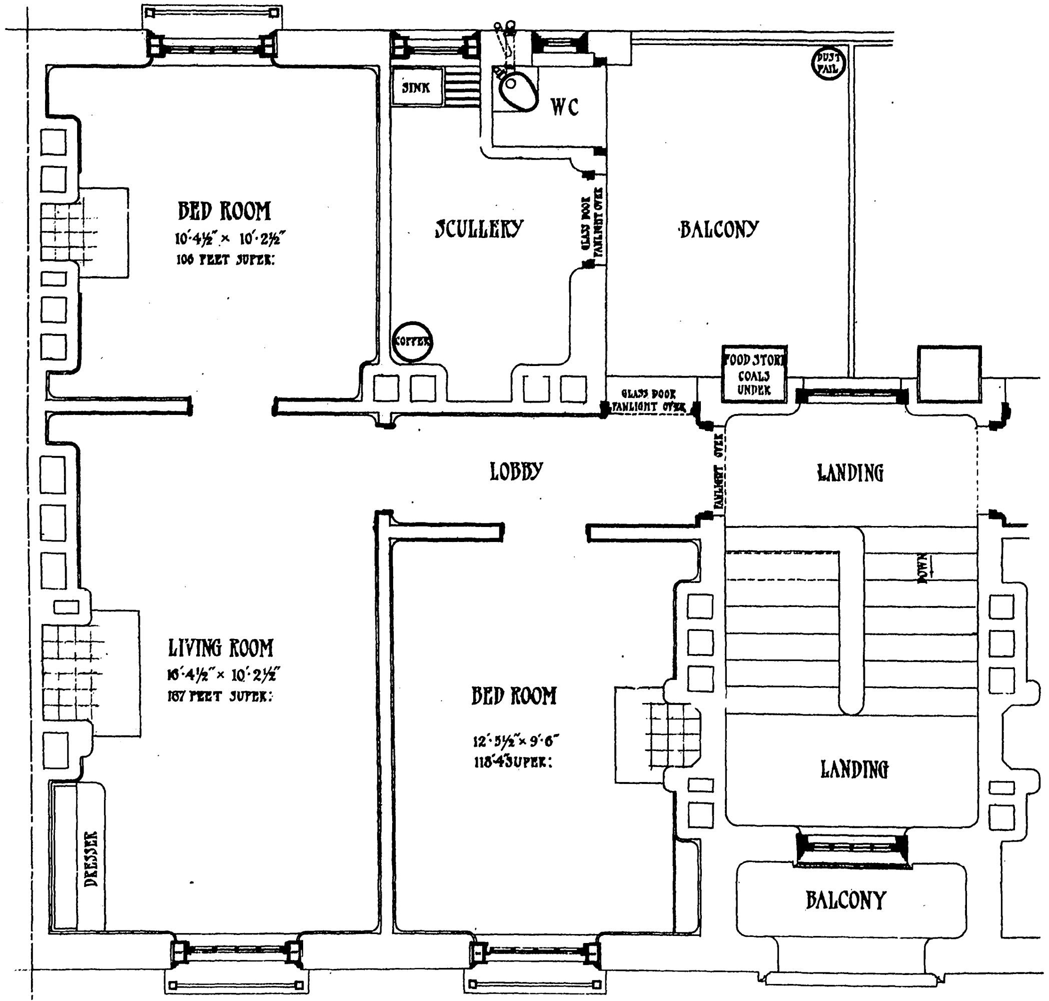
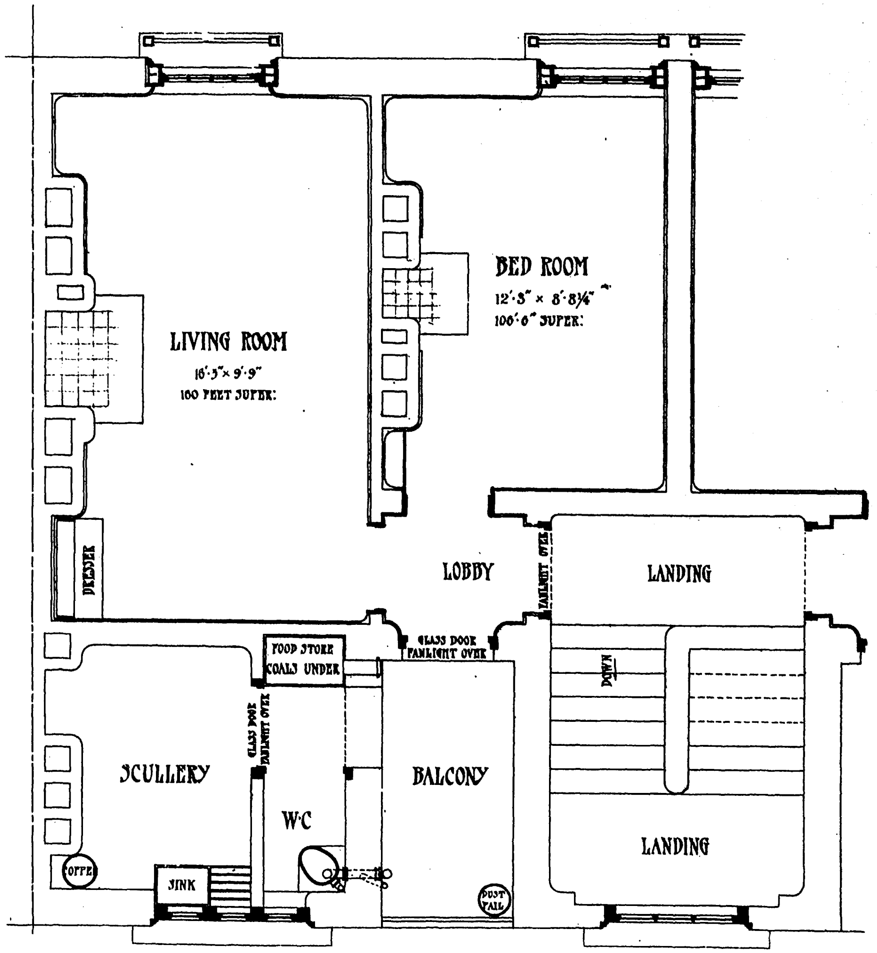


PLAN OF
WATER CLOSET
SCALE 1½-1 FOOT


SINK
WC
BED ROOM
10'·4½" × 10'·2½"
106 FEET SUPER:
SCULLERY
GLASS DOOR FANLIGHT OVER
BALCONY
DUST PAIL
COPPER
FOOD STORE COALS UNDER
GLASS DOOR FANLIGHT OVER
LOBBY
LANDING
FANLIGHT OVER
DOWN
LIVING ROOM
16'·4½" × 10'·2½"
187 FEET SUPER:
BED ROOM
12'·5½" × 9'·6"
118·43 SUPER:
LANDING
DRESSER
BALCONY

·THREE ROOM TENEMENTS·
PLAN OF FOURTH FLOOR


BED ROOM
12'·3" × 8'·8¼"
106'·6" SUPER:
LIVING ROOM
16'·3" × 9'·9"
160 FEET SUPER:
DRESSER
LOBBY
FANLIGHT OVER
LANDING
FOOD STORE COALS UNDER
GLASS DOOR FANLIGHT OVER
GLASS DOOR FANLIGHT OVER
DOWN
SCULLERY
BALCONY
W·C
LANDING
COPPER
SINK
DUST PAIL

TWO ROOMED TENEMENTS
PLAN OF FOURTH FLOOR

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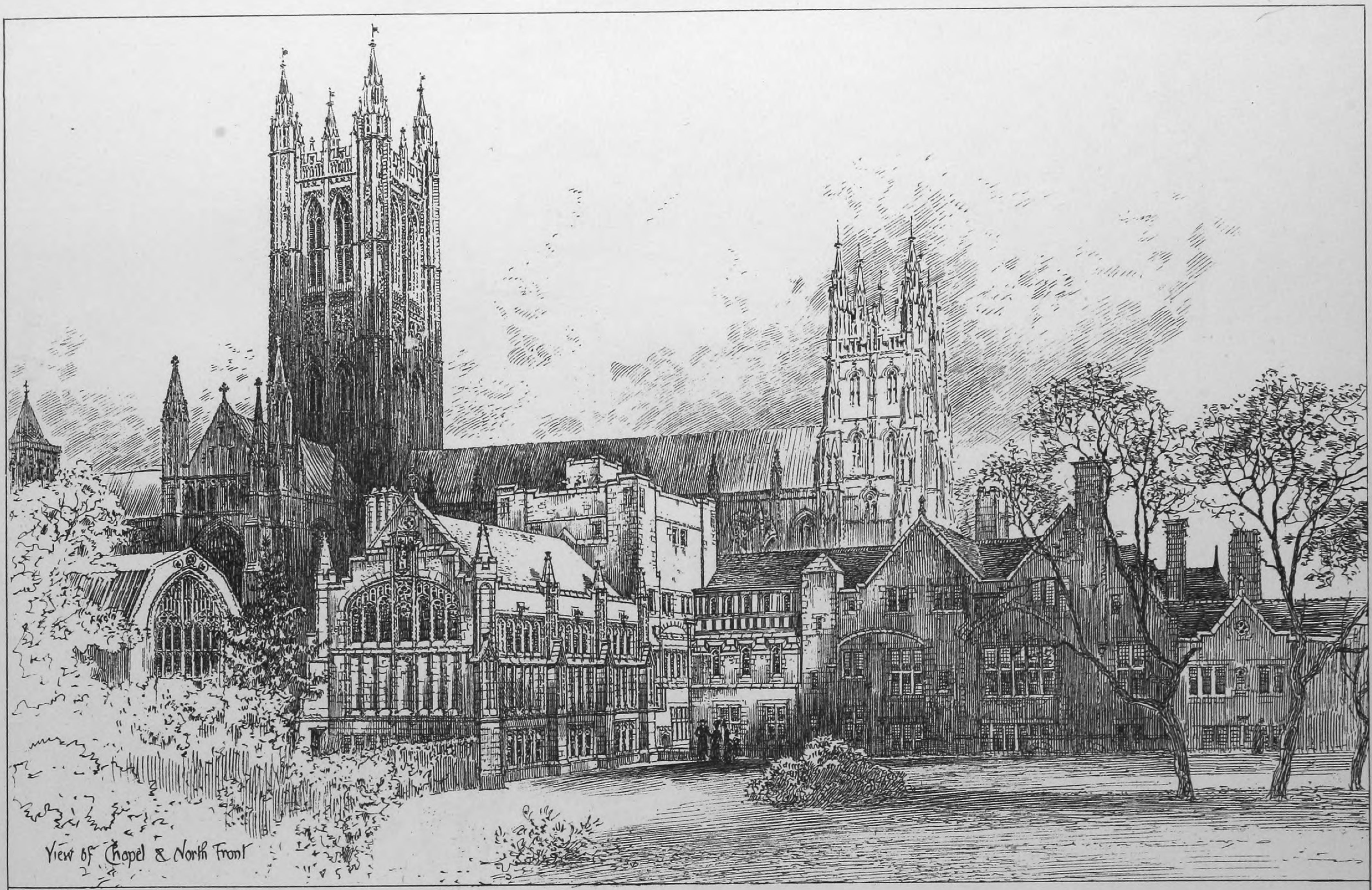
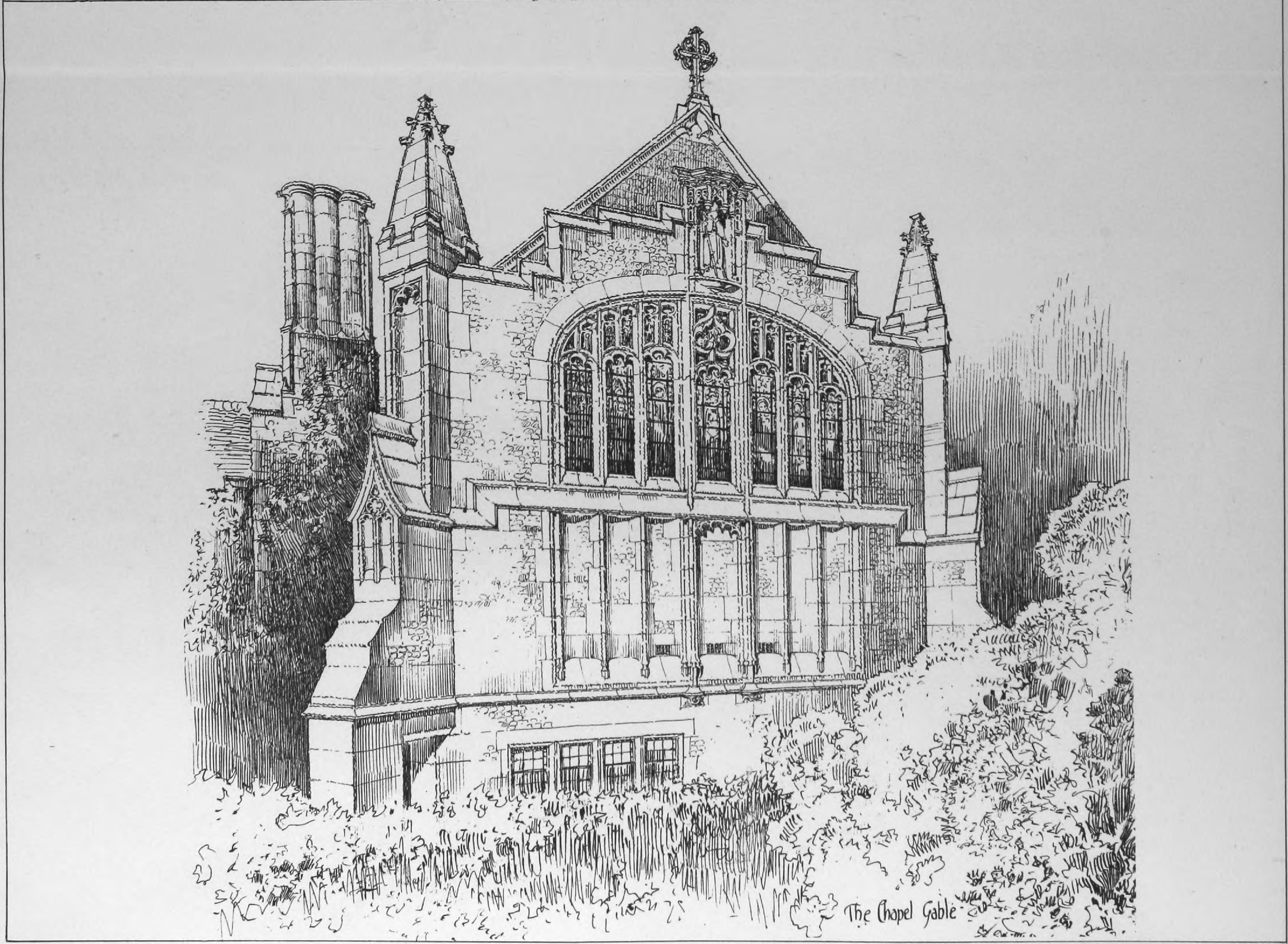


View of Chapel & North Front



The Chapel Gable

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VOL. LXXVI. No. 2936. MAY 13 1899.

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## *Architecture at the Paris Salons.*

THE architectural drawings at the Old Salon are of more general interest than last year, as there is more variety and a greater proportion of drawings representing executed work; there seem at last to be some signs of a reaction against the hitherto almost exclusive attention to ideal *projets* and restorations of classical buildings. Not that these latter are not of interest, but one wants to have some representation also of the architecture of the present day, instead of living entirely in an ideal.

It must be admitted, nevertheless, that the monumental sets of drawings of an ancient temple restored, one of which has usually appeared in the architectural room, have in general formed the most attractive item in the show. This year the place is taken by M. Boutron, a pupil of MM. Guadet and Raulin, who exhibits a set of drawings of "État Actuel et Restauration des Thermes d'Augusta Trevirorum (IV^e^ siècle)." These are not such huge and striking drawings as one has sometimes seen in this class of exhibit, but they are a very fine set and highly creditable both to the industry and inventive faculty of the author, since they are built on a very small foundation of fact, the perspective of the actual state of the ruins showing indeed a nearly complete plan, but little remaining of the walls above the surface of the ground. Nevertheless, this performance has its value and interest; no one could have built up such a structure on the basis of these scanty remains without preparing for it by a most thorough study of Roman architecture, which is riveted in the memory by the application of it in the drawings. The perspective section of the restored building is, as usual with French architects, an admirable piece of draughtsmanship. The author also adds some very well executed water-colour sketches of capitals and fragments of sculpture found on the site. Another contributor to classic restoration is M. Chaussemiche, who sends some fine drawings of the details of the Temple of Mars Ultor, and some studies in Renaissance architecture, of which those of a house in Rome, and a large clean line drawing of a monument (name not given) are especially praiseworthy.

Among designs which are obviously for ideal and not for practical purposes there are some that are not without interest. M. Despeyroux, for instance, exhibits a perspective view and detail drawings of "Un Amphithéâtre pour les Oraisons Funèbres," a rather striking conception, and, considering how fond the French are of funeral orations over the graves of eminent men, not without its practical significance. The design is French neo-Greek, and shows an architectural wall or screen forming a segment of a circle, while facing its concave side is a stone amphitheatre for the "assistance." The bier is supposed to be placed on the chord of the arc formed by the screen wall, the speaker to stand probably behind it, the concave wall assisting to throw forward the sound of his voice. This is a rather new idea and, from the French point of view at all events, is really of some value, though it would be of little use in England, where we preach sermons or write articles on deceased persons, but do not make speeches over their graves. The drawback to the design is the same that meets us constantly in modern French design of the Classic type viz.: the peculiar style of detail which seems to have been evolved by academical training working on a basis of study of the antique. It is difficult to define exactly in what the objectionable character of this academical classic architecture consists; perhaps it may be said that the most prominent characteristics are a coarseness in the mouldings, and a peculiar manner in which details of various kinds seem to be affixed to the design, as if they were nailed on, rather than forming an integral portion of it. These characteristics are not seen at their worst in M. Despeyroux' design just mentioned; we find them rampant, however, in other and larger drawings, such as the design for "Un Casino," by M. Narjoux, or in M. Hulot's immense and visionary scheme for "Une Église Votive"—a stupendous façade on a mountain of a podium, with flights of steps in front and a sloping carriage road at each side; as for ecclesiastical character, according to English feeling, there is none. A more reasonable and interesting design among the class of *projets* is that of that able architect, M. Loviot, for "Une Grande Salle des Fêtes et Cérémonies et une Exposition de l'Agriculture et des Aliments," proposed to be formed within the Galerie des Machines for next year's Exhibition. This is a construction, elliptical on plan, proposed to be erected on the floor of the gallery in question, near its western extremity, to be built up of carpentry and "staff" and requiring no foundations. The design shows a great neo-Classic screen with an order and a colossal gilt statue in the centre, with the elliptical area in front of it defined by an enclosing arcade on each side, the "Exposition des Aliments" to be in the galleries over the arcade. The characteristic promise is added, "un nombre illimité de personnes peut assister aux cérémonies"; so like the French passion for functions on a great scale. There is probably no intention of carrying out the scheme; it is a bid on the part of the architect; but as a design for a temporary exhibition structure it is highly creditable to his talents, the only drawback being that same disagreeable type of neo-Classic detail which has been nourished by the École des Beaux-Arts.

Among other designs worth mention is that by M. Félix Debat for "Un Cercle de Jeunes Artistes et Littérateurs," which certainly must be a club on a remarkably extensive scale, to judge from the scale of the building. This is probably a design made for a Beaux-Arts competition, and if so, serves as an illustration of the mistaken policy on which the architectural school is conducted, by which students are encouraged to treat in an ideal and wholly impossible fashion subjects which ought to be limited to what would be likely to be practically required and carried out. Our own students' competitions at the Royal Academy, though the results look very tame and even feeble in comparison with the grandiose drawings of the French students, have this at all events to recommend them, that they are usually such buildings as could under practical conditions be actually built. M. Debat's design, however, deserves recognition as a fine conception and as showing greater refinement of detail than many of the Classic designs. We may contrast with this the drawings of what seems to be an actual club-house, of a special character, by M. Garin : "Société Nautique de T—— sur L——; Cercle et Pavillon des Régates." It is true that the suppression of the name of the site looks rather suspicious, as if this also were an imaginary design; but at all events it is one that could be carried out, and as a design for a regatta club-house it is an excellent example of the faculty which one frequently sees so well illustrated in French architecture, of giving a special character to a building as expressive of a special purpose. This is a picturesque erection consisting of a centre square pavilion and a smaller one at each end, connected by long galleries intervening; the centre pavilion is treated as a square tower with battered sides, apparently finished externally in white cement, the end ones forming similar but lower towers, and each of them surrounded at the same height with a timber railed gallery, bracketted out on sloping timber struts; a similar gallery is repeated at the top of the centre tower: these projecting galleries, with the sloping struts, recall the appearance of the "tops" in a large square-rigged ship, the whole being a kind of shiplike house, and exactly expressing the idea of a nautical club-house. A "Salle de Concert" by M. Mirbeck, with a circular auditorium and an elliptical vestibule, has merit as a design, but is not a practical plan, especially in the orchestra, which is a theatre stall rather than an orchestra for a concert-room. Two or three designs for a "Salle de Séances Publiques, pour l'Institut," seem to show that there has been a competition of some kind for this class of building; that by M. Bouvier is more noticeable for stateliness than for convenience of plan, but the elevation is in a purer Classic style than we generally find among these drawings. A design for the same purpose by M. Moisand, a neo-Classic building with a large low dome and a large vestibule in the form of a narthex, is worth notice, chiefly for the masterly way in which the effect of the interior is indicated in the coloured sections; not very highly finished but most effective in handling, and quite supplying the place of an interior perspective. Among the same class of exhibits we may mention M. Chifflot's very fine design for "Une Salle de Concerts dans un Parc," the main feature of which is a dome with a very large centre skylight, the remainder of the surface treated in faïence in the same way that the domes of two of the 1889 Exhibition buildings were treated by M. Formigé. The domed centre compartment is surrounded by an arcaded cloister with an engaged order between the arches, interrupted at the cardinal points by a massive vestibule, with an entrance arch, with coloured mosaic decorations above the doorways. It is a kind of building far too sumptuous to be carried out on an economic basis by any private company or owner, but it is certainly a very interesting design in an architectural sense.

To come to some of the buildings either executed or of the "probable, possible sort," we find a most practical building in the "Entrepôt pour la Chamber de Commerce, Dunkerque," by M. Friésé; a great oblong block of brick warehouse, the windows deeply recessed, in sets, between wide and massive brick piers, and crowned with an oversailing parapet on boldly projecting brick corbels, connected by arches. The angle pinnacles are ugly, but not without character, and the whole is a good honest piece of brick building in a bold and massive manner. Another and more interesting exhibit is the church of Sainte-Clothilde at Reims, by M. Gosset; a church built under the auspices of Cardinal Langénieux, as a commemorative movement of the centenary 1896 (centenary of what ?). This is a far more grave and severe style of ecclesiastical building than we generally find among modern French church designs; Byzantine in style, and with something of the simplicity of genuine Byzantine architecture; not the restless, fidgety manner which we see in the neo-Byzantine style which is rather in favour for modern French churches. The plan is a tri-apsidal one of three equal apses, to east, north, and south of the centre space, with a very short square nave in front; the materials are brick and stone, with long very simply treated windows rising to the roof-springing. The centre space is covered by a semi-circular masonry dome, above which is an iron-framed dome as an exterior feature, the proportions between inner and outer dome being about the same as at St. Mark's. The sections show an elaborate system of mosaic decoration. Altogether this is a notable church design. Near this is M. Laborey's church of Notre-Dame de Sion, at Trieste, a modern Gothic church in stone, with the plan with small aisles for passage only, hitherto less common in modern churches in France than in England. The triforium gallery over the narrow aisles is carried on elliptical arches between the piers, and fenced with an elaborated traceried balustrade. The interior perspectives are drawn and coloured in a most solid and finished manner. A curious point in the interior treatment is that the vaulting-ribs are decorated in colour for a distance of three or four feet from the intersection only, the colouring being then "stopped" by a gilt scroll ornament. The effect is rather piquant.

A few other church designs, either for building or restoration, may be noticed in this connexion. M. Trinquesse's "Monastère des R. P. Carmes," at Paris, is an example of a modern Romanesque church with a large cloister to eastward of it; this is the best part of the design, the details of which generally are not attractive. In M. Prioul's reconstruction and restoration of the church at Saint-Suliac (Brittany), it is difficult to say which is reconstruction and which is entirely new work, but probably the tower and spire are new; they exhibit the poorest characteristics of French modern Gothic, being hard and wiry in detail. M. Balleyguier exhibits a drawing and an "essai de restoration" of the church at Triel (Seine-et-Oise), in which the centre portion of the plan shows a most curious and inexplicable irregularity of placing of the piers, and consequent twisting of the vaulting lines, in the central portion of the plan near the crossing; it produces almost the effect of the paper being crumpled, but is evidently a careful record of facts. One would like very much to know what were the circumstances which led to this curious piece of irregularity in mediæval setting out. The nave is four-aisled, or rather, there is an extra aisle tacked on to the south side. Both in this case and in that of the Abbey Church of Redon (a restoration scheme by the same architect) we see the phenomenon of a lofty and elaborate choir with a very low nave, much lower than the choir, and in the case of Redon evidently a nave of the modern or "debased" period, replacing, in a utilitarian spirit, a loftier mediæval nave. How much of the loftier and more elaborate choir, in each case, is original and how much restoration, the drawings give no clue. Then there is a very large and elaborate set of drawings, by two architects, M. Guédy and M. Jules Viatte, for an entire rebuilding and decoration of the abbey church of Jumièges; a printed pamphlet accompanies the drawings, copies of which are offered by an emissary to any one who is detected in the act of making notes. ("Surely in vain the net is spread in the sight of any bird.") The whole is evidently a grand bid for a job from the Commission des Monuments Historiques; it is to be hoped that considerations of cost, at all events, will knock that on the head; one can hardly expect any better motive after what one has seen done under the auspices of that terrible "Commission."

Among the examples of house architecture that is actually carried out or to be carried out there are several good designs. The "Maison de Rapport" in the Rondpoint Bugeaud, by M. Gabriel Morice, shows a good plan; the exterior is in the usual style of the Parisian stone house front, in which the various examples are so alike in their general manner that there is little to distinguish between one and another; they are always dignified and rather decorative in style, but while they never sink below a certain level they unfortunately never rise above it. This general similarity in the Parisian street house architecture is no doubt one of the qualities which gives to the better class of streets in Paris their generally fine and monumental appearance, but it is accompanied by the drawback of an almost entire want of character and individuality. Among the drawings for the one now under notice is a small pen sketch of a "cheminée"—mantel and overmantel, as we should say—labelled as "style Anglaise," which under this heading will rather amuse the English visitor. The same architect's "Maison de Rapport" in the Avenue de la Grande Armée has the same kind of merit as the other example, with a plan cleverly fitted into an angle site. A house in the Avenue des Champs Elysées, by M. Friésé, is also on an angle site, and has a circular staircase well placed in the re-entering angle at the rear of the buildings, approached by a vestibule and lobby entered from the outer angle; the exterior is shown in a sumptuous perspective drawing, and is a very good example of the prevalent style. A more interesting example of house architecture than any of these is M. Juste Lisch's "Hôtel à Cognac." In this plan the main rooms of the house are included in a block of three or four stories at the left hand of the site; at the right hand is a one-story block connected with the other block by a long gallery also in one story, the floor level of which is below the ground floor level of the main block, and connected with it by steps and a gallery at the end. This would be an unusual and effective internal plan; the defect is in the staircase, which is comprised in a circular turret of rather small dimensions, and is not of sufficiently spacious character for the general style of the house. The architectural treatment differs from that of the usual French house, and may be described as the château style modernised. The extraordinary productions which the French call "maisons à campagne" are fortunately less numerous than usual, but there is one truly characteristic specimen, the "Villa" by M. Chas. des Anges, in which the treatment of the roofs gives the house the appearance of a collection of immense "poke-bonnets" of the old school. Why the French architects take pleasure in the construction of such absurdities it is impossible to understand; in designing town houses they are rational—in country houses they seem to run mad; but we presume there must be a demand on the part of owners for country houses of this burlesque type, or at all events an acquiescence in it, or they would not continue to be built.

M. Legriel exhibits a design for the rebuilding of schools, or what is usually called in France a "groupe scolaire," at Clichy, which (as usual with French schools) might be rather taken for a mill or warehouse; and the same remark applies to M. Guyon's combination of "Groupe Scolaire—Salle de Réunion, Mairie, et École Maternelle," erected last year for the Commune of St. Maurice. This appears to be a building only half carried out, to be completed by an additional block similar to that already erected. The fact that all French school designs have this prison-like and forbidding architectural expression seems to imply something very wrong in the French educational system, if the building is the reflection of the style of education. M. Bérard's "Groupe Scolaire" for the town of Stains is less objectionable in this respect—a plain white building with large windows. All these new schools are, we believe, admirably sanitated, and in this respect might be a lesson for some of our schools in England; but it is a pity that they do not exhibit any of that home-like and semi-domestic appearance which English architects rarely fail to impart to school buildings, and which certainly tends to put a pleasanter and more attractive face on education. With these may be classed M. Joanny Bernard's excellent plans of the "Ecole Supérieure de Commerce" in the Avenue de la République, consisting of two wings the ends of which front the principal street, with a lower building connecting them. There is no order here, but a plain expanse of wall with the plinth and cornice effectively designed, and the windows arranged so as to be expressive of the utilitarian requirements of the building; everything is in good taste and suitable to the object of the design.

Among other practical examples of civil architecture M. Heneux' barracks for the municipal Sapeurs-Pompiers at Montmartre is a highly creditable work, in brick with stone dressings, and treated with some architectural effect but not outstepping the utilitarian character proper to the class of building. The new children's hospital in Rue Michel-Bizot, Paris, by M. Maistrasse, is shown in a large and fine set of drawings—plans, bird's-eye view, &c.; a well planned building on the modern system, in pavilions interspersed with gardens. Among designs for civil architecture M. Devillard's competition design for the reconstruction of the Hôtel de Ville at Versailles, which received a premium in the competition, deserves notice as of more than average merit. The buildings are planned round a centre courtyard and garden; the elevation is a harmonious and well-balanced Classic design, with an order of coupled columns on a rusticated basement, and with much purer and better Classic detail than in many examples. One may contrast with this M. Henri Guillaume's design for the "Théâtre des Bonhommes Guillaume," which can only be described as clever but impudent—a piece of architectural grotesque.

Schemes for the restoration of châteaux are, as usual, rather numerous, and are in almost all cases interesting from the beautifully-executed drawings of the château as existing, which generally form part of the set. Among these are M. Lafargue's "Château d'Herbault en Sologne," in which the coloured elevation of the chequered brickwork building, with its round angle towers, reflected in the moat, is a beautifully-executed drawing, having almost the effect of a view. The plan is of that curiously naïve type of which examples are to be found in Du Cerceau—an oblong with round towers at two of the angles and angular projections at the other two, the interior being cut up into compartments in the most primitive fashion, without any regard to planning in the modern sense of the term. The towers are capped with prodigious cones of slated roof. M. Guinot's drawings for the restoration of the château of Contenson (Loire) are also a beautiful set, especially the detail elevation shaded in Indian ink. Another set of drawings which should not be passed over is the very curious and clever scheme for a sanatorium by M. Hannotin, which is apparently put forward as intended to supply the needs of the new cure for consumption by open-air living. It is a white building carried out in steel and concrete—the section of the steel framing is given, but it is invisible in the complete design—which shows a range of deeply recessed lofty arched openings running the whole height of the building, occupied by tiers of wooden galleries for sitting or lying in the open air; the back of the gallery is the windowed partition forming the front of the living room, if it can be called so, since the object is to be as much out of it as possible. The building is not only rendered very effective and original, in an architectural sense, in the drawings, but the scheme really seems to have a practical value, in spite of the odd and rather startling appearance of the design.

Among the designs of purely decorative character one is shown by a model; a monument in white marble erected at Monaco, and designed by M. Narjoux. This is an oblong tomb with a canopy supported by square battered piers at the angles; a draped figure is seated on the balustrade in front; in the rear of the podium is the entrance to the tomb, beneath a segmental pediment. M. Ledoux exhibits an interesting design for a wall decoration in fresco, in which architecture is treated decoratively; a colonnade is represented in front, with vases and flowers in each bay, with an architectural background painted as if curved on plan and in lighter tints than the front portion. The idea is novel and very well carried out. M. Delahaye's study for a "Carte de Manœuvres" (an admission ticket apparently), designed for the War Office, is a good application of decorative design to this kind of object. M. Guillaume's sketch for the monument to Henri Pille (the monument itself is exhibited in the sculpture section) consists of a stone pedestal supporting a screen which forms the background to a bronze portrait bust; the stone details are rather "lumpy," but the whole thing is well conceived. Ecclesiastical decorations, of which there are two or three examples, are mostly uninteresting and to an English eye quite the reverse of ecclesiastical in style and feeling; but no doubt there is, to vary Burke's phrase, a "geographical taste" in these things.

Among drawings illustrative of existing architecture one of the most elaborate sets is a complete measured illustration of "Les Edifices de la Place Saint Marc" at Venice, including a plan in which even the pavement is drawn out in detail. This is exhibited by M. Gromort, in collaboration with M. Louis Sue. Among others M. Ch. Chauvet exhibits a fine drawing of a decoration in faïence at Savone—an armed figure on a background of geometrical tile pattern; this forms a portion of a projected work in illustration of pavement and tile *revêtement* of the Renaissance epoch, which should be of value if all the illustrations are equal to this in interest and in completeness of execution. M. Chedanne exhibits a very fine set of drawings of Roman wall decoration in colour from various buildings; M. Ernest Gaston has a set of measured drawings of the Cistercian Abbey of Longpont; M. Adolphe Gilbert a beautiful water colour drawing of a portion of the Parthenon; M. Hista a large frame of sketches from Versailles; M. Le Feuvre illustrates the cathedral of Le Mans, including among the set a very fine perspective view; M. Monestel sends a set of drawings of the church of St. Maximin, which are quite a study of what can be done in measured drawings; and M. Morard exhibits a very large and fine shaded elevation of the tomb of Margaret of Austria in the church at Brou.

Architecture in the New Salon may be passed over in very few words, the principal drawings consisting in wild dreams, or rather nightmares, such as the "Temples pour les Religions Futures" by M. Garas, of which the less said the better. In the section of architecture is included, however, a sketch model of a really fine monument to Puvis de Chavannes, in which the artist is represented as seated, in classical drapery, on a rock which is supported on the upper portions of four Doric columns with their entablature, which rise from among a mass of rocks and débris; there is a symbolism about this which is impressive. In the architectural section here are included various furniture exhibits, and one or two complete furnished rooms, nearly all of which, not without cleverness, are pervaded by the false taste for twisting lines and lack of simplicity which is such a discordant element in contemporary French work of this class. In M. Serrurier's furniture and decoration of a "Salle à Manger" the furniture is full of unnecessary tricks and twists, and on the side which is supposed to be an outer wall there is a decorative frieze formed of successive stalks showing the leaves and flowers of tulip symmetrically repeated, the leaves represented by green glass and the flowers (about a foot high) by ruby glass, fixed in openings cut to the shape of the design. We may be thankful that we can see nothing as coarse as this in English work of the present day. There is a small exhibit of stained glass, mostly in very strong colour, but containing nothing worth special mention. All the interest of architectural exhibits is with the Old Salon.

## ARCHITECTURE AS A STUDY FOR WOMEN.

By an American Lady.

I BELIEVE that in England the interest of the American in the innumerable old buildings, ecclesiastical and secular, which are to be found all over the country, sometimes affords amusement to those who do not live on our side of the Atlantic; and undoubtedly the study of architecture as exemplified in English buildings is one of the greatest causes of the enjoyments of a European trip. But the more we Americans see of English architecture and English women, the more we are struck with the impression which we form that the latter do not obtain anything like the pleasure and the profit which they might do from the cathedrals, the churches, and the manor-houses of their country.

I am struck by the fact that the ordinary English girl never seems to have studied architecture, and apparently imagines that it is something dull, slow, fit only for dry-as-dust antiquarians. This is the more odd to us, for as soon as the English woman crosses the Channel, she diligently visits each cathedral that she can. But she comes to these foreign exhibitions, as I think, almost wholly uneducated in an architectural sense, and almost incapable of appreciating the characteristics of the cathedrals of foreign countries.

The more Gothic architecture is studied the more delightful it becomes, and in England there is this also to be said for its study, it can be done so easily. If one takes up the study of pictures it is necessary to find some really first-rate gallery where they can be studied. In London women have this opportunity, but the girl who lives in the country is handicapped heavily. But as regards architecture she has the same advantages as the Londoner. There are examples of every kind of Gothic architecture within short journeys. In America we have none of the English-woman's advantages, but by means of photographs we flatter ourselves that we are able so to study architecture that we are quite familiar with all the finest examples of Gothic architecture in England.

But what I desire to establish is the fact that the English girl, by want of systematic study of architecture, positively minimises the pleasures of life. In the dullest country district in England there is usually some church which can be visited by rail or by bicycle, and what would be an aimless ride may, if there is a church at the end of it, be made an intellectual pleasure.

The study of Gothic architecture now has comparatively reasonable limits. This seems to me a great advantage, for it is thus a study which can be carried out thoroughly.

I have pointed out the advantages and pleasures of architecture as a study for women in England very imperfectly. Let me say something of our study of it in the United States. Let it be understood that the American woman never considers her education completed. Married and single women in America attend lectures and educational courses as an ordinary part of their life. But in England, when a girl is "out" she seems to consider that her education—speaking generally—is at an end. In America no such general idea prevails. In every town in America I believe I am correct in saying that there will be found one or more architectural classes got up by ladies. The teacher is usually a woman of wide culture, and in an elementary course a book such as Parker's "Introduction to the Study of Gothic Architecture" is used as a text book, and Fergusson for reference; and in addition, as I have said, photographs are largely used for illustrating lessons and lectures. For in the course of a term of these lessons there are always lectures introduced, given by teachers on the subject, who are often brought from distant places, so desirous are the students of the best instruction.

I am not now alluding either to lectures or courses in such educational centres as Smith's, Vassar, or Wellesley Colleges, which correspond to Newnham and Girton in England. I refer to classes privately organised and where the teacher is paid by the fees received from those who attend this form of instruction. The meeting of members is frequent; once a week is a common apportionment of the time. Sometimes also there are to be found private meetings got up by those interested in architecture for the discussion of some subjects, or to hear the results of a visit to Europe. In one word, an educated American girl hardly ever fails not only to have a knowledge of architecture, but to feel in it the same interest and pleasure that she does in literary subjects. I will end these remarks by an instance of this interest. I remember on one occasion crossing the Atlantic in June; the ocean was calm, so that we had all our faculties at our service. One evening a lady, who had never visited in England, gave us a charming lecture on Winchester Cathedral. After we had landed at Southampton, Winchester was the first place several of us visited; none of us had ever been there before, but we felt that the Cathedral was an old friend. It was beyond measure delightful at length to see before us a building which we had studied so often in distant Maine or Colorado.

## NOTES.

The "Theseion."

It has long been known that Dr. Bruno Sauer was at work on the many architectural and sculptural problems of the so-called "Theseion" at Athens. His book has now appeared. Dr. Sauer's name is best known in England by his investigations on the attachment marks of the pediment marbles of the Parthenon, and he has brought to bear on the problems of the "Theseion" the same scientific method that characterised his former work. It must suffice here to summarise the questions dealt with—we have the history of the temple and of the problem connected with it, the pediments, friezes, metopes and their restoration; and here we must note an admirable new departure in the matter of illustration; the actually existing remains are given in phototype plates, the conjectural restorations on a transparent sheet, which can be superimposed and then withdrawn. Thus the eye memory need never be confused—a gain which every archæologist will recognise. Next follow chapters on date, artistic character, probable school of the sculptures, on the question of the lost cult in statues, and finally on the name to be ascribed to the temple, and its relation to the topography of the Athenian. Dr. Sauer unhesitatingly names the temple the Hephaisteion. The title "Theseion" is as old as the Paris Anonymous of 1460, and has clung to the temple ever since. Ross was the first to see that it was not, and could not be a Theseion. Since then Ares, Herakles, and Hephaistes have all entered the lists. The majority refused credence to Ross, but have been since compelled to listen to Aristotle. The terms in which he describes the Theseion in the newly-discovered Athenian Politeia (c. 15) leave no doubt that the old name is wrong. Lölling, to whom Dr. Sauer dedicates his book, and who died before its completion, argued for the name Hephaisteion; this position, on architectural as well as topographical grounds, has been maintained by Dr. Dörpfeld, and now Dr. Sauer adds the argument of the pediment sculptures he has so ably succeeded in restoring.

The London Gas Inquiry.

Last week evidence was given by Mr. Charles Hunt, Chief Engineer of the Windsor-street Gas Works, Birmingham, before the Select Committee appointed to inquire into the powers of charge of the Metropolitan gas companies. Mr. Hunt appeared on behalf of the London County Council, and supported the charges against the Gas Light and Coke Company of over-capitalisation and bad management previously brought forward by Mr. Haward. Mr. Hunt considers that the existing arrangement of the Gas Light and Coke Company to supply gas south of the Thames at the same price as the South Metropolitan Company adds more than one penny per 1,000 cubic feet to the price to consumers north of the Thames, and suggests a transfer, on equitable terms, of the Gas Light and Coke Company's district south of the Thames to the South Metropolitan Company. With all due consideration of the peculiar details of the case, we fail to understand how cutting off a large and valuable district from the less successful company, and adding it to the district of its rival, can materially aid in producing a uniform gas charge throughout the Metropolis; and we should like to know what Mr. Hunt would consider "equitable terms." It is evident that the business of the Gas Light and Coke Company is less successfully managed than that of its metropolitan neighbours, and that gas consumers who are unfortunate enough to reside within the district (north of the Thames) supplied by this company are at a great disadvantage. But what arrangement can be made to force the offending company to charge less for gas, without disturbing public confidence in powers granted by Parliament, we cannot conceive.

**Electric Traction in Tunnels.** MR. P. V. MCMAHON, the Engineer to the City and South London Electric Railway, read a very able paper to the Institution of Electrical Engineers last week, on the working of electric locomotives in tunnels. The experiments he has made extend over a period of three or four years, and their accuracy is shown by the fact that in one case he accounts satisfactorily for 99 per cent. of the energy given to the locomotive, and makes a reasonable suggestion as to what becomes of the other one per cent. The results he has obtained will be useful not only in electric traction work but also in railway engineering. By analysing the curves of drawbar pull, speed and power obtained by experiment on the every-day working of the trains, he obtains very accurate values of the frictional tractive resistance. The curve showing the tractive resistance per ton at different speeds is a remarkably interesting one. The starting resistance is 40 lbs. per ton; it then rapidly diminishes to about 10 lb. per ton, and maintains this value from about five to sixteen miles per hour, it then rapidly increases and is 22 lbs. per ton at twenty-six miles per hour. These results appear high when compared with results obtained in ordinary steam main lines, but this is probably due to the skin resistance of the air on the train in a closely-fiting tunnel as well as to the column of air which is driven in front of it. The train wheels also are only about 2 ft. in diameter, which is little more than half of that of a main line carriage wheel. It will be seen that friction soon introduces a superior limit to the speed of trains in closely-fitting tunnels. The experiments showed Mr. McMahon in what direction to work in order to improve the design of his locomotives, and at the meeting next week he will read an addition to his paper, describing their latest forms and their efficiency in actual work.

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**Stow-on-the-Wold Rural District.** DR. R. DEANE SWEETING'S Report to the Local Government Board on the sanitary circumstances and administration of the Stow-on-the-Wold Rural District represents a very unsatisfactory condition of water supply, from shallow wells, nearly all in proximity to privy vaults. Though Bourton is now provided with a sewerage system, there still remain some fifty houses which have the old objectionable privy vault. When the new sewerage system was adopted, many of these old privy vaults and many of the old rubble drains were not dug out, so that the wells of Bourton-on-the-Water are still liable to contamination by impurities soaking into the bed of porous gravel from which the water is obtained. Excrement disposal is effected for the most part in the usual village privy vault, often a mere hole in ground, covered by a wooden plank or planks, or by a stone slab. The contents, being infrequently removed, soak away into the ground, endangering neighbouring water supplies. Twelve months is the usual period which elapses between the removals of privy contents; but in some instances it was found that they had not been removed for four years. In Bourton-on-the-Water, since the establishment of a sewerage scheme, the introduction of water-closets has proceeded gradually. Of the 201 houses connected to the main sewer ninety-two are now provided with water-closets, or nearly one-half. Of these eighty are hand-flushed and twelve are provided with a two-gallon flush, pumped from the well to a cistern in the water-closet. Most of the hand-flushed closets were very foul, and some of the water-closets are badly situated, viz., inside houses and opening directly into living rooms. Dr. Sweeting adds:—"The above facts point strongly to the need of a proper public water service. The choked condition of many of the gullies, and the filthiness of most of the hand-flushed closets, the inconvenience of having no water supply to upstairs closets, all point to this urgent necessity. It is, indeed, an indispensable corollary to the system of public drainage already established in the village."

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**Home Arts and Industries.** THE Home Arts and Industries Association annual Exhibition at the Albert Hall was opened on Thursday, for a few days only. The Association is the result of the writings of Ruskin and Morris, the object being to encourage the handicrafts in the rural districts of Great Britain, and, after fifteen years of work, the Association has done much to revive crafts that were dying out and develop existing industries, such as the hand-loom. The work is in no way professional, a great deal is done in finding and developing local talent at an early age. There is a great deal of crude and elementary work in the exhibition, the object of the Association being to make the necessities of life first well constructed and put together, and to make the more beautiful things afterwards, so that there are a great many useful and artistic things offered for sale at by no means high prices. The stalls are arranged under the name of the village or town from which the work comes. One of the most interesting is that from Compton, Surrey, the principle feature being the models for part of the Watts Chapel that has been built there from the designs of Mrs. Watts and entirely executed by the village people; the work is good of its kind and we believe is the result of wood carving classes started there some years ago. The Della Robbia Pottery Company have a class in connexion with the Association. We have rarely seen more beautiful pottery, of such modest pretensions, than that they exhibit. The best metal work is that from Yattendon, designed by Mrs. Waterhouse, mostly consisting of repoussé copper work. There are some very good double-handed tankards exhibited, and the work is good throughout. There is a great variety of metal work, but the quality of it varies It is remarkable how the same class of work coming from different counties differs. In the wood carving this is very noticeable; that coming from Penrith, Welbeck, and Altringham, all under the same teacher (Mr. Phillips), being unusually good work because of its freedom of line and great boldness of execution, arriving unconsciously sometimes at a high level of technique; whereas the Kent County Council send a great quantity of praiseworthy work, bad in inspiration and worse in design, descending to the greatest ugliness possible to modern wood-carving. The inlay work from Little Gaddesden is specially good. We fancy we have seen some by the same hands at the Arts and Crafts. Stepney and Pimlico have also good work of this class. There is a good show of bookbinding and embossed leather work.

## COMPETITION DRAWINGS FOR THE CARTWRIGHT MEMORIAL HALL, BRADFORD.

THAT this competition has evoked considerable interest in the architectural profession is clear from the fact that no less than 117 sets of drawings submitted in the competition are now exhibited in the museum of the Bradford Technical College. The problem certainly presented much attraction. An admirable site, ample funds, though not more than ample, few and simple requirements (apparently), and a monumental character, all tended to make the subject attractive.

The site is situated in the beautiful Lister Park of Bradford; the sum to be expended is 38,000*l.*; the requirements were first a suite of entertaining rooms, consisting of Mayor's parlour or drawing room, reception hall, and banqueting hall. These were also to be suitable for art galleries, and, in addition, there was required an art gallery and black and white room. The ground floor was to be mainly devoted to museum purposes and refreshment-room, and lavatory accommodation were also to be provided.

Three distinct ideas had, therefore, to be incorporated in their designs by the competitors. The building is to be first a memorial, thence it should be monumental; secondly, it is to be suitable for civic entertainments; and, thirdly, it has to serve a general and every-day purpose as museum and art gallery. It is but natural that where competitors have for the most part failed has been in the fusion of these distinct ideas. A few, but not many, have failed to give a monumental character; many have given too much prominence to the museum and crippled the festal purpose; several have omitted to make the reception-rooms suitable also for use as art galleries. The problem in fact, alluring by its apparent simplicity and capability, has led the competitors between Scylla and Charybdis, and only the practised navigators in the stormy seas of architectural competition have possessed the clear head and steady hand to steer the middle course.

The first premiated design by Messrs. J. W. Simpson and J. Milner Allen owes its position, in all probability, to the boldness with which the authors have departed from the suggestions of the programme laid down by the promoters in the original instructions, and have taken advantage of the latitude allowed, on the initiative of the assessor, in the replies to questions asked by intending competitors. Instead of arranging the reception-rooms in line on the south front, the successful competitors have grouped the whole of the first-floor galleries *en suite*, so as to form one continuous range of reception-rooms with the reception-hall and grand stairs in the centre. The reception-hall (on the first floor) is, in fact, virtually a very large balcony in the centre hall (on the ground floor) with a staircase on each side. The central hall, and reception hall partly over it, being on the north and south axial line, the banqueting hall and art gallery form respectively the east and west wings of the building, connected to the reception-hall by the drawing-room (or Mayor's parlour), and the black and white room. The central hall ends in a semicircular apse, which on the basement forms the public shelter, open to the park. The museum rooms (88 ft. by 28 ft., and 72 ft. by 28 ft.) are placed on the ground floor, under the art gallery and banqueting-hall, the remainder of the ground floor being occupied by the central hall, staircases, and approaches, and ample cloak-room accommodation. The refreshment-room is located at the south-east angle of the basement, with kitchen and offices behind it, and therefore in a convenient position for service to the banqueting-room. The details of the plan are well worked out, and as an architectural conception has purpose and fitness. In the disposition of the building on the site the authors have slightly adjusted the transverse axis line, so as to bring it into line with the statue of Sir Titus Salt. In external treatment the design is in a simple type of Renaissance, based on an order of coupled Ionic columns and pilasters. These stand upon plinths and a rusticated basement, and the blank upper walls of the elevation are not merely inoffensive but valuable parts of the design. Play of light and shade is given to the south front by a porte-cochère, with open balcony over, surmounted by a cupola, the junction of which, with its support, is the weakest part of the design. It is hardly necessary to say that the drawings are well prepared.

The second premiated design, by Mr. A. R. Jemmett, is distinctly inferior to the first, but like this has its axial line central with the principal entrance and a fine effect of vista. The reception rooms on the first floor are arranged along the south front with the Mayor's parlour in the centre and the reception room and banqueting hall right and left. At the rear, and behind the central hall, is a suite of two picture galleries, with the black and white room between. Ample museum space is provided on the ground floor, and in the basement on the north side is placed the refreshment department and shelter portico. The kitchen is not so well arranged with reference to the banqueting hall as in the first design, and is besides practically useless for the refreshment department. Although the plan outline is varied, the exterior treatment is somewhat commonplace and tame, but inoffensive, and by no means equal to the interior in effect. A somewhat false impression is conveyed in the principal or south elevation by the drawing of the main walls in lighter ink, although they set back only 2 ft. 6 in.

The third premiated design, by Messrs. W. A. Pite and R. S. Balfour, is essentially different in *motif* to the first and second designs, having the central hall with the axis east and west instead of north and south, and approached therefore from the main entrance at its side. The principal stair is at the east end of the central hall. The reception-rooms are on the south front, and not only *en suite* but unapproachable except through one another. The art galleries are on the north side of the central hall. The museum space on the ground floor is very ample; indeed, the chief merit of this plan lies in the ground floor, with its magnificent central hall and museum. The cloak-rooms are well placed on the ground floor next the entrance, though not so roomy or well-arranged as in the first premiated plan. The elevations are broad and dignified, but the main order being only one story in height, with a considerable expanse of blank wall above, is too weak for the general scale of the design.

The authors of the three premiated designs are about right in their estimates of cost, assuming the accuracy of their cubing. The first design is cubed at 8d. below the ground line, and 1s. 0½d. above; the second is cubed at 1s.; and the third at 11d.

Of the non-premiated 114 designs, a few are bad, but a very few compared with the general average of competitions, some are mediocre and several are good, though we cannot say that any one is equal to the first premiated or superior, taken all round, to the second and third. We can imagine that though the assessor had no great difficulty in selecting the best design, his labours were not easy in placing the second and third, and we do not intend to convey that the order in which we refer to subsequent designs is that which merit would necessarily justify.

The design by Mr. A. Brunnell Thomas is bold and dignified in its external treatment, though we think the keystones to the windows are a little too bold. The elevations, in pure line, are amongst the best drawn in the room. The plan somewhat resembles the third premiated, but the central hall is not so fine in effect, although communication between the rooms is better, a balcony corridor being provided. The cloak-rooms are in the wrong place and not well-arranged. Like the third premiated, this plan has a good museum provision, though even here the accommodation for public and catalogues would have to be of the makeshift order to be seen in many existing examples.

Messrs. Graham, Nicholas, and H. E. Kirby have also a dignified and well-proportioned external treatment, though somewhat of a domestic character is imparted by the mansard roofs. The general idea of the plan is magnificent but not convenient; thus, for example, the porter's room and catalogues are hidden away where no stranger would find them, and the cloak-rooms are in the wrong place. The design looks on plan extravagantly costly, though the authors make it cube out all right at 11d.

As we recently announced the dissolution of partnership between Messrs. Gibson & Russell, it is interesting to find exhibited in close proximity a design by Mr. J. S. Gibson and another by Mr. S. B. Russell, which, in their exterior treatment at least, might have been evolved by the same hand and brain, both being examples of *le dernier chic* in Renaissance as understood in England. Both designs are vigorous and bold, but, whilst we are grateful for these qualities, we should prefer less of the forced whimsicality and grotesque character pervading them. In plan the two designs are essentially different; Mr. Gibson's has the central hall on the north and south axial line, as in the first and second premiated plans, whilst Mr. Russell places his hall in a similar manner to the third premiated design. Mr. Gibson's plan has many points in common with the first premiated, but lacks the air of completeness and smoothness which this possesses. The cloak-rooms, for example, are in a good position, but are not well arranged. This is one of the very few plans in which the refreshment-room is placed on the ground floor, and not in the basement. Mr. Russell has two staircases—one at each end of his central hall—which lead to a gallery of intercommunication. His plan and, we think, also his exterior grouping are spoilt by an ornate, fantastic, unnecessary, and useless portico, which would have been a *porte cochère* but that it has steps all round. The reception-rooms are on the south front, with the Mayor's parlour at one end. The cloak-room accommodation is ample and well arranged, but not quite in the best position.

*(To be continued.)*

## THE ARCHITECTURAL ASSOCIATION DISCUSSION SECTION.

THE twelfth meeting of the Discussion Section of the Architectural Association was held at 56, Great Marlborough-street, W., on the 5th inst., Mr. H. J. Leaning in the chair.

In opening the proceedings, Mr. Leaning presented the Section with a reading desk after a design by Mr. Bonner Hopkins, and to defray the cost of which the Committee of the Architectural Association had some little time previously voted the money.

Mr. H. A. Satchell opened an interesting and well-sustained debate on the "Contract System —its Merits and Abuses." Favouring it rather than the "non-contract system," he maintained that some form of contract was a law of Nature, and was the best and least expensive method of building. Looking again at the subject from the three points of view, viz., that of the client, the architect, and the builder, he held that the client under the contract system had the great advantage of knowing how much money he was spending, and that more energy was displayed by the builder in proceeding when he had everything clear before him. The architect, too, was obliged to think out fully his design down to the details straight away, and thus all tendency to procrastination was avoided; while the builder, knowing exactly what was required of him, could set his whole staff to work to do his part of the contract expeditiously and well.

Mr. Robert Schultz, who spoke more at length on the "non-contract" system (in which the builder was paid so much per cent. on the prime cost for profit and establishment charges), confessed that he had come to the opinion that a "contract" was better in the interests of all parties—the client, the architect, and the builder. Perhaps, with no contract, the architect had the best of it, alterations being readily made, and at the same time there was less hurry and less responsibility; whilst, too, in the matter of seeing there was no unreasonable delay, much more depended upon the builder and his foreman. Still, without a contract, the work was undoubtedly more costly. The fact would surely leak out, and the workman would be inclined to take matters easily. The builder, too, was tempted to put on a less energetic foreman, and take less trouble in buying in the cheapest markets.

Mr. Howell Williams, L.C.C., speaking as a London builder, strongly favoured the contract system. The point raised by Mr. Satchell, on the builder setting his whole staff to work, was, he held, a true one, and was only possible when the builder knew exactly what was required of him. From the client's point of view, he thought the absence of a proper contract unfortunate, and liable to lead to much unpleasantness later on when settling up accounts. As for the architect, to have a schedule of prices (still a contract) was perhaps the best, leaving him free to design without being perpetually harassed for the "lump sum." But for the builder, within reasonableness, he thought things should be "cut and dried." Delays, daysheets, and what they knew as "messing about," caused more loss to builders than anything else. He pleaded for absolute confidence between architects and builders, the architect maintaining his professional position of impartiality and the builder feeling all security in leaving matters in the architect's hands. He added, he set his face strongly against the "open" competitive system of contracts as leading to work being undertaken by a class of builders who made their profits by scamping their work. Public bodies were more obliged than private persons to put things into "open" competition dealing with money from the rates, but the London County Council were unable, owing to this system, which he deplored, to get the leading London builders to tender. About 6 per cent. for establishment charges he held as about the average in cases, to be added to 10 per cent. or 12 per cent. for profit where work was done on "prime cost." One out of twelve was about the average of the contracts a London builder won, and he thought for each bona-fide tender a small fee should be paid to cover establishment charges.

Mr. C. H. Brodie, following, stated that he was always informed that builders who built their own houses found the cost enormous, there being no reasonable inducement to hurry the work along. Mr. Hopkins, Mr. Matt Garbutt, and Mr. Taylor continued the discussion, and the Chairman, who decried the speculative side to a contract as an inherent defect, stated he had been surprised, on inquiry, to find how much work was being carried on in London on the per cent. system on prime cost value. "Measure and value," he maintained, was perhaps the best means of obtaining sound work.

Mr. Seth-Smith, summing up, stated that a contract, being enforceable by law, with finality as to time and money, saved the extreme unpleasantness the architect was liable to under the "no contract" system, though, speaking for himself, he should like to state that his opinion of country builders was highly favourable, and though perhaps they could not be got to realise *time* at all, within six months or a year, still their work often left nothing to be desired, which was, after all, the really important thing. He, too, saw the evils of the "open" competitive system, and quite agreed with Mr. Williams that the mutual confidence between architects and builders was most desirable, and that all architects should do the best in their power to ensure as little of the speculative character in contracts as possible.

The thirteenth and last meeting of the session was announced for the 26th inst., when Mr. J. Leonard Williams is to read a paper on "Houses of the Speculative Type."

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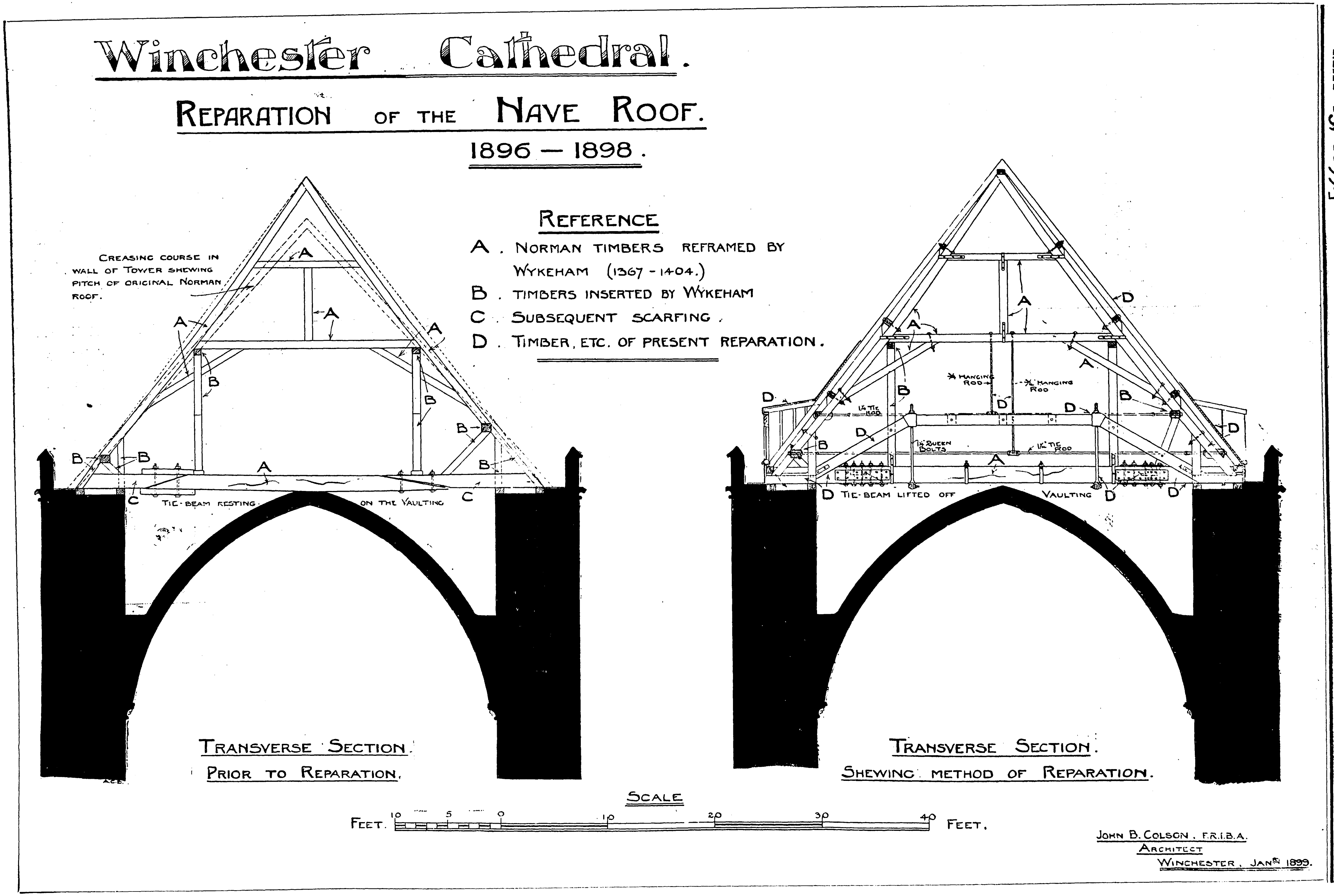
## WINCHESTER CATHEDRAL NAVE ROOF.

FOR nearly three years the roofs of Winchester Cathedral have been in the hands of builders executing works of renovation and reparation that had become necessary in consequence of the defective state of the external covering, together with the general disorganisation of the timber framings.

The nave roof, to which our illustrations refer, originally of Norman construction, and subsequently altered and re-arranged by William of Wykeham (1367-1404) to form a steeper pitch in conformity with Edington's (1345-1364) gable at the west end, had become a dead weight, lying not on the walls, but on the vaulting; each beam, instead of acting merely as a tie, was carrying the timbers of the bay of the roof and was resting on the apex ridge of the vaulting; the walls in themselves taking little weight as the tie-beams had been unskilfully scarfed, in some instances at each end, and the rafter feet, instead of bearing on the wall-plates, had been cut off and were resting upon sills which were strutted off the ties.

The work that has been executed by the builders, Messrs. Thompson, of Peterborough, under the supervision of Mr. J. B. Colson, the Surveyor to the Dean and Chapter, has been carried out with a view of relieving the nave vaulting from a pressure it was never intended to bear, and which was causing a deleterious effect, as was evidenced by the extensive fissures existing in the ashlaring and by the flushings in the underside of the stone ribs at the joints; as well as with the intention of forming a complete tie at the wall-plates, the absence of which


Winchester Cathedral.
Reparation of the Nave Roof.
1896 — 1898.
Reference
A. Norman timbers reframed by Wykeham (1367 - 1404.)
B. Timbers inserted by Wykeham
C. Subsequent scarfing.
D. Timber, etc. of present reparation.
Creasing course in wall of Tower shewing pitch of original Norman roof.
A
B
C
Tie-beam resting on the vaulting
Transverse Section.
Prior to Reparation.
D
¾" Hanging Rod
¾" Hanging Rod
1¼" Tie Rod
1¼" Queen Bolts
1½" Tie Rod
Tie-beam lifted off Vaulting
Transverse Section.
Shewing method of Reparation.
Scale
Feet. 10 5 0 10 20 30 40 Feet.
John B. Colson, F.R.I.B.A.
Architect
Winchester, Jan. 1899.

had allowed the walls to spread and was augmenting the mischief caused to the vaulting by the pressure above.

The scarfing has been readjusted, and lifting trusses have been formed on each side of the tie-beams, whereby they have been raised and are maintained clear of the vaulting. The wall-plates have been entirely renewed, and the rafter feet and ashlars have been reinstated. Iron ties have been inserted at various levels, connecting the sills upon which the rafters are supported, and these sills, together with their struttings off the ties and the uprights from the ties to the underside of the collars, have been allowed to remain. An entirely new series of purlins and rafters, with diagonal bracings, has been constructed outside the original roof, which serves the purpose not only of bracing the whole old structure together, but forming a true and even surface upon which the battens and external covering of lead have been placed.

The vaulting (one of the earliest specimens of "Milne" vaulting, that of Ely and Gloucester being only of slightly prior date) has received the necessary attention, two bays having been centred up and the ribs and ashlarings replaced; and for the purpose of executing this a travelling bridge scaffold was erected, supported upon cantilever brackets projecting from the triforium arches, upon which tram rails were fixed, and the whole was capable of being moved with ease from end to end of the beam.

The total cost of the works has been about 12,000*l.*

## MAGAZINES AND REVIEWS.

IN the *Art Journal* the article on "The Decorations of London Clubs" deals in this number with the Naval and Military Club, formerly Cambridge House, which has the record (rare in London) of being a former celebrated private mansion converted into a club. The interiors where unaltered have therefore an interest of their own, while the exterior differs from the usual club type. The ground-floor has been entirely "clubbised" in treatment, but the first-floor is little altered, and the interior of the octagon room, which forms one of the illustrations, indicates how much character is to be found in this portion of the house. An article on "Old Masters in British Lace," by Mrs. Bruce Clarke, touches on an interesting subject and has some charming illustrations.

The Jubilee Series of reprinted articles and illustrations continues to have a great deal of historical interest, and in some respects is consoling, as showing how far the decorative arts, at all events, have advanced with us during the last fifty years.

The *Quarterly Review* contains an article on the Government of London, which sums up highly in favour of the proposed Bill in this connexion, the Bill having been brought in by the political party to which the *Quarterly* is affiliated. It is somewhat odd to see what is really so drastic a "progressive" measure brought in by a Conservative Government and supported by the leading Conservative review. The same number contains an article on Velasquez and Rembrandt, written in a fine spirit of criticism. "Both painters," says the writer, "were realists, in their absolute truth to nature; but both rose far above mere imitation. Both succeeded in adding to their work that indefinable *something* which gives the abiding charm—that mysterious gift of genius which, as Coleridge says, converts the *passing* into the *permanent.*" The sentence is a very good attempt to indicate the difference between commonplace realism and the realism of genius. Another article which will interest our readers is that on "Old Oak," a review of two or three illustrative works of ancient furniture. The writer is correct in his remark that in most of these books good drawings are accompanied by very weak and inadequate letter-press. We feel somewhat sceptical, however, as to the story of the architect who wanted to clear away all the old carved bench-ends in restoring a church. This seems to be part of the *Quarterly's* old habit of slinging abuse at architects.

The *Architectural Review* (Vol. VI., No. IV.) gives the selected and one of the premiated designs for a New York yacht club building, both of them showing the characteristic merits and equally characteristic vices of the Ecole des Beaux-Arts. The chief article in the number is occupied with the exhibition of The Architectural League of New York, with small reproductions of a good many of the designs, which are of considerable interest; occasionally, like the Reredos for Dorchester (Mass). mere imitation work; occasionally of considerable originality, though this, as in the "Storage Warehouse, New York," consists rather in the new combination of details from historical styles than in actual invention.

In the *Architectural Record* (quarterly), Mr. Beverley Robinson's interesting and clever essay on "Architectural Composition" is continued. Two of the contributors to the number are English—Mr. G. A. T. Middleton writes on "Architecture at South Kensington," and Mr. Banister Fletcher on "The Sanitation of Dwellings in England." The small City House in New York is the subject of an article by Mr. Montgomery Schyler.

The *Berliner Architektur-Welt*, a new journal, is copiously and well illustrated, but gives striking evidence of the extent to which modern decorative art in Germany has taken up the cult of ugliness. There are some clever things illustrated, but the designs for furniture at the end of the number are hideous in taste, and so are many of the bits of decorative design given.

The *Studio* (April 15) contains articles on houses by Mr. Voysey and on furniture designs by Mr. Mackmurdo—the personal articles which are the fashion of the day; an illustration of the Whitechapel Art Gallery of which Mr. Townsend is the architect, and a drawing of Mr. Walter Crane's design for the Mosaic frieze for the front, with allegorical women and British workmen treated decoratively on a flat plane. Is it possible that the time will come—perhaps not very long hence—when people will discern an unreality in this kind of thing, and wonder why it was done?

The *Artist* publishes a long illustrated article on the work of the late Mr. Wolf, the animal and bird painter, with a number of illustrations from his drawings. It is interesting to learn that the artist scarcely ever endeavoured to draw with the living animal actually before his eyes; he watched it over and over again and then sketched his impressions. "Some New English Wall-Papers" is the title of remarks accompanying illustrations of various wall-papers produced by a well-known firm; they are not all of equal merit, and some of them show too great a tendency to revert to the straggling and semi-naturalistic patterns popular a generation ago.

The *Engineering Magazine* includes among its subjects the Alexander III. Bridge at Paris (treated entirely from the engineering, not from the artistic point of view), and one on wood-working machinery; both largely illustrated with technical diagrams.

The *Nineteenth Century* includes a short article by Mrs. Lecky on "The House in the Wood" ("Huis ten Bosch"), at which the delegates to the Peace Conference are to meet. The article is partly concerned with general history, but gives some information also about a rather interesting building.

*Scribner's Magazine*, under the "Field of Art" heading, touches on "Mediæval Goldsmiths' Work at Conques," with illustrations of some very curious early examples.

The *Pall Mall Magazine* continues Mr. Dana Gibson's "Sketches in Egypt" (Part III.), and devotes a descriptive and illustrative article to St. John's, Newfoundland, under the heading "Capitals of Greater Britain."

To the *Revue Générale* M. Arnold Goffin contributes a short essay on "Les Peintres Florentins," with illustrations dealing with the early or Giottesque period.

*Morings' Quarterly* continues the article commenced in the previous number, on Greek "Terra-cotta Figurines," with illustrations.

The *Antiquary* contains an article, by Miss Vansittart, on Midmar Castle, Aberdeenshire, with a good many illustrations, and the first of a series on "Ancient Kentish Colonies in Anglo-Saxon England," by Mr. T. W. Shore.

The April number of the *Essex Review* contains an interesting article by Mr. Chancellor on St. Laurence Blackmore, with a considerable number of drawings of various points in the building.

*Knowledge* is publishing a series of articles on "Electricity as an Exact Science," by Mr. Howard B. Little, and on "The Acetylene Industry," by Mr. G. T. Holloway.

We have also received the *Gentleman's Magazine*, the *English Illustrated Magazine*, and the *Genealogical Magazine*.

## PROPOSED SUMMER VISITS OF THE ARCHITECTURAL ASSOCIATION.

THE following list of interesting mansions has been drawn up by the Summer Visits Committee for the ensuing session:—

June 3—Hatfield House. Conducted by Mr. T. W. Aldwinckle, junr., and Mr. G. A. Lansdown.

June 17.—Gatton Park, near Merstham. A very fine eighteenth century mansion. The Hon. A. McGarel Hogg and Mr. H. Rose.

July 1.—Shooters' Hill House, Pangbourne. A large house by Mr. Leonard Stokes, who will conduct the party. A large house by Mr. John Belcher may possibly also be visited. Mr. Francis Hooper and Mr. W. Hargreaves Raffles.

July 15.—Graemes Dyke, near Harrow. A large mansion by Mr. R. Norman Shaw, R.A., the residence of Mr. Gilbert, the dramatist. Mr. H. D. Wilkinson and Mr. F. Dare, Clapham.

July 29.—Lee Park, near Blackheath. An eighteenth century mansion, restored upon a very large and fine scale. Mr. F. D. Clapham and Mr. Wilkinson.

August 26. — Hever Castle (as restored). Mr. W. H. Raffles and Mr. Hooper.

## THE ARCHITECTURAL ASSOCIATION SPRING VISITS:

### BUILDING TRADES EXHIBITION.

A LARGE party of the Architectural Association visited the Building Trades Exhibition on the 6th inst. by the invitation of Mr. H. Greville Montgomery, the organiser of the Exhibition, and the members were kindly entertained to tea by that gentleman in the interval of their inspection of the Exhibition. As the exhibits have been to a large extent mentioned in this journal, it is needless to attempt to give any further account of them. The visit presumably was arranged by the Visit Committee of the Architectural Association, but no member of that committee was present, as far as could be judged, and, consequently, the visit was not so satisfactorily carried through as it might have been. It might be suggested to the organisers of future Exhibitions that a small plan, with the numbers of the stalls upon it, would greatly facilitate the work of finding any particular exhibit. The Exhibition contained so large a number of materials and manufactures that a really exhaustive examination of them would occupy a longer period than one afternoon. However, much was seen that is of the very greatest interest, and Mr. Montgomery is to be heartily congratulated on the completion of a very useful piece of work.

## THE BUILDING TRADE DISPUTE.

THE secretary of the Amalgamated Society of Carpenters and Joiners (Mr. Chandler) has replied to the letter of Mr. Hassal, the secretary of the Association of Master Builders, conveying the terms of the resolution passed at the recent meeting at Birmingham. Mr. Chandler, in the course of his reply, says:—

> Whatever may have been the differences in the past between sections of employers and our trade, or however keenly the points in dispute may have been contested on both sides, we have never presumed to ask your association for such a humiliating pronouncement as the one desired from us, although the occasions have been many and the circumstances such that we should have been glad to have had those employers with whom we had no quarrel taking sides with us. But in our wildest dreams it never crossed our minds to make such an unreasonable request, and had we done so we should never have committed the mistake of adding to it a threat in case of non-compliance.
>
> I am, however, directed to point out that if your association will consent to withdraw their sympathy and support from the master plasterers and allow them to settle the dispute with their men themselves, it would render it much easier for our executive to obtain from our members some assurance of the character desired. But to attempt anything of the kind under the present circumstances would of a certainty rouse such feelings of resentment that both sympathy and support would go forth to the operative plasterers to an extent that, under any other conditions, it would have been impossible to have secured.

On the 8th inst., on inquiry at the London offices of the Master Builders' Association, Mr. T. Costigan, the secretary, stated that no meeting had yet been fixed to deal with the replies which the various unions connected with the building trade had made to the employers' demand for assurances that they would not support in any way the National Association of Operative Plasterers. In several cases the unions affected have distinctly declined to pledge themselves in the manner laid down by the employers' federation, while the others have replied that no answer can be given until their members have had an opportunity of voting upon the matter. So far from the bricklayers, stonemasons, carpenters, slaters, plumbers, painters, and the builders' labourers' unions complying with the masters' terms, some of them, it is stated, are now taking a ballot of their members upon the advisability of levying themselves in favour of the plasterers. More than this, at a recent meeting of the London Building Trades' Council, at which representatives were present from the building trade unions, a resolution was passed in favour of at once rendering financial assistance to the locked-out plasterers.

A meeting of the Yorkshire Federation of Building Trade Employers was held at Leeds on the 5th inst., the President, Mr. John Spink, of Sheffield, presiding. Representatives were present from the following towns and districts among others: Leeds, Sheffield, Bradford, Hull, Halifax, Huddersfield, York, Scarborough, Wakefield, Barnsley, Rotherham, Spen Valley, Harrogate, Driffield, Idle, Shipley, Staincliffe, Heckmondwike, and Cleckheaton. The principal resolution, which was adopted with only two dissentients, was as follows :—

> That, in accordance with the resolution passed last Friday, we hereby order the whole of the members of this Federation to lock out 25 per cent. of their men to-morrow, May 6.

The opponents to this resolution were the Bradford delegate and the representative from Harrogate. In the first case the opposition arose solely from the fact that the Bradford builders prefer to follow the lead of the National Federation, whose President (Alderman Holdsworth) lives in that city. At Harrogate the employers are understood to be thoroughly in sympathy with the policy of the Yorkshire Federation, but have what is known as season work on hand which would render it difficult for them to at once carry out the letter of the resolution. In another week or two they will be ready to come into line with the remainder of the federated masters.

The meeting began at two o'clock, and shortly after five an adjournment was made to enable a sub-committee to draw up a statement of some of the facts which had caused the dispute. It was subsequently endorsed by the general gathering, and instructions were given to have the document printed and circulated throughout Yorkshire. The statement runs as follows :—

> IN consequence of the action taken by Operatives' Societies in ordering certain of their members to cease work because non-union labour had been employed, the Yorkshire Federation have been reluctantly compelled, in the interests of the public generally and the building trade in particular, to issue this statement in order to make known the many unfair practices and the constant acts of tyranny of trade unionists which are so rapidly undermining the principles of freedom of employment.
>
> The following are some of the practices which employers in the building trade have hitherto had forced upon them :—
>
> 1. (*a*) Compelling foremen, who represent the employer, to join the operatives' union and thus become their servant rather than the employer's.
>
> (*b*) Refusal to work until the foremen have joined the operatives' union.
>
> 2. The refusal to work along with non-union men and coercing non-union men to join their unions.
>
> 3. (*a*) By dictating to the employer which workmen shall do certain work and by not allowing the employer any voice or choice in the matter.
>
> (*b*) The practice of withdrawing all their men when such work is given to another trade.
>
> 4. By refusing to fix material worked or partially worked in any other district.
>
> 5. Limitation of apprentices.
>
> 6. The objection to submit all trade disputes to a Conciliation Board of employers and employed at a conference, with a view to arriving at an amicable settlement, and thus prevent any strike or withdrawal of workmen.
>
> (Signed) John Spink, President; Sutcliffe Hanson, Secretary.

In the evening the Leeds Branch of the Yorkshire Federation of Master Builders met at the Queen's Hotel, and unanimously adopted the following resolution :—"That this branch approve of the action of the executive of the Yorkshire Federation of Building Employers in confirming and ratifying their resolution of Friday last, in which they pledged themselves to support the Hull Association, and this Federation undertakes to use its best efforts to succeed in freeing its members from Trade-Union tyranny." The proposer was Mr. Isaac Gould, and the seconder Mr. John Wilby. About 150 employers were present.

A meeting of the Leeds bricklayers to discuss the situation was held on the 5th inst. in the Kingston Unity Hall. The proceedings were private. It is understood, however, that the men were unanimous in fighting the question out with the masters. The only difference of opinion that arose was in regard to the advisability of withdrawing the 75 per cent. on the masters locking out 25 per cent. of the men. The feeling was in favour of a waiting policy. With respect to the question of promoting a co-operative system in the building trade, to work independently of the masters, its consideration was deferred.

It is stated that the resolution of the Yorkshire Federated Master Builders came into effect on Saturday. It was calculated on Saturday that fully a thousand men would be thrown out in Leeds alone. While at Selby the lock-out came into effect on Saturday as at Leeds, at Wakefield it is to remain in abeyance until this Saturday.

## THE BUILDERS' ACCIDENT INSURANCE, LIMITED.

THE eighteenth general meeting of the Builders' Accident Insurance, Limited, was held at the registered offices, 31 and 32, Bedford-street, Strand, W.C., on the 3rd inst., Mr. Stanley G. Bird in the chair.

The Secretary, Mr. R. S. Henshaw, read the minutes of the seventeenth annual general meeting, which were confirmed. The report and accounts for the period ending December 31, 1898, were taken as read.

In moving the adoption of the report, the Chairman said that the annual meeting of the company had previously been held in the months of July or August, the accounts having been made up to the previous May 31; but it was decided last year that, in future, the accounts should run from January 1 to December 31, and the meeting take place as soon as possible after the latter date. They had, therefore, to deal with a period of seven months only—too short a time to be able to form any definite opinion on the working of the Workmen's Compensation Act; but, at any rate, long enough to satisfy them with the progress of the business so far. They would see by the report, acting under actuarial advice, the amounts unpaid on quarterly policies issued up to December 31 last had not been included, and therefore the company was actually in a stronger financial position than shown by the balance-sheet. The number of claims sent in was 1,123; of these 52 per cent. had been settled without the intervention of any court of law or arbitration; 2 per cent. had been decided by the county or higher courts, and on December 31 46 per cent. were still under consideration, the majority of which had been dealt with. Where death had unhappily resulted from the accident, 40 per cent. had been settled; 33 per cent. there were no claims for, and 27 per cent. were still in negotiation. When the company had settled the rate of premium—which resulted in a considerable reduction to that originally proposed to be charged by what were termed the tariff offices—much criticism was evoked from some of their rivals on the fact that this company being a mutual company did not possess the stability that unissued capital gave to such associations where the funds were provided by shareholders, who, in their turn, expected a dividend on money so invested. To meet this difficulty the directors took power under the policy to call upon every insurer to pay a sum up to 100 per cent. on the amount of his premium by certain specified instalments. Happily the result of the seven months that had passed since the Act came into operation had shown that there was, at any rate, at present little chance of this additional payment being required, although, from the short time that had elapsed, it was obviously too soon to forecast the future. In conclusion, he was sure they would agree with him that there was every reason to be satisfied with the result of the last seven months' working, and with their present position. The support they had received from various parts of the country, no less than their present strong financial condition, was, he thought, a subject for congratulation, and he felt confident that with the same and increased support of the trade it was founded to assist, and with equal care and caution in its management in the future as had been displayed in the past, the Builders' Accident Insurance might not only retain its present position, but, in future, attain a still higher rank among similar organisations.

Mr. James Hill said he had much pleasure in seconding the motion, and thought the report very favourable considering the short time the company had worked under the new Act, and had no doubt that the energy shown by the directors would lead to further success.

The report and accounts having been discussed, the resolution was put to the meeting and carried unanimously. The retiring directors were re-elected.

Mr. A. Stewart Harrison then proposed that the directors' fees be raised from 400*l*. to 600*l*. per annum. This was seconded by Mr. Gregory, President of the London Builders' Association, and carried unanimously.

Mr. Charles Fox, F.C.A., was re-elected auditor of the company.

Mr. Andrew Killby proposed a vote of thanks to the Chairman for his services during the past year; this having been seconded by Mr. James Hill, was carried unanimously.

The Chairman having replied, the meeting terminated.

## *ARCHITECTURAL SOCIETIES.*

PEOPLE'S PALACE ARCHITECTURAL SOCIETY.—A meeting of this Society was held on the 29th ult., Mr. Francis R. Taylor in the chair, when a paper was read by Mr. H. A. Darling on "Girder Construction." The author, in his opening remarks, said that some few years ago wrought iron was almost universally used, it being cheaper than steel. At the present time, however, the more economical methods employed in the manufacture of steel have changed this, and it is now the exception to specify wrought iron for structures, steel having taken its place. It was pointed out that rolled joists were uneconomical, especially for large spans, because of the section being uniform from end to end, and consequently no provision was made for the variation of the stresses to which the girder was subjected. This was, to some extent, remedied by the use of compound girders, but there was a great waste of material in many of the stock sections, the greatest waste occurring in the web. Plate girders were then considered, and the processes involved in the manufacture of the common types of iron and steel girders were described. On the conclusion of the paper a series of questions on practical details were asked and answered. A paper on "Portland Cement" was then read by Mr. Albert Grenville, which dealt with the manufacture, properties, and uses of the material. The paper was illustrated with lantern slides. A visit will be made to the Charterhouse to-day, May 13.

GLASGOW ARCHITECTURAL ASSOCIATION.—On the 2nd inst., in the Rooms, 187, Pitt-street, the President (Mr. Geo. S. Hill, A.R.I.B.A.) in the chair, Mr. Thomas Ramsay read a paper entitled "Some Points in the Erection of a Modern Office Block." In his introductory remarks the author said a building of this class was erected in the first place with the specific purpose of making money for its owners, with, occasionally, the further purpose of serving as an advertisement. The requirements necessary to allow of its doing so the author considered to be good situation or site, ease of access, good light, maximum of rental area, ease of rearrangement to suit tenants, and the minimum of cost consistent with true economy. The author enlarged on these several requirements, pointing out, among other things, the necessity for the introduction of a certain amount of fire-resisting, if not fireproof, material in the construction, and the absolute necessity of good light, this latter requirement, in his opinion, considerably affecting the money-earning capacity of the block.

DEVON AND EXETER ARCHITECTURAL SOCIETY.—The annual meeting of this Society was held at the Princess-square School of Art, Plymouth, on the 6th inst., under the presidency of Mr. James Crocker, F.R.I.B.A., of Exeter. The annual report was presented by the Hon. Secretary (Mr. Harbottle Reed). It stated that the list of membership had slightly increased, and now stood as follows :—Members, 45; associate members, 9; associates, 13; honorary members, 4—total, 71, as against a total of 68 in 1898. Since the annual meeting held at Exeter on May 7, 1898, there have been held six general meetings and seven meetings of the Council, when many matters of professional interest have been dealt with. The Architects' Registration Bill, and the attitude of the various societies in relation thereto, had been a source of considerable correspondence. The Council had had before them the "administration of building by-laws in rural districts"; also communications from the Birmingham Architectural Society with regard to "building by-laws and their administration," as well as the new building by-laws for Exeter. The competition for the St. Thomas's Board Schools had had consideration, as well as that for the Okehampton new Workhouse and Totnes Cottage Hospital. On September 10, 1898, an excursion was made to Launceston by invitation of the ex-President (Mr. James Hine). No other separate excursion was held, but many of the members joined in that to Oxford on June 15, 1898, organised by several Exeter societies in conjunction. It is proposed on similar lines to make an excursion to Windsor in June. Last May a selection of the Institute prize drawings was, through the courtesy of the Museum and Technical Education Committee of the Exeter City Council, exhibited in the Albert Memorial. Similar arrangements would be made for another exhibition, on May 23, of the 1899 drawings, and afterwards, for the convenience of Plymouth and Cornish members, they would be shown at Devonport. The prize offered by the Society for the best sheet of measured drawings had been awarded to the only competitor, H. E. Roskruge, of Devonport. The balance in hand amounted to 8*l.* 14s. 11d. The Plymouth, Devonport, and Stonehouse branch had been doing useful work especially in connexion with the competition for the Tavistock-road building scheme, the conditions of which were so manifestly unfair, from a professional standpoint, that representations were made to the Corporation of Plymouth with a view to their modification. The Corporation, however, would not accept the suggestions, and, in consequence, no practising architect of the Three Towns (with the exception of a junior member of the profession, who is not a member of the Society) took part in the competition, and Mr. Crickmay, F.R.I.B.A., who was asked by the Corporation to act as assessor, declined the appointment.—The retiring President (Mr. James Crocker) then delivered his address. As a citizen of Exeter he might, he said, be pardoned if, in the first place, he referred to two or three city works. In building matters he might mention four of importance—the adoption of the "model by-laws" by the City Council and the erection of the Clock Tower, the near completion of the Museum and Technical Schools, and the fine new Church of St. David. While in Exeter they had been dealing with the sewage, at Plymouth they had completed a noble scheme of water supply, and other works, either proceeding or completed, included the Keyham Docks, the Citadel and Crown Hill Barracks, the widening of Old Town-street, and the new Technical Schools at Devonport. Quite apart from these there had been great general activity in both counties. The revision and re-issue of the Royal Institute of British Architects' scale of charges after twenty-six years was a matter of some importance, even though it did not absolutely bind the Courts. After referring to the question of architectural education, he proceeded to express approval of the Architects' Registration Bill now before Parliament. At the close of his address, Mr. Crocker was accorded a vote of thanks on the motion of Mr. C. Cole. Mr. James Hine seconded the motion, which was supported by Mr. Kitsell. On the proposal of Mr. O. Ralling, seconded by Mr. H. G. Luff, Mr. C. King, of Plymouth, was elected President for the ensuing year. In occupying the chair, Mr. King explained that he only took it on the clear understanding that Mr. Luff would not accept the duties of the office and had declined in his favour. Mr. C. J. Tait was elected Vice-President, on the proposal of Mr. B. Priestley Shire, seconded by Mr. W. W. Dwelly, and Messrs. H. G. Luff, J. E. Harvey, and J. M. Pinn were elected members of the Council. In proposing the re-election of the Hon. Secretary (Mr. Harbottle Reed), Mr. Crocker said a vote of thanks was due to him. This was seconded by Mr. King and supported by Mr. Cole. A similar compliment was paid to the Hon. Treasurer, Mr. O. Ralling, and the Branch Secretary, Mr. P. B. Shires. Previous to the meeting, luncheon was taken at the "Duke of Cornwall Hotel," and during the afternoon a visit was made to the new artisan's dwellings recently erected by the Corporation. The party then drove on to the Pearse Convalescent Home.

Bristol Society of Architects.—The annual general meeting was held at the Fine Arts Academy, Clifton, on Monday, the 8th inst., Mr. W. L. Bernard, President, in the chair. The annual report and balance-sheet, which was presented and adopted, showed that the Society is increasing both in numbers and influence, and that the financial condition of the Society is satisfactory. The students' prizes were then distributed, after which a paper on "Speculative Builders and their Little Ways," was read by Mr. Frank Wills, who very humorously described the deficiencies of the class of builder which the ground rent system has called into existence.

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## *ARCHÆOLOGICAL SOCIETIES.*

Royal Archæological Institute. — A general meeting of this Institute was held on the 3rd inst., Sir Henry Howorth, K.C.I.E., M.P., President, in the chair. Chancellor Ferguson, F.S.A., exhibited photographs of a large door-lock in the Tullie House Museum, Carlisle. No history is known of this lock. It is 2 ft. 1 in. in length and 7 in. in breadth. It is classified, according to its construction, as a warded spring draw-back lock with three bolts. A key-hole is seen on both the front and the back of the lock; but they are not opposite to one another; in fact, the lock contains duplicate sets of works or wards, one set in advance of the other, and probably belonged to the door of a strong room.—Dr. Wickham Legg, F.S.A., read a paper on the account in English of the annointing of the first King of Prussia in 1701.—The Rev. W. G. Clark Maxwell read a paper on "The Roman Towns in the Valley of the Bœtis," being a record of six months' investigation of the Roman sites, &c., on the banks of the Guadalquivir, between Cordova and Seville. After contrasting the thickly populated condition of the country in Roman times, as evidenced by the abundant traces of their occupation, with its present scanty population and neglected appearance, he described his method of investigation, which was to walk along the river bank, noting and marking on a map those places which presented evidences, such as bricks, &c., and "tierra de villar" of Roman settlement; remains of more extensive building, perhaps representing the "latifundia" of classical times; and such large collections of fragments of amphoræ, or kilns, as to suggest the site of a potter's workshop. He then gave a more particular account of the tentative excavations carried on at Peñaflor, Peña de la Sal, and Alcolea, the modern representatives of Celti, Arva, and Canana. A certain number of new inscriptions were discovered, while others were verified. A large number of amphora handles bearing stamps were picked up; many of the stamps being the same as occur in other places, notably among the débris of which Monte Testaccio in Rome is composed. Mrs. Clark Maxwell was of opinion that these were mostly made in Bœtica, to contain the produce of that region when exported to Rome. A number of graves built of bricks and tiles were discovered, which, from their situation, orientation, and absence of objects deposited with the bodies, might be referred to the Christian period. At Alcolã del Rio the Roman walls of concrete partly remain, as well as the ruined fragments of quays and river walls, which bear evidence of the forgotten time when the Bœtis was a highway of commerce. The Rev. E. S Dewick, Mr. F. Spurrell, and Mr. Herbert Jones took part in the discussion on the above papers.

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The London Government Bill.—In the House of Commons on Tuesday, on Clause 6 of this Bill, which gives the Committee of the Privy Council power to make a provisional order determining which of the powers under the London Buildings Act of 1894 or any amending Act are to be exercised by the London County Council and which by the various councils. Mr. Balfour said this clause had been introduced into the Bill in order to complete what he might call the theory of the Bill so far as the transfer of powers was concerned; and it was an attempt to circumvent the difficulty of doing so by schedule. It was the best attempt that could be made, but at the same time he believed it was foredoomed to failure, and he would therefore withdraw it.

## THE LONDON COUNTY COUNCIL.

The usual weekly meeting of this Council was held on Tuesday in the County Hall, Spring Gardens, Lord Welby, Chairman, presiding.

*Loans.*—On the recommendation of the Finance Committee, it was agreed to lend the Hammersmith Vestry 4,820*l.* for electric lighting purposes; the Strand District Board 14,600*l.* for street improvements in Leicester-square and Drury-lane, and a dust destructor; and the St. George's Guardians 14,975*l.* for the provision of a workhouse laundry.

*Electrical Traction on London Tramways.*—A report was submitted by the Highways Committee, on the application of the London United Tramways Company, to be allowed to use the overhead system of electric traction on that portion of their lines which comes within the county at Hammersmith. When last the matter was before the Council, it was decided to allow the company to use the overhead system on one branch of the line on condition that they constructed another portion on an underground system. The company subsequently asked for a modification of these conditions, and in support of this request stated that it had, at the urgent request of the Vestry of Hammersmith, just completed the relaying of the Goldhawk-road tramways as a double line, which was equipped, with the exception of the electrical conductors, for working on the overhead system. Having given consideration to this request, the Committee informed the company that, having regard to the expenditure (stated to be about 20,000*l.*) recently incurred by it in repaving the Goldhawk-road, and to the serious inconvenience which would be caused to the inhabitants by the road being again disturbed for the reconstruction of the tramways, they were prepared, provided that the Company would give an undertaking to lay down, on the terms stated in Mr. Robinson's letter of September 27, an underground electrical system of traction for use on the tramways from Young's Corner, viâ King-street, to Hammersmith Broadway, to recommend the Council to modify its resolution of October 18, and to give its consent to the use of the overhead trolley system, instead of an underground system, as specified in the resolution, on the tramways from Uxbridge-road Railway Station viâ Goldhawk-road to Young's Corner, the other terms and conditions of the resolution remaining unaltered. The Committee recommended in accordance with their report.

Mr. Bull said that the Hammersmith Vestry had not been consulted in this matter, and, under the Act of Parliament, they had the right to be consulted, and, therefore, he thought it should be taken back for their consideration.

Mr. Benn, Chairman of Committee, said he would take back the Report for a week.

*Sewage Matters.*—On the recommendation of the Main Drainage Committee, it was agreed (1) that the tender of Messrs. Mills & Knight, amounting to 491*l.* 16s. 4d., for the docking and repair of the s.s. *Burns* be accepted; (2) that the offer of Messrs. Crossley Brothers, Limited, to supply and fix an air compressor, driven by a small gas-engine, in the place of the present air-exhausting apparatus, at the King's Scholars' pond sewer pumping-station, for the sum of 175*l.*, be accepted.

*Tribunal of Appeal.*—The Building Act Committee recomended, and it was agreed: (*a*) That the Council do approve of the arrangement made by the Tribunal of Appeal for the provision of office accommodation at the new premises of the Surveyors' Institution in Great George-street, at a rent of 120*l.* per annum, to include rates, taxes, lighting, and heating, the sum of 5s. per week being paid for cleaning the offices and attendance; (*b*) That the Council do suggest to the Secretary of State for the Home Department that the scale of remuneration for the members of the Tribunal of Appeal, laid down in 1895 and extended in operation until the end of last year, should be continued in operation for the year 1899.

*Competitive Designs for Dust Carts.*—The Public Health Committee reported as follows:—

"We reported to the Council on March 21 last, that in response to the Council's advertisement offering a premium of 25*l.* for the best design for a dust cart and cover, a large number of designs had been sent in, but that the further progress of the matter had been delayed owing to the lamented decease of Sir Douglas Galton, who had kindly expressed his willingness to act as arbitrator. On learning that Mr. Henry Law, M.Inst. C.E., had been appointed as Sir Douglas Galton's successor in the chair of the Council of the Sanitary Institute, we inquired whether he would be good enough to undertake the arbitration, and he has kindly promised to do so. We have accordingly advertised the fact that Mr. Law will arbitrate upon the designs, and we will report the result of the competition to the Council in due course.

*Destroying an Historic House.*—The Parks and Open Spaces Committee reported as follows:—

> "On the ground at Grace-street, Bromley, which the Council has recently acquired for the purpose of a recreation ground, is a house formerly occupied by Mr. Rutty, a contractor. From the first it has been intended to clear away the house in order that the site of it might be utilised as part of the open space. It would, however, appear that there are one or two points of some interest in the building, and it has been surveyed and included in the Council's Register of Historic Buildings. We have examined the building, and are of opinion that there is nothing in it which would warrant exceptional measures being taken in order to secure its retention, whilst, on the other hand, we are strongly of opinion that every foot of open ground which can be secured in this district as a playing space for the thousands of poor children who have at present only the streets as a playground is of far more importance than the preservation of a particular staircase or doorway. Members of the General Purposes Committee have had an opportunity of viewing the house, and we understand that they are not in favour of its retention. Moreover, the land was purchased under Section 12 of the Open Spaces Act, 1887, to be laid out as public walks or pleasure grounds. This, of course, involves the removal of all the buildings, except such as may be necessary in connexion with the management of the ground as public walks or pleasure grounds. If it should be desired to retain the house for other purposes, Parliamentary sanction would have to be obtained. Under all the circumstances, we have given directions for the house to be pulled down at once, in order that the work of laying out this place for the benefit of the people may no longer be delayed. Part of the materials of the building will be used in the laying-out works, and thus some expense will be saved. We recommend—That the course taken be approved."

Dr. Longstaff said that the Council arranged with a number of antiquarian societies to make a record of historic buildings that ought to be preserved, and on the list was this Tudor house. Now the Council proposed to demolish it.

Mr. Cooper moved that the recommendation be referred back for further consideration, and this was seconded by Mr. Wallace Bruce.

The debate was adjourned for a week.

The Council adjourned soon after 7 o'clock.

## METROPOLITAN ASYLUMS BOARD.

Sir Edwin Galsworthy presided on Saturday at the fortnightly meeting of the Managers of the Metropolitan Asylum District.

*South-Western Hospital.*—The Committee of this hospital reported that Mr. J. P. Norrington, the surveyor engaged to prepare specifications for the remaking of the roads of the institution, recommended the use of asphalte for the portions of roadway most subject to wear, as, though the initial cost would be heavier than that of macadam, the annual cost, spread over twenty-five years, would be considerably less than half. It was decided that Mr. Norrington should prepare specifications including asphalte for the roads most used, the total estimated cost of the work being 5,200*l*.

*Northern Hospital.*—An estimate of 11,832*l*. as the cost of the proposed electric light installation at the Northern Hospital was approved and adopted, and it was resolved to apply to the Local Government Board for permission to raise the money on loan.

*Grove Hospital.*—The statement of claim in the action brought by Messrs. Kirk & Randall against the Board having been delivered, the Works Committee was empowered to defend the action under the advice of the solicitors. The claim, which is for over 32,000*l*., is based chiefly on the alleged delay in delivering plans, and delivery of imperfect plans by the architect during the building of the hospital.

*Margate Homes.*—Plans for the erection of two additional homes for convalescent children at Margate, prepared by Messrs. C. & W. Henman, architects, were approved and adopted. The two houses will be in connexion with the institution known as East Cliff House, and will each contain twenty-five beds. The approximate estimate for the building work was 6,938*l*.

## APPLICATIONS UNDER THE LONDON BUILDING ACT, 1894.

At the meeting of the London County Council on Tuesday, the Building Act Committee brought up the following list of applications under the 1894 London Building Act. Those applications to which consent has been given are granted on certain conditions.*

### *Lines of Frontage.*

*Bermondsey.*—Buildings on the site of Nos. 73 to 101 (odd numbers only), inclusive, Old Kent-road, Southwark, and the widening of Leroy-street (Mr. A. Murray for the Bridge House Estates Committee). —Consent.

*Newington, West.*—Houses on the south side of New-street, Kennington, and the east side of Doddington-grove (Messrs. Briant & Son for Mr. A. F. De Laune).—Consent.

*Marylebone, East.*—A porch and balcony in front of a block of buildings on the site of Nos. 27, 29, 31, and 33, Mortimer-street, St. Marylebone (Mr. A. J. Hopkins for Mr. F. Debenham).—Consent.

*Dulwich.*—A projecting clock in front of No. 199, Maple-road, Penge (Mr. W. Forrest).—Consent.

*Hammersmith.*—One-story shops on part of the forecourts of Nos. 292, 294, 296, 298, 300, 302, 304, and 306, King-street West, Hammersmith (Mr. A. Lines for Mr. A. M. Naylor).—Consent.

*Hammersmith.*—One-story shops upon part of the forecourts of Nos. 308, 310, 312, 314, and 316, King-street West, Hammersmith (Mr. A. Lines for Mr. T. Braithwaite).—Consent.

*Bermondsey.*—A block of buildings with bay-windows on the east side of Old Kent-road, Bermondsey, adjoining Kingsley-buildings (Mr. J. Moore for the Improved Industrial Dwellings Company, Limited).—Consent.

*Clapham.*—An addition in front of St. Luke's Church, Ramsden-road, Clapham (Mr. F. W. Hunt for the Rev. Canon J. Erskine Clarke).—Consent.

*Dulwich.*—One-story shops on part of the forecourts of Nos. 64 and 66, Church-street, Camberwell (Mr. L. V. Hunt for Messrs. L. Whitehead & Co.)—Consent.

*Dulwich.*—A house upon the east side of College-road, Dulwich, to the northward of Sydenham Villa (Mr. C. H. Lawson for Mr. A. Flint).—Consent.

*Lewisham.*—Bay windows to thirteen houses on the west side and thirteen houses on the east side of Wellmeadow-road, near its junction with Brownhill-road, Hither Green, Lewisham (Messrs. Allen, Harvey, & Co. for Mr. A Cameron Corbett, M.P.). —Consent.

*Lewisham.*—Bay-windows to thirteen houses on the west side and thirteen houses on the east side of Broadfield-road, near its junction with Brownhill-road, Hither Green, Lewisham (Messrs. Allen, Harvey, & Co. for Mr. A. Cameron Corbett, M.P.). —Consent.

*Lewisham.*—Houses with shops on the site of Nos. 49, 51, 53, 55, and 57, Dartmouth-road, Forest Hill, Lewisham (Mr. W. Hart Gritten for Mr. E. C. Christmas).—Consent.

*Lewisham.*—Tile-covered pents to the entrances to ten semi-detached houses on the west side of Homecroft-road, Sydenham (Mr. F. Colwill).—Consent.

*Wandsworth.*—That the application of Messrs. Young & Hall for an extension of the periods within which the erection of a building on the west side of Rosendale-road, adjacent to the London, Chatham, and Dover Railway Company's railway bridge, Herne Hill, was required to be commenced and completed, be granted.—Agreed.

*Westminster.*—Two two-story oriel windows in front of the Queen Anne's Bounty Offices, Great Smith-street, Westminster (Messrs. H. & P. Currey). —Consent.

*Westminster.*—Buildings on the north side of Greycoat-place, Westminster (Mr. R. Blomfield for the Army and Navy Co-operative Society).—Consent.

*Whitechapel.*—An iron and glass shelter in front of the Cambridge Music-hall, Commercial-street, Whitechapel (Mr. F. Matcham for The Cambridge, Limited).—Consent.

*Lambeth, North.*—A swing sign-board in front of No. 228, Westminster Bridge-road, Lambeth (Mr. S. Blow for the Midland Railway Company).—Refused.

*Marylebone, West.*†—Buildings on the east side of Abbey-road and west side of Grove End-road, St. John's Wood, on the Neville Lodge Estate (Messrs. Boehmer & Gibbs for Mr. H. Lovatt).—Refused.

*Hampstead.*—A house on the eastern side of Heathurst-road, Hampstead (Mr. J. H. Hudson for Mr. W. A. Hudson).—Refused.

*Islington, North.*—A lavatory and water-closet addition at the "St. John's Tavern," Junction-road, Islington, to abut upon St. John's Park (Mr. J. Taft for Mr. D. Bushill).—Refused.

*Islington, North.*—A theatre building on the north side of Rock-street, Finsbury Park, Islington, at the corner of St. Thomas's-road (Messrs. Murray & Foster for the Theatre Sites, Limited).—Refused.

*Kensington, South.*†—The rebuilding of part of No. 12, Sumner-place, to an advanced line in Old Brompton-road (Mr. W. H. Collbran).—Refused.

*Lewisham.*—A wood and iron verandah in front of ten houses on the east side of Ivy-lane, Brockley (Messrs. Tompkins & Barker).—Refused.

*Marylebone, West.*—A two-story oriel window in front of the 5th West Middlesex Rifle Volunteers' Drill-hall and headquarters, Nos. 21 to 31, Homer-street, St. Marylebone (Captain J. H. Smith).—Refused.

*Wandsworth.*—Two projecting illuminated signs at the "White Lion" public-house, High-street, Putney (Mr. W. Hancock for Mr. T. J. Scrutton).—Refused.

*Woolwich.*—A one-story shop upon part of the forecourt of No. 2, Francis-street, Plumstead (Mr J. Wolf).—Refused.

### *Width of Way.*

*Bethnal Green, South-west.*—A play-shed at the infants' school on the south side of Newport-street, Bethnal Green, at the corner of Coventry-street (Rev. A. R. Clemens).—Consent.

*City of London.*—The rebuilding of No. 116, Fore-street, Cripplegate, with a projecting oriel window (Messrs. N. S. Joseph, Son, & Smithem, for the trustees of the Cripplegate Bank).—Consent.

*City of London.*—Two angle turrets to a proposed building on the site of Vulcan Wharf, on the south side of Upper Thames-street, City, adjoining Puddle Dock (Mr. C. Reilly).—Consent.

*Islington, South.*†—Buildings on the west side of Pleasant-place, Essex-road, Islington (Mr. R. Nevill). —Consent.

*Bethnal Green, North-east.*—A two-story addition in front of the schools on the east side of Cranbrook-road, Green-street, Bethnal Green (Mr. T. J. Bailey for the School Board for London).—Consent.

*Rotherhithe.*—That the Council do make no order with reference to the application of Messrs. Newman & Newman on behalf of the proprietors of Hay's Wharf, Limited, for permission to retain iron gates erected across Hay's-lane and Counter-street, Tooley-street, Rotherhithe.—Agreed.

*Lewisham.*†—Seven houses with shops on the north side of Wells-road, Sydenham (Mr. H. T. Adams).—Refused.

*Westminster.*—A building on the north side of Orchard-street, Westminster, at the corner of Great Smith-street (Mr. G. A. Hall for the Mutual Tontine Westminster Chambers Association).—Refused.

### *Space at Rear.*

*Marylebone, West.*—The rebuilding of No. 8, Northumberland-street, St. Marylebone, at the corner of Paddington-street, to abut at the rear upon a disused burial-ground in Paddington-street (Mr. Beresford Pite for Messrs. Matthews Brothers). —Consent.

*Clapham.*—The uniting of No. 40, Blandfield-street, Nightingale-lane, Clapham, with a one-story building, No. 40A, Blandfield-street (Mr. L. S. Rogers for Mr. J. Down).—Consent.

*Wandsworth.*—Six houses on the north side of Oakhill-road, and five houses on the west side of Elizabeth-place, East Putney, with an open space at the rear (Mr. W. Goodwin).—Consent.

*Southwark, West.*—A modification of the provisions of Section 41 (1) (vi.) of the London Building Act, 1894, with regard to open spaces about buildings, so far as relates to the proposed erection of two dwelling houses with shops on the ground floor on the site of Nos. 2 and 4, Webber-row, Southwark, and the site of No. 72, Webber-street, respectively, with irregular spaces at the rear (Messrs. F. S. Brereton & Son, for the trustees of Marshall's Charity).—Consent.

*Fulham.*—A modification of the provisions of Section 41 of the London Building Act, 1894, with regard to open spaces about buildings, so far as relates to the proposed erection of a two-story house with a shop on the ground-floor on the east side of Grimstone-road, Fulham, at the rear of No. 132, Hurlingham-road, without an open space at the rear (Mr. H. G. Gardner for Mr. F. W. Freure).—Refused.

*St. George, Hanover-square.*—A modification of the provisions of Part V. of the London Building Act, 1894, with regard to open spaces about buildings, so far as relates to the proposed erection of a block of residential flats on the site of No. 25, Hanover-square, St. George, Hanover-square, at the corner of George-street, with an open space at the rear (Mr. C. Bell for Mr. G. A. Schafield).—Refused.

### *Line of Fronts and Width of Way.*

*Bermondsey.*—An addition to the porch to the Charterhouse Mission, Crosby-row, Bermondsey (Mr. B. Ingelow for the Committee of the Charterhouse Mission).—Consent.

### *Width of Way and Space at Rear.*

*Walworth.*—Twelve dwelling-houses, to be inhabited by persons of the working class, on the south side of Nursery-row, Walworth (Mr. R. J. Dickins for Lord Llangattock).—Refused.

*Bethnal Green, North-east.*—Certain deviations from the plans certified by the District Surveyor, under the provision of the London Building Act, 1894, so far as relates to the proposed rebuilding of the "Prince Albert" beer-house, No. 61, Old Ford-road, Bethnal Green, to abut upon Russia-lane (Mr. B. J. Capell for Messrs. Truman, Hanbury, Buxton, & Co., Limited).—Refused.

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* Names of applicants are given in brackets. Buildings are new erections unless otherwise stated.

### *Line of Fronts and Construction of Buildings.*

*Rotherhithe.* — Three iron gangways across Morgan's-lane, Tooley-street, Rotherhithe, to connect the second, third, and fourth floors respectively of warehouses on each side of the lane (Mr. A. Webb for Messrs. Boord & Son).—Consent.

*Islington, North.*—An iron room on the flat roof of the addition at the rear of No. 51, Highgate-hill, Islington, abutting on Salisbury-road (Mr. F. S. Hammond for Mr. H. Lay).—Refused.

*Paddington, North.*†—A wood and glass cycle-shed on the forecourt of No. 45, Maida-vale, Paddington, at the corner of Clifton-road (Mr. S. Barrett for Mrs. E. Cooper).—Refused.

### *Formation of Streets.*

*Lewisham.*—That an order be issued to Mr. S. Cawston, sanctioning the formation or laying out of eight new streets for carriage traffic on the Bromley Park Estate, London-road, Lewisham. That the names Ashgrove-road, Calmont-road, Farnborough-road, Coniston-road, Hillbrow-road, Elstree-hill, Madeira-avenue, and Warren-road, be approved for the new streets.—Agreed.

*Lewisham.*—That an order be issued to Mr. H. Roberts, sanctioning the formation or laying out of two new streets for carriage traffic, to lead out of Laleham-road and Brownhill-road, Catford (for Mr. R. Howell, Mr. H. Hawkes, and the Earl of Dartmouth). That the names Carswell-street and Redfern-street be approved for the new streets.—Agreed.

*Wandsworth.*—That an order be issued to Mr. L. S. Rogers, sanctioning the formation or laying out of a new street for carriage traffic, to lead from the Grove to Allfarthing-lane, Wandsworth, and the widening in connexion therewith of a portion of Allfarthing-lane. That the name Pentland-street be approved for the new street.—Agreed.

### *Cubical Extent and Construction of Buildings.*

*Greenwich.*—That the application by Mr. G. S. Young for the Thames Iron Works and Shipbuilding Company, Limited, and John Penn & Sons, Limited, for the Council's approval of the plans and particulars submitted for the construction of an iron workshop in a yard at the Greenwich Engine Works, John Penn-street, Blackheath-road, Greenwich, be granted.—Agreed.

*Fulham.*†—The erection at Wandsworth Bridge-wharf, on the east side of Wandsworth Bridge-road, Fulham, of an open iron shed to exceed in extent 250,000, but not 450,000 cubic feet, and to be used only for the purposes of the trade of a timber merchant (Mr. E. Avern for Mr. E. H. Johnson).—Refused.

### *Height of Buildings.*

*City of London.*—A building on the south side of Tallis-street, Victoria Embankment, City, between the premises of the *Daily Mail* and the National Telephone Company, to the height shown upon the plans submitted with the application of Mr. H. O. Ellis for Messrs. Harmsworth Brothers.—Agreed.

*Whitechapel.*—A theatre building on the south side of Whitechapel-road, Whitechapel, with the east wall exceeding in height the width of Tasmania-place (Mr. F. Matcham for Mr. W. M. Tilson).—Consent.

*Westminster.*—A building on the north side of Greycoat-place, Westminster, with a portion to exceed 80 ft. in height (Mr. R. Blomfield for the Army and Navy Co-operative Society)—Refused.

### *Dwelling-houses on Low-lying Land.*

*Greenwich.* — That the solicitor do prepare a licence, under Section 122 of the London Building Act, 1894, to Mr. T. Dinwiddy, for the erection of three buildings to be used wholly or in part as dwelling-houses on low-lying land situated at the corner of Trafalgar-road and Whitworth-street, Greenwich.—Agreed.

*The recommendations marked † are contrary to the views of the Local Authorities.*

## *COMPETITION.*

BOARD SCHOOL, WATFORD.—In a limited competition for a school in two departments to accommodate 1,040 children, to be erected by the Watford School Board on a site having frontages to Judge-street and Ridge-street, Mr. W. H. Syme was appointed architect on the recommendation of the assessor, Mr. E. R. Robson.

SOLDIERS' HOME, NEWCASTLE-ON-TYNE.—Lord Roberts opened the new Soldiers' Home at Spital Tongues, Newcastle, on Thursday last week. The building, which has been erected at a cost of about 2,700*l.*, is situate in Hunter's-road. It comprises a hall suitable for meetings, concerts, &c., together with reading and smoke rooms, refreshment buffet, living and bedroom accommodation for married and single soldiers on furlough or changing stations, and rooms for the superintendent and his wife. The architect for the home was Mr. J. Walton Taylor, and the contractor Mr. John Jackson, both of Newcastle.

## Illustrations.

### NEW STATES HALL, GUERNSEY.

THIS building is partly a House of Parliament and partly Law Courts. The site is extremely irregular in shape, and as regards levels there is a fall of 28 ft. from the north-east to the south-west corners. Advantage has been taken of this to place the offices for the Solicitor-General, Attorney-General, and Receiver-General on the ground floor of the south front facing Court Row. The office of the Greffier is on the same floor, and adjoining is the Record Office, a vaulted room 68 ft. long by 30 ft. wide. The principal business entrance is in the centre of the south front on this lower ground floor, and the various offices beforementioned are approached by a corridor 12 ft. wide and 130 ft. long.

The upper ground floor is approached from St. James-street, the entrance hall being 106 ft. long by 28 ft. in width. This is called the Salle d'Attente. On the south front are the halls of deliberation and election, respectively 56 ft. and 72 ft. in length by 35 ft. in width. Rooms for the deputies with cloak-rooms and lavatories are provided. The two courts are upon the opposite side of the entrance hall, from which they may be entered, but the public entrance to the police-court is from New-street, and that to the New Court or Salle d'Audience is from St. James-street. The business room for the bailiff and the juratts' retiring room adjoin the courts, and have a separate entrance from St. James-street. Above them is a library. There is a direct underground communication between the prison and the courts. The estimated cost is 50,000*l.* The materials for the outer walls are the local grey granite, Portland stone being used for the upper stages of the tower, and for the inner part of the large windows. The use of granite has necessitated great simplicity in design which is probably an advantage.

The drawing is exhibited in the Royal Academy.

### THREE BRIDGES.

AMONG the architectural drawings at the Royal Academy this year are three bridges by Messrs. Ernest George & Yeates, and of these we give reproductions in our present number.

One of these is now erecting at North Mymms, Herts, for Mr. Walter Burns. It is schemed together with an octagonal lodge, iron entrance gates, and stone piers. It is of brick and stone, and the span of each of the four arches is about 20 ft. It crosses a hollow which is the bed of the Colne, and is only occasionally flooded, though, at such times, the water rises ten or fifteen feet. Mr. J. Simpson is the contractor, having previously done the work of the house under the same architects.

The bridge at Monk Fryston, Yorkshire, for Mr. Hemsworth, is a roofed wooden bridge, for which the ancient bridge at Lucerne is taken as a type. Its length is about 80 ft. It crosses a piece of water in the park, giving pleasant shade till the opposite trees are reached.

It is constructed as an honest piece of carpentry, with its timbers halved or tenoned, and oak pinned; not relying upon nails, screws, or iron straps to keep it together.

A third example, also by Messrs. Ernest George & Yeates, is a foot-bridge crossing a right-of-way through a park. It starts from a hillside, and the descending steps (which are apt to be awkward and slippery in wet weather) are formed in an octagonal turret, shingle covered.

### ST. PETER'S CHURCH, BENTLEY, DONCASTER.

THIS church was built two or three years ago. It accommodates 400 adults. The plan comprises a wide nave with very narrow aisles, nave and aisles under one roof; a chancel of dignified proportions, with vestries, and organ chamber on the north side.

The entrances are in the western bay of the nave, north and south. A low, broad porch of slight projection shelters the northern entrance. The lowest stage of the tower forms a commodious entrance on the south side; this tower, together with the west end, forms the most prominent feature of the design, and is surmounted by a spire rising to a height of about 120 ft.

The church is built of brick, faced externally with a local stone of a warm yellow colour. The walls are plastered inside. The roofs are of Baltic timber, with massive tie beams, arched trusses, purlins, wall braces, &c., and a bold coved cornice. The roofs are covered with tiles. The floors are laid with wood blocks, with tiled passage-ways. The open benches in the nave and also the choir stalls, which are elaborately carved, are of teak. The pulpit and font are of stone. A dossal for the present supplies the place of a reredos. The east window—which is a richly traceried one of five lights—is filled with painted glass by Messrs. Clayton & Bell.

The architect is Mr. J. Codd.

### COMPETITION DESIGN FOR CHURCH FOR EXETER.

THIS was one of the many designs sent in for a rather famous competition in which the assessor was allowed only to consider a small number of the designs, previously selected without his concurrence.

The design, by Mr. G. H. Shackle, is one of considerable originality. The walls were intended to be of brickwork plastered inside, the dressings of stone, and the roof covering of Delabole slate. The church would accommodate 650, and its cost was estimated by an Exeter firm of builders at 6,500*l.*

The drawing was exhibited at the Royal Academy of 1897.

### PALAZZO BERNARDO.

THE Palazzo Bernardo has a typical Venetian elevation. The windows are treated with white veined marble, and the spandrils filled with disks of purple porphyry.

The whole front is now bereft of the gorgeous covering of frescoes by Giovanni Salviati, which formerly adorned it, but it still presents a pleasant aspect of agreeable colour, due to the variety and weatherstaining of the brickwork. The courtyard of the palace is no less attractive than the outside. R. S. BALFOUR.

## LONDON AND MIDDLESEX ARCHÆOLOGICAL SOCIETY.

AN evening meeting of this Society was held on Tuesday, the 2nd inst., at the London Institution, Finsbury-circus, E.C.

Mr. E. W. Brabrook presided, and introduced, after a few opening remarks, Sir Benjamin Stone, who was announced to deliver a lecture on "Historical Photography, especially with Reference to London and its Environs," but after he had been speaking for about three-quarters of an hour, it was discovered that the lantern, by the aid of which the photographic slides were to have been shown, had not arrived. The lecturer, however, gave a narrative of facts which he had unearthed in his researches among the relics contained in the Pyx Chapel at Westminster, Abbey, and spoke of the importance of photography in historical records, and the great use to which "snap shots" could be put, if dated and carefully preserved.

Dr. Freshfield, the President of the Society, in moving a vote of thanks to Sir B. Stone, said he wished to take this opportunity of alluding to the contemplated wholesale destruction of the old City churches. Some of the bishops, after spending a few years in the diocese, seemed to think that the best way of getting money was to pull down and sell the City churches. The Union of Benefices Act, by means of which that destruction had been carried on, had already proceeded far enough in his opinion, for at the present time the sites of three churches, viz., St. Bartholomew, Moor-lane; St. Michael, Bassishaw; and St. George, Botolph-lane, had been sold, and the churches were to be pulled down. Many of them had seen the announcement in the *City Press* that the Bishop had now organised a tribunal who were to advise him on the further demolition of the old City churches. That was a much more dangerous manner of attacking these old buildings, and through its agency he had strong reason to believe that the churches of Saint Mary Woolnoth, and Saint Edmund the King and Martyr, Allhallows, Lombard-street, and Saint Peter, Cornhill, would shortly be placed under the ban of extinction. It was to the vicars, churchwardens, and vestries they must look to help them in opposing that destruction, and he hoped those present would do their best to assist him in so doing. It was arranged that Sir B. Stone would complete his lecture on another evening, when the lantern would be forthcoming.

MEMORIAL WINDOW, ANNAHILT CHURCH, CO. DOWN.—A stained-glass window has been placed on the south side of this church. The window consists of two lights and was designed and executed by Mr. T. F. Curtis (Ward & Hughes), of London.

# Books.

*Spon's Architects' and Builders' Price Book: With Useful Memoranda and Tables.* By W. YOUNG, Architect. Twenty-sixth edition. London: E. and F. N. Spon, Limited, 125, Strand.

THE main title of this book does not convey its real character, the "Useful Memoranda and Tables" comprising nearly half the volume. Interesting as some of these may be, they savour rather too much of the prevailing "tit-bits" order; a large number of the examples given, to be of any real value, requiring a much larger space than can be given in a book of this kind. On the other hand, some of the tables and articles are extremely useful and are not to be found collected in any other work.

This edition is almost a literal reprint of the last, even to the preface, and does not bear the impress of such careful revision as the nature of the work demands. For instance, in the table on page 167, the prices for labour and mortar on brickwork, the *highest* price given is 5*l*., in the price of brickwork on page 171 it is given at 6*l*. 15s. for the lowest. Again, we think it a somewhat dangerous example to give brickwork "picked for outside work and jointed," and "in walls picked stocks and jointed both sides" at per rod superficial, and certainly the difference in price is more than 25s. per rod between ordinary brickwork, and that "in picked stocks jointed both sides," even if the walls are thick, and this latter element enters very largely into the calculation of price.

In the prices for Portland and Bath stones on page 185 no mention is made as to the particular beds referred to. Certainly some note should be given as to these if the information is to be of any real value, as, in addition to the variation in the cost of the stone, there is a considerable difference in the cost of working. This is not the only book of its class that fails in this respect. The same remark applies to the items of Yorkshire stone on pages 186 and 187, and these, in connexion with those on page 188, require some explanation. There are a great many stones mentioned which are not likely to be in general use, and the space occupied by these might be more usefully employed in amplifying the information of those more in use; and why Robin Hood and Howley Park stone are relegated to a position amongst sundries at the fag end of the book passes our comprehension. If it is necessary to give the prices of Scotch stones, certainly the English terms should be given alongside the Scotch ones, as a price-book suited to London, or even England generally, is practically useless in Scotland.

The same want of careful revision mentioned earlier militates against the usefulness of this work, even where the information given is useful, *e.g.*, pages 293, 293*, 293†, and 294. This system of numbering should not occur in more than one edition, and the question arises which are the casements "above" mentioned on page 294? The items immediately preceding are steel and the others have the items of fixed lights immediately following.

The work generally has all the material to make it one of the most useful of its class, and with careful revision and rearrangement, with the elimination of a good many items and the amplification of others, this end would be achieved; but the simple tacking on of later information without any attempt at bringing that which the book already contains up to date, is useless. That is the impression that a careful study gives us of the edition now before us, and we think the examples given, which are only a few of those we noticed, fully bear this out.

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*Modern Drainage Inspection and Sanitary Surveys.* By GERARD J. G. JENSEN, M.S.E., F.I.S.E. London: The Sanitary Publishing Company. 1899.

THIS little book of 126 pages can be recommended to the architect, surveyor, and sanitary inspector as a guide-book in reference to the matters of which it professes to treat. The four methods of testing drains are discussed, namely, "olfactory" tests, and testing by smoke, water, and compressed air, preference being given to the last. The "Jensen" pneumatic drain-testing machine is described and illustrated, as also are the principal kinds of smoke-machines. The author's gas-pipe testing machine is simple and useful. It consists of a pump and container; after the gas has been turned off at the meter, the tube of the machine is connected with one of the gas-fittings, and a small quantity of liquid ammonia is poured into the container, the fumes from which are then pumped into the system of pipes. A test-paper passed along the course of the pipes will locate the position of any leakage which may occur. In the matter of traps and sanitary fittings there is nothing very novel; indeed, siphonic closets and lavatories are not mentioned, nor is any mention made of the different kinds of covers for manholes and lampholes, or of channels leading to gullies. More might with advantage have been said of the methods of ventilating systems of drainage. These are merely sins of omission; sins of commission we have not discovered. The three forms of "Sanitary Report" will be of great service to the young inspector. The book is well arranged and well written, clearly printed, and profusely illustrated, and contains a good index.

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*Journal of the Sanitary Institute.* Vol. XX., Part I., April, 1899. London: E. Stanford.

THIS number of the Journal is largely made up of what we may call the remnants of the Birmingham Congress. No fewer than twenty-two papers read (or taken as read) at the Congress are included, but of some of them the merest abstract is given. Dr. Sykes's paper on "Dwelling Accommodation in Large Cities" occupies the first place, and contains much interesting matter. The importance of the housing problem is evident when we remember that, at the time of the last census, 45 per cent. of the population of England and Wales dwelt in houses or tenements containing from one to four rooms only. In the crowded district of St. Luke's, London, the percentage was no less than 80. Dr. Sykes pleads strongly for a statutory definition of overcrowding, and insists that, for adults, the minimum air-space should be fixed at 400 cubic feet per head. Mr. Peter Addie treats of improvement schemes under the Housing of the Working Classes Act, and gives plans of the houses erected by the Corporation of Birmingham. The smaller tenements are flats, each containing a living-room, scullery, and one or two bedrooms; the buildings are of two stories, the upper tenements being reached by staircases common to several of them. The larger houses consist of two stories and an attic, and are well arranged with the exception of the stairs, which are as bad as they can well be, being indeed positively dangerous on account of the number of turnsteps or winders and the absence of light. Mr. J. S. Pickering contributes an interesting paper on by-laws relating to new streets and buildings, and draws attention to the illegal provisions contained in many by-laws, such as those relating to the height of rooms in places where the Public Health Acts Amendment Act, 1890, has not been adopted. He wisely suggests that the adoption of by-laws by Sanitary Authorities should be made compulsory, but that greater latitude should be given to authorities to frame by-laws adapted to their own particular locality. The paper was printed in our issue for October 1, 1898. There is a mournful interest in the contribution by Sir Douglas Galton, as this number of the Journal contains also the account of his death, together with a memorial notice of his career.

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*Inwood's Tables of Interest and Mortality for the Purchasing of Estates and Valuation of Properties.* Twenty-fifth edition. Revised and Extended by WILLIAM SCHOOLING, F.R.A.S. London: Crosby Lockwood & Sons. 1899.

WHEN a book has reached a twenty-fifth edition the reviewer has merely to record the fact. "Inwood's Tables" are so well known that it would be absurd to discuss them. It is sufficient to say that those who need a book for the purpose of such calculations as the value of reversions, estates, and so forth, will find in this book the most ample assistance.

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## TRADE CATALOGUE.

MESSRS. HOLDEN & BROOKE, LIMITED, of West Gorton, Manchester, send us their new catalogue of steam-users' specialties, among which we notice some novelties which will prove of interest to builders. Several injectors of different kinds are illustrated and priced, but particular attention should be drawn to the exhaust steam injector for working against high boiler-pressures. This consists of an exhaust-steam injector supplemented by a small live-steam injector, the result being, it is said, a feed of very high temperature, namely, from 235 deg. to 270 deg. Fahr. We notice also their "silent heaters, boilers, and circulators," for heating and circulating liquids by exhaust or live steam; these will be useful in swimming baths, laundries, breweries, &c. The "Sirius" pulsating pump appears to be both strong and cheap; the list price for a pump to deliver 6,000 gallons per hour is only 19*l*. Russell's patent ejection valve for ejecting condensed water from steam pipes is a simple contrivance, and as it is made for pressures below 15 lb. it can be used for steam warming apparatus.

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## BOOKS RECEIVED.

A HISTORY OF FRENCH ART 1100—1899. By Rose G. Kingsley. (Longmans, Green, & Co.)

PRACTICAL MASONRY. By W. R. Purchase. (Crosby Lockwood & Son.)

APPLIED GEOLOGY. By J. V. Elsden. Part II. (The *Quarry* Publishing Company.)

PROCEEDINGS OF THE SOUTH AFRICAN ASSOCIATION OF ENGINEERS AND ARCHITECTS. Vol. IV.

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# Correspondence.

*To the Editor of* THE BUILDER.

## SPECIFICATIONS.

SIR,—I have read with much pleasure the report of Mr. Macey's paper on specifications.

It is evident these are not left to the office boy, as they were in my younger days, but I fear the opposite extreme is being reached, and the specification is becoming an incomplete bill of quantities.

It must be remembered that drawings and specification are for the purpose of enabling the building to be erected in a proper manner.

What really takes place on a building is that the under foreman takes the builder's copy of the drawings on the work, and the specification is seldom consulted.

Builders, when consulted, say, give full particulars on the drawings, and they can dispense with specifications.

I have a number of drawings made by architects in the latter part of the last century, where a full description of the work is written on the drawing.

I cannot agree with Mr. Lovegrove that 9 in. by 9 in. is large enough for all flues. All flues over 20 ft. in length, and all kitchen flues should be 14 in. by 9 in. I have fifty-four buildings under my charge, and the 9 in. by 9 in. flues require sweeping every three months or they smoke badly.

ROBERT PHILLIPS.

*Shire Hall, Gloucester.*

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## ARCHITECTURE AT THE ROYAL ACADEMY.

SIR,—Will you permit me to state that I am indebted to Messrs. Fabbrucci & McCrossan for the excellent little model of the proposed Victoria Tower for Colchester? By an accident, I much regret this was not stated in the R.A. catalogue.

JOHN BELCHER.

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## MESSRS. GIBSON & RUSSELL.

SIR,—The statement which appeared in your last issue under the heading of "Miscellaneous," relative to the dissolution of partnership between Mr. Gibson and myself, is inaccurate, as Messrs. Gibson & Russell have never been at 4, Gray's Inn-square, but always at No. 11, where I shall continue to practise, Mr. Gibson having removed, judging from your paragraph, to No. 4. S. B. RUSSELL.

⁂ The statement sent to us previously was not quite clear.—ED.

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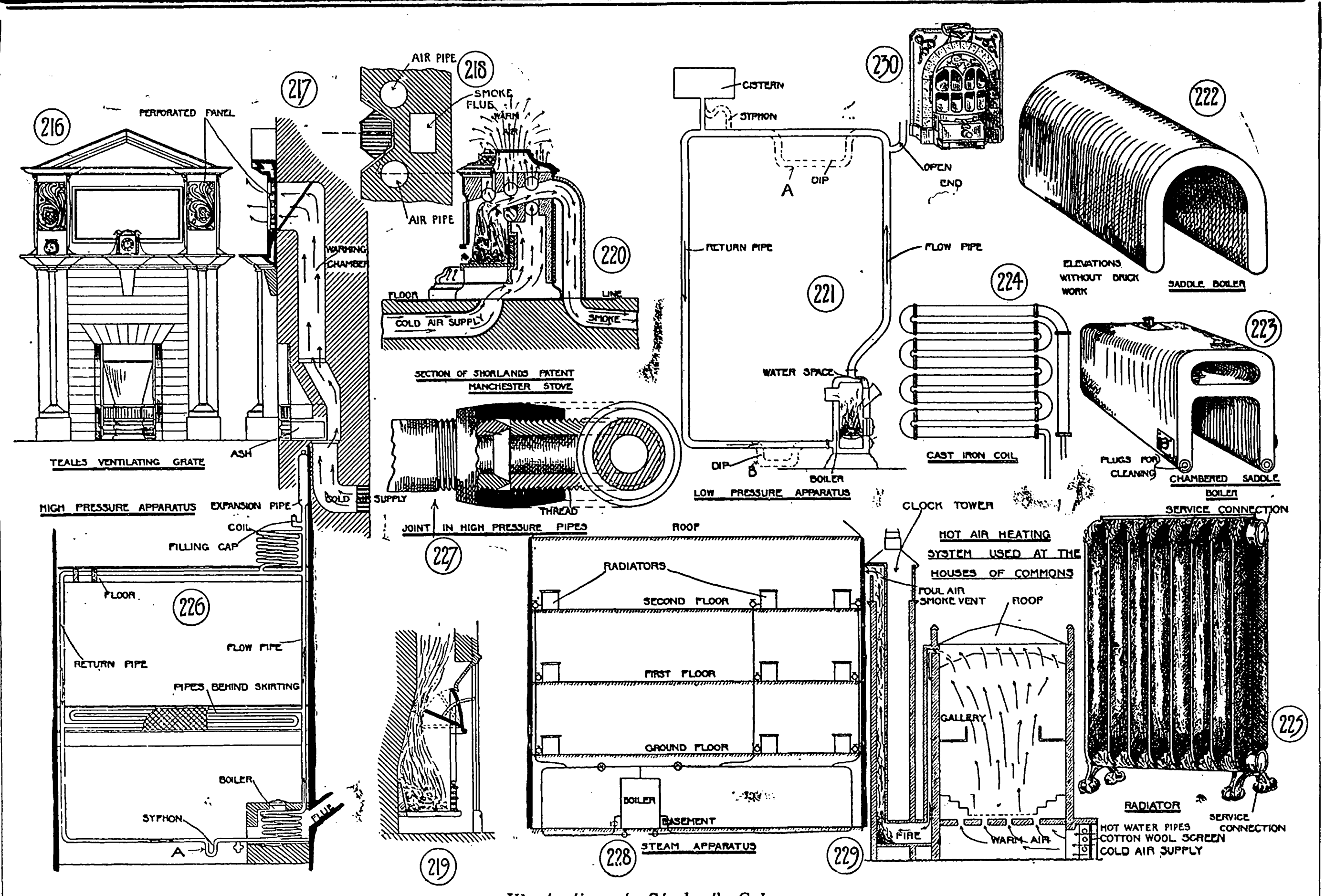
NEW HOMŒOPATHIC HOSPITAL, BROMLEY.—The foundation-stone has just been laid of Bromley Hospital and Dispensary, on the White Hart Field. The whole of the working part of the hospital is on one floor, and it will comprise, when completed, a women's ward with six beds, men's ward with two beds, children's ward with six or eight beds, two single bed wards, an operating-room, day-room, and matron's sitting-room, a complete kitchen department, linen stores, &c. Each ward will have separate bathrooms and sanitary conveniences. The out-patient's department will contain a waiting-room, consulting-room, two examination-rooms, and dispensary. On the first floor, over the administration department, are bedrooms for the matron, nurses, and servants. The whole of the building will be heated by hot water. Mr. S. B. Russell, of Bromley, is the architect; and the work is being carried out by Mr. T. D. Graty, builder, of Bromley.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PERFORATED PANEL
AIR PIPE
SMOKE FLUE
WARM
AIR PIPE
WARMING CHAMBER
FLOOR
LINE
COLD AIR SUPPLY
SMOKE
SECTION OF SHORLANDS PATENT MANCHESTER STOVE
TEALES VENTILATING GRATE
ASH
HIGH PRESSURE APPARATUS
EXPANSION PIPE
COIL
FILLING CAP
COLD SUPPLY
THREAD
JOINT IN HIGH PRESSURE PIPES
FLOOR
RETURN PIPE
FLOW PIPE
PIPES BEHIND SKIRTING
BOILER
SYPHON
A
FLUE
CISTERN
SYPHON
DIP
A
RETURN PIPE
FLOW PIPE
WATER SPACE
DIP
B
BOILER
LOW PRESSURE APPARATUS
OPEN END
ELEVATIONS WITHOUT BRICK WORK
SADDLE BOILER
CAST IRON COIL
PLUGS FOR CLEANING
CHAMBERED SADDLE BOILER
SERVICE CONNECTION
ROOF
RADIATORS
SECOND FLOOR
FIRST FLOOR
GROUND FLOOR
BOILER
BASEMENT
STEAM APPARATUS
CLOCK TOWER
HOT AIR HEATING SYSTEM USED AT THE HOUSES OF COMMONS
FOUL AIR SMOKE VENT
ROOF
GALLERY
FIRE
WARM AIR
HOT WATER PIPES
COTTON WOOL SCREEN
COLD AIR SUPPLY
RADIATOR
SERVICE CONNECTION

*Illustrations to Student's Column.*

# The Student's Column.

## ARCHITECTURAL HYGIENE.

### XVIII.—HEATING.

THIS subject may be conveniently dealt with under the following headings :—

1. *General remarks.*
2. *Open grates.*
3. *Close stoves.*
4. *Hot-water apparatus.*
5. *Steam-pipes.*
6. *Hot air.*
7. *Electricity.*
8. *Hot-water supply.*
9. *Safety Valves, &c.*

### I. GENERAL REMARKS.

It must be clearly understood that all heating arrangements must be subservient to the scheme of ventilation, and these most important arrangements should be considered together in the designing of any building. Heat may be considered of two kinds, viz., *radiant* and *convexed*, the former is that which is conveyed in straight lines from a heated surface and its intensity (like light) decreases as the square of the distance. *Convexed* heat may be made clear by the following example :—When the air around heated surfaces becomes warmed, the surrounding and colder air forces it upwards ; this is constantly repeated till the whole of the air is warmed.

### 2. OPEN GRATES.

For a small room this is undoubtedly the most cheerful and pleasant method. Modern stoves of the *Pridgin Teale* model are a vast improvement upon the old-fashioned kinds in which nearly all the heat was sent up the flue, only about one-sixth being sent into the room. By looking at figs. 216, 217, and 218, it will be seen that the sides and back being of firebrick, and the latter being well inclined forward, the intensity of the heat is much increased, and it is thrown more into the room than in the other grates. The movable ashpan regulates the draught, so that more perfect combustion can be obtained and the removal of the ashes is facilitated. In addition to the above the "throat" of the flue should be contracted and the front and bottom bars should be narrow. In this same figure it will be noticed that a supply of fresh *warmed* air can be obtained by means of an inlet flue which is warmed by the fire. There are very many patent grates now in the market involving the above principles in various modified forms. It is well to remember, however, the danger of more complicated systems, and it is, as a rule, a mistake to depart materially from Teale's ideas as before expressed.

Fig. 219 shows Dr. Lee's patent fire regulator, and is a very simple and scientific appliance. It will be seen from the section that practically it is a blower fitted with a damper. It has been found that 30 to 50 per cent. of fuel can be saved by its use. When the fire is first lighted the regulator can be pulled up by the ratchet, and when it is well alight the regulator can be arranged horizontally over the fire so as to control the draught and combustion. It can be fitted practically to any grate, and when the fire is not in use it can be detached and stored away. It has undergone scientific tests with most satisfactory results. By its means a considerable diminution of draught occurs up the chimney, thus preventing a room from being draughty. In consequence of this diminution the heating capacity of a fire is conserved, and sent into the room instead of being drawn up the chimney. It also appears that the regulator acts to a certain extent as a smoke consumer.

A recent contrivance in fire-bricks is shown in fig. 246. They are known as the *Flaming Kitchener Cheek*, and the advantages claimed are (*a*) a continuous flow of flame ; (*b*) more heat from less coal ; (*c*) most of the smoke is consumed by the flaming brick ; (*d*) flues require less sweeping ; (*e*) ovens and boilers are more readily heated, and it burns economically any quality of coal. They are made of the best Stourbridge fire-clay, and are of the same size as the ordinary cheek, but perforated through the face with upwardly slanting holes, which ash cannot stop up while the fire is kept well raked. These front holes lead into central passages having an exit at the top, and through which the flames are drawn from the hottest parts of the fire. These fire-brick cheeks become intensely and uniformly heated right through, which prevents them from cracking and scaling off, like the solid brick cheeks which suffer from irregular expansion caused by heat playing on one side only.

When fresh fuel is added, the new flames and gases have not to wait until they can force their way through the smoking tarry mass, because they find an easier passage through this red-hot patent brick, even being drawn through the glowing embers, if previously heaped against the brick, and thus completing their combustion The balance of the smoke and gases, which may not have been drawn through the coals, fire and flaming cheek, passes over the top holes, and is there ignited by the intensely hot flames issuing therefrom. The results are—little or no smoke or soot passing into the flues, and more heat generated from less coal. The lower parts and fire-side of the oven and boiler are rapidly heated through the thin back of the cheek.

Another patent recently placed on the market is shown in fig. 247*, which represents what is known as the "Domestic Crater."

It is designed on the principle of creating an induced current of heated air to pass freely into the body of the fire, and thereby inducing more perfect combustion. It acts on the same principle as that involved in inserting a poker at the bottom of a fire to revive it. The principle is that the fuel is held up by the poker for a short time, and forms a hollow space inside the fire, allowing a free current of air to enter and pass into the fire. As the fire burns up the fuel settles down around the poker, and fills the hollow space, thus doing away with the air current. This difficulty is claimed to be remedied by the *crater*.

*Gas* is now used to some extent for grates, and especially in bed and other rooms which are not used continuously. If, however, the products of combustion are not carried off by a flue, they are unhealthy. Balls of asbestos and pumice are usually placed over a Bunsen burner, and, being rendered incandescent, produce considerable heat. Some of the later designs are modelled with the idea of providing a supply of heated air. It is probable that in the future *gas* kitcheners will be used more extensively for cooking purposes owing to their handiness and cleanliness.

### 3. CLOSE STOVES.

There are many forms now in use ; the one shown in fig. 220 and made by Shorland, of Manchester, is, perhaps, one of the best. They are economical but are liable to over dry the air and cause discomfort ; they have the advantage of radiating heat all round, but they seem apt to char the organic matter in the air and cause carbonic oxide to be generated ; the latter being injurious to health.

Fig. 230 represents the "Salamandre" stove supplied by the London Warming and Ventilation Company. It presents a cheerful appearance owing to the doors being fitted with mica panels, and the dampers are so arranged that when the stove is burning slowly the expense for fuel is reduced to a minimum, while by altering the regulator the heat may in five minutes be increased to its full capacity. It will burn continuously through a whole winter with *anthracite* at a cost not exceeding 3d. for every twenty-four hours. It can be placed in front of any grate or, if the latter be removed, it can be fixed in position with a perforated ventilating front.

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* For figs. 237, 246, and 247, see next sheet of illustrations.

The *fuel* used in all kinds of stores has been considered by most people up to the present time simply from the standpoint of cost. There is no doubt, also, that the claims of *anthracite* have, to a large extent, been hidden from the public owing to the large interests of British capitalists in the smoky and unsatisfactory coal of everyday life. *Anthracite* is a natural coal which gives off no smoke, and it is sent out from the mines in various regulated sizes. Some fifty million tons are annually mined in the United States, and some two millions in South Wales, and some inferior qualities are found in other countries. The Americans export but little of their anthracite, but that from Wales appears to be freely sent to other countries. The British public may some day be sufficiently wise to retain in their own country the fuel which is the most economical, odourless, and smokeless that is known to mankind. The defenders of the filthy coal that fills our cities with dirt and soot, and veils our buildings in fogs and chokes our lungs with foreign matter, have stated that anthracite will not burn in open grates and should not be used for cooking purposes. As a fact, it burns better in open grates, though perhaps requiring a little more wood in the kindling, and when once alight it requires but little attention if the ash is occasionally removed from the front bars and from the base of the grate. The cinders should be riddled and reburnt. For cooking, anthracite is an ideal fuel, and for grilling purposes indispensable.

### 4. HOT WATER APPARATUS.

Under this heading we have to consider two distinct systems, commonly called
(*a*) *Low Pressure*, and
(*b*) *High Pressure*.

In both systems the circulation is due to the difference in weight of two columns of water connected together and in one continuous circuit. When one column is heated it expands, becomes lighter, and is forced upward by the heavier column pressing against its base.

(*a*) *The Low Pressure* system has many advantages over other forms of heating, the principal ones being that there is little risk of accident by fire, an even temperature is easily maintained, almost any kind of fuel can be used, and it is economical in its consumption thereof. Large pipes are used in this system, being generally 3 in. or 4 in. in diameter. Fig. 221 shows the application of this system. The flow-pipe should rise direct from the boiler to the highest level of the circulation, and the vertical fall of the return pipe should be designed as much as possible so as to be at the end of the circulation, in order to use the highest vertical column obtainable of the coldest water in the apparatus as the motive power. Dips as dotted at A and B tend to reverse the circulation owing to the column of water that is further from the boiler being cooler and heavier than that which is nearer. The nearer, however, that the dips are kept to the end of the circulation the less is their resistance. Escapes for air and steam are essential, and small pipes should be carried up well above the highest water level and should discharge into the open air. Boilers must be used that are suitable for the work required to be done. Hood's law on this subject is that one superficial foot of direct heating surface will heat 50·0 of 4 in. pipes. It is found best in practice to add at least 25 per cent. of heating surface, owing to the liability of improperly swept flues and indifferent stoking. The ordinary saddle boiler as in fig. 222, is much used and is easy to manage. Chambered boilers, as in fig. 223, have a greater heating surface and are suitable for a larger system. Cornish and duplicate boilers are used in big schemes for schools and public buildings.

*Fire Bars* should, of course, have their areas in proportion to the rest of the apparatus, and are not generally less than twenty square inches for every hundred feet superficial of radiating surface.

*Chimneys* should be well swept occasionally, and should be carried up a sufficient height so as to ensure a proper draught. They should not be less than 9 square inches in area for every hundred feet of radiating surface.

*Pipes* are generally of cast-iron in 9-ft. lengths, or in 6-ft. lengths if under 3 in. in diameter. They should be provided with sliding expansion joints to prevent their becoming inefficient owing to leaks. The other joints should be properly caulked with lead and spun yarn. Hood gives the following table to find the feet run of pipe required for every 1,000 cubic feet of space in different classes of buildings; but if the space is thoroughly ventilated 25 to 50 per cent. must be added.

| Nature of Buildings. | Temperature Required. | Length of Pipe. | | |
|---|---|---|---|---|
| | | 4 in. | 3 in. | 2 in. |
| | deg. | ft. | ft. | ft. |
| Churches and large public buildings | 55 | 5 | 7 | 10 |
| Dwelling rooms | 65 | 12 | 16 | 24 |
| ,, ,, | 70 | 14 | 19 | 28 |
| Halls, shops, waiting-rooms, &c. | 55 | 10 | 14 | 20 |
| ,, ,, ,, ,, | 60 | 12 | 16 | 24 |
| Workrooms, manufactories, &c. | 50 to 55 | 6 | 8 | 12 |
| ,, ,, ,, ,, | 60 | 8 | 11 | 16 |
| Schools and lecture rooms | 55 to 58 | 6 to 7 | 8 to 9 | 12 to 14 |
| Drying-rooms for linen, &c. | 120* | 150 to 180 | 200 to 240 | 300 to 360 |
| ,, ,, curing bacon, drying paper, &c. | 70 | 20 | 28 | 40 |
| Greenhouses and conservatories | 55† | 35 | 47 | 70 |
| Graperies and stove-houses | 65 to 70 † | 45 | 60 | 90 |
| Pineries, hothouses, cucumber-pits | 80 | 55 | 74 | 110 |

* This is the temperature when empty; when filled with wet linen, about 80 deg. † In coldest weather.

*Pipes* should be painted to prevent oxidation, and should be fitted with valves so arranged that any part of the system may be shut off at will from the flow and return. The *screw-down* valve should be used in preference to the *throttle*.

*Cisterns*, which may be worked by a ball valve, should be fixed above the highest water-level to supply the loss of water due to evaporation, &c. A waste-pipe should be provided to act as an overflow in case of the ball-cock getting out of order, and to take off the superfluous water if the system is overheated.

*Coils and Radiators* are usually placed in suitable positions for the purpose of obtaining a larger amount of heating surface. A simple form of double coil is shown in fig. 224, and a more modern form in fig. 237. Radiators were originally introduced by the Americans, but are now much used in this country. They are superior to and much cleaner than cased coils, and are now much improved in design. Fig. 225 represents one that is frequently used.

*Gratings* over pipes are to be avoided, though they are very generally in use for churches and chapels, the pipes underneath soon become covered with a layer of dust, which not only gives forth offensive smells, but also acts as a non-conductive covering.

(*b*) *High Pressure Systems* consist of a continuous circuit of wrought-iron welded tubing, generally about ⅞ in. diameter. About one-tenth the total length of piping is formed into a coil and is placed in a fire-brick lined furnace, in which the temperature can be raised to about 380 deg. F. Fig. 226 is a sketch representing the principles of this system. An expansion pipe is shown at the top of the flow-pipe, and the water not being filled into this pipe; a space is provided for its expansion. The whole apparatus being sealed, the water is heated and cooled very rapidly, and it is maintained that it is more economical than other systems for buildings and rooms that are not frequently used. The pipes have to be carefully made and tested, and are cut with male and female threads and screwed to each other by sockets, as shown in fig. 227. A syphon, as shown at A in fig. 226, is placed near the boiler to prevent the water working back up the return pipe. A disagreeable smell is sometimes noticed from this system, owing to the high temperature, from the same reason as mentioned when discussing *Close Stoves*.

## *OBITUARY.*

MR. A. P. BREVITT.—The death took place on the 2nd inst. of Mr. Archibald Paul Brevitt, architect, of Wolverhampton. The deceased, who was 59 years of age, had been in ill-health for a considerable period. He commenced practice at his native place, Darlaston, removing about fifteen years ago to Wolverhampton.

MR. W. C. TYNIE.—The death of Mr. William Campbell Tynie, took place recently, after a short illness, at his residence 2, Claremont Park, Gateshead. About thirteen years ago Mr. Tynie began business as builder and contractor in partnership with Mr. J. Graham. A few years ago the latter gentleman left England, and since then Mr. Tynie had carried on the business himself.

## *GENERAL BUILDING NEWS.*

CHURCH, LOWESTOFT.—The new mission church, which has been erected on Beaconsfield-road, Kirkley, Lowestoft, was dedicated recently. The building, which is in connexion with Kirkley Church, is to be known as "St. Matthew's Church." The edifice is of half-timber construction on a brick base, is in the Perpendicular style, and was designed by Messrs. Bottle & Olley, of Great Yarmouth, Mr. Elsey being the builder. Sub-contracts were carried out by Messrs. Brady & Todd, Mr. Whitehead being responsible for the stonework, and Messrs. Waller & Smith for the gas, &c. The nave is 70 ft. by 35 ft. 6 in., and provides seating accommodation for 500 on chairs. At the west end is a baptistry. The main entrance is at the south-west corner of the nave. The chancel is 27 ft. by 17 ft. 6 in., and has aisles and a clearstory on either side. The north aisle is used as an organ chamber and the south as a vestry. The rood screen is surmounted by a crucifix which has semi-lifesize saintly figures in adoration on each side.

METHODIST CHURCH, PUDSEY.—Trinity United Methodist Free Church, Pudsey, was opened on the 1st inst. The new buildings consist of a church with vestries and other accessories. The extreme internal dimensions of the church are 79 ft. by 53 ft. The central feature of the front elevation is an open portico, with Corinthian columns, surmounted by a pediment. The portico is flanked right and left with staircase turrets—the one on the left hand rising to a height of about 90 ft., and finishing with a cupola. The main entrance doors, three in number, are placed on the inner wall of the portico, communicating with inner vestibules. The church has galleries both at the ends and sides. The whole of the pews are open, those on the ground floor being circular on plan, radiating towards the rostrum. The windows are glazed with cathedral-tinted glass in lead, executed by Messrs. Seward & Co., of Lancaster. The ground floor of the church and vestries is laid with pitch pine wood-block flooring. The church will provide seating accommodation for about 880 adults, or a mixed congregation of some 1,050 persons. The heating is by hot water, low-pressure, fitted up by Messrs. Seward & Co., of Preston. In connexion with the heating arrangement a number of ventilating radiators have been fixed, allowing for the introduction of fresh warm air into the building. The total cost will be about 7,000*l*. Mr. W. Hutton, of Fulneck, has been the contractor for the bricklayer and mason's work; Messrs. Appleyard Bros., of Bramley, for the carpenter and joiner's work; Messrs. Laycock & Sons, Stanningley, for the plastering; Mr. F. Thompson, Stanningley, for the slating; and Mr. A. Higginbotham, of Idle, for the plumbing and painting. The architect is Mr. W. H. Dinsley, of Chorley, whose design was accepted in competition. Mr. W. Shackleton has acted as clerk of works.

CATHOLIC SCHOOL-CHURCH, ACCRINGTON.—The memorial stone of a new Catholic school-church, which is being erected on the block of land abutting on Cobham, Garfield, and Beaconsfield-streets, Accrington, was laid recently. The new building is 91 ft. long by 41 ft. in width. It is an oblong structure and will be two stories in height. The ground floor will from the outset be used as a school, and will accommodate 334 children. The upper room will serve the purposes of a chapel until a church can be built, and it will thereafter be utilised for school purposes. It is also intended to erect a presbytery. The schools will ultimately afford accommodation for 669 scholars. It will, at least until the upper room is available, be a mixed school, with class-rooms for babies, infants, and elder scholars. The architect is Mr. Hill, of Manchester, and the builder, Mr. H. Ramsbottom, of Accrington.

The cost of the building, together with that of the land, is estimated at 4,770*l*.

New Chapel at Islington Cemetery.—A Nonconformist chapel has just been opened at Islington Cemetery. In February, 1898, a competition took place, with the result that the design of Messrs. Forsyth & Maule, London, was selected, the tender price being 3,054*l*. Messrs. Gough & Co., contractors, Hendon, have carried out the work, and the superintendent, Mr. Stubbs, acted as clerk of the works.

Tower, Fenton Parish Church, Staffordshire.—On the 4th inst. were dedicated the tower and bells which have been added to Fenton Parish Church. The tower was erected by Mr. W. Mould, from the designs of Messrs. Lynam, Beckett, & Lynam. The bells are by Messrs. Carr, of Smethwick.

School, Hessle, Yorkshire.—An addition to the parish schools at Hessle has just been opened. The new building, which will consist of a schoolroom, 73 ft. 6 in. by 21 ft. 6 in., a class-room 22 ft. 6 in. by 21 ft. 6 in., and a cloak-room and lavatory, will be used as a boy's school, the old building being now occupied by the girls. Messrs. Bilson, Botterill, & Bilson were the architects, and the cost has been about 2,200*l*.

School, Heath Town, Staffordshire.—A new infants' school has just been opened at Heath Town. The schools have been erected in the Woden-road. The whole of the accommodation is provided on the ground floor, and consists of an infants' department and a department for boys and girls, containing school and class rooms, cookery-room, babies'-room, teachers'-rooms, and store-rooms. The schools, as now erected, give accommodation for 404 children. The external walls are built with local bricks, relieved with Ruabon brick quoins and terra-cotta, and the roofs are covered with Broseley brindled tiles. The various rooms are warmed by open fireplaces, fitted with Manchester grates. The general contract has been entrusted to Mr. F. W. Beard, Heath Town. The terra-cotta was supplied by Messrs. Davies Brothers, Wrexham; iron fencing by Messrs. W. Hayward & Sons; the gas fittings, &c., by Mr. A. J. Hartill; the whole having been carried out under the supervision of Mr. F. Hunter Lynes, architect, Wolverhampton, whose design was selected in competition.

Truant School, Dinas Powis, Glamorganshire.—A new truant school has been erected at Dinas Powis. The site covers an area of 8 acres, and is enclosed by a boundary wall 8 ft. high, the main entrance opening on to the White Cross-road. The buildings are quadrangular in plan. Running the whole length of the building from west to east is a corridor, with the main hall in the centre, and other corridors branching east and west respectively. On the ground floor is accommodation for various offices, committee-room, surgeon, waiting-room for boys' parents, boys' hall and staircase, boys' dining-room with kitchens adjoining, school and class-rooms, large cloak-room and lavatory with sixty basins, plunge bath, reception room with disinfector, workshop, boiler-house, and laundry. Suites of apartments are in the west and east blocks respectively for the superintendent and officers, and six large pantries and stores. On the first floor are three dormitories for the boys, bedrooms for officers and servants, bath-rooms, &c. Isolated from the main buildings, and in the north-west corner of them, is a small infirmary, the first floor of which will be used for special cases. A portion of the playground has been roofed in for use as a drill-shed. The main floors are fireproof. The floors are laid with wood blocks and tiles throughout, except in the officers' private rooms. The buildings are heated, and all the cooking will be done by steam, for which purpose two six-horse power boilers are provided. Accommodation is provided for 120 boys, but the arrangement of the buildings allows of extension if necessary. In many of the rooms the walls, to a height of 4 ft. 6 in., are faced with white glazed brick, and glazed brick dadoes run through the corridors. Externally the walls are faced with Cwmbran pressed red bricks in Flemish bond, and the roofs are covered with best Portmadoc slates laid on boarding and felting. Mr. Alexander was the clerk of works. The buildings have been erected from plans prepared by Mr. W. H. Dashwood Caple, architect, Cardiff, who has superintended the erection of the buildings, the contractors being Messrs. E. R. Evans & Bros., of Cardiff. The cost of the buildings, boundary walls, roads and lodge will be about 14,400*l*.

Board School, Perth.—Additions and alterations have been made at the Southern District Board School, Perth, at a cost of nearly 5,000*l*. A wing, two stories in height, has been added at right angles to the old school, and contains a central hall on both floors, an infants' department for 250 pupils, two senior class-rooms, a cookery-room, and a workshop. Teachers' retiring-rooms have been provided, also new lavatory and cloak-room accommodation for infants. The various works have been carried out by the following contractors:—Masonry, William Tait; joinery, William Dow & Son; plumbing, James MacLeish; plastering, J. Alexander M'Ritchie, Dundee; slating, James Buchan; wrought-irom railings, D. Macgregor. Mr. G. P. K. Young, Perth, was the architect.

Co-operative Stores, Blyth, Northumberland.—The block of new store premises erected at Cowpen Quay by the Blyth Central Industrial and Provident Co-operative Society was opened recently. Mr. A. A. Windle, of Blyth, was the architect. The contract price of the builders, Messrs. Barron & Temple, of Blyth, was 3,150*l*

Masonic Hall, Loanhead, N.B.—The foundation-stone of the new Masonic Hall, Loanhead, was laid recently. The new hall is being erected in Clerk-street, from plans by Mr. R. M. Cameron, architect, Edinburgh, and will cost about 800*l*. When completed, the main building will accommodate between three and four hundred people, while committee-rooms, &c., will be provided in the front portion.

Town-hall, Conway.—On the 1st inst. the new Town-hall was opened. The building was erected from the plans of Mr. T. B. Farrington, C.E., Borough Surveyor, but owing to the illness of Mr. Farrington, the supervision of the work was given to Mr. R. Davies, architect, Bangor, the contractors being Messrs. Thorp & Sons, Llandudno.

Co-operative Premises, Newbiggin, Morpeth.—A new public hall and co-operative store premises were opened recently at Newbiggin. The new premises, situated in the main street, have been erected by the Newbiggin District Co-operative Society, and consist of grocery and hardware shops on the ground floor with warehouses behind, while on the upper floor is a public hall to seat over 700 persons, fitted with stage or platform, retiring rooms with lavatories, committee-rooms, and offices, built with dressed ashlar stone. The architect for the new building was Mr. T. E. Davidson, Newcastle and South Shields; contractor, Mr. T. Dodds, Bedlington; heating and plumbing, Mr. J. J. Spoor, Bishop Auckland; clerk of works, Mr. Edward Reed.

Additions to Town Hall, Kensington.—On the 4th inst. additions to Kensington Town Hall were opened. On the ground floor, which may be approached either from the main building, or from Church-wall or Church-court, provision is made for the whole of the Surveyors' department. The offices vacated by the transfer will be divided between the Vestry Clerk, the Accountant, and probably the Lighting Engineer. There is also an extension of the Medical Officer's department into the ground floor of the new building. Accommodation is provided for the chief official himself, his clerks, and sanitary inspectors; whilst four extra rooms and several vaults are placed at his disposal in the basement. Vestrymen are not to have a new Council Chamber, but a room is set apart for their convenience. Upstairs, too, the members are provided with a committee-room 41 ft. by 22 ft. The usual offices are attached. The new coroner's court, on the first floor, is quite distinct from the remainder of the building, and can be reached by a separate entrance from Church-wall. The dimensions of the court itself are 32 ft. by 24 ft. There is a retiring-room at the back of the daïs on which the coroner will be seated, and a waiting-room for the witnesses is also provided. The extensions and alterations have been carried out by Messrs. Leslie & Co., builders, of Kensington-square, from plans prepared by the joint architects, Mr. W. Weaver, Surveyor to the Vestry, and Mr. W. G. Hunt, of Kensington. The cost of the site was 6,728*l*., and the contract price for the building was 13,747*l*.

Co-operative Premises, York.—New central premises of the York Equitable Industrial Society, erected in Railway-street and Tanner-row, were opened on the 3rd inst. At a depth of 9 ft. below the surface the workmen unearthed a double row of circular bases, 9 ft. 2 in. apart from each other, and fourteen in number. The new establishment has a frontage of about 150 ft. to Railway-street, and 84 ft. to Tanner-row, and is divided into eight departments. The rear of the place is entirely occupied by warehouses, to which access is gained through a gateway about 12 ft. wide, communicating with a loading yard covered by a glass roof. Two stone staircases lead to the offices and board-room on the first floor. On the second floor are workrooms, caretaker's apartments and tea rooms for the employees, together with a large assembly hall, measuring 65 ft. by 34 ft., having a gallery at one end, and platform and retiring rooms at the other. The building is lighted throughout by electricity. The buildings are heated throughout by hot water on the low pressure system. The architects are Messrs. Athron & Beck, of Doncaster, and the contractors Messrs. Arnold & Son, of the same town.

Free Library, Sutton-in-Ashfield.—A free library was opened on the 3rd inst. at Sutton-in-Ashfield as a memorial of the Queen's long reign. Mr. J. P. Adlington, architect, Sutton-in-Ashfield, designed the building, and the contract was secured by Mr. H. Shaw, also of Sutton. The one-story erection is of brick with stone facings, and is situated in Forest-street. The entrance-hall is 26 ft. long by 9 ft. 6 in. wide. There are three rooms provided, each 14 ft. high. The reading-room, which is at the rear of the premises, is the largest, measuring 34 ft. 6 in. by 25 ft. 6 in.

Lecture Hall, M'Quiston Memorial Church, Belfast.—A new lecture hall in connexion with this church has just been opened. The building comprises a central hall, capable of seating 400 persons, and five smaller rooms, embracing a committee-room with sitting accommodation for 100 persons, a large class-room, ladies' parlour, minister's study, and a kitchen. The hall is 90 ft. long by 62 ft. broad. The erection of the building was carried out by Mr. William Dowling, from the plans of Mr. W. J. Roome, architect.

Artisans' Dwellings, Southampton.—On the south side of ancient Simnel-street, Southampton, a number of slum habitations have been demolished, and on the site there is to be erected by the Corporation dwellings for artisans at a cost of about 9,000*l*. The foundation-stone of the new buildings, which are to the north of the municipal lodging-house, now in course of erection, was laid by the Mayor recently. Mr. C. J. Hair is the architect, and Messrs. Dyer & Sons are the contractors.

Proposed New Theatre, Keighley.—It is proposed to erect a new and enlarged playhouse on the site of the Queen's Theatre, Keighley. The plans of the new edifice, which have been prepared by Mr. Frank Matcham, of London, have been passed by the West Riding County Council and the Keighley Town Council.

Free Library, Putney.—On the 6th inst. a new Free Library was opened at Putney in Disraeli-road. The lending library is 42 ft. by 30 ft., the newspaper reading-room 52 ft. 6 in. by 30 ft.; and there are also a magazine-room, a ladies'-room, and a map-room. On the ground floor in the front of the building is a committee-room, and the upper apartments will be occupied by the librarian. The library, which is 80 ft. back from the road, is approached by a corridor, with an arched ceiling. The plans for the building were prepared by Mr. F. G. Smith, and it has been built by Messrs. H. Roffey, of Putney.

Hospital, Dumbarton.—On the 3rd inst. Lord Overtoun opened in Dumbarton the new "Dr. Little Hospital," which contains seven beds, and is situated in the town-end part of the burgh. When completed, it will have cost upwards of 1,000*l*. The architect is Mr. Rogerson, of Messrs. M'Whannel & Rogerson.

Clock Tower, Wainfleet, Lincolnshire.—A clock tower, which has been erected as a memorial to the late Mr. Walter Martin, was opened on the 2nd inst. The tower is of red brick, with courses of moulded blue bricks, and is 33 ft. high. The clock, supplied by Messrs. Smith & Co., of Derby, has three dials, each 3 ft. in diameter. The contractors were Messrs. J. T. Turner & Sons, of Wainfleet, Mr. J. B. Corby, of Stamford, being the architect.

Council Offices and Fire Station, Bristol.—Colonel A. G. Durnford, R.E., held an inquiry on behalf of the Local Government Board, at the Council House, Bristol, on the 3rd inst., into the applications of the Bristol Corporation for leave to borrow 7,125*l*. for the new Council chamber and offices, and 3,250*l*. for the fire station at St. George. Mr. Yabbicom, City Engineer, explained that the new Council chamber would be 60 ft. by 34 ft., and 21 ft. high. He also explained the plans for the fire station, which he said would be a plain brick and Bath stone building.

Proposed Theatre for Saltley, Birmingham.—Plans will be submitted in a few days for the erection of a new theatre at the corner of Saltley-road and Nechells-place. The designs have been prepared by Mr. T. Guest, of Birmingham. The proposed building will cost upwards of 10,000*l*., and is to seat about 2,000 persons.

Mission Hall, Hessle, Yorkshire.—A mission hall at Springville, in connexion with the parish church at Hessle, was opened recently. The building is of red brick with stone dressings, and consists of nave, chancel, and vestry. It accommodates about 120 persons, and was erected under the supervision of Mr. Thropp, the County Surveyor of Lincolnshire.

Convalescent Home, Herne Bay.—The building, standing on the top of the rising ground to the south-east of Herne Bay, at Beltinge, has just been opened. The Home is a three-storied building of brick, relieved by Bath stone dressings, &c., and has been erected by Messrs. Wall & Co., of London, from designs by Mr. A. Saxon Snell, London. It is warmed throughout by hot-water pipes, and will be lighted by an installation of acetylene gas, erected by the Acetylite Company.

Central Fire-Engine Station, Aberdeen.—These buildings, which are throughout lighted by electricity and heated by steam, are now almost entirely finished. The site, which measures about two acres, lies between the east side of King-street and the Corporation Workshops, and is bounded on the north by a branch railway to the harbour. The main buildings have a frontage to King-street of 100 ft., 70 ft. for the fire-engine station proper and 30 ft. for house (of four stories and attics) for fire-master and assistant fire-master, and two-roomed office. The fire-engine station has an elevation of white granite, and the height from the street level to the apex of the central pediment is 60 ft. On the ground floor is a room (51 ft. 8 in. long by 35 ft. wide and 17 ft. 6 in. high) for fire-engines and hose-reels, &c. At the back are doors, opening by patent spring, entering into a stable. The "duty-room," which communicates both with the engine-room and the firemaster's office, contains switchboards for the electric light, fire bells, telephone communication, and speaking-tubes. Behind the duty-room is a hanging stone staircase, lined with enamelled bricks, leading to the top of the building, the second floor of which contains houses for married firemen, while on the first floor are quarters for single firemen. On the ground floor are boil-house for horses' food and washing-place with entrances to south courtyard (on same level) and the stable. In an underground chamber is the heating apparatus. At the north-east angle is a square tower of stone, 100 ft. high, the interior of which will be used for drying hose-pipes, while iron ladder and balconies outside are intended for brigade exercise. The south courtyard, which will serve for drilling purposes, and has an access to King-street, is surrounded by plainer buildings—store, coach-house, lavatory, three-story houses for married firemen, and rooms for the Corporation's Weights and Measures Department, the latter entering from another courtyard, to the north of which are buildings for the Town Council's Lighting Department. The architect (after competition) is Mr. A. H. L. McKinnon, Aberdeen, and Mr. Robert Milne has acted as clerk of works for the Municipal Corporation. The contractors were:—Mason work, A. Cheyne; joiner, Geo. Jamieson; plaster, Jas. Stewart; plumber, A. B. Robertson; painter, A. Copland; slaters, Adam & Co.; ironwork, John Grant; electric light and bells, Shirras, Laing, & Co., Limited; heating engineer, Walter Simpson—all of Aberdeen. An illustration of the front building appeared in the Aberdeen number of the *Builder* in May last year, and the total cost of the buildings, irrespective of site, will be about 12,000*l.*

ASSURANCE OFFICES, PERTH.—A block of buildings for the General Accident Assurance Corporation, Limited, is in course of erection on the site of the old post-office, Perth. The principal elevations will be built of yellow freestone from Woodburn Quarry, Cumberland, the doorways to be of polished granite. The building will be lighted by electricity. The architect is Mr. G. P. K. Young, of Perth, and the contractors are as follows: masonry, Messrs. R. Brand & Sons; joinery, Messrs. James Hay & Sons; plumbing, Mr. James MacLeish; plastering, Mr. Alexander M'Ritchie, Dundee; slating, Mr. James Buchan, Perth; glazing work, Messrs. G. R. Douglas & Son; ironwork, Messrs. Mather & Son, Edinburgh; marble work, Mr. J. L. Thomson; bells and telephones, Messrs. Westwood & Son, Perth. Mr. George Henderson is clerk of works.

DRILL HALL, HUDDERSFIELD.—The memorial stone of the new drill hall for Huddersfield has just been laid by Lord Roberts. The whole of the buildings cover a space of ground 208 ft. 8 in. in length and 82 ft. in width. The general plan is divided into three sections. In the centre is the main hall, 108 ft. by 78 ft., with a height to the ceiling of 40 ft. At each end are balconies stretched across the whole width of the hall. On the west side of the main hall is the front block of buildings, two stories in height, which abuts on St. Paul's-street. The entrance facing the end of Page-street is 12 ft. wide, and out of the vestibule, into which this admits the visitor, open passages at right angles to the right and left. On the right of the entrance is a room for officers, and on the left the orderly room and rooms for the colonel and adjutant arranged *en suite.* The principal room on the floor above, 50 ft. by 24 ft., is utilised as a clothing store, whilst there are also provided a room for sectional meetings, examinations, &c., an ambulance store, and a room for the signallers. The two-story building at the east end of the drill hall will be practically devoted to the rank and file. There is an entrance hall from an intended street on the north side of the building. From this there is an entrance to the recruits' drill hall, which is 75 ft. long by 30 ft. wide, and to the main drill hall, and between the two there is an arms-room (with entrances and exits from each) providing accommodation for 500 stands of arms, a Maxim gun, and a cleaning-room. A staircase ascends from the ground floor to an open landing from which are entrances to the sergeants' and privates' clubs, the band-room, and the balcony at the end of the main hall. In the basement there is storage room for camp equipage, &c., and a kitchen. Captain W. Cooper is the architect.

## *SANITARY AND ENGINEERING NEWS.*

DRAINAGE SCHEME, ST. MARYCHURCH, DEVON.—Colonel A. J. Hepper, on behalf of the Local Government Board, conducted at the St. Marychurch Town Hall on the 27th ult. an inquiry into the application of the St. Marychurch District Council for permission to borrow 7,700*l.* for works of sewerage. Mr. Worth, Civil Engineer, of Plymouth, described the plans. Mr. T. W. Windeatt opposed the scheme on behalf of the Torquay Town Council, on the ground that if carried out some of the Torquay sewers would be overcharged.

SEWERAGE SCHEME, DARFIELD, YORKS.—On the 3rd inst. Mr. E. A. Sandford Fawcett, Local Government Board inspector, held an inquiry at Darfield into an application by the Urban District Council for sanction to borrow 7,000*l.* for a scheme of sewerage and sewage treatment under the septic tank system. Mr. F. Graham Fairbank, the engineer for the scheme, explained its nature and details.

WATER SUPPLY, KINGSKERSWELL, DEVON.—It is proposed to supply the village of Kingskerswell with water from the Torquay supply, and on the 28th ult. Colonel Hepper, a Local Government Board Inspector, inquired into the application of the Newton Abbot Rural District Council for sanction to borrow 2,000*l.* to carry out the scheme. Mr. Segar, the Engineer to the Council, explained the details of the scheme.

WATERWORKS, CARNARVON.—An inquiry was held recently by Mr. W. O. E. Meade-King, Local Government Board Inspector, into the application of the Carnarvon Town Council for power to borrow 3,310*l.* for the purpose of constructing a reservoir and laying down mains. Mr. R. L. Jones, the Borough Surveyor, explained the plans.

## *STAINED GLASS AND DECORATION.*

MEMORIAL WINDOW AT LICHFIELD CATHEDRAL.—A memorial window in the south aisle of the choir of Lichfield Cathedral, to the late Ven. Melville Horne Scott, Archdeacon of Stafford and Canon Residentiary, was dedicated on the 5th inst. The artist was Mr. C. E. Kempe.

MEMORIAL WINDOW, CLAYDON CHURCH, SUFFOLK.—A memorial window, executed by Mr. A. L. Moore, of London, has just been dedicated in this church. The window consists of three lights, representing three scenes from the life of Christ.

## *FOREIGN.*

FRANCE.—A statue to Lamartine is to be inaugurated at Belley on the 22nd inst.——Surveys are being made for a new railway from Dijon to Lausanne, branching off from the existing line at Frasne, passing near the lake of St. Point, and tunnelling through Mount Dor.——The second exhibition of the "Société des Amis des Arts" of the Oise Department will be held at Beauvais, from June 1 to July 1. That of the similar society of Seine-et-Oise will open at Versailles on July 2.——The Hôtel de Perfecture at Limoges is shortly to be rebuilt.——There is talk of forming an electric railway at Paris running north and south, and connecting Saint Denis with Sceaulx.——Among recent deaths to be recorded are those of M. Edouard Hardy, civil engineer, known for his improvements in mining engineering; M. Constant Brochart, a painter who was largely instrumental in bringing about the revival of pastel in France; and M. Vauthier Galle, a sculptor and medallist who has produced many fine coins and medals. He obtained the Grand Prix de Rome as a student, and four times received medals for his work in the annual Salons. In the Salons of 1850 and 1859 his "Printemps" and "Omphale" attracted much admiration.

## *MISCELLANEOUS.*

PROFESSIONAL AND BUSINESS ANNOUNCEMENT.—Mr. C. Evans-Vaughan, architect, has removed his offices from 25, Lowther-arcade, to 11, Adam-street, Adelphi.

BRIGHTON MASTER BUILDERS' ASSOCIATION.—On the 2nd inst. the annual dinner of the Brighton Association of Master Builders was held at the Clarence Rooms, Hotel Metropole. Alderman Botting, J.P. (Chairman of the Association), presided. After the loyal toast, Mr. H. F. Gates proposed "The Mayor and Corporation of Brighton," and Alderman Davey responded. Mr. J. K. Nye gave the toast of the evening, "The Association of Master Builders." Formed, as he understood, in 1893, the Association had been gradually, but assuredly, going on and working in the right direction, and the last report was most satisfactory, because it showed that the members had in no way diminished, and that financially they were in a very healthy position. There was only one ominous clause in their report, and that alluded to the strike. He thought in Brighton they were fortunate because they seemed to go on with their work irrespective of strikes. Speaking purely as an outsider, it seemed to him to be wicked that a skilled and practical workman was obliged to drop his tools and associate himself with perhaps an indolent and unskilful workman, whose object was to do as little work as he could and get as much as he could for it. That was no incentive to work, and he hoped the eyes of the British workman would be opened before he did away entirely with the trade whereby he lived. At Oxford recently Lord Grey suggested a kind of co-partnership between master and man, thinking it was somewhat degrading for a man to be always earning money and not sharing in the profits. He (the speaker) did not know what would happen when a loss was incurred. Their Association had started an insurance company, in face of the Workmen's Compensation Act, and he was pleased to find that was also in a most healthy state. Some thousands of shares had been taken up.—The Chairman, in responding, said it had lately been his privilege to attend, on behalf of the Association, several large gatherings in London, Derby, and elsewhere, and he found, after comparing their position there with their own, that they in Brighton were most fortunate. It happened in this way, the master builders of Brighton were very united, and determined to firmly oppose everything they thought was wrong. That was known in the trade—and it was known that it was good for the workmen that it should be so—and he believed that speaking generally the workmen were satisfied with the masters, and the masters with the men, Commenting on the Workmen's Compensation Act. the Chairman urged that instead of acting as a preventive in cases of accident and carelessness it had had the very opposite effect, deaths having increased 12½ per cent. and accidents 43 per cent. Locally, the master builders went fully into the serious position in which it placed them, and ultimately they formed an Assurance Company. They called in 4s. in the £, and that had given them a fund of over 3,000*l.* to which they could put their hands at any time. They had gone through ten months of the first year, and 100*l.* would cover all their claims. That showed their Company was in a very prosperous state, and that they had done quite the right thing. When the fund had reached 5,000*l.*, he thought the premiums might be reduced by one-half, which they would give as a bonus, and that in the near future the members would scarcely have anything to pay at all. They had all their funds well invested, and he thought no better plan to meet their difficulty could have been hit upon. In connexion with it they were very much indebted to Mr. J. K. Nye and to their Secretary, Mr. Emery.—The remaining toasts were "The Visitors" and "The Chairman and Vice-Chairmen."

THE DANGER FROM MANSARD ROOFS IN CITIES.—The Plans Committee of Aberdeen Town Council have resolved not to approve of the plans of new buildings with Mansard roofs unless a screen or some form of protection is provided. This regulation has been adopted owing to such roofs being a source of danger to pedestrians, as loose slates dislodged on windy days are apt to fall on the footway and not on the carriage way of the street below. In cases where the buildings are retired from the street, a screen will not be insisted on.

THE BYRON STATUE FOR ABERDEEN.—The committee in charge of this movement have resolved that the statue be of bronze with suitable granite pedestal, that it be placed within the grounds of Aberdeen Grammar School, and that the sculptor be Mr. Pittendrigh Macgillivray, A.R.S.A., Edinburgh.

HISTORIC HOUSES IN BATH.—The Bath Corporation, in pursuance of its scheme for affixing mural tablets on some of the many houses in the city possessing historic interest, have just caused one to be placed on the façade of 19, Bennett-street, where lived for some six years before his death, in 1814, Admiral Phillip, the first Governor of Australia.

APPOINTMENT OF SANITARY INSPECTORS.—The Local Government Board has sanctioned the appointment of the following sanitary inspectors in the undermentioned districts: Mr. W. Thorpe in Chelsea, Messrs. J. H. Danson and C. Langstone in Newington, Mr. J. Sanderson in St. Martin-in-the-Fields.

IMPROVEMENTS, CLEVEDON, SOMERSETSHIRE.—On the 4th inst., Col. Durnford, R.E., held an inquiry at the Public Hall, Clevedon, on behalf of the Local Government Board, into an application by the Clevedon Urban District Council for sanction to borrow 3,065*l.* for purposes of bridge and street improvement, and 233*l.* for works of sewerage The Surveyor, Mr. G. W. Knowles, explained the nature of the street improvements which were to be undertaken. It was proposed to widen Old-street in continuation of the Tickenham-road improvement. Of the Ken-road Bridge improvement, the Surveyor said that on account of heavy traffic by traction engines the crown of the arch of the bridge fell in, and the work of rebuilding had to be undertaken. It was thought advisable to have the bridge wider than previously. Details were also given of the works of sewerage.

LEEDS BUILDERS' EXCHANGE CLUB.—The committee of the Leeds Builders' Exchange Club have leased, it is stated, premises in the new block of buildings opposite the Corn Exchange. The present premises in Gascoigne-street have for some time been much too small. Since the establishment of the club some six or seven years ago the membership has steadily increased until at the present time it has reached considerably over 300.

THE LONDON IMPROVEMENTS BILL.—The London Improvements Bill, promoted by the County Council for the purpose of constructing a new central street from Holborn to the Strand and carrying out other street improvements, came again before a Select Committee of the House of Commons, presided over by Mr. A. H. Brown, M.P., on the 8th inst. The preamble of the Bill has already been passed by the Committee, and the sitting was devoted to considering amendments to the Bill and new clauses. At the opening of the proceedings Mr. Lewis Coward, on behalf of Lord Glenesk, intimated to the Committee that a clause had been agreed to with the County Council under which the *Morning Post* premises were to be the subject of reinstatement. It had been thought desirable that the reinstatement premises and the whole subject-matter should be clearly shown on a plan referred to in the clause as "the plan signed for the purposes of identification by Mr. A. H. Brown, the Chairman of the Committee." The plan had been agreed to, and had been signed by the representatives of Lord Glenesk and the County Council, yet he had since received a letter from the Parliamentary agents of the County Council saying that the plan, like the clause, was but a rough provisional agreement, which did not seem to them sufficiently formal and complete to be signed by the Chairman. Inasmuch as the clause had been agreed to, and had been passed by the London County Council, he asked the Chairman to sign the accompanying plan—a request to which the Chairman acceded. Lord Robert Cecil, for the Great Northern and Strand Railway Company, which proposes to construct a portion of its line under the new thoroughfare, asked the Committee to insert a clause providing that if any part of the lands between Clare-street and Hollies-street, over which powers have been obtained by the Company, be utilised for the purposes of the new street, the County Council shall sell to the Company other lands in the vicinity equally adapted for use as an access to any station the Company may construct near the Strand. Mr. Freeman, Q.C., for the County Council, after incidentally announcing that it was not the intention of the Council to apply the betterment principle to the underground lines of railway, went on to ask the Committee to reject the clause on the ground that the Company was seeking power to monopolise a right of way under the new street. The Committee, however, after a short deliberation, agreed to the clause and inserted it in the Bill. Amendments were then made in the measure in order to carry out the recommendations of the Committee, and the new clauses having been brought up by the promoters and agreed to, the Bill was ordered to be reported to the House.

English and American Bridge Builders.—In the House of Commons, on the 9th inst., Sir A. Hickman asked the Secretary for India whether the Indian Government had given the order for the Goktiek viaduct, containing 5,000 tons of steel, to an American firm; would he explain why the chief English bridge builders were not asked to tender for it; and whether he would give instructions in future that tenders should be invited from the chief British makers? Lord G. Hamilton: My hon friend has evidently been misinformed about this matter. The order for the Goktiek viaduct was not given by the Government of India, who have nothing to do with it, but by the Burma Railways Company. The company invited five English firms and two American firms to tender. Of the five English firms, four refused to tender; but one English firm, which had not been invited, asked leave to tender and was allowed to do so. Consequently two English and two American tenders were sent in. The most favourable English tender required three years for the work at a cost of 116,000*l.* The most favourable American tender required about one year for the completion of the work at a cost of 60,125*l.* In these circumstances the company, with the concurrence of the Government director (who represents the Secretary of State), accepted the American tender. The Indian railway companies give preference in all these contracts to British makers; but I am sorry to say that this is not the first contract in which there has been a marked difference, both in price and time of delivery, between British and American tenders.

The Preservation of Haddon Hall.—About a year ago much anxiety was felt as to the stability of the large tower near the entrance to Haddon Hall. His Grace the Duke of Rutland, who, as its owner, at once took steps to ascertain the actual facts of the case. More than one architect was consulted, with the result that it was ascertained that the tower was nearly 11 in. out of the line perpendicular, and that there was reason to believe that this disarrangement might increase. Acting under professional advice, his Grace resolved that the tower should be "underpinned," and the work has been entrusted to Messrs. Toft Brothers, of Youlgreave, and was commenced recently. When the necessary excavations were made, it was discovered that the whole tower rested on no solid foundation, but was built almost from the surface. It stands on a rock, but there were several feet of soil or shale between the base of the tower and the rock. The intervening space between the base of the tower and solid rock is now to be filled up with blue bricks. It is stated that other portions of the Hall are to be examined, and, where necessary, repaired, the Duke having decided to spend at least 300*l.* per year for three years, in order to preserve the ancient and historical pile as nearly as possible in its present state.

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## *CAPITAL AND LABOUR.*

Torquay Carpenters' and Joiners' Wages.—The master builders of Torquay have conceded the halfpenny per hour increase—from 7d. to 7½d.—which the carpenters and joiners in their employ intimated that they would require by May 1.

The Dispute in the Belfast Building Trade.—On the 5th inst. at the fortnightly meeting of the Belfast United Trades and Labour Council, Mr. Walker said he would like to announce that the building trade dispute, which had been going on during the past week, had practically come to a termination that day. The proposals of the employers had been fairly drastic, but every one of them, with the exception of the question of the addition of half a mile to the walking boundary, had been withdrawn. So they stood in the same position with regard to the employers as they did twelve months ago.

The Barnsley Dispute.—The masons of Barnsley are already on strike, as has been reported, and there is no change in the position of affairs so far as they are concerned. The general question raised by the decision of the Yorkshire section of the Builders' Federation, that 25 per cent. of the men employed be served with notice to quit their work, affects, of course, the other branches of the building trades. The Barnsley employers are not yet in a position to take any action in regard to it, but the whole subject will be considered at a meeting of federated employers to be held this week. Apparently there is a good deal of difference of opinion amongst the employers on the subject. Some are not members of the Federation, and it will probably be difficult to obtain united action at present.

The Strike at Messrs. Doulton's—Messrs. Doulton's clay pit men at Dudley, to the number of 250, still remain on strike, and the stoppage is seriously affecting the pottery work. Mr. H. L. Doulton refuses to treat with the Union officials, and the men agreed at a meeting to the dispute being decided by a Board of Conciliation as suggested by the Chamber of Commerce.

The North Walsham Dispute.—The North Walsham bricklayers' strike is all but at an end. The masters have agreed to pay the extra wage demanded, but they will have nothing to do with the proposed code of rules.

Carpenters' Strike, Cheltenham.—The carpenters in the Cheltenham district belonging to the Amalgamated Society of Carpenters and Joiners and the General Union came out on strike on the 2nd inst. The dispute emanated from a demand made to the Master Builders' Association in November last for an advance of a penny an hour. In February the employers offered a halfpenny an hour without prejudice. A joint committee meeting was held by the men on the 2nd inst., when it was reported that some of the smaller builders had conceded the demands of the men.—A threatened strike by the operative stonemasons has been averted. The men made a demand for an advance of ¾d. an hour, and the masters offered to concede an advance of ¼d. an hour and the alteration of a minor character in the working rules. The men thoroughly discussed the question, and in the end have decided to accept the ¼d. per hour in preference to coming out on strike.

Staffordshire Building Trade.—The principal item of interest in connexion with the building trade of the district has been the award of his Honour Judge Jordan on the arbitration in reference to the application of the joiners for an increase in the rate of pay, and a reduction in the number of hours worked. From all quarters reports are to hand that the decision is far from being an unqualified success, both masters and men uniting in its condemnation. Bricklayers report employment as much improved, there being now only a small percentage unemployed. Joiners and carpenters are working well. Painters and plumbers are very busy, and overtime is general. Plasterers and masons are working full time. Labourers of all kinds are well employed, there being a constant demand for this class of operative. In all the brick and tileyards there is great activity, large orders being booked faster than others can be executed. At Leek all departments are busy, and there are no operatives out of work. At Crewe the trade remains in a satisfactory condition, and the operatives are averaging fully seven days per week. At Stafford and surrounding villages trade is good.—*Staffordshire Sentinel.*

The Dispute in the Norwich Building Trade.—Although there seems to be some prospect of a general lock-out in the building trade throughout the country as a consequence of the strike on the part of the plasterers, we are glad to learn that there is every probability that this extreme step will not be taken in Norwich. For some months past there have been negotiations going on between the masters and the men, the bricklayers, bricklayers' labourers, carpenters, masons, and now the painters having made applications for advances of wages. The masters have considered the matter in a conciliatory spirit, and while no definite arrangement has yet been arrived at, a conference is shortly to be held at which it is believed all matters in dispute will be amicably settled. In the meantime, extensive building operations are going on in various parts of the city.—*Eastern Daily Press.*

Building Trade Dispute at Leamington.—The members of the Leamington Master Builders' Association and the members of the Leamington and Warwick Branch of Operative Stonemasons of England and Wales are at loggerheads. Sometime ago the latter asked for an increase in pay of ½d. per hour, and that their hours of labour be decreased. The Warwick masters have granted the concession, but the Leamington masters not having yet given their decision, the whole of the members of the Leamington Branch have ceased work. The stonemasons point out that they have not had an increase in wages for twenty-three years.

The Morecambe Building Trade.—The Morecambe masons have come out on strike, after the expiration of a six months' notice, for an advance of wages from 9d., the standard rate, to 9½d. an hour. The Morecambe bricklayers have also come out, after asking for a halfpenny advance, and the acceptance by the masters of a code of rules formulated by the men's society.

The Hull Dispute.—A mass meeting of builders' labourers affected by the lock-out took place on the 5th inst. at the St. George's Hall, Story-street. Councillor G. Belt presided, and there were fully 500 present. It was unanimously decided that the men should continue to strenuously resist the new rules formulated by the employers, and the strength of the lock-out committee was added to.

Wigan Painters on Strike.—Wigan painters and decorators have come out on strike. The men have for some time been seeking an advance of wages and a definite understanding as to the employment of apprentices. The masters were willing to submit the questions in dispute to an arbitrator appointed by the Board of Trade, but the men desired that a local gentleman should settle the differences. The masters declined to accept the men's proposals.

Strike of Joiners at St. Annes, Lancashire.—Six months' notice for an advance in wages, from 8d. to 9d. an hour, expired on May 1 at St. Annes, and the masters not conceding the demand, all society men ceased work. Delegates from the men met representatives from the Master Builders' Federation, and asked for 8½d. for six months, to be then increased to 9d. They also wished to enforce the regulation in respect of apprentices, that one apprentice only should be employed to every six journeymen. The masters refused to grant anything, with the result that all society hands are out of employment.

Threatened Strike of Edinburgh Plumbers.—A meeting was held in the Edinburgh Oddfellows' Hall on the 5th inst. of members of the United Operative Plumbers' Association of Scotland and the United Plumbers' Association of Great Britain and Ireland (Edinburgh and Leith branches) to consider proposed amendments on the existing working rules and regulations. The proceedings were conducted in private, but it was intimated at the close that the chief points in the demand upon the Master Plumbers' Association at this time are that the standard rate of wages for competent workmen should be 9d. per hour, instead of 8½d., a minimum rate of 6d. per hour to apprentices at the conclusion of their apprenticeship; and overtime to be paid at time and a half. It was stated that the Master Plumbers' Association had refused arbitration in the matter. The meeting resolved that unless the demands were conceded there should be a strike on Saturday, 13th inst. It being believed that only about a dozen masters belonged to the Master Builders' Federation, it was agreed that employers should be individually asked to concede the demands, and sign the amended rules and regulations.

The Building Dispute at Wolverhampton.—The condition of affairs in connexion with the strike of bricklayers' labourers at Wolverhampton, who have been refused the demand of ½d. advance per hour, has undergone no material change during the past week. No communications have passed between the men and the master builders, and both are firm as before in adhering to their several positions. Since the masters declined the proffered mediation of the Mayor of Wolverhampton (Mr. Price Lewis), a meeting of the Building Trades Federation of Wolverhampton and District has been held, at which the members passed the following resolution:—"We, the members of the Building Trades Federation of Wolverhampton and District, regret that the master builders have refused to accept the Mayor's offer to act as mediator in the unfortunate dispute with their labourers, and begs also to tender to the Mayor its best thanks for the interest he has taken in the matter, and assures the labourers of the sympathy and support of all the affiliated branches." It is expected that a public mass meeting of members of the various societies will be held in Wolverhampton shortly.

Masons' Wages at Cardiff.—At a meeting on the 8th inst. of the Cardiff Town Council Mr. Crossman proposed that the wages of the masons in the employ of the Corporation be increased one halfpenny per hour as and from May 1, and that they be allowed one hour for dinner all the year round and permitted to cease work on Saturdays at noon. A letter was read from the Master Builders' Association stating that the state of the trade would not warrant an increase of wages. Upon a division the resolution was carried by a majority of seventeen votes to five.

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## *LEGAL.*

### A COUNCIL AND BUILDING PLANS.

The case of Fulford *v.* Blatchford came before a Divisional Court of Queen's Bench, composed of Justices Darling and Channell, on the 5th inst., on the appeal of Mr. Fulford, Town Clerk of Okehampton, Devonshire, from the decision of the Justices of Okehampton, who refused to convict the respondent of an alleged offence under Section 33 of the Public Health Amendment Act, 1890.

The facts, shortly stated, are these. Mr. Geen, of Okehampton, proposed to erect an arcade, and on May 28, 1894, deposited with the Urban Sanitary Authorities proper plans which described the houses therein otherwise than as dwelling-houses. The arcade was erected pursuant to these plans. On February 9, 1898, the tenants were summoned before the justices for using their "shops and offices" as dwelling-houses, contrary to the Public Health Amendment

Act, 1890, Section 33, and such tenants were convicted, as also was the builder. The present respondent was one of such tenants. On March 28, 1898, Mr. Henry Geen deposited with the Urban Sanitary Authority another set of plans which were entitled "Plans for domestic conversion," and they showed (1) ground floor, shop, and kitchen; (2) first floor parlour and bedroom, (3) second floor bedroom. These plans showed the second floor, which was not shown in the original plans, and also new windows and various other alterations, and, it was said, carried out in every way the suggestions made by the Medical Officer of Health in his report. It was said, however, that the buildings would still be deficient in the air space prescribed by the by-laws for dwelling-houses. The Council had never signified either approval or disapproval of the plans, and after one month had elapsed from the date of the deposit of the plans with the Council the builder carried out all the alterations and additions as shown therein. After the hearing of the information, the respondent obtained a situation at Plymouth, but his wife and children continued to reside at Nos. 10 and 12, The Arcade, for the purpose of carrying on and taking care of the business. The respondent occasionally returned and slept himself on the premises. On December 3, 1898, a fresh information was laid by the appellant on behalf of the Council against the respondent, and the authority to prosecute was given to Mr. Fulford on October 3, 1898, a date prior to the date of the alleged offence. This information charged the respondent with having from October 24, 1898, to November 8, 1898, used Nos. 10 and 12, the Arcade for the purpose of habitation, the deposited plan of such building having described such building otherwise than as a dwelling-house. The information was heard on December 14, 1898, and dismissed, and from this decision the present appeal was brought. The justices said that the offence charged was not for an infringment of by-laws, which would be a totally separate and distinct offence, and they were not prepared to say whether, under the circumstances, such an offence might not be committed by the respondent. They also found that under the section in question two things were necessary, (1) the plans must have been deposited in which the premises were described otherwise than as a dwelling-house, (2) subsequent habitation. Section 159 of the Public Health Act expressly provides that the conversion into a dwelling-house of any building not originally constructed for human habitation shall be considered a new building, and this, the Justices held, made the plans deposited by Geen on March 28, 1898, as plans of a new building within that Section, and, therefore, they said that, inasmuch as plans were deposited with the Local Authority describing these arcade buildings as dwelling-houses, the occupation by the respondent after such plans were deposited could not be taken to be an offence within Section 33 of the Act of 1890.

Mr. Duke, Q.C., and Mr R. C. Gen appeared for the appellant; and Mr. Foote, Q.C., and Mr. Bodilly for the respondent.

At the conclusion of the arguments of counsel their Lordships held that the Justices ought to have convicted the respondent, and remitted the case to them for that to be done. The appeal was therefore allowed.

## TIME PENALTIES IN CONTRACTS.

AT Yarmouth County Court recently, before his Honour Judge Wilmot, an action of some interest to builders and others was heard. It was brought by William Cork, builder, Northgate-street, to recover 79*l.* 17s. 8d., balance of an account for work done in connexion with the erection of a new shop and buildings in High-street, Gorleston, for William Hindle. This claim was admitted, but defendant pleaded a set-off of 73*l.*, and paid the balance, 6*l.* 17s. 8d., into Court. This 73*l.* was thus made up—15*l.* for reinstating defective plastering, 4*l.* for defective door fastenings, both of which were admitted, leaving the only issue for trial an amount of 54*l.* claimed by the defendant as time penalties in accordance with contract, being nine weeks at 6*l.* per week. Mr. E. Wild appeared for plaintiff, and Mr. J. B. Matthews defended.

Defendant's case was first opened. Mr. Matthews argued that defendant had sustained great loss by plaintiff's delay in executing the contract. The work should have been completed in six months by March 26, 1897. On account of one difficulty the architect extended the time to April 16, but it was months after that the contract was really completed.

Defendant said that in September, 1896, when he was in business, he decided to pull down his premises and rebuild. A contract was entered into with plaintiff, who commenced the work, and it made satisfactory progress until Christmas. Defendant had a contract with Stanley Bros., stonemasons, who finished their part of the work on January 11. Plaintiff was informed, but he practically did nothing that week, and defendant was continuously going to plaintiff. He had to enter the house on June 24, when the place was very unfinished.

Mr. H. D. Arnott, architect, Gorleston, said in 1896 he prepared the plans and specifications for the work which plaintiff started on September 28. The contract specified it was to be completed on March 25 following. Witness first became dissatisfied with the progress of the work shortly before Christmas, and frequent communications passed in reference to this. There was a certain delay through the stonemasons, but he made a liberal allowance for this in extending the time for the completion of the contract. At various dates there were only one bricklayer and one labourer on the job, but that was practically nothing. He was continually urging plaintiff to get on. It was the hardest contract he ever had, and he had written more letters over it than upon any other.

Mr. Alfred E. Stanley, of Stanley Bros., stonemasons, repudiated any delay on their part.

Mr. Wild's defence was that any delay was due to the stonemasons. Defendant had on this account allowed extra time, though he was not empowered under the contract to grant extra time. The work, it was suggested, could not possibly have been completed within the specified time, and therefore time penalties could not be recovered. Plaintiff was stopped from December 10 to January 11. The stonemasons finished their work on January 11, and plaintiff resumed work on January 14.

His Honour pointed out that plaintiff took all risks when he accepted the contract, and he might have cut it too fine.

Plaintiff said that the girder referred to was delivered three days before he was ready. It had to be cut before it was fixed, but that was on account of a structural alteration decided upon after the original specifications had been executed. He put the delay on the stonemasons, on account of whom, he said, he could only do his own work piecemeal. He estimated he lost quite 100*l.* in this way, as the delay was nearer twelve than three weeks.

Mr. J. T. Bottle, architect, said that no allowance was made for any delay, and if the delay attributed to the stonemasons had occurred it would be unreasonable and impossible to expect plaintiff to complete the work within the time allowed.

His Honour said he had some doubt whether the builder was not entitled to compensation for any delay by which he suffered. Mr. Wild's contention was that if plaintiff had been compelled to delay his own work through the fault of other contractors he should escape the operation of the penalty clause, but that was a point of law he was not prepared to decide. There had no doubt been delay on the part of the stonemasons, but that delay had been amply allowed for by defendant's architect. Plaintiff was bound by his contract, and defendant was therefore entitled to the amount claimed. He gave judgment for defendant, but granted leave to plaintiff to appeal.—*Eastern Daily Press.*

## BY-LAWS AS TO AIR SPACE, &c.

AT West Ham Police-court on the 3rd inst. Messrs. T. Welsh & Son, builders, of Forest Gate, were summoned for that they, having been convicted for an offence against the by-laws of the West Ham Town Council with respect to the sufficiency of the air space and the ventilation of a certain new dwelling-house, had still continued to neglect the provision of the by-law. Mr. Gwynne-James appeared for the West Ham Corporation; Mr. Saunders represented the defendants. Last year the defendants were engaged in the re-erection of the "Dew Drop" inn, at Arkwright-street, Canning Town, and on November 30 were convicted for infringing By-law 63 as to the air space and for neglecting to deposit plans with the Local Authority. Since then nothing had been done towards providing the air space set down as necessary in the by-law, and Mr. Gwynne-James, for the Corporation, now asked that a continuing penalty be imposed. Mr. Saunders said that by an error in one of the text-books he had been unfortunately misled and had given notice of appeal too late. Now his contention was that the offence was not one to which a continuing penalty was applicable. The building in question was not now in the possession or under the control of the builders. Messrs. Welsh had no right to go there and pull it down. If they did so, it would be a trespass, and it would be monstrous to fine a person for not doing what the law would not allow him to do. A number of decisions in cases bearing on the question were quoted, and in the result Mr. Gillespie said he had decided to convict. Section 158 of the Public Health Act of 1878, combined with the case "Rumbold *v.* Smith," made this a continuing offence, and the defendants would have to pay a penalty of 10s. a day for sixty days, 30*l.*, with 12s. court costs, or undergo a month's imprisonment. Mr. Saunders asked for a special case to be stated, and the magistrate said that the application could be made in the usual course. He would put no obstacles in the way.

## ALLEGED INJURY TO BUILDING LAND BY A RAILWAY COMPANY.

THE case of Davis and Others *v.* The London, Tilbury, and Southend Railway Company came before Mr. Justice Bigham, sitting without a jury, in the Queen's Bench Division on the 10th inst.; an action brought by the executors of the late E. C. Davis upon an award of an arbitrator appointed under the Lands Clauses Act, 1845, to ascertain the amount of compensation payable by the Railway Company to the plaintiffs for injuriously affecting their property by the execution of certain works at Tilbury by the defendants. It appeared that the plaintiffs, as executors, were possessed of three acres of building land, with a frontage on Manor-road, Tilbury, this road running in a direct line from the plaintiffs' property to the docks, and crossing the defendants' line by a level crossing, which is about 100 yards from the nearest point of the plaintiffs' property. In 1891 the defendants obtained an Act conferring upon them powers, including one to close the level crossing, and make a new road to connect with Manor-road at a point near the level crossing, but not touching the plaintiffs' property. By this new road which crossed the railway by a bridge the distance from the plaintiffs' property to the docks was about half a mile longer, and not level, and the plaintiffs claimed that this deviation and the closing of the crossing seriously affected the value of their property. The defendants, without admitting liability, allowed the matter to go to arbitration, when the arbitrator, after hearing evidence, found that the property had been injuriously affected and awarded the plaintiffs 300*l.* compensation.

Mr. Justice Bingham, after hearing the arguments of counsel, said that he was of opinion that there was no evidence to go before the arbitrator that the land was injuriously affected by the works in question, and gave judgment for the defendant company with costs.

Mr. Morton and Mr. E. E. Wild were counsel for the plaintiffs; and Mr. C. A. Russell, Q.C., and Mr. Colam for the defendants.

## MEETINGS.

### FRIDAY, MAY 12.

*Architectural Association.*—Dr. G. V. Poore on "Soil and Aspect in Relation to the Dwelling House."—7.30 p.m.

*Incorporated Association of Municipal and County Engineers.*—Eastern district meeting at Ipswich and Felixstowe.

### SATURDAY, MAY 13.

*Institution of Junior Engineers.*—Visit to the Royal Arsenal, Woolwich. Train leaves Charing Cross 9.20 a.m.

*St. Paul's Ecclesiological Society.*—Visit to Lincoln's Inn Chapel, under the guidance of Mr. W. Paley Baildon, F.S.A. 3 p.m.

*People's Palace Architectural Society.*—Visit to the Charterhouse.

*Northern Architectural Association.*—Excursion meeting. Members to assemble at North Shields Station at 2.48 p.m., upon the arrival of the 2.32 p.m. train from Newcastle. The Coach-lane new Board School will be first visited. The party will then proceed by the ferry to South Shields, where the following buildings will be inspected in rotation—New Variety Theatre, "Britannia Hotel," new residences at Westoe, and Mortimer-road Board Schools.

### MONDAY, MAY 15.

*Royal Institute of British Architects.*—Mr. H. H. Statham on "The Architectural Element in Engineering Work." 8 p.m.

*Surveyors' Institution.*—Mr. R. M. D. Sanders on "Land Purchase in Ireland." 8 p.m.

### TUESDAY, MAY 16.

*Royal Institution.* — Professor W. J. Sollas on "Geology." I. 3 p.m.

*Society of Arts (Applied Art Section).*—Mr. I. Hunter Donaldson on "The Artistic Treatment of Picture Frames." 8 p.m.

### WEDNESDAY, MAY 17.

*Builders' Foremen and Clerks of Works' Institution.*—Ordinary meeting of the members. 8 p.m.

*Society of Arts.*—Mr. J. E. Evans-Jackson on "The Law of Trade Marks." 8 p.m.

### THURSDAY, MAY 18.

*Carpenters' Hall, London Wall (Lectures on Carpentry and Joinery).*—Professor Banister Fletcher on "Timber Roofs, Tie Beam, and Hammer Beam." 7.30 p.m.

*Society for the Encouragement of the Fine Arts.*—Mr. H. Hewkley on "Lithography, Past and Present." Illustrated. 8 p.m.

*Royal Institution.*—Mr. Lewis F. Day on "Embroidery." III.—3 p.m.

*Society of Antiquaries.*—8.30 p.m.

*Institution of Electrical Engineers* (at the Society of Arts, John-street, Adelphi, W.C.).—Discussion on Mr. P. V. McMahon's paper on "Electric Locomotives in Practice and Tractive Resistance in Tunnels with Notes on Electric Locomotive Design." 8 p.m.

### FRIDAY, MAY 19.

*Royal Institution.*—The Bishop of Bristol on "Runic and Ogam Characters and Inscriptions in the British Isles." 9 p.m.

## RECENT PATENTS:

### ACCEPTED SPECIFICATIONS.

### *Open to Opposition until July 3.*

[1898.] 1,612, Clarke, Hewitt, & Stevens, Cement Kilns. 4,628, Imschenetzky, a New Refractory Material. 7,369, Martinelli, Valves. 9,313, Smith, Atmospherical Burners. 9,462-4, Naef, Smelting and Calcining Apparatus, and Production of Ammonia Cyanides, Coke, and Gas. 9,475, Boardman, Electrical Arc Lamps. 9,511, Clémançon, Rheostats for the Graduated Control of Electrical Resistance. 9,718, Strakosch & Schmid, Producing and Burning Acetylene Gas. 9,813, Bánki, and 11,276, Hildebrand and Others, Gas, Petroleum, and similar Engines. 9,935, Bührer, Brick and Tile Kilns combined with Artificial Drying Chambers. 10,019, Griffiths, Workmen's Time

Checking and Recording Machine. 10,044, Gordon, Regenerative Gas Furnaces and Gas Producers. 10,616, Thomas-Davies, Enclosed Arc Lamps. 11,574, Spence & Spence, Treatment of Sewage. 11,609, Sowry & Munslow, Electrical Fuses and Cut-outs. 11,716, Forbes, and 13,573, Soc. Chaussard et Cie & Vignes, Acetylene Lamps. 11,743, Woodroffe & Wright, Atmospherical Burners for Oil Lamps or Stoves. 11,962, Hughes, Automatical Prepayment Mechanism (Electricity and Gas). 12,007, Nesbit & Clowes, Water Heaters, Condensers, and Separators. 12,360, Halket & Kennedy, Safety Gear for Lifts. 12,667, Bartenstein, Device for fitting Reflectors, Shades, &c., to Lamps. 12,707, Winterflood, Automatic Valve Attachment for "Geysers." 12,799, Bowers, Tool Holders for Use in Lathes and Planing Machines and other Machine Tools. 12,880, Robertson, Turning and Screw-Cutting Lathes. 13,116, Von Welsbach, Illuminating Conductors for Incandescent Electrical Lamps. 13,206, Wattson & Sandford, Weighing Apparatus. 13,471, Wright, Astragals, and means for Securing Glass in Roofs. 14,004, Eastmead, Hoisting Apparatus. 14,139, Forbes, Manufacture of Acetylene Gas. 14,217, Wood, Electrical Miners' Lamps. 14,292, Leonard, Ball Cocks or Float Valves. 14,751, Hofmann, Grinding, Crushing, and Similar Machines. 14,761, Langdon, Electrical Safety Fuses or Cut-outs. 20,534a, McCartney, Gas Stoves for Water-heaters. 24,404, Hackethal, Insulating and Supporting Electrical Conductors. 25,267, Ferguson, Circles for Surveying or Levelling Instruments. [1899] 1,627, Treleaven, Insulators for Fastening Electrical Wires. 2,393, Howson & Fanner, Sinks. 2,569, Moyle, Ventilating Apparatus. 3,955, Parker, Pivotal Supporting Devices for Window Sashes, Doors, &c. 4,708, Helm, Waste Pipes of Sinks, Closets, &c. 5,043, Willner, Impregnating Wood. 5,502, Heller, Gas Burners. 5,702, Owens, Syphon Waste-water Flushing Closets. 5,783, Schwinning, Sorting Bricks, Stones, &c., According to their Weight. 6,074, Woebs, Clamp for Woodworkers. 6,269-70, Hall, Electrical Lamp Holders, and Combined Electrical Switches and Lamp Holders. 6,330, Tabor & Schrafft, Window Sashes. 6,505, Seward & Illingworth, Taps, Valves, &c. 6,595, Wellman, Seaver Engineering Company, Cranes. 6,643, Witham & Lord, Drawing Frames. 6,647, Lundbergs, Wall-plugs (Electrical). 6,686, Curran, Studding or Supports for Partition Walls. 6,780, Bräuer & Bauer, Diaphragm Pumps.

### ABSTRACTS OF PATENTED INVENTIONS.

555.—Burners for Soldering and Brazing: *A. Platt.*—A set screw joins the tube, having air-holes, to a lamp or vapour burner; for soldering purposes a hollow copper bit, into and around which the flame passes, is placed by means of a bolt in the mouth of the tube; for brazing the bit has its opening flattened. The burner, in a modified shape, can be used for removing paint.

556.—Traps for Drains: *A. A. Grist.*—The invention consists in forming the stopper of the inspection opening of the trap with a hinge, and attaching thereto a chain by means of which it can be lifted.

593.—Moulding Bricks: *Blackman Ventilating Company, W. W. Wardle, & W. Tattersall.*—As the cut bricks leave the cutting-table of an extrusion machine they become separated upon a number of boards, united together by slotted links and mounted upon V-shaped guide-rails, which slide transversely, owing to the action of toggle-links and a foot-lever, and so move the bricks clear from the cutting-frame; another board pushes the bricks off the linked boards on to another board, whence they are carried to the drying chambers.

632.—Electrical Switches: *W. M. Walters.*—The switch, adapted for use for an incandescent lamp, has a transparent cover and a small lamp to be connected by placing the switch arm upon a central contact, a spring pin on the switch arm engaging with a notched metal strip; a resistance may be put in circuit with the small auxiliary lamp.

664.—Waterproofing and Similar Compounds: *E. Toussaint.*—A composition is made of benzine (35 parts), resin or other gum (10 parts), and beeswax (1 part) for waterproofing purposes; also for coating plasters, walls, wood, paper, &c.

679.—Treatment of Alabaster: *H. F. Lamock.*—To harden and preserve unpolished articles fashioned of natural alabaster, they are first dried at about 80 deg. C. in a steam-heated chamber, then put into a vat containing a cold solution of fluosilicate of magnesium; and then taken out in order that the liquid upon their surfaces may soak into them; the process is repeated until they can absorb no more, after which the articles are dried in the open air, soaked in water and dried in the hot chamber, and are then ready to be polished.

684.—Artificial Stone: *W. A. Oakley.*—An artificial stone is produced by powdering and mixing together in equivalent parts certain natural earths possessing respectively acid and alkaline natures, so that when subjected to the action of heat each forms a flux for the other, colour effects are produced by the addition of metallic oxides, and imitation marble may be made in the process. The materials mixed either dry or wet, are fused and cast or moulded in fireclay moulds lined with plumbago, or they may be moulded into the required shape, covered with plumbago, cased in fireclay, and burned in a kiln. To induce the fusion and increase the hardness of the stone, its constituents may be mixed with powdered charcoal or some similar reducing agent.

796.—Pipe Jointing: *C. A. Higbee.*—Screw threads are cut in the spigot and socket ends, which are also tapered. The edges of the threads are cut away, and upon screwing up tightly the spaces between the threads become completely filled.

813.—Apparatus for Lifts and Hoists: *J. C. Etchells.*—The invention is devised for automatically unlocking or locking the door of the lift well when the cage stops or starts from the landing or floor. The projecting end of an arm fixed upon a rocking shaft is struck by a projecting plate upon the cage, and a radial arm engages with the inner ends of two levers which are pivotted to the frame and normally engage with the door and keep it locked. As the former arm is pushed in, the radial arm forces the inner ends of the levers against two springs, and so lowers the outer ends and leaves the door free, whilst pins upon radial arms or springs are lifted as the cage stops, and so serve to keep the door open.

830.—Building Blocks: *V. Micheli.*—A paste is made of argil, potters' earth, marl, sandstone, kaolin, "puzzolana," fossil earths, and similar clays, with which are kneaded lime, cement, ashes, silex, potash, &c., resins and oily substances being added; the moulded blocks are designed to take the place of iron, stone, or wood.

836.—Apparatus for Use in Wells: *Ingersoll-Sergeant Drill Company.*—For raising water from a well an open-ended delivery pipe is fixed within the pressure chamber, which, being open at the bottom and closed at the top, is put into communication with a compressed-air reservoir, so that the water it contains is forced up the delivery-pipe until the level falls just below the pipe's lower end, when some of the air escapes and water rises within the pressure-chamber, but is again pressed down as before; in a modified form the casing of the well itself is adapted to form the pressure chamber.

890.—Lift-valves and their Casings: *F. H. Mingay.*—The plug, made of cork or other compressible material is moved by a lever or other means, and its seat, which is tapered, is formed either in the tap body itself or in a separate piece to which the tap body is fastened, the valve may also be made to open inwards.

903.—Ventilators: *J. J. Cresswell.*—The inlet ventilator is intended to impart a rotary motion to the air, as well as to mix it with disinfectants or perfumes: a cylinder or tube is fitted with spiral or inclined vanes mounted upon horizontal axes and linked to a ring on which is a knob, by means of which the inclination of the vanes can be altered, appliances for disinfecting, aromatising, or moistening the air are fixed within a tubular passage along the axis.

1,002.—Electrometers: *A. A. Voysey & R. P. Wilson.*—For the purpose of measuring current supplied upon alternating current mains is used an electrostatical or other volt-meter by connecting it with the secondary of an air-core or other transformer, whose primary winding carries the current that is to be measured; pointers and scales, with switches for changing the connexions, are provided for current and pressure measurements.

1,025.—Joints for Thin Copper and Brass Pipes: *Elmores German and Austro-Hungarian Metal Company.*—The conically widened end of the pipe is turned around a metal ring fitted thereon, a packing-ring being inserted between the jointing edges, bolts and flanged rings draw together and fasten the pipes, and the inner surfaces of the rings are shaped to fit the widened ends of the tubes.

1,077.—Door-Knobs and their Attachment: *E. Taylor.*—A bush is screwed into the knob and is cemented in its place. Into a collar on the bush is screwed a headed screw from the inside, the screw-nick being at its outer end. The square spindle is screwed into the knob, when the screw is turned down on to one of its faces, or it is inserted into a squared hole in the knob and held by screwing down the screw into one of a number of recesses on the spindle; for the recesses made in ordinary spindles the screw may have a convex-shaped head.

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## PRICES CURRENT OF MATERIALS:

### WOOD.*

Per Petersburg standard hundred.

| | £ | s. | d. | £ | s. | d. |
|---|---|---|---|---|---|---|
| White Sea: first yellow deals | 17 | 0 | 0 | 18 | 0 | 0 |
| Second do. | 13 | 5 | 0 | 14 | 15 | 0 |
| Third do. | 10 | 15 | 0 | 11 | 15 | 0 |
| Battens, 40s., 30s., and 15s. less respectively. | | | | | | |
| Petersburg: first yellow deals | 11 | 15 | 0 | 14 | 5 | 0 |
| Second do. | 10 | 15 | 0 | 12 | 5 | 0 |
| Battens, 30s. and 20s. less respectively. | | | | | | |
| Petersburg, white deals | 9 | 15 | 0 | 11 | 15 | 0 |
| Do. white battens | 7 | 10 | 0 | 9 | 0 | 0 |
| Riga, white deals | 8 | 5 | 0 | 9 | 5 | 0 |
| Swedish mixed yellow deals | 13 | 5 | 0 | 16 | 15 | 0 |
| Third do. | 12 | 5 | 0 | 14 | 5 | 0 |
| Fourth do. | 10 | 15 | 0 | 11 | 15 | 0 |
| Fifth do. | 9 | 15 | 0 | 10 | 15 | 0 |
| Battens, 30s., 20s., and 10s. less respectively. | | | | | | |
| Whitewood, 10 to 20 per cent. less. | | | | | | |
| Finnish unsorted yellow deals | 9 | 15 | 0 | 10 | 5 | 0 |
| Battens, 10s. and 5s. less respectively. | | | | | | |
| Whitewood, 5 to 10 per cent. less. | | | | | | |
| Norwegian second yellow battens | 7 | 10 | 0 | 8 | 10 | 0 |
| Third do. | 7 | 0 | 0 | 8 | 0 | 0 |
| Fourth do. | 6 | 10 | 0 | 7 | 10 | 0 |
| Whitewood, 10s. less. | | | | | | |
| Danzig, Crown Deck deals, per 40 ft. 3 in. | 0 | 15 | 0 | 1 | 5 | 0 |
| Brack | 0 | 12 | 0 | 1 | 0 | 0 |
| St. Lawrence Pine deals, &c., per P.S.H.:— | | | | | | |
| 1st, Bright and Dry, regular sizes | 18 | 15 | 0 | 25 | 5 | 0 |
| ,, ,, oddments | 11 | 15 | 0 | 18 | 10 | 0 |
| 2nd ,, regular sizes | 13 | 15 | 0 | 17 | 0 | 0 |
| ,, ,, oddments | 9 | 5 | 0 | 12 | 15 | 0 |
| 3rd ,, regular sizes | 9 | 0 | 0 | 10 | 0 | 0 |
| ,, ,, oddments | 6 | 15 | 0 | 8 | 5 | 0 |
| 4th ,, regular sizes | 6 | 0 | 0 | 7 | 0 | 0 |
| ,, ,, oddments | 5 | 10 | 0 | 6 | 10 | 0 |
| St. Lawrence Spruce deals, &c. | | | | | | |
| First, regular sizes | 8 | 5 | 0 | 10 | 5 | 0 |
| Second ,, | 7 | 5 | 0 | 8 | 5 | 0 |
| Third ,, | 7 | 0 | 0 | 7 | 15 | 0 |
| Fourth ,, | 5 | 15 | 0 | 6 | 15 | 0 |
| Oddments and battens at 20s., 10s., 7s. 6d., and 5s. less respectively. | | | | | | |
| New Brunswick Spruce deals, &c. | 7 | 0 | 0 | 7 | 15 | 0 |
| Oddments, battens, and fourths | 6 | 5 | 0 | 7 | 5 | 0 |
| United States pitch pine planks and boards | 9 | 5 | 0 | 12 | 15 | 0 |
| Prepared Boards, per square | | | | | | |
| 1¼ by 6½ and 7 in. 1st yellow | | 12 | 0 | | 15 | 3 |
| ,, ,, 2nd ,, | | 10 | 6 | | 12 | 3 |
| 1 by 6½ and 7 in. 1st ,, | | 9 | 0 | | 11 | 3 |
| ,, ,, ,, white | | 8 | 6 | | 9 | 3 |
| ,, ,, 2nd yellow | | 8 | 6 | | 10 | 3 |
| ,, ,, ,, white | | 7 | 0 | | 7 | 9 |
| ⅞ by 6½ & 7 in. 1st & 2nd yellow | | 7 | 9 | | 8 | 6 |
| ,, ,, ,, white | | 7 | 3 | | 8 | 0 |
| ¾ by 6½ and 7 in. 1st yellow and white (grooved, tongued, and beaded) | | 6 | 9 | | 9 | 3 |
| ¾ by 6½ and 7 in. 2nd yellow and white (ditto) | | 5 | 9 | | 8 | 0 |
| ⅝ by 6½ and 7 in. 1st yellow and white (ditto) | | 5 | 9 | | 6 | 6 |
| ⅝ by 6½ and 7 in. 2nd yellow and white (ditto) | | 5 | 3 | | 6 | 0 |

Narrower widths at 10 per cent. less.
3rd quality at 15 per cent. less than 2nd.

| Danzig and Memel Fir Timber— per load | £ | s. | d. | £ | s. | d. |
|---|---|---|---|---|---|---|
| Best middling | 2 | 10 | 0 | 3 | 10 | 0 |
| Good middling and Second | 2 | 0 | 0 | 3 | 5 | 0 |
| Common middling | 1 | 10 | 0 | 2 | 10 | 0 |
| Undersized | 1 | 10 | 0 | 1 | 15 | 0 |
| Swedish and Norwegian Balks | 1 | 5 | 0 | 1 | 15 | 0 |
| Baltic Oak Timber— | | | | | | |
| Danzig and Stettin—Large | 3 | 10 | 0 | 4 | 0 | 0 |
| Small | 2 | 0 | 0 | 2 | 5 | 0 |
| Quebec Timber per load | | | | | | |
| Yellow Pine | 4 | 10 | 0 | 6 | 5 | 0 |
| Oak | 4 | 5 | 0 | 6 | 5 | 0 |
| Elm | 4 | 15 | 0 | 5 | 15 | 0 |
| Ash | 4 | 0 | 0 | 5 | 5 | 0 |
| Birch | 3 | 10 | 0 | 5 | 10 | 0 |
| New Brunswick, &c., Birch | 2 | 5 | 0 | 3 | 0 | 0 |
| American Pitch Pine Timber | 2 | 14 | 0 | 3 | 3 | 0 |
| Wainscot, per log, 18 cubic ft.— | | | | | | |
| Crown (Eng. & Dutch) } nominal | 4 | 10 | 0 | 6 | 5 | 0 |
| Brack | 3 | 15 | 0 | 4 | 15 | 0 |
| Lathwood, per cubic fathom— | | | | | | |
| Petersburg | 4 | 0 | 0 | 6 | 10 | 0 |
| Riga and Danzig | 4 | 10 | 0 | 5 | 10 | 0 |
| Norway Poles, per ft. run | 0 | 0 | 1 | 0 | 0 | 1½ |
| Oak Staves, per mille full size pipe | | | | | | |
| Memel, Crown | 210 | 0 | 0 | 220 | 0 | 0 |
| Brack | 180 | 0 | 0 | 190 | 0 | 0 |
| Danzig | 165 | 0 | 0 | 175 | 0 | 0 |
| Bosnia, single Barrel (nominal) | 28 | 0 | 0 | 30 | 0 | 0 |
| United States, Pipe | 35 | 0 | 0 | 42 | 10 | 0 |
| Hogshead, extra heavy and double extra | 27 | 10 | 0 | 32 | 10 | 0 |
| Indian Teake per load | 11 | 15 | 0 | 16 | 15 | 0 |
| British Guiana Greenheart | 0 | 0 | 0 | 8 | 0 | 0 |
| Mahogany, per foot superficial— | | | | | | |
| Honduras, cargo average | 0 | 0 | 4½ | 0 | 0 | 6 |
| Nicaragua, do. | 0 | 0 | 4¾ | 0 | 0 | 5¼ |
| Tabasco, do. | 0 | 0 | 4 | 0 | 0 | 6½ |
| Mexican, do. | 0 | 0 | 3½ | 0 | 0 | 4 |
| Panama, do. | 0 | 0 | 3 | 0 | 0 | 4 |
| African, do. | 0 | 0 | 3½ | 0 | 0 | 5 |
| Cuba, do. | 0 | 0 | 5½ | 0 | 0 | 7½ |
| St. Domingo, do. | 0 | 0 | 5 | 0 | 0 | 7 |
| Do. Curls (good to prime) | 0 | 0 | 9 | 0 | 1 | 3 |
| Walnut, American (logs) | 0 | 2 | 0 | 0 | 4 | 6 |
| Do. do. (planks and boards) | 0 | 2 | 0 | 0 | 7 | 6 |
| Italian, per foot superficial | 0 | 0 | 3 | 0 | 0 | 7½ |
| Black Sea, per ton | 6 | 0 | 0 | 12 | 0 | 0 |
| Satin Walnut (logs) per foot cube | 0 | 1 | 0 | 0 | 1 | 3 |
| ,, ,, (planks and boards) | 0 | 2 | 0 | 0 | 2 | 9 |
| Sequoia (Californian redwood), per foot cube | 0 | 1 | 9 | 0 | 2 | 0 |
| Whitewood, American (logs) | 0 | 1 | 3 | 0 | 1 | 6 |
| ,, ,, (planks and boards) | 0 | 1 | 6 | 0 | 2 | 9 |
| Quartered oak ,, ,, ,, | 0 | 2 | 3 | 0 | 4 | 0 |
| Kauri pine (logs) | 0 | 1 | 9 | 0 | 2 | 0 |
| ,, ,, (planks) | 0 | 2 | 3 | 0 | 2 | 9 |
| Jarrah (planks) | 0 | 2 | 3 | 0 | 2 | 6 |
| Lancewood spars each, fresh and large | 0 | 7 | 0 | 0 | 10 | 0 |
| Lancewood spars, ordinary to fair | 0 | 4 | 0 | 0 | 6 | 0 |
| Degame spars | 0 | 8 | 0 | 0 | 12 | 6 |

### METALS.

| | £ | s. | d. | £ | s. | d. |
|---|---|---|---|---|---|---|
| Iron—Pig, in Scotland ton | 3 | 3 | 2½ | 0 | 0 | 0 |
| Bar, Welsh, in London | 6 | 0 | 0 | 6 | 5 | 0 |
| Do. do. at works in Wales | 5 | 15 | 0 | 5 | 17 | 6 |
| Do. Staffordshire, in London | 6 | 5 | 0 | 7 | 10 | 0 |
| Copper—British cake and ingot | 79 | 10 | 0 | 80 | 0 | 0 |
| Best selected | 80 | 0 | 0 | 81 | 0 | 0 |
| Sheets, strong | 82 | 0 | 0 | 84 | 0 | 0 |
| Chili bars | 76 | 12 | 6 | 0 | 0 | 0 |
| Yellow Metal lb. | | | 7d. | | | 7½d. |
| Lead—Pig | | | | | | |
| Spanish ton | 14 | 5 | 0 | 0 | 0 | 0 |
| English Com. Brands | 14 | 10 | 0 | 0 | 0 | 0 |
| Sheet, English, 6 lbs. per sq. ft. and upwards | 15 | 10 | 0 | 0 | 0 | 0 |
| Pipe | 16 | 0 | 0 | 0 | 0 | 0 |
| Zinc—English sheet ton | 31 | 0 | 0 | 0 | 0 | 0 |
| Vieille Montagne | 31 | 10 | 0 | 0 | 0 | 0 |
| Spelter | 28 | 11 | 3 | 28 | 13 | 9 |
| Tin—Straits | 116 | 7 | 6 | 0 | 0 | 0 |
| Australian | 116 | 10 | 0 | 117 | 0 | 0 |
| English Ingots | 119 | 0 | 0 | 120 | 0 | 0 |
| Banca | 114 | 0 | 0 | 0 | 0 | 0 |
| Billiton | 113 | 0 | 0 | 0 | 0 | 0 |

### OILS.

| | £ | s. | d. | £ | s. | d. |
|---|---|---|---|---|---|---|
| Linseed ton | 18 | 10 | 0 | 0 | 0 | 0 |
| Cocoanut, Cochin | 29 | 10 | 0 | 0 | 0 | 0 |
| Do. Ceylon | 25 | 15 | 0 | 0 | 0 | 0 |
| Palm, Lagos | 24 | 10 | 0 | 0 | 0 | 0 |
| Rapeseed, English, pale | 22 | 15 | 0 | 0 | 0 | 0 |
| Do. Brown | 21 | 5 | 0 | 0 | 0 | 0 |
| Cottonseed ref. | 16 | 10 | 0 | 17 | 10 | 0 |
| Oleine | 17 | 0 | 0 | 19 | 0 | 0 |
| Lubricating U.S. | 0 | 5 | 3 | 0 | 7 | 6 |
| Do. Black | 0 | 5 | 0 | 0 | 6 | 6 |
| Tar—Stockholm barrel | 1 | 6 | 6 | 0 | 0 | 0 |
| Archangel | 1 | 0 | 0 | 0 | 0 | 0 |
| Turpentine | 34 | 5 | 0 | 0 | 0 | 0 |

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## SOME RECENT SALES OF PROPERTY:

### ESTATE EXCHANGE REPORT.

| | |
|---|---|
| April 24.—By G. W. Dixon & Co. (at Sutton). | |
| Cheam, Surrey.—Station-rd., Pond-villas and two cottages in rear, f., r. 68*l*. 15s. | £960 |
| Worcester Park, Surrey.—Longfellow-rd., &c., three freehold building sites | 120 |
| April 25.—By C. W. Davies. | |
| Islington.—4. Tyndale-ter., u.t. 45 yrs., g.r. 6*l*. 10s., r. 45*l*. | 510 |
| 8, 11, and 14, Dagmar-ter., u.t. 47 yrs., g.r. 18*l*. 18s., r. 124*l*. | 1,330 |
| By Humbert & Flint (at Watford). | |
| Watford, Herts.—35 to 45 (odd), Regent-st., f. | 1,040 |
| 16 and 18, Sutton-rd., f., r. 42*l*. | 675 |
| By R. & A. G. Thorowgood (at Waltham Abbey). | |
| Waltham Abbey.—Epping-rd., six plots of building land, f. | 315 |
| Nazing Common, Essex.—A freehold cottage and 2 a. | 290 |
| A freehold building plot, 3 a. 0 r. 14 p. | 120 |

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* The prices for wood are shipping prices. Ten per cent., approximately, should be added in order to arrive at the current trade prices.

| | |
|---|---|
| By Batchelar & Son (at Croydon). | |
| Croydon.—75, South-end, a corner building site, area 3,000 ft., f. | £2,100 |
| By Crafter, Harris, & Co. (at Masons' Hall Tavern). | |
| Lee.—Bromley-rd., "The Summerfield Tavern," u.t. 28 yrs., r. 100l., with goodwill | 4 910 |
| April 26.—By W. H. Brown & Co. | |
| Tulse Hill.—154, Norwood-rd., f., r. 60l. | 1,450 |
| By Hobson, Richards, & Co. | |
| Enfield Highway.—Green-st., two freehold cottages and a piece of land adjoining | 200 |
| By Ellis Morris & Co. | |
| Finsbury Park.—Hermitage-rd., f.g.r. 13l. 7s., reversion in 96 yrs. | 410 |
| Holloway.—Elthorne-rd., f.g.r. 18l., reversion in 96 yrs. | 490 |
| Hornsey-rd., f.g.r.'s 160l. 6s., reversion in 95 yrs. | 4,385 |
| Hoxton.—2, Gopsall-st., u.t. 32 yrs., g.r. 4l. 4s., r. 30l. | 265 |
| Rotherhithe.—6, Derrick-st., f. | 205 |
| By Moss & Jameson. | |
| Long Acre.—54, 58, and 60, Neal-st., f., r. 234l. | 3,500 |
| By R. Tidey & Son. | |
| Islington.—49, Cleveland-rd., u.t. 53 yrs., g.r. 5l., r. 46l. | 510 |
| De Beauvoir Town.—183, Downham-rd., u.t. 42 yrs., g.r. 5l., r. 38l. | 410 |
| Kentish Town.—60 and 64, Castle-rd., u.t. 61 yrs., g.r. 14l. 10s., r. 85l. | 760 |
| By Belton & Sons (at "Horse Shoe" Hotel). | |
| Bayswater.—Portobello-rd., the "Freemason's Arms" p.-h., u.t. 45½ yrs., r. 100l., with goodwill | 6,000 |
| By Wyatt & Son (at Chichester). | |
| Birdham, Sussex.—Common Dyers field, 14 a. 3 r. 10 p., f. | 710 |
| By Edwin Evans (at Clapham Junction). | |
| Clapham.—Worcester-gdns., f.g.r. 9l., reversion in 85 yrs. | 265 |
| Wandsworth.—124 and 126, Earlsfield-rd., u.t. 88 yrs., g.r. 14l. | 545 |
| 210, Earlsfield-rd., u.t. 87 yrs., g.r. 6l. | 245 |
| Battersea.—91, Leathwaite-rd., u.t. 83 yrs., g.r. 6l. 15s., r. 34l. | 315 |
| 58, 60, 62, and 64, Bassett-rd., u.t. 70 yrs., g.r. 20l. | 1,030 |
| 12, Patience-rd., u.t. 79 yrs., g.r. 6l. | 230 |
| Fulham.—16 and 18, Kinnoul-rd., u.t. 94 yrs., g.r. 10l. 10s. | 500 |
| Wandsworth.—2 to 12 (even), Jews'-row, u.t. 64 yrs., g.r. 31l. 10s. | 1,135 |
| 45, Schubert-rd., u.t. 84 yrs., g.r. 8l. 8s., r. 40l. | 395 |
| Croydon.—14 and 16, Dryden-rd., u.t. 84½ yrs., g.r. 9l. | 235 |
| By William Weston (at Harrow-rd.). | |
| Maida Vale.—52, Sutherland-av., u.t. 64 yrs., g.r. 11l., e.r. 70l. | 650 |
| Paddington.—11, St. Mary's-sq., u.t. 40 yrs., g.r. 8l. 10s., r. 55l. | 565 |
| 8, Woodfield-cres., u.t. 60 yrs., g.r. 8l., r. 42l. | 420 |
| 76, Clarendon-st., u.t. 53 yrs., g.r. 5l. 10s., r. 40l. | 335 |
| 74, Cirencester-st., u.t. 53 yrs., g.r. 6l. 10s. | 275 |
| Westbourne Park.—47, Leamington-rd. Villas, u.t. 57 yrs., g.r. 10l., r. 60l. | 485 |
| Harlesden.—23 to 27, 31 to 35 (odd), Tubbs'-rd., u.t. 83 yrs., g.r. 36l., r. 192l. | 1,890 |
| By A. Dowell (at Edinburgh). | |
| Anstruther (near), Fifeshire.—The Estate of Kilrenny, 680 a. | 20,000 |
| April 27.—By Leopold Farmer. | |
| Brondesbury.—232, Willesden-lane, u.t. 93 yrs., g.r. 30l. 1s. | 1,800 |
| St. John's Wood.—5 and 6, Northwick-ter., u.t. 24 yrs., g.r. 30l. 10s., e.r. 270l. | 1,625 |
| 140, Alexandra-rd., u.t. 58 yrs., g.r. 20l., e.r. 90l. | 800 |
| Kilburn.—Brondesbury-rd., Ivy Lodge, u.t. 80 yrs., g.r. 9l. 15s., e.r. 55l. | 525 |
| By W. N. Willoughby. | |
| Tulse Hill.—Harpenden-rd., Durban House, u.t. 96½ yrs., g.r. 7l. 7s., r. 40l. | 470 |
| By Farebrother, Ellis, & Co. | |
| Island of Ceylon, Maskeliva.—The Bunyan and Ovoca Tea Plantations, 563 a., f. | 25,000 |
| Twickenham.—12, 19, 22, 28, 29, 46, and 50, Strawberry Hill-road, f., r. 515l. | 7,205 |
| By Dyer, Son, & Hilton. | |
| Blackheath.—6, Lee-rd., u.t. 40 yrs., g.r. 10l. | 1,200 |
| 17, Kidbrook Park-rd., u.t. 66 yrs., g.r. 11l., e.r. 80l. | 435 |
| Lee.—Grove Park, The Limes, u.t. 72 yrs., g.r. 20l., r. 95l. | 850 |
| 6, Northbrook-rd., u.t. 61 yrs., g.r. 14l. 14s., e.r. 80l. | 440 |
| 54, Burnt Ash-rd., u.t. 55 yrs., g.r. 8l. 1s., r. 65l. | 515 |
| By C. C. & T. Moore. | |
| Plaistow.—2 to 20 (even), Chapman-rd., u.t. 64 yrs., g.r. 20l. | 1,000 |
| Victoria Park.—88, Bishop's-rd., u.t. 45 yrs., g.r. 4l., e.r. 38l. | 400 |
| Islington.—29 to 37 (odd), Queensbury-st., u.t. 11 yrs., g.r. 30l. | 475 |
| Plumstead.—67 and 67a, Reidhaven-rd., u.t. 67 and 91 yrs., g.r. 8l. | 395 |
| Mile End.—8 to 32 (even), Bloomfield-rd., u.t. 67 yrs., g.r. 59l., r. 468l. | 4,945 |
| By Newbon, Edwards, & Shephard. | |
| Barnsbury.—Richmond-cres., i.g.r. 48l., u.t. 52 yrs., g.r. 6l. | 855 |
| Offord-rd., &c., i.g.r. 15l., u.t. 51 yrs., g.r. 2l. | 265 |
| Caledonian-rd.—Sutterton-st., i.g.r. 30l., u.t. 53 yrs., g.r. 5l. | 490 |
| Southampton-st., &c., i.g.r. 63l., u.t. 45 yrs., g.r. 5l. 2s., with short reversion | 1,160 |
| Camden Town.—35, King's-rd., u.t. 72 yrs., g.r. 55l., e.r. 150l. | 1,820 |
| Stratford.—Keogh-rd., freehold rent charge of 60l. | 1,440 |
| Limehouse.—Eastfield-st., &c., f.g.r. 15l., reversion in 21 yrs. | 330 |
| Islington.—101, Packington-st., u.t. 37 yrs., g.r. 6l., e.r. 40l. | 465 |
| By Stimson & Sons. | |
| Kilburn.—26 and 28, Aldershot-rd., f., r. 62l. | 890 |
| Walworth.—16, Lebanon-st., u.t. 51 yrs., g.r. 5l. 10s., r. 45l. | 555 |
| Camberwell.—Hinton-rd., Bridge House and works, u.t. 41 yrs., g.r. 16l., r. 50l. | 415 |
| Clapham.—48, Victoria-rd., u.t. 81 yrs., g.r. 8l., e.r. 50l. | £420 |
| Brixton.—72, 84, and 86, Arlingford-rd,, u.t. 79 yrs., g.r. 25l. 10s., e.r. 124l. | 1,250 |
| 56 and 69, Brailsford-rd., u.t. 79 yrs., g.r. 17l., r. 72l. | 725 |
| Old Kent-rd.—4, 6, 8, and 10, St. Jude's-villas, u.t. 75 yrs., g.r. 24l., r. 124l. | 1,160 |
| Peckham.—1, Shields-st., u.t. 64 yrs., g.r. 6l., r. 45l. | 425 |
| By J. A. & W. Tharp. | |
| Hoxton.—Hoxton Market, a freehold building site, area 2,050 ft. | 950 |
| Woodford.—Grove Hill, St. Hildas and St. Bede's, f., r. 95l. | 1,720 |
| Ratcliff Highway.—34, St. George's-st., f. | 250 |
| South Tottenham.—173 and 175, St. Ann's-rd., u.t. 70 yrs., g.r. 25l. 4s., r. 95l. | 720 |
| By Worsfold & Hayward (at Dover). | |
| Dover, Kent.—68, London-rd., f. | 570 |
| 91, High-st., f., r. 30l. | 630 |
| 56, Wyndham-rd., u.t. 994 yrs., g.r. 2l. | 130 |
| 16, Maison Dieu-rd., u.t. 61 yrs., g.r. 5l. 5s. | 530 |
| 42, York-st., f. | 215 |
| 26, Clarendon-rd., f. | 355 |
| Shepherdswell, Kent.—1 and 2, Church Hill House, and 1½ acres, f. | 610 |
| By Nott & Cartwright (at Clapham Junction). | |
| Mitcham, Surrey.—High-rd., &c., 23 plots of building land, f. | 1,284 |
| By Fergvson & Son (at Leek). | |
| Leek, Staffs.—Cheddleton Heath, and 29 a. 0 r. 30 p., f. | 1,050 |
| The Roaches Estate, 68 a. 0 r. 10 p., f. | 3,000 |
| April 28.—By Baker & Sons. | |
| City of London.—3, Queen Victoria-st., u.t. 52 yrs., g.r. 105l., r. 505l. | 2,900 |
| By Arthur Barton. | |
| Chingford.—Sewardstone-rd., Laurel House, and 1¾ a., f. | 1,740 |
| Lee.—156 and 160, Burnt Ash-hill, u.t. 65½ yrs., g.r. 27l. 12s., r. 175l. | 1,575 |
| By Bunch & Duke. | |
| South Woodford.—7 to 11, Walpole-rd., f. | 1,325 |
| By P. J. Dixon & Son. | |
| Shoreditch.—70 and 72, Weymouth-ter., f. | 985 |
| Stratford.—2 and 4, Keogh-rd., f. | 700 |
| Ilford.—61 to 67 (odd), Windsor-rd., u.t. 98 yrs., g.r. 20l. | 990 |
| Windsor-rd., four plots of building land, f. | 265 |
| Wimbledon.—Cecil-rd., f.g.r.'s 18l., reversion in 98 yrs. | 468 |
| By Dolman & Pearce. | |
| Notting Hill.—5 and 7, Ladbroke-rd., u.t. 36½ yrs., g.r. 20l., r. 92l. | 990 |
| By Godwin, Basley, & Eldridge. | |
| Hockley, Essex.—Perpetual rent charges of 72l. 2s. 2d. per annum | 1,440 |
| By Linnett & Lane. | |
| Willesden.—2 to 18 (even), Preston-gardens, u.t. 96 yrs., g.r. 45l., e.r. 288l. | 2,600 |
| By Rider & Sons. | |
| Shepherd's Bush.—76 to 88 (even), Loftus-rd., u.t. 73 yrs., g.r. 41l. | 2,385 |
| Notting Hill.—234, Ladbroke-grove, u.t. 71 yrs., g.r. 10l., r. 42l. | 420 |
| By Slade & Butler. | |
| King's Cross.—172, 174, and 176, King's Cross-rd., c., r. 63l. | 850 |
| 156, King's Cross-rd., c. | 240 |
| Bayswater.—"Chepstow Tavern" Mews, a peppercorn g.r., reversion in 44¼ yrs. | 640 |
| By Dyer, Son, & Hilton (at Lewisham). | |
| Lewisham.—1 and 5, Ellerdale-st., u.t. 71 yrs., g.r. 6l., r. 46l. 10s. | 485 |
| 47, 51, and 52, Brookbank-rd., u.t. 71 yrs., g.r. 9l., r. 69l. | 740 |
| 1 to 7 (odd), Molesworth-st., u.t. 62 yrs., g.r. 12l. 7s. | 975 |
| By Hepper & Sons (at Leeds). | |
| Leeds.—198, Burnley-rd., f., r. 19l. 10s. | 410 |
| By Maddison, Miles, & Maddison (at Yarmouth). | |
| Yarmouth, Norfolk.—12 to 19, 29, and 31, Princes-rd., f., r. 435l., subject to payments of 40l. 2s. | 9,470 |
| By Wainwright & Laver (at Shepton Mallet). | |
| Doulting, Somerset.—Seven freehold cottages and gardens | 444 |
| Two enclosures, 6 a. 0 r. 16 p., f. | 285 |
| Croscombe, Somerset.—Thrupe Marsh Farm, 107 a. 3 r. 10 p., f. | 1,750 |
| Shepton Mallet, Somerset.—Fiva freehold cottages and gardens | 170 |
| May 1.—By Messrs. Kemsley. | |
| Rainham, Essex.—The South Hall Estate, 116 a. 1 r. 4 p., f. | 7,900 |
| South Hall Farm (part of), 50 a. 1 r. 16 p., f. | 3,900 |
| Romford, Essex.—London-rd., an enclosure of building land, 7 a. 1 r. 14 p., f. | 3,200 |
| Dagenham, Essex.—Romford-rd., a block of building land, 1 a. 1 r. 5 p., f. | 450 |
| By Edward Millard. | |
| Chelsea.—Marlborough-rd., the "Queens' Arms" p.-h., &c., f.g.r. 10l., reversion in 9¼ yrs. | 6,700 |
| Ives-st., f.g.r. 10l., reversion in 9¼ yrs. | 900 |
| 76 to 88 (even), Marlborough-rd., and 1 to 13 (odd), Green-st., f., r. 544l. 12s.; also f.g.r.'s 51l., reversion in 9½ and 11½ yrs. | 17,000 |
| Green-st., the "Admiral Codrington" p.-h., f.g.r. 40l., reversion in 11½ yrs. | 6,000 |
| 29, Smith-st., f., r. 40l. | 900 |
| By Alex. Phillips. | |
| Hornsey.—Inderwick-rd., eight freehold building plots | 760 |
| 106, 108, and 110, Inderwick-rd., u.t. 97½ yrs., g.r. 24l., r. 186l. | 1,305 |
| By Prickett & Venables. | |
| Ashtead, Surrey.—The Ashtead Brick Works, 10 a., including plant and machinery, f. | 5,600 |
| Barnett Wood-lane, a freehold building estate, 15½ a. | 2,175 |
| Oakfield-rd., a plot of building land, f. | 250 |
| Barnett Wood-lane, three pieces of building land, f. | 420 |
| By H. Holmes & Co. | |
| Marylebone.—2 and 3, Upper Marylebone-st., u.t. 20 yrs., g.r. 90l., r. 165l. | 720 |
| 8, Paradise-pl., u.t. 62 yrs., g.r. 10l. | 1,050 |
| 4, Bolsover-st., u.t. 4¼ yrs., g.r. 16l., r. 70l. | 160 |
| 100, Bolsover-st., u.t. 40 yrs., g.r. 34l., r. 104l. | 860 |
| 102, Bolsover-st., u.t. 3½ yrs., g.r. 20l. | £200 |
| 31, Ridinghouse-st., u.t. 24½ yrs., g.r. 28l., r. 85l. | 625 |
| 21, Nottingham-st., u.t. 5¼ yrs., g.r. 20l., r. 85l. | 200 |
| Holloway.—212, Brecknock-rd., u.t. 70 yrs., g.r. 6l., r. 42l. | 455 |
| 221, Brecknock-rd., u.t. 69 yrs., g.r. 6l. 10s., r. 54l. | 435 |
| May 2.—By David J. Chattell. | |
| Edgware.—Whitchurch-lane, a plot of land, 3 a. 0 r. 32 p., f. | 650 |
| By Frank Jolly & Co. | |
| Clapton.—43, Downs-rd., f., e.r. 90l. | 1,525 |
| Mile End.—129, Redman's-rd., f. | 400 |
| Stepney.—60, Gold-st., f. | 380 |
| 21, Copley-st., u.t. 43½ yrs., g.r. 4l. | 280 |
| By Mansell & Rowe. | |
| Norwood.—57 to 75 (odd), Rommany-rd., f. (in lots) | 2,545 |
| By E. & A. Swain. | |
| West Kensington.—33, Charleville-rd., u.t. 77 yrs., g.r. 10l. | 575 |
| By Battam & Co. | |
| North Kensington.—Blagrove-rd., f.g.r. 35l., reversion in 67 yrs. | 955 |
| Bevington-rd., f.g.r. 91l., reversion in 67 yrs. | 2,380 |
| Acklam-rd., f.g.r. 72l., reversion in 67 yrs. | 1,900 |
| Acklam-rd., f.g.r. 64l., with licences of 3l., reversion in 67 yrs. | 1,660 |
| By Debenham, Tewson, & Co. | |
| South Kensington.—6, Gloucester-ter., u.t. 20 yrs., g.r. 5l., r. 60l. | 790 |
| 4, Thistle-grove-lane, u.t. 19½ yrs,, g.r. 20l., r. 34l. | 120 |
| Westminster.—22 and 24, Strutton Ground, u.t. 7 yrs., g.r. 1l., r. 120l. | 510 |
| 69, Great Peter-st., f., r. 119l. | 2,300 |
| Bull's Head-court, two pieces of building land, f. | 1,180 |
| 2 and 3, Little College-st., u.t. 4 yrs., g.r. 3l., r. 60l. | 160 |
| Notting Hill.—Portland-rd., f.g.r.'s 253l. 8s., reversion in 50 yrs. (in lots) | 8,395 |
| Clapton.—London-rd., f.g.r.'s 15l. 15s., reversion in 63 yrs. | 430 |
| Stoke Newington.—Victoria Grove West, i.g.r. 5l. 10s., u.t. 45 yrs., g.r. nil | 115 |
| Marylebone.—49 to 55, Union-st., u.t. 8 yrs., g.r. 5l. | 520 |
| By Duncan & Kimpton. | |
| Tooting.—51, Defoe-rd., u.t. 79 yrs., g.r. 5l. | 175 |
| Highbury.—41 and 43, Aubert Park, u.t. 77 yrs., g.r. 16l., r. 80l. | 800 |
| Crouch End.—12, 14, 16, 20 to 30 (even), Palace-rd., u.t. 59¾ yrs., g.r. 72l., e.r. 360l. | 2,985 |
| By Elliott, Ellis & Co. (at Plymouth). | |
| Pennycross, Devon.—The Oaten Arishes Building Estate, 13 a. 2 r. 21 p. (in lots) | 6,150 |
| By Hepper & Sons (at Leeds). | |
| Weetwood, Yorks.—The Bardon Hill Estate, 7 a. 0 r. 12 p., f. | 9,500 |
| By Stephenson & Alexander (at Cowbridge). | |
| Penlline, Glamorgan.—Penlline Court, and 32 a. 2 r. 3 p., f. | 3,060 |
| May 3.—By Joshua Baker & Son. | |
| Mile End.—Devonshire-st., f.g.r. 17l. 10s., reversion in 11 yrs. | 1,580 |
| By Baxter, Payne, & Lepper. | |
| Bromley, Kent.—Beckenham-lane, Pixfield, and 7 a. 2 r. 0 p. f. | 4,800 |
| By Briant & Son. | |
| Edmonton.—Hertford-rd., Holly Cottage, and ½ a., f., r. 26l. | 640 |
| Southgate.—Reservoir-rd., three enclosures of land, 3 a. 3 r. 24 p., f. | 515 |
| Reservoir-rd., freehold nursery ground, 1 a., r. 15l. | 255 |
| Thornton Heath.—38, 42, 44, 46, 48, and 50, Beulah-rd, f., r. 244l. (in lots) | 3,560 |
| 79 and 81, Parchmore-rd., f., r. 76l. | 1,100 |
| Parchmore-rd., f.g.r.'s 33l., reversion in 67 yrs. | 965 |
| Brixton.—44, Pulross-rd., u.t. 65¼ yrs., g.r. 4l. 15s., e.r. 32l. | 280 |
| By Hobson, Richards, & Co. | |
| Holloway.—Whistler-st., f.g.r.'s 191l. 10s., reversion in 81 yrs. | 4,550 |
| Clapham.—174, Clapham-rd., u.t. 44½ yrs., g.r. 9l. | 710 |
| By Alfred Richards. | |
| Tottenham.—Park-lane, Asplin's farmhouse, and 3 a. 1 r. 2 p., f. | 1,460 |
| 412, 414, and 416, High-rd., f., r. 98l. 16s. | 880 |
| Philip-lane, the Orchard, f., r. 68l. | 1,450 |
| Clyde-rd., Clyde Lodge, f. | 845 |
| Colney Hatch.—2 to 7, Dunger-pl., f., e.r. 70l. 4s. | 465 |
| By J. H. Bradwell & Son (at Nottingham). | |
| Willoughby-on-the-Wolds, Notts. — A freehold farm, comprising 47 acres | 1,540 |
| May 4.—By J. G. Dean & Co. | |
| Wandsworth.—66, Nightingale-lane, u.t. 82 yrs., g.r. 11l., e.r. 65l. | 700 |
| By A. Prevost & Son. | |
| Mile End.—1, 2, and 3, Morgan-ter., u.t. 82½ yrs., g.r. 12l., r. 120l. | 2,200 |
| 39 to 51 (odd), Carter-st., u.t. 46½ yrs., g.r. 21l. | 795 |
| 13, White Horse-lane, f. | 475 |
| Stratford.—27, 43, and 45, Cullum-st., u.t. 77½ yrs., g.r. 15l. 5s. | 405 |
| Bow.—34, Coburn-rd., u.t. 18 yrs., g.r. 3l. | 185 |
| Leigh-on-Sea.—Main-rd., &c., three freehold building sites | 160 |
| By George Billings. | |
| Clapton.—13, Chatsworth-rd., and 83, Clifton-rd., f. | 1,360 |
| 11 and 15, Chatsworth-rd., f., r. 117l. | 2,325 |
| By C. C. & T. Moore. | |
| Bow.—55 and 57, Tredegar-rd., f., e.r. 80l. | 1,180 |
| 129, 131, and 133, Fairfoot-rd., u.t. 63½ yrs., r. 10l. 10s., r. 101l. 8s. | 825 |
| Stepney.—54, 56, and 58, Cadiz-st., u.t. 98 yrs., g.r. 7l. 10s. | 240 |
| St. George's East.—56 and 57, St. George's-st., f., r. 119l. 12s. | 1,000 |
| By A. Aldridge & Co. | |
| Norwood.—27 to 45 (odd), Whiteley-rd., u.t. 67 yrs., g.r. 35l., r. 350l. | 3,665 |
| By Stimson & Sons. | |
| Bermondsey.—42, Upper Grange-rd., f., r. 38l. 8s. | 610 |
| 61, Riley-st., f. | 490 |
| St. Leonard's-on-Sea, Sussex.—East Ascent, f.g.r. 35l., reversion in 19 yrs. | 1,680 |

# COMPETITIONS, CONTRACTS, AND PUBLIC APPOINTMENTS.

## COMPETITIONS.

| Nature of Work. | By whom Advertised. | Premiums. | Designs to be delivered. |
|---|---|---|---|
| *Masonic Hall | Aldershot Masonic Hall Co. | 30*l*. and 10*l*. | No date |

## CONTRACTS.

| Nature of Work or Materials. | By whom Required. | Forms of Tender, &c. Supplied by | Tenders to be delivered. |
|---|---|---|---|
| Retaining Walls, &c. Bath-road | Bristol Corp. | T. H. Yabbicom, Archt. 63, Queen-square, Bristol | May 16 |
| House, Croyde, Devon | F. A. Baker | F. W. Petter, Archt. Barnstaple | do. |
| Road Materials | Uxbridge R.D.C. | E. Birks, Boro Surv. Town Hall, Uxbridge | do. |
| Two Houses, Western-rd. Cork | ........ | T. Murphy & Sons, 9, Marlborough-st. Cork | do. |
| Water Mains, Orton | Bilston U.D.C. | C. L. N. Wilson, C.E. Town Hall | do. |
| Granite (1,000 tons) | Dover T.C. | E. W. Knocker, Castle Hill House | do. |
| *Sewering, Levelling, Paving, &c. | Bromley U.D.C. | Surveyor, Council Offices, Bromley | do. |
| *Making-up Road | Tottenham U.D.C. | P. E. Murphy, 712, High-rd. Tottenham | do. |
| *Eight Cottages and Construction of New Street | L. & N. W. & G. W. Joint Rlys. | Engr. Shrewsbury Station | May 17 |
| Thirty-four Houses, Tyne Dock, South Shields | N.E.R. Co. | W. Bell, Archt. Central Station, Newcastle | do. |
| House | Longtown (U.D.) Sch. Bd. | E. A. Johnson, Archt. Abergavenny | do. |
| Schools, Compton, Plymouth | ........ | H. J. Snell, Archt. 13, Courtenay-st. Plymouth | do. |
| Sanitorium, Campbell Cottage, Belfast | Governors | Mr. Stephens, Surv. Donegall-sq. Bldgs. Belfast. | do. |
| Chapel, &c. Llandegfan | Calvinistic Methodists | J. Owen, Menai Bridge | do. |
| *Cleaning and Painting | Midland Railway Co. | Co.'s Archt. Cavendish House. Derby | May 18 |
| Alterations to Filter Beds, Cranleigh | Hambledon R.D.C. | E. L. Lunn, Surv. 36, High-st. Guildford | do. |
| Rectory, Ballyshannon | ........ | F. W. Lockwood, Archt. 16, Waring-st. Belfast | do. |
| Surveyor's Materials | Cuckfield U.D.C. | E Waugh, Haywards Heath | do. |
| Retort House | Stoke-on-Trent Corp. | W. Prince, Engr. Wharf-st Stoke-on-Trent | do. |
| Fourteen Houses, Slyne-rd. Skerton | ........ | W. Richmond, Slynedales, Skerton. Lancs. | do. |
| Road Materials | Eastbourne R.D.C. | J. H. Evans, Gladwin Villa, Polegate | May 19 |
| Road Works, Lossie-wynd | ........ | A. A. Turriff, Surv. Elgin | do. |
| Granite | Castle Donington R D.C. | J. W. Newbold, Becket-st. Derby | do. |
| Drainage Works, London-road | Shrewsbury Corp. | W. C. Eddowes, Boro Surv. The Square, Shrewsbury | do. |
| Granite | Lowestoft R.D.C. | A J. Kirby, Surv. Ivy Cottage, Lowestoft | do. |
| *Pipe Sewers | Barnet R.D.C. | W. H. Mansbridge, Office, High-st. Barnet | May 20 |
| Two Houses, Utley, near Keighley | ........ | W. M. & A. Sugden, Archt. Keighley | do. |
| Alterations to Premises, Middlesbrough | T. G. Poole | W. Duncan, Archt. 43, Albert-rd. Middlesbrough | do. |
| Villa, New Brompton | ........ | E. J. Hammond, Archt. 111, High-street, New Brompton | do |
| Four Houses, Empress-rd. Wrexham | ........ | Mr. Higginson, Victoria-rd. Wrexham | do. |
| House, Garforth | R. Evers | A. Hartley, Archt. Castleford | do. |
| Additions to Schools | Cannock Sch. Bd. | Bailey & McConnel, Archt. Bridge-st. Walsall | do |
| Rebuilding Shop, Athlone | Burgess & Sons | J. G. Skipton, Archt. Northgate-st. Athlone | do. |
| Bridge, Askrigg, Yorks | ........ | W. Stead, C.E. Northallerton | do. |
| Street Works | Clitheroe Corp. | A. R. Bleazard, Borough Surv. | do. |
| Additions to Workhouse Chapel | Basford (Notts.) Union | W. V. Betts, Archt. Radford-rd. Old Basford | May 22 |
| Church, Altrincham | ........ | Austin & Paley, Archt. Castle Hill, Lancaster | do. |
| Chapel, Hafod, nr. Pontypridd | ........ | W. David, 34, Wayne-st Hafod | do. |
| *Two Libraries | Lewisham Vestry | J. Andrews, 13, Basinghall-st. E.C. | May 23 |
| Alterations to Green Dragon Hotel, Workington | ... | Castiglione & Gibbings, Surv. Workington | do. |

## CONTRACTS—*Continued.*

| Nature of Work or Materials. | By whom Required. | Forms of Tender, &c. Supplied by | Tenders to be delivered. |
|---|---|---|---|
| Additions to Workhouse, nr. Colchester | Tendring Union | F. Whitmore, Archt. Chelmsford | May 23 |
| *Preparing and Painting Ironwork | Bloomsbury Guardians | J. Appleton, 57, Broad-st. Bloomsbury, W.C. | do. |
| *Painting, Whitewashing, Repairs | do. | do. | do. |
| *Yellow Deals and Batten Ends (60 fathoms) | Eton Union | R. H. Barrett, Union Offices, Slough | do. |
| *Wrought-iron Fencing | Brighton Corp. | F. J. C. May, Town Hall, Brighton | May 24 |
| *Making-up and Paving Roads | Fulham Vestry | C. Botterill, Town Hall, Walham Green, S.W. | do. |
| Drainage Works (Contract No. 5) | Shipley U.D.C. | M. Paterson, C.E. 35, Manor-row, Bradford | do |
| Granite and Slag | Ely R.D.C. | E. B. Claxton, Downham-lane, Ely | do. |
| Road Works, West Road, &c. | Pokesdown U.D.C. | E W. Tugamells, Surv Cromwell-rd. Pokesdown | May 25 |
| *Repaving with Jarrah Wood | Hampstead Vestry | Surveyor, Vestry Hall | do. |
| *Oak Fencing and Gates | Wood Green U.D.C. | C. J. Gunyon, Town Hall, Wood Green | May 26 |
| Sewers | St. Annes-on-Sea U.D.C. | H. Bancroft, C.E. 88, Mosley-st. Manchester | do. |
| Hall, Brydekirk, N.B. | ........ | W. Thorburn, School House, Brydekirk | May 27 |
| Cottages and Manse, Bedale | ........ | W. Peachey, Archt. 3, Amber-st. Saltburn | do. |
| *Sea Wall, Road, &c. | Somerset C.C. | C. A. Brereton, 21, Delahay-st. Westminster, S W. | May 29 |
| Sewers, Westgate Hill | Tong U.D.C. | J. Drake & Son, Engr. Queensbury, nr. Bradford | do. |
| Water Supply Works | Kilkenny Corp. | J. R. Reade, C.E. Town Hall, Kilkenny | May 30 |
| *Laying Wood Paving | Willesden D.C. | O. C. Robson, Offices, Dyne-rd Kilburn | do. |
| *Kerbing, Making-up, &c. Roads | Barnet U.D.C. | W. H. Mansbridge, 40, High-st. Barnet | do. |
| *Tar Paving | Kingston-on-Thames Corp. | Clerk, Clattern House, Kingston-on-Thames | May 31 |
| *Granite and Flints | do. | Boro. Surv. do. | do. |
| *Engine House and Boiler House | Gravesend and Milton Water Co. | J. Mansergh, 5, Victoria-st. S.W. | do. |
| *Painting, Cleaning, &c. | St. Marylebone Gdns. | Superintendent at Schools, Southall | June 5 |
| Paving Works | Branksome (Devon) U.D.C. | S. J. Newman, Surv. 3, Tennyson-buildings, Branksome | June 6 |
| *Sewers, &c.; also Settling Tank, &c. | Market Harboro R.D.C. | J. B. Everard, 6, Millstone-lane, Leicester | June 13 |
| *Church, also House, Histon, Cambs. | ........ | G. Baines, 5, Clement's-inn, W.C. | No date |
| Alterations to Premises, Annan, N.B. | G. Thomson & Co. | T. T. Scott, Archt. 43, Lowther-st. Carlisle | do. |
| Two Houses, Ashton-under-Lyne | ........ | T. D. Lindley, Archt. Ashton-under-Lyne | do. |
| Houses and Stables, Alnmouth | J. J. Hardy | G. Reavell, Junr. Archt. Alnwick | do. |
| Nine Houses, Crown-lane | Horwich Indust Co-op. Soc. | E. W. Dyson, C E. 17, Lee-lane, Horwich | do. |
| Additions to Holme Mull, Keighley | ........ | J. Haggas, Archt. North-st. Keighley | do. |
| Shop, Low-st. Keighley | ........ | J. Judson & Moore, Archt. Keighley | do. |
| Sewers | Alnwick U.D C. | G. Wilson, Surv. Alnwick | do. |
| Pavilion, Hawksworth | Bradford Golf Club | Isitt & Co. Archt. Prudential-buildings, Bradford | do. |
| Additions to Myrtle Hill House, Cork | ........ | A. Hill, Archt. 22, George's st. Cork | do. |
| Offices and Stables, New Malden | ........ | C. T. Lewis, Cambridge-road, New Malden, Surrey | do. |
| Five Houses, South View, Tantobie | W. & R. Bulmer | T. E. Crossling, Archt. Stanley, R.S.O. | do |
| Six Houses | Clitheroe Land and Building Co. | Briggs & Wolstenholme, Archt. Blackburn | do. |

## PUBLIC APPOINTMENTS.

| Nature of Appointment. | By whom Advertised. | Salary. | Application to be in. |
|---|---|---|---|
| *Clerk of Works | High Peak Hospital Com. | ........ | May 20 |
| *Borough Surveyor and Inspector of Nuisances | Brecon Corp. | 100*l*. per annum | June 10 |

*Those marked with an asterisk (*) are advertised in this Number. Competitions, p.* iv. *Contracts, pp.* iv. vi. viii. x. & xxi. *Public Appointments, pp.* xix. & xxi.

| | |
|---|---|
| South Kensington.—46, Emperor's Gate, f., e.r. 175*l*. | £2,170 |
| St. Pancras.—Chalton-st., f.g.r. 30*l*., reversion in 27½ yrs. | 910 |
| Chalton-st., f.g.r. 18*l*., reversion in 29 yrs. | 640 |
| Church Way, f.g.r. 55*l*., reversion in 26½ yrs. | 1,600 |
| Chalton-st., f.g.r.'s 104*l*. 15s., reversions varying from 24½ to 25¾ yrs. | 4,205 |
| Charles-st., f.g.r. 120*l*., reversion in 29¾ yrs. | 3,600 |
| Stibbington-st., the "Anchor" b.-h., f.g.r. 17*l*. 10s., reversion in 21½ yrs. | 2,935 |
| Euston-rd., f.g.r. 72*l*., reversion in 24 yrs. | 3,710 |
| Euston-rd., f.g.r. 10*l*., reversion in 3 yrs. | 2,000 |
| May 5.—By TOPLIS & HARDING. | |
| Esher, Surrey.—West End Common, freehold farm buildings, four cottages and 6½ a. | 2,025 |
| By CLIMPSON & JOHNSON. | |
| Tooting.—26, Streathbourne-rd., u.t. 91 yrs., g.r. 9*l*., e.r. 55*l*. | 560 |
| By EDWIN EVANS. | |
| Putney.—41, 43, and 45, Bective-rd., f., r. 105*l*. 16s. | 1,120 |
| 11 and 13, Bective-rd., f. | 730 |
| 139, Disraeli-rd., f. | 590 |
| 16, 18, and 15, Werter-rd., f., r. 140*l*. | 1,395 |
| Holloway.—4, Charles-st., u.t. 44 yrs., g.r. 6*l*. | 220 |
| Leyton.—13 to 25, Bedford-ter., u.t. 98 yrs., g.r. 68*l*. 5s. | 2,750 |
| Bermondsey.—2, Dobbs Cross-st., and 3, 4, and 5, Upper Mill court., f. | 610 |
| Southwark.—1 to 8, Lant-pl.; 1 to 9, 17, 18, and 19, Grotto-pl.: and 1 to 5, Lower Grotto-pl., u.t. 52½ yrs., g.r. 95*l*. | 1,150 |
| By MONTAGU & ROBINSON. | |
| Southwark.—56 and 58, Southwark-st., f., r. 700*l*. | 14,800 |
| 67, 69, and 71, Southwark Bridge-rd., f., r. 460*l*. | 9,800 |
| Norwood.—2, Knight's Hill-rd., f., r. 90*l*. | 2,050 |
| 220, Norwood-rd., f., r. 70*l*. | £1,625 |
| 3 and 4, Bloom-gr., and a plot of land, f. | 830 |
| Lawrence-rd., a block of building land, 0 a. 3 r. 25 p., f. | 2,075 |
| Croydon.—Gloucester-rd., f.g.r. 14*l*. 5s., reversion in 69 yrs. | 395 |
| High Wycombe, Bucks.—Hughenden-rd., "The Fox Inn," f.g.r. 9*l*., reversion in 38 yrs. | 400 |

*Contractions used in these lists.*—F.g.r. for freehold ground-rent; l.g.r. for leasehold ground-rent; i.g.r. for improved ground-rent; g.r. for ground-rent; r. for rent; f. for freehold; c. for copyhold; l. for leasehold; e.r. for estimated rental; u.t. for unexpired term; p.a. for per annum; yrs. for years; st. for street; rd. for road; sq. for square; pl. for place; ter. for terrace; cres. for crescent; yd. for yard, &c.

## TO CORRESPONDENTS.

M. & F.—R. & W.—J. L. (Amounts should have been stated.)

NOTE.—The responsibility of signed articles, letters, and papers read at public meetings, rests, of course, with the authors.

*We cannot undertake to return rejected communications.*

Letters or communications (beyond mere news items) which have been duplicated for other journals are NOT DESIRED.

We are compelled to decline pointing out books and giving addresses.

Any commission to a contributor to write an article is given subject to the approval of the article, when written, by the Editor, who retains the right to reject it if unsatisfactory. The receipt by the author of a proof of an article in type does not necessarily imply its acceptance.

All communications regarding literary and artistic matters should be addressed to THE EDITOR; those relating to advertisements and other exclusively business matters should be addressed to THE PUBLISHER, and *not* to the Editor.

## TENDERS.

[Communications for insertion under this heading should be addressed to "The Editor," and must reach us *not later than* 10 *a.m. on Thursdays.* N.B.—We cannot publish Tenders unless authenticated by the name and address of the sender; and we cannot publish announcements of Tenders accepted unless the amount of the Tender is given, nor any list in which the lowest Tender is under £100, unless in some exceptional cases and for special reasons.]

* Denotes *accepted.* † Denotes *provisionally accepted.*

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BATHGATE, N.B.—For the erection of a hospital for infectious diseases, for Linlithgow County Council (Bathgate District). Messrs. J. Melvin & Son, architects, Alloa. Quantities by Mr. William Campbell, ordained surveyor, Perth:—

| | | | |
|---|---|---|---|
| *Bricklaying, &c.*—Wilson & Wallace, West Calder* | 2,749 | 9 | 11 |
| *Carpentering and Joinery.*—Geo. Gillon, Whitburn* | 1,310 | 0 | 0 |
| *Plumbing.*—Rolland & Co., Dunfermline* | 613 | 0 | 0 |
| *Slating.*—James Easton, Bathgate* | 350 | 0 | 0 |
| *Plastering.*—James Easton, Bathgate* | 458 | 0 | 0 |
| *Painting.*—James Munnoch, Broxburn* | 87 | 7 | 4½ |
| *Electric Bells and Telephones.*—Bryden & Sons, Edinburgh* | 17 | 14 | 4 |
| | £5,585 | 11 | 7½ |

ABER, BARGOED (Wales).—For the erection of forty houses, Aber, Bargoed. Mr. G. Kenshole, architect, Duffryn House, Ystrad Mynach:—

| | | | |
|---|---|---|---|
| Tom Evans | £10,549 0 | Jones Bros. | £8,026 10 |
| Jenkins & Sons | 8,270 0 | J. C. Richards | 7,889 10 |
| D. W. Rosser | 8,265 0 | Williams & Sons | 7,840 0 |
| Marsh & Wride | 8,210 0 | Davies Bros. | 7,613 3 |
| W. Harris | 8,107 0 | James & Sons, Penygraig* | 7,555 0 |
| Lewis Davies | 8,075 0 | | |
| Morgan & Sons | 8,045 13 | | |

BECKENHAM.—For alterations and additions to pair of cottages, Thelsey Park, Beckenham. Mr. Alfred Cox, architect, 4, Adam-street, Adelphi:—

| | | | |
|---|---|---|---|
| G. Palmer | £1,969 | E. Orpin | £1,871 |
| J. Kick | 1,920 | H. Heathfield | 1,827 |
| Syme & Duncan | 1,889 | L. Evans, Bromley | 1,795 |

BRAMPTON, SUFFOLK.—For the erection of two houses for Mr. A. A. Tutthill. Mr. A. Pells, architect, Beccles:—

| | | | |
|---|---|---|---|
| Rayner | £580 | Calver, St. Andrews* | £493 |
| Dunn | 550 | | |

BUCKNALL.—For Abbey Hulton section of the Bucknall sewerage scheme. Mr. Larner Sugden, Engineer and Surveyor to the Council, 20, Cheapside, Hanley, and at Leek:—

| | | | |
|---|---|---|---|
| Bagnall | £1,181 0 | Cornes | £1,050 0 |
| Barke | 1,125 16 | Williams, Etruria* | 940 0 |

BURTON-ON-TRENT.—For alterations to bank premises, High-street, for Lloyd's Bank, Limited. Mr. Thomas Jenkins, architect, 35, High-street, Burton-on-Trent. Quantities by the architect.

T. Lowe & Sons accepted on schedule of prices.

BURTON-ON-TRENT.—For alterations to business premises in High-street, for Mr. A. Gaved. Mr. Thomas Jenkins, architect, 35, High-street, Burton-on-Trent. Quantities by the architect:—

| | | | |
|---|---|---|---|
| T. Lowe & Son | £195 | H. Edwards | £187 |
| Chamberlain Bros. | 193 | W. Gee* | 163 |

BURTON-ON-TRENT.—For building a residence in Hamilton-road, for Mr. James Gilbert. Mr. Thomas Jenkins, architect, 35, High-street, Burton-on-Trent. Quantities by the architect:—

| | | | |
|---|---|---|---|
| G. Kennard | £650 13 | A. Geary | £604 0 |
| G. Hodges | 610 0 | R. Kershaw* | 597 0 |
| H. Edwards | 605 0 | | |

CARDIFF.—For erecting new Church of St. Martin's, Roath, Cardiff. Mr. F. R. Kempson, architect, Cardiff. Quantities by Mr. Chas. Taylor, Cardiff:—

| | | | |
|---|---|---|---|
| Thomas & Co. | £14,879 0 | H. Gibbon | £12,103 0 |
| Luscombe | 14,500 0 | Morgan & Co. | 11,800 0 |
| Shepton & Son | 13,427 10 | Latty & Co. | 10,771 0 |
| H. Smith | 13,421 0 | Beames & Nephew | 9,250 0 |
| Stephens, Bastow, & Co., Lim. | 13,397 0 | | |

CHAPEL-EN-LE-FRITH.—For the erection of an isolation hospital, Chinley, for the High Peak Hospital Committee. Mr. W. R. Bryden, architect, 1, George-street, Buxton. Quantities by Mr. Fred Cartwright, Sheffield:—

| | | | |
|---|---|---|---|
| Tomlinson & Son | £12,330 0 0 | Hughes & Stirling | £9,940 0 0 |
| Ives & Co. | 11,880 19 0 | M. Simpson | 9,008 0 0 |
| Booth & Son. | 11,050 0 0 | Scattergood & Warrington, New Mills* | 8,773 7 8 |
| Haughton & Son | 10,197 0 0 | James Salt | 8,650 0 0 |

CHICHESTER.—For the erection of art school and technical institute, North-street, for the Corporation. Mr. Jas. Saunders, City Surveyor, Lion-street, Chichester:—

Chas. Hooker, The Hornet, Chichester* .. £1,886

*For Ironwork.*

Measures Bros., 57, Southwark-street, London, S.E.*

[As per schedule.]

CREWE.—For new Liberal Club premises, Gatefield-street. Messrs. Wm. Sugden & Son, architects, Leek. Quantities by Messrs. Mosley & Anderson, Northampton:—

| | | | |
|---|---|---|---|
| Heath | £2,392 | Stringer | £2,048 |
| Williams | 2,298 | Micklewright | 2,044 |
| Cotterill | 2,103 | T. Smith | 1,974 |
| Henson | 2,072 | Matthews* | 1,804 |

[Fair wages clauses in contract.]

CROYDON.—For alterations and additions to Nos. 66, 68, and 70, North End, Croydon, for Dr. Ranger, D.C.L. Mr. J. Williams Dunford, architect, 100c, Queen Victoria-street, E.C.:—

| | | | |
|---|---|---|---|
| Jenkins & Butler | £1,141 | Marriage & Co. | £742 |
| Burton & Son | 760 | Waller & Co., Croydon* | 702 |

FRINTON-ON-SEA.—For the erection of a villa in Fourth-avenue, for Mr. R. P. Cooper. Messrs. Homer & Co., architects, Estate Office, Frinton-on-Sea:—

| | | | |
|---|---|---|---|
| Pitcher | £1,357 | West | £1,293 |
| Diss | 1,325 | Abbott* | 998 |

FRINTON-ON-SEA.—For the erection of a villa in Third-avenue, for Mr. A. R. Chamberlayne. Messrs. Homer & Co., architects, Estate Office, Frinton-on-Sea:—

| | | | |
|---|---|---|---|
| Pitcher | £1,298 | West | £1,258 |
| Diss | 1,275 | Abbott* | 990 |

FROME.—For the erection of a malting for Messrs. E. Baily & Son, Limited. Mr. W. G. Brown, architect, Park-road, Frome. Quantities supplied by architect:—

| | | | |
|---|---|---|---|
| Long & Son | £5,143 | Lowe & Sons | £4,610 |
| Wort & Way | 4,835 | C. Barnes, Frome* | 4,487 |

HUDDERSFIELD.—For the erection of a circular brick chimney, Brigg Mills, Meltham, for the Spinning Company, Limited. Mr. W. Carter, architect, Meltham, near Huddersfield. Quantities by architect:—

Myles & Warner, Stalybridge* .......... £364 10

LANCHESTER.—For alterations to police-station for the Durham County Standing Joint Committee. Mr. W. Crozier, C.E., Shire Hall, Durham:—

| | | | |
|---|---|---|---|
| Gradon & Son | £221 14 | Craig Bros., Sacriston, near Durham* | £199 0 |

LEYTONSTONE.—For erecting new beer stores, Grove Green-road, Leytonstone, for Benskin's, Limited, Watford Brewery:—

Henry Wood* .......................... £347 10

LONDON.—For proposed billiard-room, &c., 147, Barking-road, E., for Mansfield House, University Settlement. Mr. H. C. Lander, architect, Effingham House, Arundel-street, Strand, W.C. Quantities by Mr. J. T. Carew, 22, Surrey-street, Strand, W.C.:—

| | | | |
|---|---|---|---|
| W. M. Norton | £452 10 | Dove, Euston-road* | £370 0 |
| W. J. Maddison | 400 0 | | |

LONDON.—For the erection of two bath turrets at the Infirmary, Cale-street, Chelsea, for the Chelsea Guardians. Messrs. Lansdell & Harrison, architects, 38, Bow-lane, Cheapside, E.C. Quantities by Messrs. Northcroft, Son, & Neighbour:—

| | | | |
|---|---|---|---|
| F. T. Chinchen | £6,500 | Wall & Co. | £5,720 |
| G. Wade | 6,300 | General Builders, Lim. | 5,690 |
| Gregory & Co. | 5,897 | Spencer, Santo, & Co. | 5,676 |
| Godfrey & Son | 5,800 | W. Norton, Chelsea* | 5,270 |
| F. & H. F. Higgs | 5,765 | | |

LONDON.—For augmenting the steam producing plant at the South-Eastern Hospital, for the Metropolitan Asylums Board. Messrs. Burstall & Monkhouse, engineers:—

| | | | |
|---|---|---|---|
| Blackwell & Co. (Informal) | | Easton, Anderson, & Goolden, Lim. | £1,960 |
| J. Thompson | £4,000 | Danks & Co., Lim. | 1,945 |
| Defries & Sons, Lim. | 3,200 | Taylor & Sons | 1,915 |
| Korting Bros. | 2,732 | Dawson & Co., Lim., Stalybridge* | 1,910 |
| J. & F. May | 2,154 | | |
| Tinkers, Lim. | 2,150 | | |
| Vauxhall Iron Works Company, Lim. | 2,025 | | |

[Engineers' revised estimate, 1300*l.*]

LONDON.—For radiators, steam heaters, piping, &c., to the South-Eastern Hospital, for the Metropolitan Asylums Board. Messrs. Burstall & Monkhouse, engineers:—

| | | | |
|---|---|---|---|
| Defries & Sons, Limited | £6,700 0 0 | J. & F. May | £3,898 0 0 |
| King, Ltd. | 5,581 17 6 | Kite & Co. | 3,800 0 0 |
| Fairbrother & Co. | 5,429 0 0 | Moorgate Engineering Company | 3,641 0 0 |
| Edwards & Barnes | 4,987 10 0 | Cameron & Co. | 3,410 0 0 |
| Berry & Sons | 4,854 0 0 | Dawson & Co., Ltd. | 3,400 0 0 |
| Korting Bros. | 4,746 0 0 | J. C. & J. S. Ellis, Ltd., Sheffield* | 3,272 0 0 |
| Dargue, Griffiths, & Co., Ltd. | 4,299 0 0 | | |

[Engineers' revised estimate, £4,350.]

LONDON.—For decorations and electric light, 24, Nevern-square, and decorations, 25, Nevern-square, Earl's Court, South Kensington. Messrs. Morley & Letts, surveyors, 185, Earl's Court-road, S.W.:—

| | | | |
|---|---|---|---|
| Rugg | £612 | Whitaker | £537 |
| Holdstock | 556 | Oldrey, N. Kensington* | 501 |

LONDON.—For decorative, sanitary, and electric light works, 38, Nevern-square, Earl's Court, South Kensington. Messrs. Morley & Letts, surveyors, 185, Earl's Court-road:—

| | | | |
|---|---|---|---|
| Heath | £256 | Whitaker* | £231 |
| Holdstock | 239 | | |

LONDON.—For alterations, repairs, and decorations, 8, Rutland Gate, S.W.:—

| | If marble stairs. | If Portland stairs. |
|---|---|---|
| W. H. T. Kelland | £2,580 | — |
| A. Bush | 2,577 | — |
| R. S. Buckeridge | 2,400 | — |
| J. Cannon | 2,275 | £2,115 |
| Spiers & Son | 2,140 | 2,060 |

LONDON.—For new premises and alterations, for Messrs. Green & Son. Mr. G. Gordon Stanham, architect, 100B, Queen Victoria-street, E.C.:—

| | | | |
|---|---|---|---|
| T. Nye | £2,300 | Heywood | £2,155 |
| Chamberlain Bros. | 2,280 | John Appleby, Cornwall-road, S.E. | 2,140 |
| Speechley & Smith | 2,248 | | |

LONDON.—For alterations, fittings, and dilapidations at the "Penshurst Arms" public-house, Penshurst-road, South Hackney, N.E., for Messrs. Holt & Co. Mr. Fred. A. Ashton, architect, 177, Romford-road, Stratford, E.:—

| | Alterations, &c. | Dilapidations. | Total. |
|---|---|---|---|
| Curtis & Son | £698 | £198 | £896 |
| Cocks, Limited* | 727 | 148 | 875 |

LONDON.—For alterations, fittings, and dilapidations at the "Prince of Wales" public-house, Grafton-street, Mile End, E., for Messrs. Holt & Co. Mr. Fred. A. Ashton, architect, 177, Romford-road, Stratford, E.:—

Cocks, Limited* .......................... £800

NEWMARKET.—For erecting a house and mason's shop in Rous-road, Newmarket. Messrs. Roberts & Way, architects:—

| | | | |
|---|---|---|---|
| Walkerley | £674 | Linzell | £524 |
| Cowell | 570 | | |

NEWMARKET.—For erecting a Shop in Rous-road. Messrs. Roberts & Way, architects:—

| | | | |
|---|---|---|---|
| King | £1,095 | Linzell | £867 |
| Cowell | 978 | | |

NORWICH.—For additions to schools, Angel-road, for the School Board. Mr. C. J. Brown, architect, Cathedral Offices, Norwich:—

| | | | |
|---|---|---|---|
| Chapman & Son | £449 0 | Sendall | £388 0 |
| Pye & Son | 437 10 | Leveridge, Dereham-rd., Norwich* | 384 10 |
| Tyrell Bros. | 430 0 | | |
| Scarles Bros. | 425 0 | | |

NOTTINGHAM.—For the construction of two underground lavatories, Burton and North-streets, for the Corporation. Mr. A. Brown, C.E., Guildhall, Nottingham:—

| | | | |
|---|---|---|---|
| J. H. Vickers, Lim. | £3,875 | Gilbert & Gabbitass | £3,360 |
| Williamson & Co. | 3,412 | T. Barlow | 3,320 |
| F. Messom | 3,390 | Hutchinson, Gordon-road, Nottingham* | 3,085 |
| Dennett & Ingle | 3,375 | | |

PLYMOUTH.—For alterations, &c., to "Fountain Inn," Frankfort-street, for Mr. J. Leathlean. Mr. Edgar M. Leest, architect, Public Hall Chambers, Devonport:—

| | | | |
|---|---|---|---|
| Tozer & Son | £444 13 | Goad & Co. | £397 0 |
| Jillard & Stevenson | 410 0 | W. Blake* | 377 0 |

[All of Plymouth].

PLYMOUTH.—Accepted for alterations to Dodbrooke House, Millbrook, near Plymouth, for Mr. E. S. Blight. Mr. Edgar M. Leest, architect, Public Hall Chambers, Devonport:—

J. H. Gregory, Devonport ............ £103 15

SEDGEFIELD (Durham).—For the erection of a bakery at County Lunatic Asylum. Mr. W. Crozier, C.E., architect, Shire Hall, Durham:—

| | | | |
|---|---|---|---|
| G. H. Bell | £913 14 6 | J. G. Gradon, Durham* | £838 19 2 |
| T. Hilton | 886 0 0 | | |
| Draper & Son | 850 0 0 | | |

SHEFFIELD.—For the erection of stores, &c., Pond-street, Sheffield, for the Directors of Messrs. Thomas Rawson & Co., Limited. Messrs. Hall & Fenton, architects, 14, St. James-row, Sheffield. Quantities by the architects:—

| | | | |
|---|---|---|---|
| James Fidler | £2,590 | A. Bradbury | £2,343 |
| Masten & Son | 2,522 | T. Roper | 2,251 |
| A. Turner | 2,521 | T. Margerrison | 2,250 |
| John Morton | 2,478 | J. W. Dickens | 2,240 |
| Powell & Son | 2,468 | M. Hancock, Horam-road* | 2,146 |
| J. & H. Wheen | 2,460 | | |

THAMES DITTON.—For new detached residence, for Mr. Richmond Keele. Messrs. Pennington & Son, architects, Hastings House, Norfolk-street, Strand, W.C. Quantities by Mr. H. Williams Mellor, 17, Buckingham-street, Adelphi, W.C.:—

| | | | |
|---|---|---|---|
| Dove Bros. | £2,525 | A. J. Cole | £2,225 |
| Godson & Son | 2,415 | Macers | 2,153 |
| John Appleby | 2,275 | Somerford | 1,995 |

WALTHAM CROSS.—For the erection of residence and cycle show rooms, for Messrs. G. Fell Bros., in the High-road, Waltham Cross:—

| | | | |
|---|---|---|---|
| J. Porter | £1,307 | A. F. Almond | £1,125 |
| W. Critcher | 1,250 | Lawrence & Son* | 1,099 |

WALTHAMSTOW.—For re-building No. 178, Wood-street for Mr. F. E. Devereux. Mr. J. Williams Dunford, architect, 100c, Queen Victoria-street, E.C.:—

| | | | |
|---|---|---|---|
| Fuller & Son | £570 | J. Reed, Walthamstow† | £451 |
| W. Lawrence | 487 | | |

WELLINGTON.—For rebuilding the "Lamb Inn," Wellington, Salop, for Mr. Thos. Taylor. Mr. C. R. Dalgleish, architect, Wellington and Shrewsbury. Quantities by the architect:—

| | | Deductions. |
|---|---|---|
| J. Bright | £3,858 | £280 |
| Geo. Bickerton | 3,818 | 260 |
| H. Price | 3,740 | 293 |
| Price & Sons | 3,625 | 252 |
| A. Roper, Wellington* | 3,723 | 380 |

WELLINGTON.—For additions and alterations to Dr. Calwell's house, Wellington, Salop. Mr. C. R. Dalgleish, architect, Wellington and Shrewsbury. Quantities by the architect:—

| | | | |
|---|---|---|---|
| R. & J. Millington | £1,087 | J. Bright, Wellington* | £930 |
| Price & Sons | 1,075 | | |

WELLINGTON.—For additions to Sunnycroft, Wellington, Salop, for Mrs. Slaney, also building new entrance lodge and stables. Mr. C. R. Dalgleish, architect. Quantities by the architect:—

| | | |
|---|---|---|
| Additions to house | Roper, Wellington | £1,800 |
| New stables | ,, ,, | 1,139 |
| Entrance lodge | ,, ,, | 660 |

## LONDON SCHOOL BOARD TENDERS.

ALLEN-STREET.—Structural alterations to building in order to provide additional lighting, &c.; re-dividing rooms by new glazed partitions; new cloak-rooms for boys, and cloak-cupboards for girls and infants, additional lavatory basins for infants; and Kindergarten gallery, &c.:—

| | | | |
|---|---|---|---|
| F. T. Chinchen | £2,200 0 | Garrett & Son | £1,527 0 |
| Marchant & Hirst | 2,170 0 | W. Hammond | 1,527 0 |
| Lathey Bros. | 1,585 0 | W. R. & A. Hide* | 1,412 10 |

GLOBE-TERRACE.—Improving lighting of halls of all departments, adding to existing class-room, and providing one additional class-room on each floor:—

| | | | |
|---|---|---|---|
| J. G. Cowell | £2,114 0 0 | Willmott & Sons | £1,831 8 6 |
| Grover & Son | 2,014 0 0 | Johnson & Co. | 1,782 0 0 |
| Chessum & Sons | 2,013 0 0 | C. Cox | 1,736 0 0 |
| Lawrance & Sons | 1,887 0 0 | F. & F. J. Wood* | 1,694 0 0 |

[*See also next page.*

HOMERTON COLLEGE.—Adapting front building for a residential deaf school for thirty children, and adapting back premises for a manual training centre for twenty boys, and for a temporary school to accommodate 420 children :—

| | A | B | C | Total. |
|---|---|---|---|---|
| W. Shurmur .... | £4,680 .. | £2,780 .. | £280 .. | £7,740 |
| McCormick & Sons | 4,799 .. | 2,536 .. | 280 .. | 7,615 |
| Grover & Son .. . | 4,552 .. | 2,779 .. | 280 .. | 7,611 |
| Dove Bros. ...... | 4,634 .. | 2,521 .. | 280 .. | 7,435 |
| Chessum & Sons | 4,686 .. | 2,431 .. | 280 .. | 7,397 |
| Snewin Bros. & Co. | 4,120 .. | 2,648 .. | 280 .. | 7,048 |
| Lawrance & Sons | 4,165 .. | 2,490 .. | 280 .. | 6,935 |
| T. L. Green* .... | 4,147 .. | 2,175 .. | 280 .. | 6,602 |

A For work to front building, and including the water-closets and other new outbuildings at back of same, also the drainage connected therewith.

B For work to back building, including the new water-closets, &c., at back of same, also the new drainage connected therewith, also the covered playgrounds.

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|---|---|---|---|
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| J. Marsland .......... | 165 | | |

MARLBOROUGH-ROAD.—Providing and fixing small vertical boiler and hot-water coils, for warming corridors (boys, girls, and infants), and converting existing gas radiators into hot-water coils, and connecting to boiler (including smoke pipe to roof if required) :—

| | | | | | |
|---|---|---|---|---|---|
| J. C. & J. S. Ellis, Ltd. ............ | £231 | 0 | Palowkar & Sons .. | £173 | 15 |
| Cannon & Sons.... | 198 | 15 | Sharp, O'Brien & Co. | 165 | 19 |
| W. Simmons ...... | 190 | 15 | J. Grundy ........ | 155 | 0 |
| Stevens & Sons.... | 185 | 0 | G. Davis* ........ | 155 | 0 |

MARLBOROUGH-STREET.—Providing and fixing a steam boiler and apparatus for warming swimming-bath :—

| | | | | | |
|---|---|---|---|---|---|
| Fraser & Son...... | £346 | 0 | J. Wontner-Smith, Gray, & Co. .... | £290 | 0 |
| Cannon & Sons.... | 311 | 0 | J. & F. May ...... | 262 | 0 |
| Price, Lea, & Co... | 310 | 0 | G. & E. Bradley .. | 259 | 10 |
| J. C. & J. S. Ellis, Lim. ............ | 309 | 0 | C. Kite & Co.*.... | 230 | 0 |
| J. Esson .......... | 298 | 0 | | | |

PONTON-ROAD.—Adapting class-rooms on the ground floor (Infants' department) for a Visitors' Daily Centre, including new water-closet and lavatory accommodation in connexion therewith :—

| | | | | | |
|---|---|---|---|---|---|
| R. S. Ronald ...... | £687 | 0 | Maxwell Bros., Ltd. | £595 | 0 |
| Hooper & Son .... | 679 | 0 | W. V. Goad ...... | 592 | 0 |
| Johnson & Co. .... | 630 | 0 | Rice & Son........ | 575 | 0 |
| B. E. Nightingale | 628 | 0 | F. R. Blaxton*.... | 435 | 15 |
| E. B. Tucker...... | 598 | 0 | | | |

ROCKINGHAM-STREET.—Improvements. Providing new halls for boys, girls, and infants; also cloak-rooms and lavatories for boys and girls, and stock-rooms for all departments, alterations to infants' lavatory, new teachers'-rooms, alterations to entrance and steps (boys and girls) :—

| | | | |
|---|---|---|---|
| J. N. Try .......... | £5,016 | W. Downs ........ | £4,522 |
| Johnson & Co....... | 4,995 | Smith & Sons ...... | 4,500 |
| Wall & Co. ........ | 4,705 | E. Triggs .......... | 4,385 |
| J. & C. Bowyer .... | 4,652 | J. Marsland ........ | 4,320 |
| Bulled & Co. ...... | 4,588 | White & Co. ...... | 4,137 |
| F. & H. F. Higgs .. | 4,588 | Garrett & Son* .... | 4,054 |
| Outhwaite & Son.... | 4,560 | | |

SMITH-STREET.—Adapting an old house, left up on site, for a schoolkeeper's residence :—

| | | | |
|---|---|---|---|
| A. E. Symes.......... | £585 | J. F. Holliday........ | £399 |
| Lawrance & Sons .... | 540 | Johnson & Co. ...... | 390 |
| Collis Willmott ...... | 410 | J. T. Robey* ........ | 349 |

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| | | | |
|---|---|---|---|
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| F. Britton .......... | 2,822 | E. Triggs .......... | 2,449 |
| Johnson & Co....... | 2,610 | Martin, Wells, & Co. | 2,425 |
| Ashby & Horner.... | 2,556 | Killingback & Co.*.. | 2,398 |

TOWER-STREET.—Providing and fixing iron staircase to Manual Training Centre :—

| | | | |
|---|---|---|---|
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| St. Pancras Iron Company, Limited .. | 75 | 0 | 0 |
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| J. C. & J. S. Ellis, Limited ............ | 649 | 0 |
| Fraser & Son .......................... | 638 | 0 |
| Wenham & Waters ...................... | 625 | 0 |
| Wontner-Smith, Gray, & Co. .......... | 622 | 0 |
| Wippell Bros. & Row .................. | 575 | 0 |
| Dargue, Griffiths, & Co., Limited ...... | 551 | 2 |
| Kallaway & Co., Limited .............. | 525 | 0 |
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| Duffield & Co.* ........................ | 486 | 0 |

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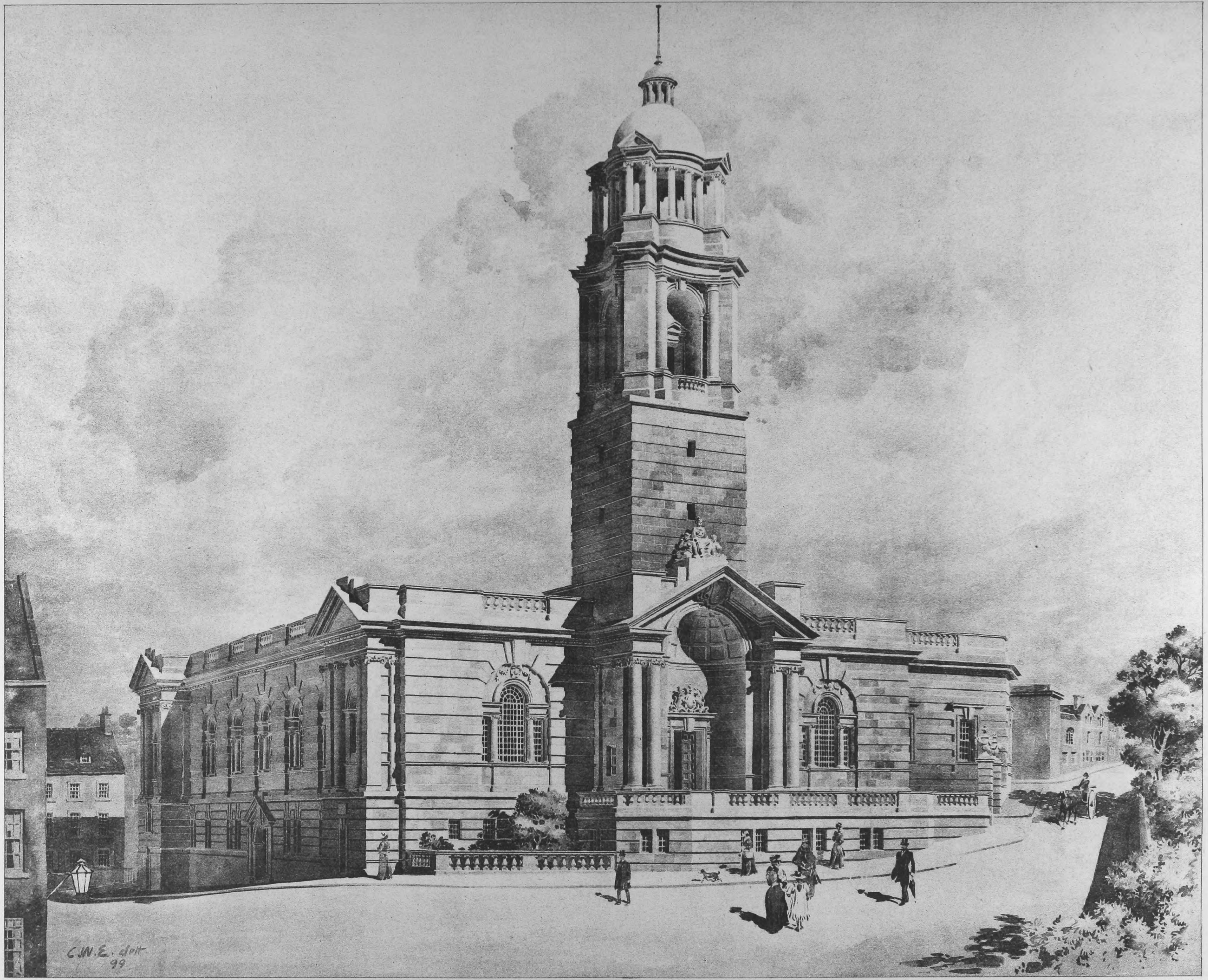

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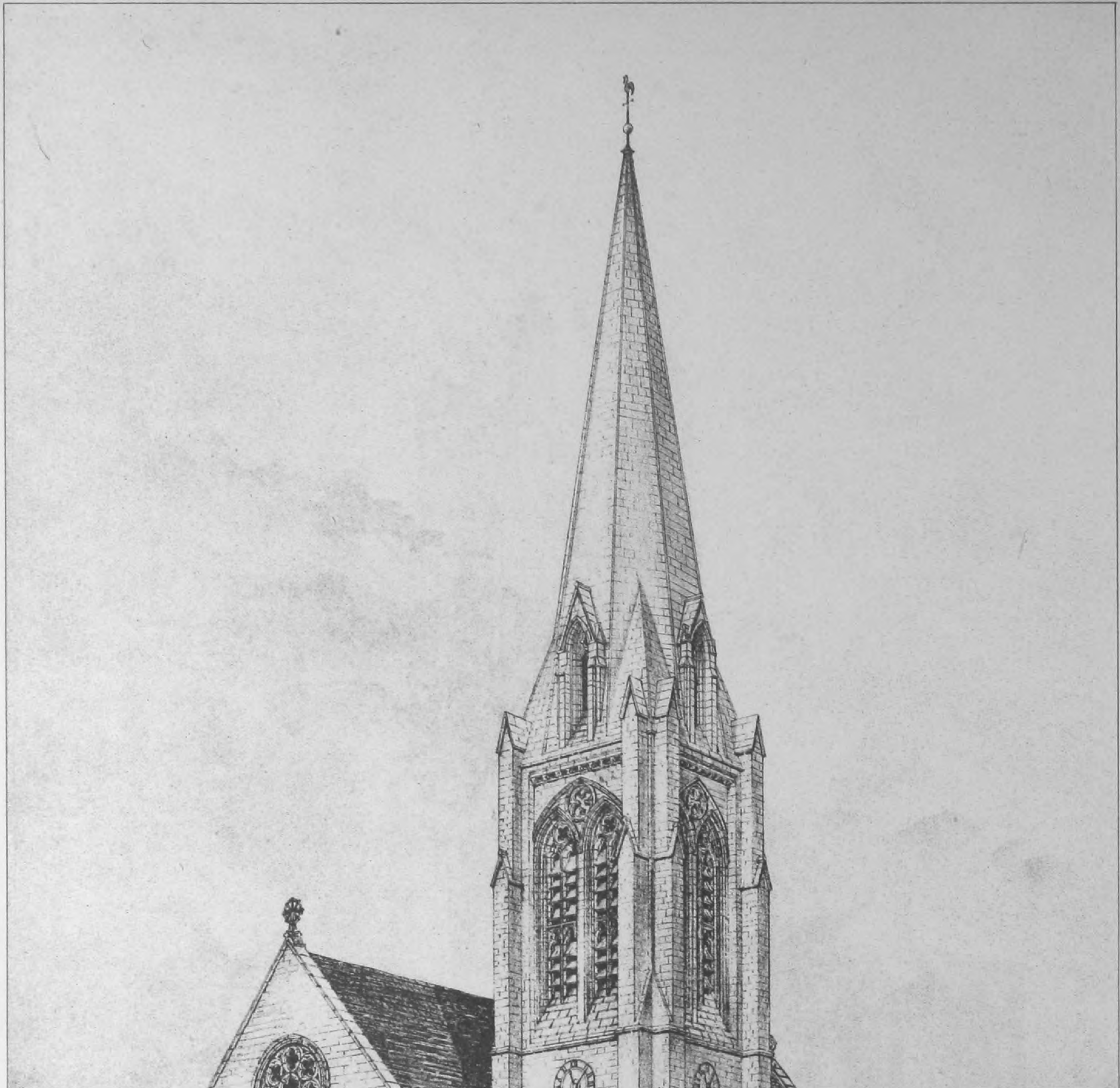

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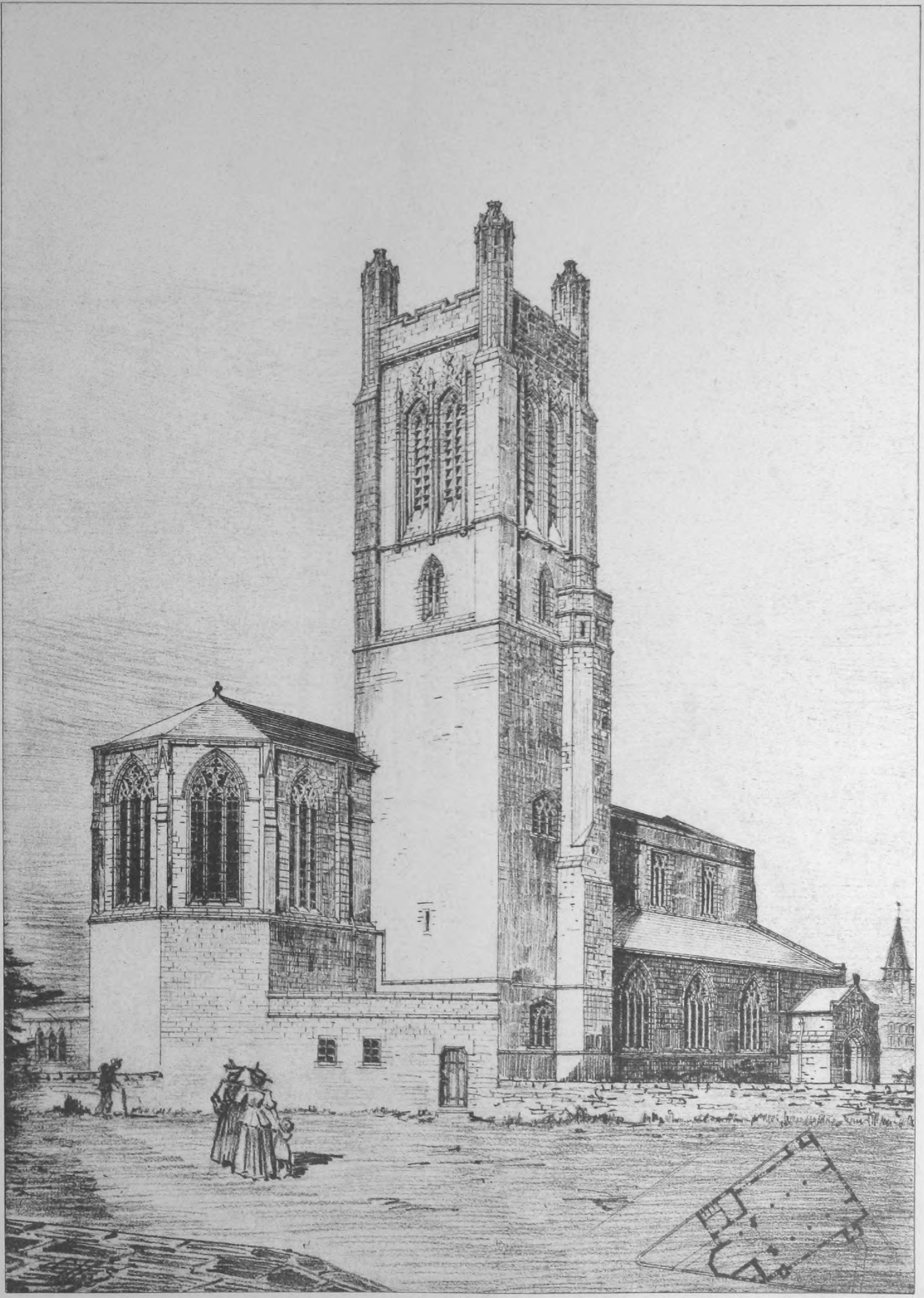

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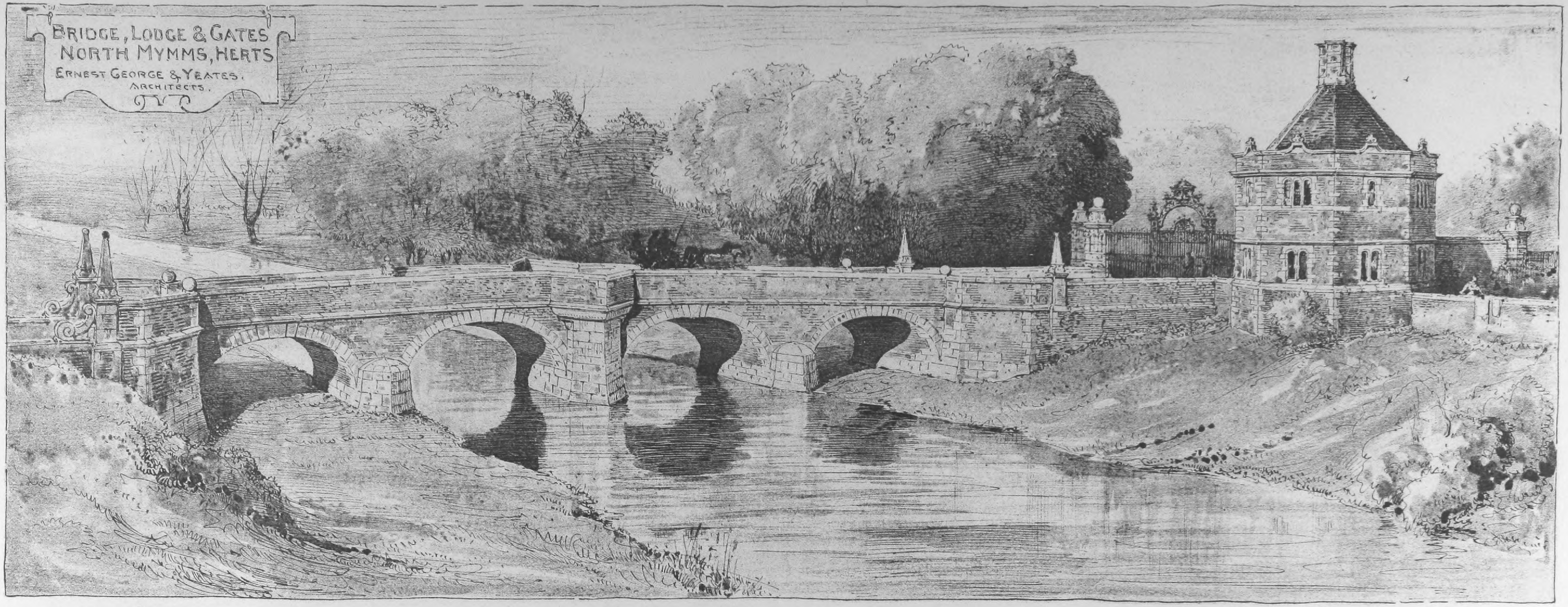
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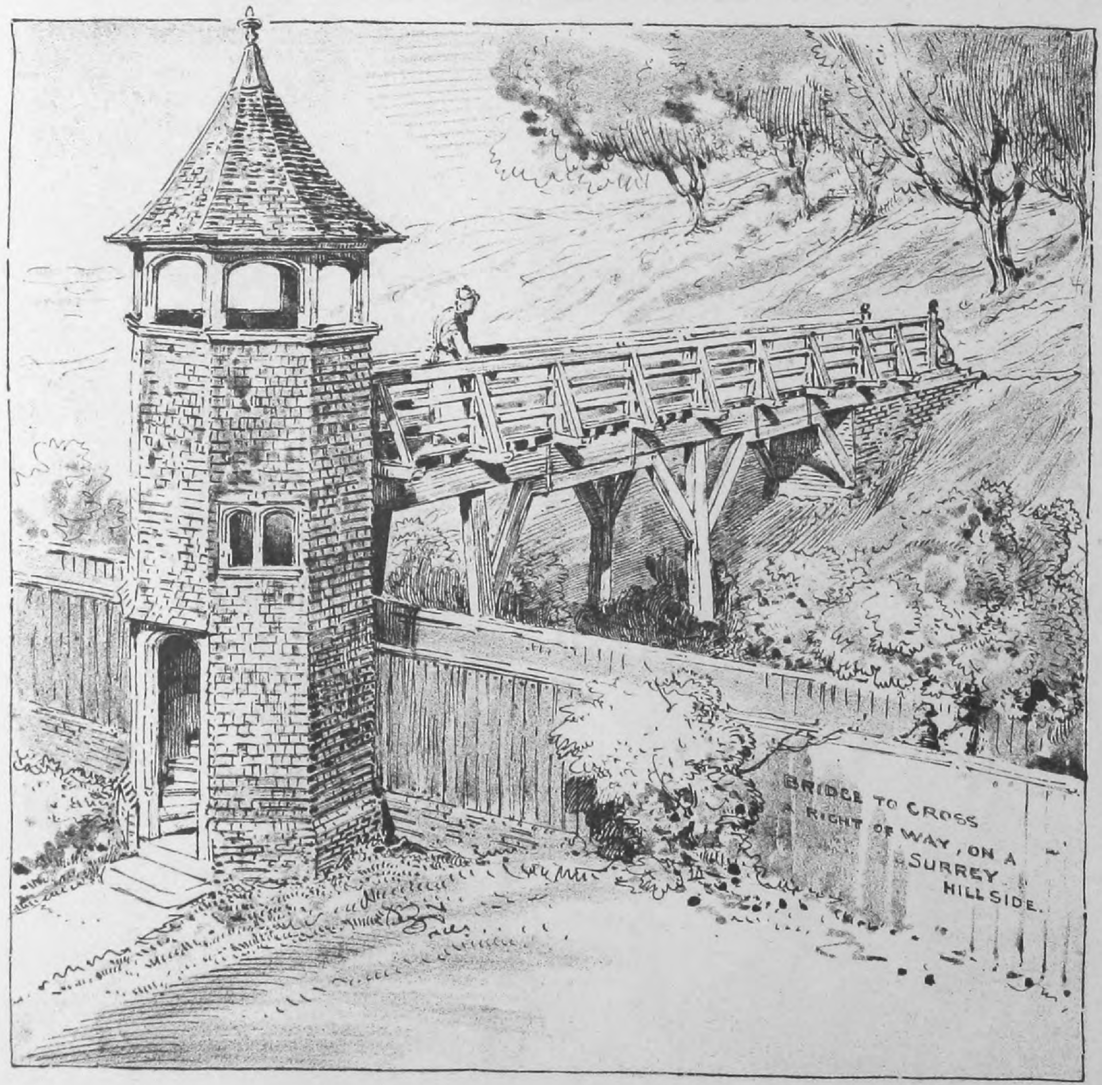
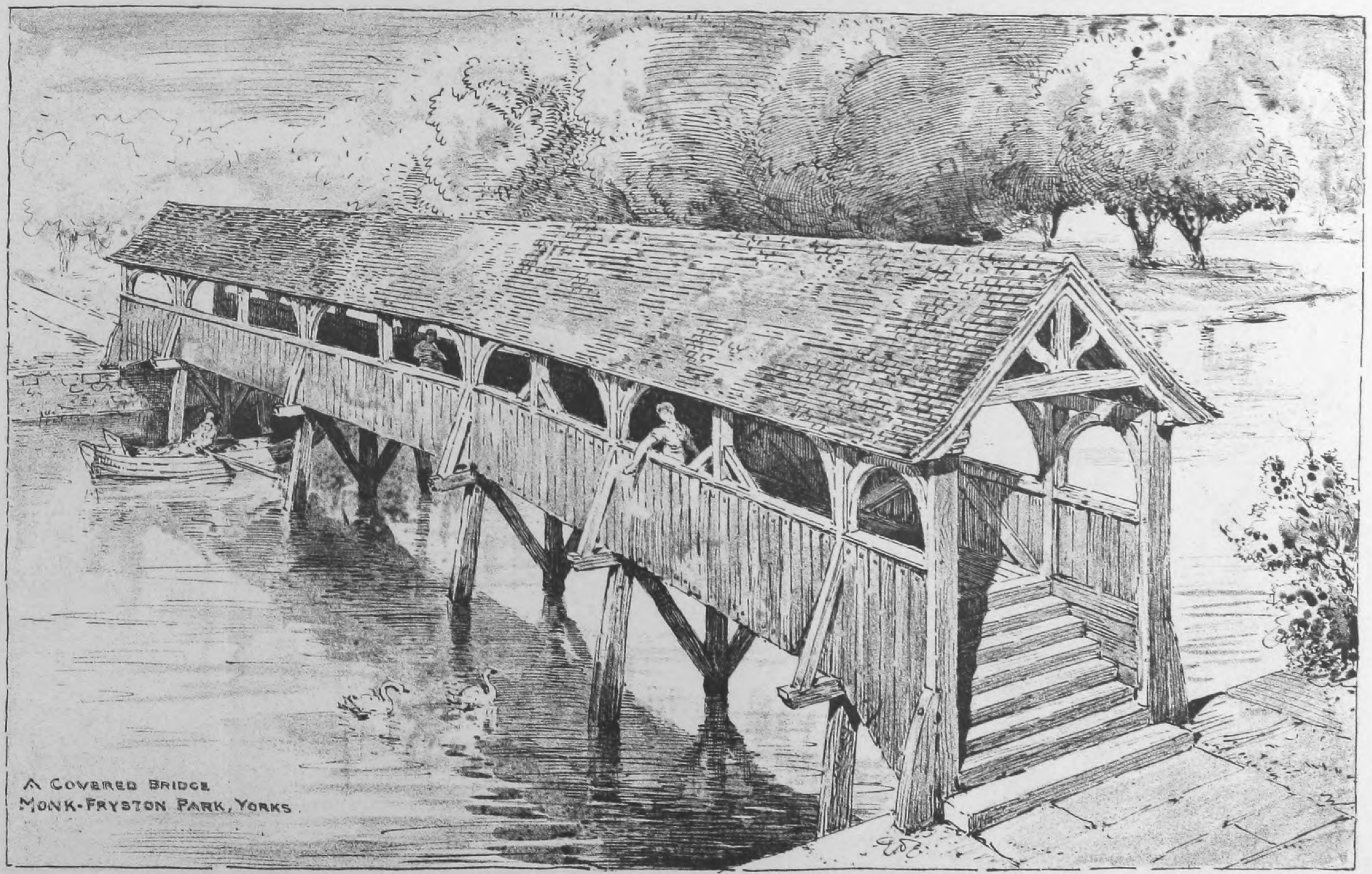

BRIDGE TO CROSS
RIGHT OF WAY, ON A
SURREY
HILL SIDE.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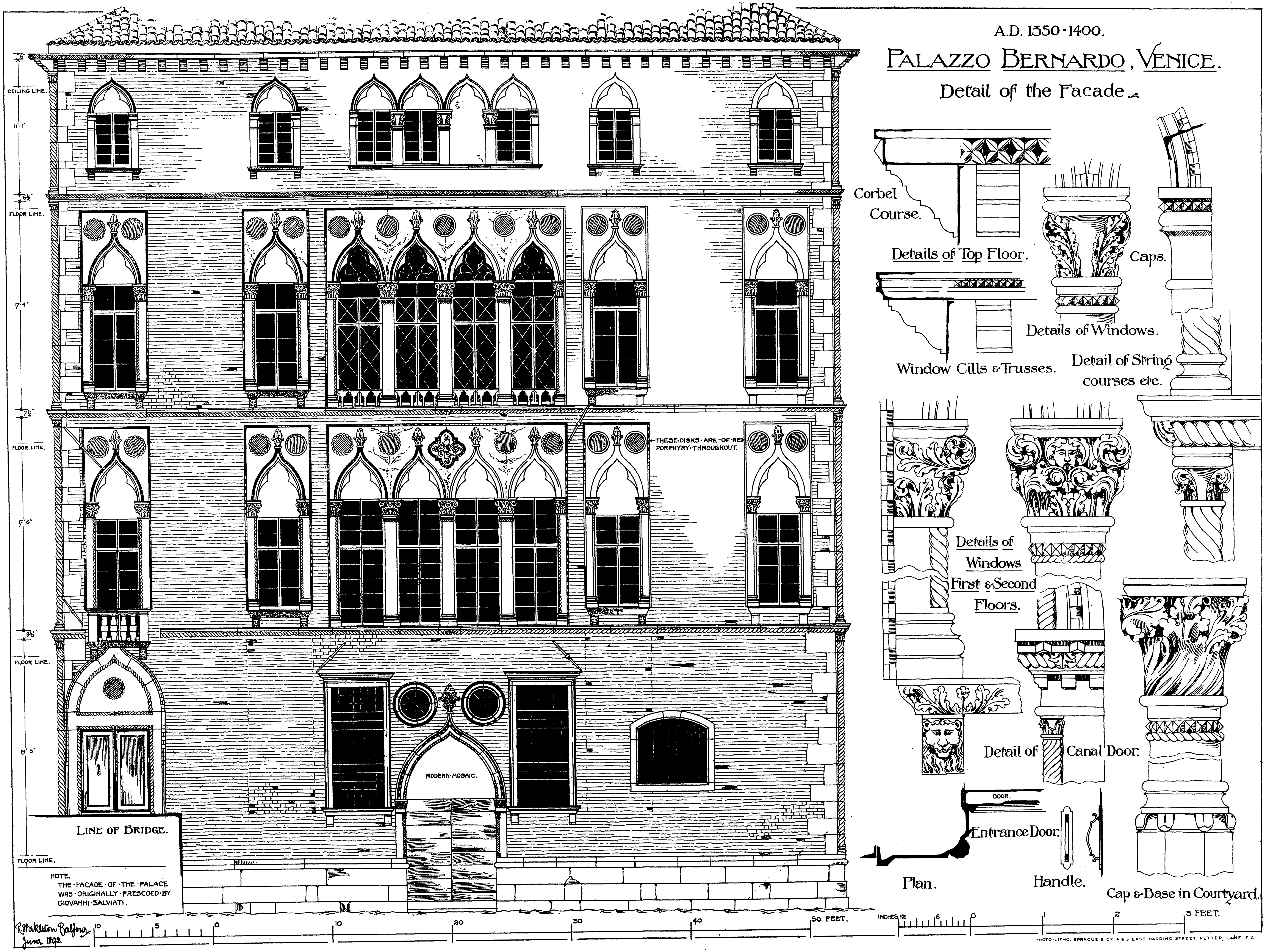

A.D. 1350-1400.

# PALAZZO BERNARDO, VENICE.

## Detail of the Facade.

NOTE. THE FACADE OF THE PALACE WAS ORIGINALLY FRESCOED BY GIOVANNI SALVIATI.

R. Shekleton Balfour. June 1892.

6"
CEILING LINE.
11' 1"
6½"
FLOOR LINE.
7' 4"
7½"
FLOOR LINE.
17' 6"
8½"
FLOOR LINE.
19' 3"
FLOOR LINE.
LINE OF BRIDGE.
THESE DISKS ARE OF RED PORPHYRY THROUGHOUT.
MODERN MOSAIC.
10 5 0 10 20 30 40 50 FEET.
Corbel Course.
Details of Top Floor.
Caps.
Window Cills & Trusses.
Details of Windows.
Detail of String courses etc.
Details of Windows First & Second Floors.
Detail of Canal Door.
DOOR.
Entrance Door.
Plan.
Handle.
Cap & Base in Courtyard.
INCHES 12 6 0 1 2 3 FEET.

PHOTO-LITHO. SPRAGUE & Cº 4 & 5 EAST HARDING STREET FETTER LANE. E.C.

# The Builder.

VOL. LXXVI. No. 2937.

MAY 20, 1899.

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Proposed Church, Glass Houghton, Castleford.—Messrs. Demaine & Brierley, Architects .......................... *Single-Page Ink-Photo.*
New Church, York.—Messrs. Demaine & Brierley, Architects .......................... *Single-Page Ink-Photo.*
Stabling at Lingfield.—Mr. Ernest Runtz, Architect .......................... *Single-Page Photo-Litho.*
Crown Theatre, Peckham.—Mr. Ernest Runtz, Architect .......................... *Single-Page Photo-Litho.*
Amherst School, Guernsey.—Messrs. Colson, Farrow, & Nisbett, Architects .......................... *Two Single-Page Photo-Lithos.*

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### *Art in France in* 1899.

THERE seems to be a kind of lull in French painting and sculpture this year, which we may take perhaps to be preparatory to a great effort for the International Exhibition Year of 1900. People in Paris seem inclined to take that view, at all events. The Old Salon contains a sufficient number of fine and striking works to make a very good exhibition occupying, say two or three of the larger galleries, but the exhibition as a whole is one of the weakest we have seen, and even in the works of the best men it must be admitted that only in one or two cases can they be said to be at their best. The New Salon is so palpably weak that its continuance seems to be an effort, and one is inclined to think that the reunion of the two Salons, which is talked of as a possibility, is not unlikely to be brought about from mere inability of the younger to keep its place alongside of its older, greater, and more popular rival. The loss of Puvis de Chavannes is of course an irreparable one to the New Salon: and M. Carolus-Duran, who (though in so opposite a manner) has also been one of its chief supports, this year exhibits so little—a sketch for a picture of the Crucifixion and two bust portraits—that his works have to be looked for, instead of forming, as usual, a prominent part of the spectacle. The two Salons are accommodated, as before, in the Galerie des Machines, where we greatly regret to see, in the centre, a vast octagonal structure of piers and girders, evidently a preparation for the erection of a central dome for the 1900 Exhibition, for which the central portion of the roof will have to be removed and the grand continuity of the building spoiled. It is a great pity that so fine a construction should thus be broken into merely to serve the purposes of a temporary exhibition.

The Old Salon has its curiosities as usual. Among them is M. Béroud's "Aux Maîtres d'Autrefois," the interior of the Salon Carré of the Louvre, with some mysterious females in diaphanous drapery floating about in the air attaching garlands to the paintings of the old masters; a huge painting by M. Barbin of the execution of the Pazzi conspirators in the Palazzo Vecchio at Florence, a picture so large that one has to back through the doorway of the adjoining room to take it in, and in which the prevailing tone is that of a mahogany table. A ramping elephant tossing a tiger with his trunk represents a kind of art that would only be in place on the outside of a wild-beast show. The usual gigantic "hash of nudes" is provided this year by M. Le Quesne, who animates the reeds listening to Midas into a crowd of women; a work, however, with less of sprawl and more decorative lines than we sometimes find in pictures of this class. Among the large and prominent works of a more serious order is M. J. J. F. Aubert's "La Mission des Apôtres," or Christ's charge to the Apostles, a religious picture of good intent but hardly rising above mediocrity.

There are, as usual, a certain number of large works of purely decorative character and intention. Among these is M. Schommer's ceiling painting for the "Salle du Doctorat" in the new Sorbonne, in which a nude figure of Truth floats in the clouds and a seated student below, in robe and gown, looks up to her for inspiration; the combination is an odd one, but the design has that floating quality of composition which the French understand so well in ceiling-painting. M. Gervais rather throws away his splendid gifts on another odd combination "A la Gloire du Sculpteur Bachelier," also a decorative work, in which a nude angel with iridescent wings (which are given with fine effect) floats down the middle of a street of Renaissance Paris to greet the sculptor, clad in the ordinary dress of his period, an allegorical figure of France looking on with approval. It narrowly escapes being absurd; and though there is a brilliancy and force about it, M. Gervais has done far finer things than this. Among the decorative works one of the best is the landscape by M. Maurice Chabas for the Salle des Fêtes of the Mairie of Vincennes, a sufficiently conventionalised landscape in horizontal lines and fine and warm colour; the introduction of a spray of a foreground tree sprinkling the sky space has a good effect and keeps the rest at a distance. An enormous *plein-air* painting (it must be about 80 ft. long) of a football match is intended by M. Guillonnet as a decoration for the Lycée Lakanal, and may do well enough for that position, but it is not decorative in any proper sense of the word. M. L. E. Fournier's "L'Agriculture du Rhône," for the large room of the Prefecture of the Rhone, is a good work of mural decoration in a monumental style, and M. Jean Paul Laurens exhibits an extraordinary ceiling decoration for the "Galerie des Illustres" at Toulouse, in which the most prominent object is a lion upside down in the sky, or appearing so in its present position; the picture may explain itself better when it is placed in its intended position on the ceiling, but it is at best a confused affair, and hardly worthy of the painter's reputation.

Among the larger works not professedly decorative M. Debat-Ponsan contributes one of those works with a moral to which he is rather partial, "Le Christ sur le Montagne," where Christ appears on one side on a rising ground saying the words "That ye should love one another, even as I have loved you," while beneath extends a historical line of fighters, from the barbarous ages to modern times; the figures of Francis I. and Louis XIV. are prominent near the foreground, and various victims of war lie extended on the ground. This is a powerful moral essay, but it is not art, and fails as a picture; he calls it indeed "A Vision," but this kind of thing is more suited to a literary essay than a painting; one can never get over the incongruity of the collection of figures of different ages. M. Humbert's "Marie-Madeleine," a triptych, is a seriously intended work, showing the Magdalen in her unconverted stage on the right, a fine figure in rich costume; in the centre compartment she is seen weeping over the body of Christ, in the right hand compartment as a soberly dressed and reformed woman. This also is a kind of sermon in painting, but it is not without artistic power and effectiveness. M. Ferrier's "Eveil du Poète" another very large picture, is a purely ideal work, in which the figures of the Muses, in slightly misty drapery, dance across the picture towards the poet, who is wakened by a winged genius; the work hardly realises its aim, in an artistic sense, but there is a certain beauty both of fancy and line in it. M. Henri Martin continues his *pointelliste* style in his work entitled "Sérénité," which however is too vague in meaning to be of interest, and is in fact one of the weakest of this painter's works that we have seen. To go from the ideal to the real, another of the large pictures of the year is M. Tattegrain's "Saint-Quentin pris d'assaut—l'exode," an incident of 1557. This is one of the old class of historical pictures for which this clever painter has acquired a reputation; it represents the moment when all the women were ordered out of the half-ruined city to return to France; they press together up to the front of the picture, a miserable crowd, amid dead bodies and the débris of burned buildings, driven on by soldiers in the rear. The picture is crowded with detail, and is a kind of work which it is worth while to paint as an effort to present to modern eyes the realities of warfare in a more cruel age; though in this sense it falls short in power and reality of some of the painter's previous works of the same class. Among the painters of large works Mr. Smith-Lewis as usual occupies a prominent position as a painter of what may be called full-sized landscape with full-size cattle or horses on it; but he has deteriorated very much: in search of what he evidently considers breadth of style he has lost the element of beauty; his horse is as like parchment as last year; he is a painter who has spoiled a fine talent by falling into an exaggerated crudeness of execution.

The interchange of art between painters and sculptors is on the increase in France. M. Gerôme, for one, is now almost as much sculptor as painter, indeed it is to be hoped that his two works of sculpture this year (which, owing to the absurd want of system in numbering at the Salon, we were unable to find) are more important than his one picture; for the latter, a collection of four little scenes between Cupid and Anacreon, in one frame, cannot be thought worthy of his reputation; it is poor in colour and rather absurd in conception. On the other hand, it is interesting to find a great sculptor like M. Mercié exhibiting so fine and finished a painting as "Colére d'Amour," in which a beautifully designed nude figure of Cupid (the adolescent, not the infant Cupid) stands in the foreground with a frown on his face and about to fit an arrow to his bow. The picture is perhaps a little hard in style; its beauty is, in fact of a sculpturesque kind, but as a sculptor's picture it shows a wonderful versatility. Among the works of an ideal and poetic class, what may be called the symbolical works, M. Hippolyte Fournier's "La Convalescente" is really remarkable in conception. The scene shows a kind of cavern opening on the sky, with dark water at the bottom; out of the water has risen a bat-winged but not unbeautiful figure, the angel of disease, which, with feet still trailing in the dark water, lifts up a figure of a woman who is received by the winged angel of health above. There is no explanation in the catalogue, but that is the obvious reading; this is really a fine and original conception, and powerful also in artistic effect. It is a strange contrast to pass from this to M. Bouguereau's cold and harmless but correct classicalities, of which his "L'Amour et Psyché" is one of the best he has done, but the interest is all superficial and the painting, with all its correctness and finish, cold and commonplace in colour. A picture which may be classed with that of M. Fournier just mentioned is the fine work by M. Zwiller "Pour le Centenaire de la Réunion de Mulhouse à la France (1798-1898)." This represents a nude figure of a woman, with her back nearly turned to the spectator, the curves of the figure contrasted by the straight line of some black drapery hanging from her arm; she is engaged in writing an inscription on a mural tablet on the wall against which the figure is relieved. The work is fine in colour and altogether an original and poetic conception. Of the paintings which are simply nude studies M. Chartron's "Echo" is deservedly one of the popular pictures of the year, for its fine drawing and purity of line and sentiment; it is simply a figure seated on a rock in an open landscape; with no special suggestion of "echo," nor any poetic sentiment; it is simply charming—that is all, but that is much. In a lesser degree the same kind of innocent charm belongs to M. Nicolas Laurens's two girls, "Sur la Dune." A superior work in execution to either of these, because finer in colour, is M. Verdier's "Latet Anguis in Herbâ," a splendid piece of painting in its way, though disagreeable in the sentiment and expression indicated correctly enough in the title. Fortunately, also, we are not without one of M. Fantin-Latour's small but truly intellectual pictures, in which, as in his "Baigneuses" this year, we seem to forget mere paint altogether; these are not "nude pictures," but poems in which landscape and figures are blended into a kind of abstract conception, a poem in painting; though from their small scale they are lost, to most spectators, amid the crowd of large and flaring canvases by which they are surrounded.

Of M. Henner one would rather not speak, he makes one melancholy; he was once a fine painter of ideals, he is now a mannerist who repeats the same trick, an unwholesome one in an artistic sense, every year. Among works of the class called *genre* there are of course many that have more or less interest or pathos of subject, but which do not touch a sufficiently high artistic point to be worth singling out for mention. Mme. Demont-Breton has a rather fine picture of a Breton shrimper, apparently (the title, "Le Geernaedier," is probably a local term), going out to his day's work at low tide, "obscure lutteur fatigué de misère," though it is nothing like equal to her masterly work of last year. She exhibits also a small and delicate painting of a subject out of her usual beat; "Alma Mater," a Virgin and Child seated before a window opening—a kind of modern rendering of the Madonna. Two idyllic pictures are worth recording, M. Thivet's classic idyll "Doux Instants," and Miss Madeleine Smith's "Amour Maternel," where a peasant woman holding her child stands in front of trees and golden corn—a work of some pathos and individuality. Also one must not pass over the name of Rosa Bonheur, who exhibits a small work, "Vache et Taureau d'Auvergne," but, as in so many other cases, not at her best.

There are few portraits of consequence. M. Benjamin-Constant's "Mme. von Derwies" is a brilliant specimen of the *portrait de luxe*, in which, however, he is not equal to Carolus-Duran at his best; M. Léon Comerre's portrait of "M. Holtz, Deputé," is a good solid portrait of the realistic school, and M. Hébert exhibits a very charming portrait of a little girl the head only, painted with great delicacy of colour, and artificially relieved in effect by a black frame. It is noteworthy that Napoleon pictures are again rather numerous, but none of them of the first order; the best is M. Francois Flameng's of Napoleon riding in front of the standards after the battle of Iena—"Le Soir d'Iéna." That by M. Guillon, "Debarquement de Général Bonaparte en Egypte," though rather limelight in its effect, shows a characteristic figure of the young Napoleon, in his long-haired days, on the prow of the boat, determined to be the first to land. M. Marchand's "Le Soir de Rivoli" is a large theatrical painting, violent in colour. M. Georges Clairin has produced a couple of powerful pictures relating to the Egyptian Campaign. The one illustrates the "Départ des Conscrits à Louqsor;' the scene is the outside of a prison where the unfortunate fellahs, compelled to serve, show their heads at the grated windows, amid the lamentations of their families. The companion work (a puzzle to the spectator until the other one is seen), called "Le Retour des Conscrits," shows nothing but the heaped-up wastes of sand in the desert, with here and there some human remains, half protruding, of the troops who have died on the march. A small picture of modern battle, "Le Charge—1870," by M. Chartier, is remarkable for its defiant realism and total absence of stage effect. It is taken at the moment when the square of infantry are delivering their fire, the cavalry galloping furiously to get home to their object, men and horses falling, not in picturesque attitudes, but anyhow; the painter spares us the usual officer in a heroic attitude with his arm stretched out. It is surely in this spirit that battle pictures should be painted. One may note also that the fine French school of Still-Life painting keeps up to the mark; no finer example could be found than M. Grün's "Cuivres."

But the strong point of the Old Salon is in the landscapes, not on account of their number so much as the high quality of the best of them. M. Didier-Pouget's grand morning scene, "Bruyères en fleurs," with its forcibly painted foreground, the valley half dim with mist, and the table-land beyond just lighted by the morning sun, is enough in itself to crush all the landscapes at the Academy. Among other fine works are M. Quignon's "Les Coteaux de Verville," a landscape of cornfields painted in the rich full style of handling in which he treats that kind of subject; M. Simonet's "Soleil Couchant;" M. Harpignies' two works, "La Loire" and "Fin d'une belle Journée;" M. Lamy's "Souffles d'Automne," with the rather stormy sunset sky gleaming through the trees; and the two landscapes by M. Wallet, who seems to have rather successfully caught the inspiration of Harpignies. It is of interest to note also that one of M. Bonnat's two contributions is a landscape, and a very good one—the first one he has exhibited here, we believe; and M. Besset's "Tourettes-sur-loup," where a half ruined ancient masonry bridge, painted with great force, crosses the foreground, and the landscape is seen through the arch, is striking from its special treatment. One may observe, also, that there are signs of improvement in sea painting; there are some terribly bad sea pictures, to be sure; but M. Eysséric's "Au large" is much better than usual, and M. Jobert's "La Brume dans l'Atlantique," an immense painting of stormy sea under a dark sky, with a ship staggering in the background, half seen through the mist, is a really powerful and impressive work.

The New Salon professes, of course, to represent the more intellectual and experimental side of painting, and had some claim to that position at first, but this year its decline and fall is too obvious to be ignored. One walks round room after room without finding anything really worth stopping at, and many of the things that are hung are simply preposterous. There are some groups of small landscapes of delicate style, by M. Iwill and others, such as would be killed amid the crowd of the Old Salon; for the New Salon has always in the main consisted of smaller pictures, and it is notably the case this year. There are M. Cazin's landscapes, as perfectly balanced in style as ever, but not equal to those of last year, except perhaps "Lever de Lune." M. Cottet has made some pathetic studies of various single figures under the same title, "Deuil." M. Boutet de Monvel exhibits a very large work somewhat in the style of a mediæval tapestry, "Jeanne d'Arc à Chinon," intended we fancy for a decoration at Domremy; it is perfectly and absolutely flat, the figures looking as if cut out, and the gold ornaments on the dresses worked in relief, as in some of the early Italian paintings. The figures and faces themselves have plenty of character, but the whole work, as a picture, is rather playing at mediævalism. To go to the opposite style of things, M. Guillaume Dubufe has undertaken to paint a large decorative picture "In Memoriam" of Puvis de Chavannes, concerning which one's immediate thought is, how would Puvis de Chavannes have liked it? The idea of M. Dubufe painting a picture in homage to the great master of stern and severe decorative art seems rather absurd; he certainly never paid his idol the flattery of imitation, at all events. M. Courtois has a rather hard and conventional but finely designed painting of a "Jeune fille à la Source," a picture which carries one back to old times, and is in direct opposition to the movement of "progress" supposed to be represented by the New Salon; and from M. Courtens we have, as usual, a fine example of a wooded landscape with very bright and genuine sunlight pouring through the trees. M. La Touche's "Les Sonneurs," a man and two women pulling ropes in a belfry, with a background of stained glass windows, is a fine study of colour. M. Rousseau's cattle pictures are admirable, and M. Stewart (an American by birth) exhibits again some of his fanciful and poetic, but very thoroughly studied scenes, where nude figures are seen in the half light of a wood—"Chasseresses," and others of the same type. These, and some of the small groups of landscapes before mentioned, are among the attractions of the collection, but they are among a wilderness of oddities and worse.

Sculpture at the New Salon is not worth taking into account, it is so poorly represented. In the Old Salon the centre court is filled with the usual crowd of works in marble, plaster, and bronze, including some fine things; but the want of repose, the striving after sensation and after anything that will catch the eye, has unfortunately invaded French sculpture also to a great extent. We have for instance M. Bartholdi's monument to the French soldiers killed at Schinznach, an obelisk with a winged figure, as if flying, stuck on to it at one side, at the top, as if it were glued on; a treatment perfectly foreign to the genius of sculpture. We have M. Larche's great screeching bronze group of "The Tempest and the Clouds," which looks likely to knock one down. There are, however, fine works, though not so many as usual; among others M. Falguière may be congratulated on his model for the statue of Balzac, seated in a thoughtful attitude, caressing one knee with his hand. This is a fine work, and succeeds in investing the great novelist with a dignity worthy of his genius; a difficult task with a figure and face like his. M. Paul Dubois' "Souvenir," a wax group of two ladies, placed under glass in one of the picture-galleries, is a beautiful work in feeling, probably meant to be cast in bronze, for which, with the elaboration of the costume, it is most suitable. M. Ducrot-Icard has treated the figure of Jael with considerable power; he takes a sculptor's licence of representing her as nude, gazing down on the murdered Sisera with a countenance strongly marked apparently by remorse and concern at the act. Among other fine works are M. Moreau-Vauthier's "Bretonne," a fragment for a monument; and M. Jean Boucher's two works "Un Soir," two lovers seated together, and "Antique et Moderne," a plaster group of considerable originality and beauty. The antique spirit is represented by a draped man of Greek type of face, seated with face uplifted in a calm and serene contemplation; the modern by a nude female figure who sits with a book on her knee and her head leaning on her hand with a wearied expression of speculation. This is one of those works, at once sculpturesque in form and intellectual in signification, in which the genius of French sculpture has so often shown to advantage. We regret to observe the increasing tendency to polychromatic sculpture—polychromy of built-up material; it is apparently popular with the public, but it is a false form of art.

## THE NEW BUILDINGS FOR SOUTH KENSINGTON MUSEUM.

THE ceremony of laying the foundation stone for the new buildings to form the completion of the South Kensington Museum, which was performed by the Queen on Wednesday afternoon, in the presence of a distinguished "assistance," is a welcome proof that, after all these years of delay, the reproach of leaving our world-famed artistic Museum housed behind a brick wall is at last to be removed.

Since the date of the competition, in which Mr. Aston Webb's design was accepted, considerable modifications have been made in both the plan and design of the proposed building, although we are glad to say that the statement in the *Times* that "useless towers have been cut down" and that the elevation will be "comparatively unadorned," as if the architect had listened to the foolish clamour which demanded that nothing should be spent on the architecture of the building, is quite unfounded. Alterations have in fact been made rather in the way of improving architectural effect than reducing it. The central block of the façade has been lowered and widened, so as to give greater mass and breadth to it, and make it a pavilion rather than a tower. The treatment of the finish of this pavilion is suggested by that of the centre feature of the Certosa at Pavia, not of course in mere imitation, but a carrying out of the same leading idea, of recessed octagonal stories one over the other, the highest terminating in a small cupola. The rest of the façade has been modified in the direction of giving it greater breadth and continuity, and the main cornice is carried right round the building without a break, except at one point where the vertical line of a turret, which we think it will be better to preserve here, interrupts it for a few feet. The intermediate pavilions between the angles and the centre, seen in the competition design,* have been modified so as to reduce their prominence and rather alter their character; instead of rising above the main line of building, with angle turrets, the cornice line is continued across them, and a pediment introduced, giving a less Oriental and more classic character to the whole.

The alterations in the plan are of considerable interest. The lines of Brompton-road and Exhibition-road are not at right angles, and in the former plan the western end was canted inwards from the line of Exhibition-road in order to bring it to a right angle with the main front. It has been thought, however, that it was a pity to injure the vista down Exhibition-road by setting the line of building away from the road. Accordingly, in the plan as now arranged, the line of the west end of the building continues the line of Exhibition-road; the block immediately continguous to it on the south front is at right angles to it, but the whole line of the south front is laid out on a slight curve, so as to follow the line of the Brompton-road, the block at the east end being at a slight angle to the corresponding one at the west end of the façade. This can be seen on the block plan of the whole site given on p. 501; it will be better seen, however, on the detailed plan which we shall publish, along with the perspective view, next week. One point in regard to the plan, which is not yet settled, is very important. The reader will see that across the central court of the Museum, now existing, a one-story gallery is indicated by single lines. The wish of the architect is that this corridor should be introduced to complete the central axis corridor from south to north, which otherwise is interrupted at the centre of the building, and the access to the northern block and to the refreshment rooms could only be by a circuitous route. We regard this completion of the north and south axial line of the plan as absolutely essential both for architectural and for practical reasons. It is understood that the South Kensington officials object to it as spoiling the appearance of the courtyard. Our own impression is that the residents at the Museum do not want their lawn-tennis courts to be cut up. Another point which the architect has in view (not shown on this plan) is to form a wide road leading up axially to the centre entrance of the building, by taking a portion of Thurloe-square. At present, as every one knows, the access to the Museum from South Kensington Station is by a most accidental kind of route, through small streets lying at all angles to each other.

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* Illustrated in the *Builder* of August 15, 1891.

The block plan of the neighbourhood (p. 501) shows what a remarkable collection of large buildings, symmetrically placed, will now be formed in this district. The scheme for treating the College of Science, opposite to the front of the Imperial Museum, is such as to form an architecturally fine *place* of what would be otherwise only a common road. The design of the projecting end pavilions of the Imperial Institute is to be repeated, with Mr. Collcutt's concurrence, on the opposite portions of the College of Science, so as to produce a symmetrical entry at each end of the road, the two blocks being connected by a screen. Where the road-line takes a sweep inward, opposite the centre of the Imperial Institute, this will be repeated in front of the College of Science, so as to afford a circular area, in the centre of which a monument or group of statuary can be placed. The whole effect will be very good, and to some extent a new departure in London, where we have hitherto paid so little attention to alignment and laying out of sites; and it is to be hoped that times are changed since the days when we could, through sheer carelessness, plant the Albert Memorial out of axis with the Albert Hall, and no one think anything of it.

## NOTES.

**The New Member of the Institute.**

It was an agreeable surprise to hear the announcement, at the last meeting of the Institute, that Mr. Bodley had joined its ranks. We only wish he had done so long ago. We hear that there is some disposition on the part of others of the "memorialists" to abandon the attitude of opposition and support the Institute; perhaps Mr. Bodley's example may be followed in other cases. Whether architecture is a profession or an art, it is for its interests that its representative body should be a strong one, and include all schools. The influencing of public opinion in the right direction may very much depend on this.

**A Municipal Opera House.**

We are glad to find the London County Council have been considering the proposal which has been made to them, in a petition signed by a great number of persons, to subsidise with public funds a national opera house, and that a Report on the subject has been presented by the General Purposes Committee. As to the question of actually applying public money to the support of a national opera house in London the Council do not as yet feel in a position to make any distinct undertaking, but apparently they are regarding the idea with no unfavourable spirit. We may quote the following sentences from the Report of the Committee:—

> "There is, however, one step which we think the Council would do well to take. If a national opera house is to be erected, it would be essential that it should occupy one of the most prominent sites in London. The Council will in the course of the next two or three years be laying out plans for the great avenue from Holborn to the Strand, and it occurs to us that in doing so the Council should reserve some plot of land which would be suitable for such an opera house. This need not involve the Council in any financial liability, as it is by no means improbable that private persons might then be willing to erect a theatre or to take upon lease one erected by the Council. The terms of the lease might be such as would ensure the undertaking being carried on upon the lines of a national opera house, with a view to the improvement of music and the education of operatic artistes. The Council might guarantee the capital, or enter into some other financial arrangement with its lessees which would give it a right to see that its conditions were complied with. In this way we think it quite possible that the objects aimed at by the petitioners might be obtained without asking the ratepayers to contribute to any portion of the actual expense."

Whenever and wherever the contemplated opera house is built, it is to be hoped that it will be a work of art in an architectural sense, as well as a satisfactorily planned theatre.

**Belfast Cathedral.**

The original scheme by Mr. Drew for an entirely new Cathedral for Belfast has been abandoned for want of any prospect of funds. It has now rather resolved itself into a scheme for a pro-Cathedral to be provided by a re-building of the Parish Church of St. Anne as a spacious "Basilican" church, at an ultimate estimated cost of 50,000*l.*, of which however very little is as yet realised, only about 15,000*l.* being in prospect at present. Tenders are now to be got for preparing the foundations, which will probably swallow up a considerable portion of the funds in hand, as firm ground is not to be met with at Belfast at less than 50 ft. from the surface. This does not look very promising for the completion of the work, but there is evidently a good deal of enthusiasm about it in Ireland, and it is to be hoped that this enthusiasm may take a sufficiently practical form to allow of the completion of the work within a reasonable period.

**South Kensington Museum.**

The ceremony of laying the foundation stone of the Victoria and Albert Museum on Wednesday was a very picturesque one, and to those who could forget the present and look down the unknown years to come it was an impressive one. Who will be the people who will take out that casket from the stone? Will they look upon it as some uncouth piece of workmanship, or will the world have become entirely scientific, and this age be looked back upon as an age of high artistic development? There is a sense of satisfaction in feeling that we shall have now something better for our great collection in the South Kensington Museum than the miserable set of out-houses or sheds that have hitherto fronted Brompton-road. The pavilion in which the stone was laid was a well-built wooden structure, almost more solid than we should have thought worth erecting as a temporary structure. The red and white striped awning and the groups of flags made a fine blaze of colour, and the sun coming out just as the Queen arrived gave the final touch to what was a very pretty sight. We noticed that the architect was spoken of among the audience as "Sir Aston Webb"; which, though incorrect at present, is probably only an anticipation.

**Accidents to Railway Servants.**

The Automatic Couplings Bill has now given place to the Railway Servants' Accidents Commission, this transformation scene affording another example of the approved Parliamentary method of temporarily shelving embarrassing subjects. The body over which Lord James of Hereford will preside has a short but comprehensive reference, and all friends of the railway workers will unite in hoping that a sufficiently unanimous Report will be forthcoming to enable Mr. Ritchie to draft another "Safety Appliances" Bill at some future time—with the intention of passing it. Although the manner in which the previous measure was dropped proved disappointing, the present procedure certainly affords every facility for the *pros* and *cons.* of automatic couplings to be thoroughly discussed, and for clearing the ground of exaggerated statements and unreliable estimates. The railway and wagon owning interests have a strong representation on the Commission, including as it does Sir George Paget, Sir Charles Scotter, and Sir Alfred Hickman. Mr. W. M. Ackworth has also rendered valuable service to railway managers by his various publications. One or two Labour representatives are included, and others whom one would have expected to find nominated will have their opportunities for service as witnesses.

**The London Gas Inquiry.**

Mr. Joseph Trenner, delegate from the Holborn Town Hall Conference of Local Authorities, and Mr. H. E. Jones, chief engineer and manager of the Commercial Gas Company, last week gave evidence before the Select Committee of the House of Commons. Mr. Trenner said that he knew of contracts which had been lost to manufacturers on the north side of the Thames owing solely to the fact that manufacturers on the south side could work their gas engines at a considerably less cost than those on the north side. Mr. Jones said that the area supplied by the Commercial Gas Company was chiefly occupied by the working classes, that the district had no attractive suburban quarter, no room for extension in buildings, and very few upper and middle class residents. Nevertheless, in the past six years they had gained over nine thousand consumers by coin-meter supply, and there seemed no limit to the extension of the supply on this system. Mr. Jones' evidence showed that although the Commercial Gas Company already supply gas at a cheaper rate than the Gas Light and Coke Company, the former Company would be able to sell gas at a yet cheaper rate if they were not heavily handicapped by the swamping of their legitimate coke market with coke from the Bromley and Bow Common works of the greater Company. Although Mr. Jones' evidence was mainly confined to the working of the Commercial Gas Company, it was in reality the strongest condemnation of the Gas Light and Coke Company which has yet been pronounced.

**The Workmen's Compensation Act.** THE case of Irons *v.* Davis & Timmins, Limited, makes it plain that those who have to adjudicate on the Workmen's Compensation Act should be careful not to extend its operation unduly. A boy, after an accident, was permanently injured in his hand, but was continued in his employment at the same rate of wages. The County Court Judge gave him not only compensation for the time he was unable to work, but 2s. 6d. a week for his life on the ground, under the first schedule to the Act—(1) *b* "Where total or partial incapacity for work results from the injury, a weekly payment during the incapacity," &c. The Court of Appeal held, however, that the plaintiff was not suffering any longer from total or partial incapacity. The point is less simple than it seems. For an accident may be of such a nature that it is not severe enough to prevent a workman from earning money in busy times and yet may incapacitate him when the labour market is glutted. The matter must, however, always be one of evidence, and *primâ facie* it is clear from this decision that where a workman is earning the same wages after as before an accident, he is neither wholly nor partially incapacitated. The case of Edwards *v.* Godfrey, also decided by the Court of Appeal on Saturday, has made it clear that a workman may sue an employer under the Employers' Liability Act, 1880, and if he fails he may proceed under the Workmen's Compensation Act. The words of Section 1, Sub-section 2, of the latter Act are:—"The workman may at his option either claim compensation under this Act or take the same proceedings as were open to him before the commencement of this Act." That is to say, he has two remedies open to him.

**Duty of Replacing Pavement.** A SOMEWHAT curious but interesting case is reported in the current number of the *Law Courts* — Crisp *v.* The London County Council. The latter body served on the owner of a house a notice under Section 106 of the Building Act, 1894, to do certain work to put the house into a safe condition. The owner having failed to comply with the notice the Council obtained an order from a magistrate, under Section 107, that the owner should do the necessary work within fourteen days. On his failure to do so the Council did the work. For this purpose part of the foot pavement had to be taken up. The work was done, the cost repaid by the owner, and the house subsequently rebuilt by the same person, but the pavement was never replaced. A woman was injured owing to the state of this pavement and sued the County Council, but Mr. Justice Wills held that there was no duty on the Council to reinstate the pavement after the hoarding had been removed. "Once," said the Judge, "they have erected the hoarding and put the dangerous structure into a safe condition their duty is, I think, at an end. The duty of taking down the hoarding and replacing the pavement lies upon the owner of the premises, as one of the ordinary duties attaching to the ownership of property." We confess that it seems to us that the replacing of pavements or anything else moved in order to make a dangerous building safe should be regarded as part of the work of the public authority. There is something too ridiculous in a public authority doing work to prevent a building falling down and injuring passers-by, and yet leaving the work in such a condition that those who use the street can be injured as they walk through it.

**St. Paul's Churchyard.** WE entirely agree with the letter that was addressed to the *Times* a few days ago, calling attention to the preparation for the erection of a new building on the north side of St. Paul's, on the same line as the existing buildings, thereby perpetuating the retention of the narrow street to the north. The opportunity should certainly be taken to set back the line and widen the street to correspond with that on the south side, both for the sake of traffic and for the architectural effect of the Cathedral.

**St. George's Church, Liverpool.** WE are glad to hear that it is probable that St. George's Church tower at Liverpool will be preserved; it is at all events to be left standing for twelve months after the body of the church has been removed, to see the effect; and there can be little doubt that after that it will be retained. The City Surveyor reports that the tower will be perfectly secure standing alone; there is no settlement of any kind, and the walls are 5 ft. thick. Mr. Arthur P. Fry, in the Liverpool *Daily Post*, has published a rather good plan for a suggested laying out of the site in connexion with the tower. We shall be glad of the result not only on account of Liverpool, but because it will perhaps serve as a good example to other cities which are too anxious to destroy their architectural monuments of a past time.

**Arbroath Shambles Competition.** WE had occasion only a few weeks ago to comment on the objectionable terms of the instructions to architects in the competition for the hospital at Little Cairnie, near Arbroath. But the Commissioners of Arbroath seem to be incorrigible. We now receive a copy of another set of competition instructions issued by them for new shambles, in which we again find that the statement that the Commissioners will "reserve the right" to obtain the assistance of a professional assessor, but "will not bind themselves" to do so; that they will not bind themselves to employ any of the architects competing; that they will not pay the premium to a competitor if they do select him to carry the work; and that they are not under obligation to carry out any of the plans submitted. Architects who compete under these conditions can hardly be surprised if they find the results unsatisfactory.

**Changes in the Strand.** ALL the houses between Carting-lane, formerly Dirty-lane, at No. 88 (east), and Ivy Bridge-lane (west), have been pulled down for the erection of some new shops, offices, and chambers, by Mr. J. Carmichael, of Wandsworth, contractor, after Mr. Joseph Sawyer's plans and designs. The greater portion of the fresh premises will occupy the space between the north ends of Cecil and Salisbury streets, which were entirely demolished for building the Hotel Cecil. The old entrance of Ivy Bridge-lane, at No. 76, was incorporated, in 1893, in the front of the Club Café, designed by Mr. P. E. Pilditch, and now the lane itself will be obliterated. Our more elderly readers will remember that it formed the descent, covered in, partly, by portions of the houses in Salisbury-street, along its east side, to the "Fox under the Hill," where, at Salisbury-stairs, the half-penny steamboats—the *Ant*, the *Bee*, and the *Cricket*—plied to and from London Bridge. The traffic was discontinued after the explosion of the boilers of the *Cricket*, by which six persons were killed and many more were injured. The lane was then closed by a gate at the Strand end, though for many years afterwards it could be ascended from the river-side. "Ivy Bridge" and "Salisbury-stairs" are delineated in S. & N. Buck's large riverside view, 1749. Ivy Bridge-lane marks the site of the Ivy Bridge—formerly Ulle-brig, cited by Stow as "now taken down"—across a stream that flowed from the Cock and Pie fields, near Seven Dials, and forms the boundary between the City of Westminster and the Duchy of Lancaster. Over its lower end stood the west portion of the concave circus which, together with its central flight of steps, the brothers Adam added to Salisbury-street, as rebuilt by Payne.

**The Royal Institution, Albemarle-street.** IN the course of next month the Royal Institution will celebrate the centenary of their foundation. Established in 1799 by Sir Joseph Banks, Cavendish, Sir Benjamin Thompson (Count Rumford), and others, the Royal Institution held their first meeting in Albemarle-street on June 5, 1799; for their premises there, originally five houses, L. Vulliamy built in 1839, the well-known façade, with its engaged Corinthian columns.

**Mr. Arthur Severn's Exhibition.** THE exhibition of water-colour drawings by Mr. Arthur Severn, at the Society of Fine Arts, is a very pleasing one showing a good deal of variety in style and subject. It includes both landscape and architecture; among the latter class of subjects Mr. Severn unfortunately seems to have been rather too much attracted by the Tower Bridge (not generally an attraction to artists); but he has painted some better architecture with care and effect. Among the landscapes "Afternoon Effect, Seaside" (80), "Clear Day, Coniston Lake" (63), and "Moonlight from the Casino Monte Carlo" (77) are especially good; and there is a beautiful study of "Daffodils in Duddon Valley" (61), which seems like a kind of homage to Wordsworth.

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## CARTWRIGHT MEMORIAL HALL, COMPETITION.*

RESUMING our account and notes of some of the drawings exhibited in this competition, we may premise that amongst the remaining competitors who have been unsuccessful, failure for the most part has evidently resulted from insufficient consideration having been given to the use of the building, and especially the first floor, on festal occasions. It has been very generally overlooked that "during municipal entertainments the building will be closed to the public," as stated in replies to queries, and many competitors have gone adrift by placing the cloak-rooms on the first floor, which is clearly quite wrong when the whole building is intended to be devoted to entertainments. In several instances the approach to the reception-room is very undignified, and in some cases worse than undignified—even dangerous. Many competitors have forgotten that even well-dressed crowds are sometimes attacked by panic, and that free, easy, and uninterrupted exits are of paramount importance when any large number of persons are gathered together in one building.

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* Continued from page 464.

Messrs. R. Coxon & F. Sidney have, like many others, a good museum plan, but fail in the festal arrangements, the cloak-rooms being on the first floor, the central hall practically wasted, the balcony not accessible except from the art gallery and banqueting hall. The external treatment is monumental and in a good type of Renaissance, but is rather restless and so somewhat deficient in dignity.

Mr. W. H. Thorp has followed on the lines of the third premiated design with an east and west axis to his central hall. Here again we have a good museum plan, but the rooms on the first floor are thoroughfare rooms, and exits would be dangerous in a panic. The cloak-rooms are in a good position but not well arranged in themselves. The elevation is a good example of Italian Renaissance treatment but we think the attic rather too high.

Messrs. Hall & Davis have a plan which is good in many respects in general arrangement but spoilt in detail. The cloak-rooms are in the wrong place, the porter's room of abnormal size, and the effect of the central hall would be spoilt by the excessive width of the balconies. The economy practised by these gentlemen in the drawing of their elevations is not happy, as the north and south elevations, for example, are shown the same by the drawing, but on the plan the north and south sides differ.

Mr. W. J. Morley, of Bradford, has made a bold bid for success by sending in two designs. In one he has a grandiose plan of which, the details, however, are rather weak. The central hall has its axis north and south, as in the first and second premiated plan, and this, judging by results, lends itself to the better arrangement in general; but in this case there are faults in the detail of plan, such as wrong position of cloak-rooms, while the porter is hidden away, and some of the museum rooms or spaces would be absolutely dark. The elevation is effective and monumental, and we cannot but regret that the author did not concentrate upon the perfecting of this design the time which has been spent on the alternative, which is far inferior, although more economical in price. It is very seldom advisable in competitions for the competitor to spread his time and labour over alternative designs. It has sometimes happened that both alternatives are excellent, but far more often a good design is spoilt by being hurried to make time for an alternative.

Messrs. Eade & Johns have a good plan, and one which would be very effective in its interior arrangements, but not quite so effective as the first premiated plan. The cloak-rooms are too small and badly arranged, although in the right position. The elevation is good, well proportioned, and costly, and the figure at which the design is cubed is certainly too low, so that excessive costliness has probably had a great deal to do with the failure of these gentlemen.

Mr. Thomas Davison has one of the few plans on the lines of the third premiated, that is, with the axis of the central hall east and west, that is at all successful, and his design in this respect is very nearly, if not quite, equal to the third premiated. The elevation is quiet and dignified; the pricing perhaps a little low, the basement being priced at 6d., and the remainder at 1s., which averages something over 10½d., although the design does not look a costly one compared even with others, which profess to be cubed at a higher price. We fancy that in some cases the cubing of the competitors is not distinguished by that mathematical accuracy which is desirable. Inaccuracy in cubing, whether from carelessness or intention, is usually detrimental to one's chances of success in a competition, as every assessor who understands his work checks the cubing of likely designs; or, at any rate, has it done for him by a reliable surveyor or assistant.

Messrs. Bedford & Kitson have sent in another example of a plan with the axis of the central hall east and west, in this case with staircase at each end. The plan is good for museum purposes, but for festal occasions the circulation is imperfect and the reception undignified; the cloak-rooms, too, are inconveniently placed and arranged. The elevations are quiet and dignified, but the grouping is not altogether perfect. The price at which the design is cubed is much too low.

The design by Messrs. Bateman, Bolton, & Bateman is remarkable for its oddity. The reception-room, Mayor's parlour, and banqueting-hall are arranged as one long room divided by wooden screens, whilst the elevations are remarkable for having as their chief feature five enormous arches on the south and three enormous arches on the east. There is, perhaps, something in both of these ideas, odd as they may appear at first sight, but it would take very clever handling to produce a satisfactory result.

Messrs. G. H. Shackle & C. W. Baker with a poor plan have a good south elevation, which only wants a slight adjustment of the proportion between ground and first stories to be admirable.

Messrs. W. Haywood & W. H. Bidlake adopt the east and west axial line for their central hall, and produce a plan excellent in general idea, but spoilt by the undignified arrangement of the stairs, which have twenty-one steps in one flight, a disposition not only bad in effect but absolutely dangerous for a public building. The cloak-rooms are absurdly small, and the intention of utilising part of the museum and picture gallery for this purpose on festal occasions cannot be commended. The architectural treatment and detail doth externally and internally are excellent and effective, and absolutely free from any approach to hackneyed features. The design, as a whole, must be placed amongst those that are too expensive, the sum allowed per foot cube being inadequate.

Mr. C. H. Reilley has sought a monumental character by adopting Greco-Egyptian detail and solidity, producing a clever but questionable design. The ground-floor plan is effective, but the festal arrangements are not satisfactory, whilst even the severity of the treatment would hardly justify the low price at which the design is cubed.

Messrs. Sutcliffe & Sutcliffe have chosen the east and west axial line for their central hall, and give two staircases at the ends, but shut off from the hall, losing thereby in effectiveness; the arrangements for reception are not dignified. The elevation is well treated, but the price allowed in cubing is too low.

Mr. R. W. Bedingfield has chosen the north and south axial line for his central hall, but has spoilt the interior effect by giving too much balcony. The cloak-rooms are on the first floor, badly placed and badly arranged. The elevation is modern in treatment, excellent in design, dignified and free from affectation. The price allowed is reasonable. The same gentleman also submits a design in conjunction with Mr. Baines, which is decidedly inferior, being outré both in plan and elevation.

A grandiose and effective plan, though expensive, with the axial line of the central hall north and south has been sent in by Mr. J. R. Poyser. The reception rooms are well arranged for dignified ceremony and, although the cloak-room accommodation is inadequate, this is a design that, with more study in working out, would produce a fine building both in plan and elevation, this latter being well composed but needing refinement of detail and improvement of proportion. Unfortunately it is a costly design.

Mr. G. F. Borroman sends an elevation vigorously designed, but too florid and expensive for the price allowed. The plan is not up to the necessary standard for success, as although the central hall has a north and south axis, the stairs are poorly planned, the cloak-rooms bad, and the reception arrangements unsatisfactory.

Mr. F. Anderson has achieved originality by placing his central hall in the basement, which leads to curious developments of entrances and access stairs. The festal suite and cloak-rooms are badly managed.

Messrs. A. G. Humphreys and W. B. Hopkinson have a central hall of square plan, which, with the grand staircase, forms a very effective treatment. The plan, as a whole, would make a good art gallery, but would poorly serve for festivities. The elevation is powerful and dignified, though somewhat weird.

Messrs. Claude New and Neilson Clift have some clever and well drawn detail, but their design fails in the treatment of the first floor elevation. The plan lacks convenience for municipal entertainments.

The plan submitted by Messrs. R. Graeme Watt & Tulloch, with the axis of the central hall north and south and the grand stair at the north end, is very effective. The planning of the reception-room is good, but the cloak-rooms are not in the right place. The elevation with a dome is imposing, though somewhat overdone with sculpture and florid features. We think the cubing requires checking, as the design looks more expensive than the price makes it out to be.

Messrs. Clark and Hutchinson have designed a museum and art gallery, and have laid too little stress on the festal requirements, whilst a palpable error of judgment has led them to place the central hall at the back with a blank external wall, and to profess to light some of the museum rooms from courts 17 ft. wide and 48 ft. deep, a perversity that is the more to be regretted as the elevation has the makings of a fine design with a little more study.

Messrs. Malcolm, Stark, & Rowntree have based their design upon a different period of renaissance to any other competitor adopting the feeling of Elizabethan work as their *point d'appui*, and have produced a very dignified and suitable design. The plan fails in festal capabilities, the access to the reception rooms being deficient in dignity and the reception hall itself being virtually a *cul de sac*.

Messrs. J. Thomson and R. D. Sandilands place their central hall at the rear, making it virtually an independent room. The stairs are undignified, otherwise the festal arrangement is better than in very many plans, whilst the cloak-rooms are rightly placed and most excellently planned. The elevation treated with a dome is of municipal character and well-designed and the price is right.

Mr. H. A. Woodington has a good elevation, dignified and well grouped, with good detail and no affectation. His plan, the east and west axial line for central hall, is good for an art gallery, but fails for entertainment.

Messrs. C. H. B. Quennell and A. F. Usher have designed a central hall on the east and west axial line, which is finely proportioned and effective; but their plan, though good for a museum and art gallery, lacks convenience for civic functions mainly by reason of the distance of the stair from the reception-rooms. The elevation is dignified with a restraint that is admirable.

Messrs. H. & E. Marten give a north and south axis to their central hall, which is square with an octagonal dome and staircase at the end. Their plan makes a good museum and art gallery, and is very fairly suitable for entertainments. The elevation is ornate and fussy, though clever and well drawn, and would serve admirably for a casino.

Mr. R. J. Lovell has adopted the east and west axial line for the central hall, and with an octagonal dome over the middle has produced an effective plan, spoilt for festal purposes by the position of the cloak rooms. The elevation is clever and fairly suitable, though with a tendency to be florid.

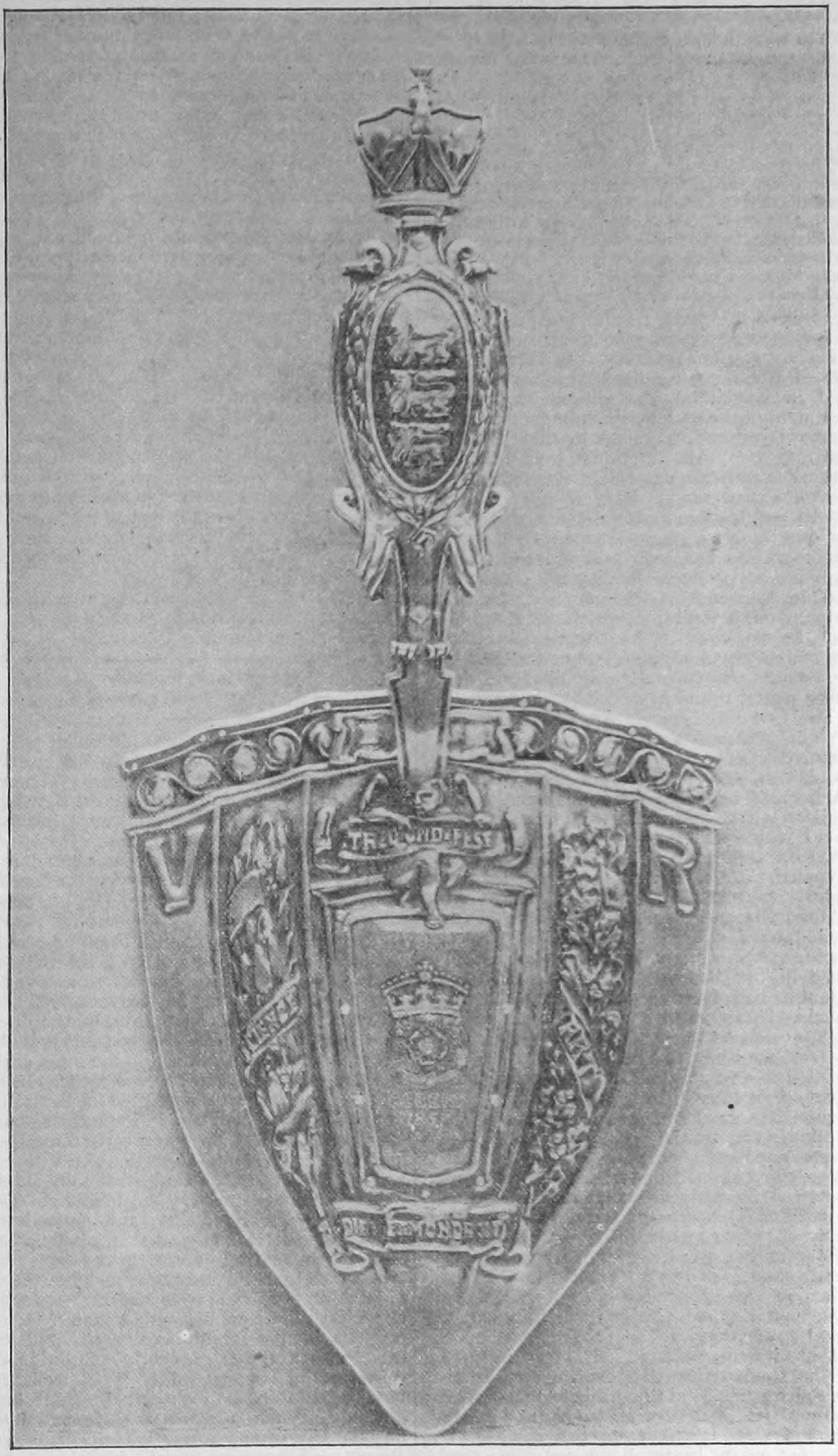
Messrs. Mawson & Hudson, while adopting the east and west axial line for their central hall, have departed from the general treatment by placing their reception rooms at the back on the north side, and their staircases on the south in domed pavilions. Their central hall is well designed, but the plan fails in convenience for entertainments. The elevation is dignified and well proportioned, and with the plan goes to make up a fine building, though probably too costly, in spite of the care bestowed on the estimate, unless the price of building in Bradford has not increased during the last few years as in other parts of the kingdom.

Messrs. John Sutcliffe & Lawrence Buck are set down as of Chicago, but their training has clearly been more influenced by Paris. The plan is French, the elevation French, and the drawing French. The plan is in many respects a good one, with the central hall on the east and west axial line and a central stair opposite the south entrance. The elevation is on Neo-Grec lines, dignified and scholarly.

Mr. A. J. Rowley has a bold and dignified elevation in which, however, the proportions would bear improving. His plan is one of those that give a good museum and art gallery but poor festal possibilities.

Messrs. Tate & Eagle show a well-designed elevation with good detail, but the plan fails by reason of the cloak-rooms being in the wrong place and badly arranged.

Mr. J. Coates Carter displays originality in his plan with a grand external stair leading to an open loggia on the first floor, and a carriage entrance to the ground floor under the loggia. His central hall is octagonal with a flat dome. The elevations are forcible, striking, and clever, but a bit wild; and, indeed, the whole design with all its cleverness is somewhat open to the charge of seeking originality by way of eccentricity.



*Trowel used at the Laying of the Foundation Stone of the South Kensington Museum Buildings. Designed and executed by Nelson and Edith Dawson.*

Messrs. Cheston & Perkin have submitted a design with an external treatment that is one of the finest, if not absolutely the best in the room, and most beautifully drawn by a draughtsman whose training seems to owe something to Germany, and whose work is on a par with the best continental productions. It is a pity that the plan is not equal in excellence to the exterior, but, like so many others, shows a good museum and art gallery, but poor festal opportunities. These gentlemen have been almost too honest in their estimate of the cost of their design, and suggest leaving out one corner of their building to keep within the limit of cost, yet the whole of their design cubes out at much less than several other designs, whose authors have a more elastic conscience or less experienced knowledge.

Messrs. E. R. Robson and A. J. Adams have adopted the east and west axis for their central hall, with the grand stand at the end. For civic entertainments their plan is spoilt by the reception hall and ante-room being far separated from the banqueting hall, with no dignified processional approach. The elevations are of a somewhat fussy and restless Neo-Grec treatment.

Messrs. T. A. Buttery and S. B. Birds place their reception rooms at the north side of the central hall, which is on the east and west axial line; the stairs are lacking in dignity, and the cloak-rooms wrongly placed. The exterior is very magnificent, with a great dome over the central hall, but could not be built for the money.

Messrs. A. Cox and F. D. Clapham have sent in a nice quiet elevation, but their plan on the usual east and west axial line has the also usual fault of defective festal arrangement.

Messrs. T. Worthington & Sons have contributed some beautifully-executed drawings with elevations of suitable and refined character in monotint. Their plan, though following the favourite arrangement of central hall, is fairly well adapted for entertainments.

Mr. Thompson James has endeavoured to weld together the art of Egypt and the latest development of Arts and Crafts, with a result not altogether unsatisfactory, though needing rather some hammering together. The plan follows the general east and west axial disposition.

Messrs. Pearce & Horsley place their central hall at the rear with the grand staircase in front of it on a north and south axial line, and produce a good plan on this basis. Their elevation is somewhat commonplace, and spoilt by a florid domical roof in the centre of the south front.

In connexion with the exhibition of these drawings, the promoters have made two departures from the usual practice which call for comment. In the first place, the reports of the authors are attached to their drawings in every case—a proceeding that is worthy of being generally followed in the exhibition of competition drawings. There are often points on which one desires information in making an examination of designs, and if the report is not available this information is often not forthcoming. The other departure from the usual procedure is one that is worthy of strong condemnation. The names of the authors have been attached to all the designs without, as we understand, their consent being first obtained. In our experience it is usual for promoters of competitions to ask the permission of unsuccessful competitors before affixing their names to their drawings, and the failure to do so must be considered, at the least, a gross breach of courtesy on the part of the promoters.

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## TROWEL USED AT SOUTH KENSINGTON.

ONE is glad to notice that the decorative trowel used by the Queen at the ceremony of laying the foundation stone at South Kensington on Wednesday was not the usual "shop" production. It was designed and executed by those original artists Mr. and Mrs. Nelson Dawson, whose work of this kind has been known in the Royal Academy sculpture room during the last two or three years.

We give an illustration of the trowel; we regret that we have not space for one of the box made for it by the same artists, which is in itself a work of art. The trowel is of silver with some armorial devices and mottoes in enamel.

The trowel was presented by the architect, who naturally, therefore, was able to exercise his own choice of an artist to carry it out.

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## THE ROYAL INSTITUTE OF BRITISH ARCHITECTS:

### THE ARCHITECTURAL ELEMENT IN ENGINEERING WORK.

AN ordinary general meeting of this Institute was held on Monday, at No. 9, Conduit-street, Regent-street, Professor Aitchison, R.A., the President, in the chair.

The minutes of the last meeting having been taken as read,

Mr. H. H. Statham read a paper on "The Architectural Element in Engineering Work," of which the following is an abstract :—

Mr. Statham said he hoped no member of the Institute supposed that this paper was intended in any sense as an attack on the engineering profession. So far from entertaining any such intention, it seemed to him that in the century just drawing to a close engineers had played a far more important part in the world than architects. This was partly, no doubt, owing to circumstances not altogether within their own control, but which they had turned to splendid account. The enormous development of locomotion by means of steam power, which would be remembered in history as the great characteristic of the present century, had led to a demand for immense constructional works all over the world for the crossing of rivers, valleys, and estuaries. The viaduct was to the nineteenth century what the cathedral was to the twelfth, thirteenth, and fourteenth centuries.

Many persons, artists especially, had been mournful or indignant over this, and complained that the world was getting covered with structures which had no beauty. He had not much sympathy with this constant depreciation of engineers and their works, and considered it to be very much exaggerated. What was the real mistake of modern engineers he would come to presently. But in regard to a large proportion of the purely utilitarian structures which had been erected by engineers, he held that there was a great deal more of interest in them than many of those who complained of them were able to perceive. Structure was in itself a subject of great interest, and those who could find nothing to admire in a great piece of construction devised to overcome a practical obstacle to intercommunication or locomotion gave evidence not so much of a superior as of a one-sided education. You could hardly design a structure to overcome a great natural obstacle, or to resist one of the great forces of nature, without giving it a certain character, an interest of its own, provided it was carried out in a simple and unaffected manner, and with direct reference to its practical purpose. You could not build a stone bridge across a river without producing a fine object in the sweep of the arch and the resisting mass of the abutments. A suspension bridge, again, with the catenary curve of the chains designed for us, as it were, by nature herself, was so beautiful an object that it was exceedingly difficult to spoil it. Engineers had succeeded in spoiling it in some cases, as he would have occasion to show, but it was because they were not always content to let it alone sufficiently; and where the span to be bridged was a large one, even the girder was redeemed in our eyes, or should be, by its obvious practical suitability to its purpose. The girdo-phobia, as we might call it, of many artists and persons of æsthetic sensitiveness was exaggerated. A girder bridge was certainly not so pleasing in its lines as an arch or a suspension chain, but, after all, it was only a beam on a large scale. If a structure of this kind was let well alone, simply treated as a piece of unadorned construction, it would in a sense make its own æsthetic. On the Intercolonial Railway in Canada, across a good many of the minor valleys the line was carried on lattice girder-bridges supported on simple rectangular pyramids of undressed stones, rather wider at the top than the width of the girder, and without any "treatment" of any kind, the girders being just laid across the tops of these stone piles. These really looked quite picturesque; it was the Dartmoor rustic bridge on a large scale.

Going through some lantern illustrations of engineering works of a practical and unadorned character, among others he would point to the lattice girder bridge near Fribourg, on lofty lattice piers, as an erection which illustrated favourably the argument that perfectly frank display of structure in engineering works, with no pretence at ornament, was not offensive to picturesque effect; at all events he could not regard a structure like this as an injury to the landscape. The same remark applied to the Crumlin Viaduct, a structure of the same class. Whether the Forth Bridge was or was not an ugly thing was a point on which there might be a difference of opinion. Probably it would be viewed in different lights according as people knew anything about construction or not. Those who did, regarded it with interest; those who did not, probably with some bewilderment. As to artistic or decorative treatment, any attempt at that in a work of this kind would have been preposterous, and would have defeated its own ends.

Coming to the arched masonry type of structure, after mentioning some older examples, he referred to Kingston Bridge, London Bridge, and new Putney Bridge, all very fine structures which had this quality in common, that they were treated with the greatest breadth and simplicity, relying for their effect entirely on the disposition of the masses of masonry, not even indulging in the use of an order on the piers.

Taking bridges in which masonry was used in combination with iron construction, we had in the Victoria Bridge over the St. Lawrence a remarkable example of what was suggested before—that a structure built to resist the forces of nature would almost always have character and interest. Here we had simple massive stone piers, which on the up-stream side were carried out in long spurs to meet and break up the ice coming down after the thaws. There was not a particle of ornament, but the piers and the great box girder laid like a beam over them formed a most impressive structure, which would only be weakened by any attempt at ornamental treatment. The Menai Tubular Bridge was built amid many criticisms to the effect that it was a thing of no beauty, which would be an injury to the effect of the suspension bridge, &c. Yet Hamerton, one of the most discerning and enthusiastic of art critics, wrote of it some time after:—

> "The whole bridge is admirable as a work of art, though the art is very simple and severe. The long line of tube (which looks like a great beam) is fortunately broken by the piers of marble which are finished above the beam as towers, and the majesty that naturally belongs to a work of colossal size and weight is enhanced by the prudent use of some architectural adornment. The tubular bridge over the River Conway near the castle is less fortunate, because the neighbourhood of a great mediæval building led the architect of the bridge to adopt a castellated style for the entrances to the tubes—a style which might be more or less in harmony with the fortress, but would scarcely in any other situation have been chosen to accompany a bridge which was nothing but two parallel beams."

Taking examples of suspension bridges, the Menai Suspension Bridge was in every respect one of the most beautiful structures of any kind in England. The simple but massive treatment of the towers, spreading toward the base, was admirably suited to their situation and function. All the things they had been looking at hitherto were characterised by simplicity, sometimes showing nothing but the unadorned construction. It was within the last quarter of a century or so that the minds of engineers had been poisoned with the terrible ambition to produce "handsome" structures, and in the endeavour after that they had entered on a field for which their training had in no way fitted them. It seemed impossible to get engineers to understand that the handling of decorative architectural detail was a matter requiring special training.

The two mistakes we most frequently met with in these ornate modern engineering works were, coarseness of design in ornament and mouldings, and want of perception of scale. In fact, it appeared that engineers hardly realised what scale meant, and thought that a detail which was good on a small scale was good on a large scale, which by no means followed. *Scale* might be regarded in two lights. It consisted, firstly, in so proportioning all the parts and details of a design that they should have a harmonious relation to one another, which might be called perception of scale in the abstract. There was also what might be called conventional scale: the recognised and habitual proportion to each other of details (such as those of the orders) which had by long use come to have a certain recognised relation to one another, so that a use of one of them on an entirely different scale to what we were accustomed to confused our sense of proportion in the structure. This sense of scale was conventional and acquired, no doubt; but if these conventional materials of architectural design were made use of at all, they ought to be used with knowledge and not at haphazard. After citing some examples, especially Blackfriars and Hammersmith bridges, of bad detail and falsity of scale, he directed attention to illustrations of the bridge at Coulouvrière, near Geneva, which was understood to have given the suggestion for the Vauxhall Bridge design. The general aspect of the Coulouvrière Bridge, from a distance, was picturesque, but the details would not bear examination, and in fact, from an architect's point of view, it was a very bad design. The columns on the bridge had no proper foundations, but were bracketed out over the side in a very clumsy manner. The decorative details showed badly designed *rococo* ornament meandering partly over the surface of rusticated quoins, to which they bore no relation. The archivolts of the arches were strongly emphasised by sham quoins of very pronounced character, executed in cement in imitation of stone. In the Vauxhall Bridge design immense quoins, with a rustication of 1 ft. projection from the wall-face, were carried round the archivolts. The defect of this design, in regard to appearance, was that it was unusually thin at the crown of the arch; the concrete construction allowed of this, but in facing it with granite the visible arch looked exceedingly thin and weak at the crown. By emphasising the archivolt course by rustication, and at the same time entirely separating it from the spandrel masonry, which was kept quite flat, this thin and weak appearance of the visible granite arch was increased; and at the same time the large and deep cornice, of very coarse mouldings, still further reduced the visible depth of the arch at the crown. The details showed a complete ignoring of scale. The single moulding which crowned the plinth of the main piers was nearly 3 ft. in vertical height, and this magnified moulding operated to reduce the whole scale of the rest of the work, making the quoins on the face of the pier, which were really very large, appear trivial; while the insertion of a necking moulding on the semicircular projection on the face of the pier at once transformed it to a column of immense thickness, and quite out of proportion to any function of a column in such a position. The whole thing was a jumble of incongruous details, put together by some one who did not understand the language of architectural design.

The problem of treating a concrete bridge with a granite facing was, in fact, rather a new one; the granite was here, in reality, only what the French call a *revêtement*, and should be treated accordingly.

In regard to the general subject of the designing of bridges, he would suggest that if it was urged that, in the case of bridges which were to be decoratively treated, the engineer should be assisted by an architect, why should it not be put the other way about—that an architect should build the bridge assisted by an engineer? Architects were not familiar with the problems incident to forming foundations in deep water, in the bed of the sea or of a river; but as soon as the structure cleared the water, if it was to be an architecturally treated bridge, it was really more of an architect's business than an engineer's. But he feared that this was throwing an Apple of Discord on the board.

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Lord Wemyss said he was in thorough sympathy with the view that some of our bridges were horrors, and that the design of such works should be, if possible, under proper control. Putney Bridge was, in his opinion, one of the most lovely bridges on the Thames; but as to the Forth Bridge, it had destroyed the landscape and one of the most beautiful places in the world—Hopeton. He should have thought that the engineer could put up suitable bridges without destroying the beauties of the landscape. Hungerford Bridge, again, looked to have great ugly elephant legs, and it was between two of our most beautiful bridges—Waterloo and Westminster. He felt that models of all works of this description and of public buildings, should be prepared and exhibited, for models were everything: drawings told very little. He wished that the Institute would declare itself to the same effect, and that they would do so in reference to such a great chance as now presented itself, viz., the proposed public buildings in Parliament-street. He might add that he was surprised the Institute did not move in the matter of the decoration of St. Paul's Cathedral—that they did not petition and help to save the building. That had been done by others, and he believed, he was glad to say, that the stencilling and black-lettering were to be removed. Models ought to be prepared, and *in situ*, for all public work. It was the only effective check on municipalities, and others. In the original design for the Admiralty building there was a tower of nearly 400 ft. at the corner of the Horseguards! What would the Horseguards have looked had that been erected? When a model was prepared the unsuitability of the tower was seen at once. He was endeavouring to get a model prepared of the proposed Cromwell statue. At the Tate Gallery it was proposed to erect a statue of Millais. The question was, shall the statue be on the steps of the Gallery or in the garden? A model was prepared, when it was found that the statue was out of place on the steps, while in the garden it would have the effect of dwarfing the building.

The Chairman said that he had seen Mr. Akers Douglas as to the designs for the Government buildings, and he tried to impress on that gentleman the importance of having models made. He understood that models were to be made.

Lord Wemyss said that at first nothing was going to be done; then the designs were put in the tea-room of the House of Commons—that was what was called a public exhibition, but a peer could not get in to see them unless he was personally conducted by a member of the Commons—and now the designs were to be put in the Victoria Gallery, which would be open to the public. But models had not been prepared, and he maintained that they were wanted.

Mr. A. T. Walmisley said that there could be no doubt they were all in perfect sympathy with the arguments of Mr. Statham—arguments which had been so ably put and so interestingly illustrated. There was no occasion for architects to do their own engineering, any more than there was for them to do their own quantity surveying, and engineers should seek the artistic co-operation of architects in the design of detail. The architect had in early life neither the taste nor the opportunity for the pursuit of mathematics, which were essential to an engineer in his work; furthermore, it needed engineering experience to arrive at the correct data for units of calculation. While engineers should be responsible for the stability of structures, architects should always be called on to deal with the artistic elements. He had been glad to hear Mr. Statham's remarks in reference to the lantern illustrations. As to the Forth Bridge, and Mr. Statham's remarks upon the importance of paint for engineering structures, there was this difficulty about that bridge—the tubular struts could not be painted inside. Had they been made of open lattice-work, which could have been easily arranged, they would have been accessible to the painter's brush, and that would have been better; otherwise the bridge was a very fine example of engineering talent. One bridge over the Thames which had always commended itself to his judgment, and which Mr. Statham had not alluded to, was the Victoria Railway Bridge at Battersea. The towers of the Chelsea Suspension Bridge were only patchwork, covering the true towers; but in the Victoria Bridge, if they examined the parapet, they would see that it was essentially an engineering design—it could not be made in masonry. They had no right necessarily to make iron structures imitations of masonry, as had sometimes been done.

Mr. Henry Lovegrove said that the late Sir Horace Jones designed the architectural part of the Tower Bridge before he died, and that Mr. G. D. Stevenson, who had been his assistant, finished the details by order of the Corporation.

Mr. Statham said that that was not so. Sir Horace Jones made a design, but the one carried out was as different as possible.

Mr. Beresford Pite, in proposing a vote of thanks to Mr. Statham, said that the lecturer's remarks must have carried conviction to their minds, and his arguments and the skilful arrangement of the illustrations might have similarly convinced an engineering audience. There was nothing so certain as ocular demonstration, and they had been favoured with that as well as with a skilful analytical criticism. As soon as they accepted the fundamental principle that the simple expression of a building gave it dignity of purpose they arrived at a basis of certainty in most problems which presented themselves to the designers of bridges or viaducts. A tendency to ornament, however, was necessary to the human being—the savage decorated himself—and the engineer felt he must decorate his buildings; but if Sir Alexander Binnie, for instance, in regard to the design of Vauxhall Bridge took up the same attitude as did Sir William Richmond in the decoration of St. Paul's, we should be in an *impasse*. The Institute as a body were not content to let these matters alone. They had persistently approached the Bridges Committee of the London County Council in spite of some coldness on the part of that Committee, and the interference of the Institute would, he hoped, be beneficial to the interests of ornamental art. They did not quarrel with the structure, but they felt that the application of experience to the detail would be beneficial. The Institute had also been moving in the matter of the decoration of St. Paul's. A public protest, printed in the *Times*, had been drawn up by the Institute, as well as a similar protest in regard to Vauxhall Bridge. Since then, negotiations had been going on in reference to St. Paul's, and there were well-founded hopes that the interference had not been in vain. They could not publish all they did, for that would defeat the ends they had in view; but the Institute, as a body, might rest assured they, the Council, were doing all that was possible in the matter.

Professor Kerr seconded the vote of thanks, and said he feared that the system of exhibiting illustrations on a screen was, to a certain extent, delusive, for photographs reproduced on the screen were taken from the point of view of the artist. He had listened with much pleasure to the interesting address by Mr. Statham; it was not so academical as he had expected, and that was all the better. It was a suggestive paper, and the chief suggestiveness of it was this: That as architecture from the architect's point of view meant the beautification of building, why should not the engineer's building be also beautiful? The first principle was that the construction should be correct; but a second principle was that that construction should be administered with an eye to grace. He saw no reason why the works of the engineer, particularly bridges and the like, should not be as gracefully rendered as any architect's work. How was that to be accomplished? In foreign countries something was done—a good deal was done, as had been seen from the illustrations shown that evening. In this country he was afraid there was no engineering example which might be said to be up to the mark as an effort towards the beautification of structure. There was no reason for that. They did not insist on the engineer doing the work of beautification himself; on the contrary. The architect did not hesitate to employ the decorator to do the purely decorative work of a building. For the credit of the nation something ought to be done by the Institute and its friends in the direction of a more desirable end. A fine bridge in accordance with its surroundings was not what he understood to be the architectural treatment of a bridge; but the conventional, or, at all events, the highly artificial treatment of its construction, upon constructive principles, but also upon conventional principles which had gradually grown—not in one nation alone, but in the whole community of nations from the commencement of time, constituted a volume of knowledge which surely could be applied to engineering works quite as effectively as to the works of the architect. As to the preparation of models, on the continent it was the rule to exhibit models for all public monuments of reasonable size before the works were carried out, and it was a great mistake that the same was not done in this country.

Mr. W. Woodward said that most members of the Institute would agree with the general principles which Mr. Statham had given them in his paper with regard to the almost universal ugliness with which engineers clothed their constructional works, but there were two instances which Mr. Statham had forgotten to mention where not only were the structures in themselves exceedingly ugly, but they had tended considerably to spoil excellent views of two of the most magnificent structures in the world; he referred to the railway bridge across Ludgate Hill, which so dreadfully interfered with the view of St. Paul's Cathedral, and the ugly structure, with lattice girders, which crosses the Tiber, and which interfered with the view of St. Angelo and St. Peter's. They must all agree with Mr. Statham's condemnation of Blackfriars Bridge, and as to the Forth Bridge, he wished the lecturer had given more emphasis to its unmitigated ugliness. As to Vauxhall Bridge, at an early period in the design for the bridge a meeting was held between Mr. Waterhouse and Mr. Mountford and the Engineer to the London County Council, Sir Alexander Binnie. Subsequently Messrs. Waterhouse and Mountford wrote to the Engineer and expressed their entire satisfaction with the design, subject to a few alterations. That being so, he did not understand the action of the Institute in publicly condemning the design for the bridge. As to the detailed criticism of Mr. Statham, that gentleman referred to the columns carrying nothing. Why, that was almost a modern feature of the high art architect's designs! In dozens of cases he could mention that had been done by those architects. As to the covering of granite condemned by Mr. Statham, surely he was aware that one of the finest features in the decoration of Italian churches was a facing of marble. Why the concrete construction should not be cased with an excellent, durable, external polished surface in the form of granite he did not know. There was no objection to that. As to the columns carrying nothing, they carried the lamp standards; and altogether, instead of the bridge being of unmitigated ugliness, the members of the Institute who had seen the design must have been struck with its dignity. It would be a credit not only to London, but to the engineer who designed it.

Mr. E. W. Hudson said he wished there were more beautiful examples of bridges across the Thames. He admired Westminster Bridge, which appeared to him to be one of the lightest and most appropriate bridges on the river, and he should like to know what Mr. Statham thought of it. He did not know if they should call it a sham because the cast-iron work had been treated in the Gothic manner. There was the bridge crossing the Thames at Hampton Court, which must have offended their eyes many times, and it was unfortunate that there was no public protest at the time of its erection, and that it was not made more in accordance with its surroundings, and a nobler structure than it is. Mr. Statham had been rather hard on Thomas Page in regard to Chelsea Bridge; the chain was a thing of beauty, though he (the speaker) must agree that some of the ornament was very much overladen. Mr. Statham objected to the mediæval castellated bridge piers at Conway, and as to that, was it to be taken that all mediæval design applied to a bridge was out of place? Would it not have been quite in accord with good taste to have had a Gothic bridge across the Seine in the neighbourhood of Notre Dame rather than one of Classic form? He did not for a moment suggest that it was better to have what might be described as a forgery; but that it might be designed in the style of the buildings of a mediæval date.

Mr. E. W. Mountford said he felt glad Mr. Statham had shown the views of the bridge upon which the design for the proposed new Vauxhall Bridge was supposed to be based. It seemed that Sir Alexander Binnie had been successful in reproducing the objectionable features of that bridge without its compensating good qualities. Looking at the original, one could see the value of those immense piers coming between arches of such great span. There were two piers of apparently 30 ft. in width, which of course gave the necessary feeling of strength to the bridge, which the present design for Vauxhall Bridge wholly lacks. That was not Sir Alexander Binnie's fault, for the Thames Conservancy limited the size of the piers. When the Committee of the Institute, some six years ago, prepared a design for the bridge they did not alter Sir Alexander Binnie's design in any essential feature, but they did take the liberty of increasing the width of the piers 4 ft. or 5 ft., and they were told at once that that was impossible, because the Thames Conservancy had fixed the size and nothing larger was possible. It was quite probable that the efforts of the Institute would not be entirely in vain. Mr. Woodward spoke of what he knew, but he, unfortunately, did not know much. Mr. Statham did not object to the casing granite at all; on the contrary, he approved of it. A gentleman near him (the speaker) had made a very good suggestion, viz., that the bridge should be cased in mosaic, thus giving Sir William Richmond another opportunity when he had finished with St. Paul's. The granite or some casing was necessary in order to preserve the concrete from the action of the elements, and if they could persuade the County Council to remove some of the superfluous ornament, he thought the bridge would not be a bad one. As to the letter from Mr. Waterhouse and himself, it ought to be explained that that letter was quite a private one to Sir A. Binnie, and it was written with a special object which he could not explain that evening. The bridge was a great improvement on that first designed by Sir A. Binnie, and with the general outline it was agreed that there was little fault to find. What they did find fault with was the architectural details — the mouldings and carvings and things of that sort, and of them they ventured to express their strong disapproval. The Institute had done a good deal to get the Dean and Chapter of St. Paul's to reconsider the decoration of that building and if the stencilling was removed, they might take some credit to themselves for that.

Mr. W. D. Caröe said that one of the chief points of the paper, which had been brought out very well, and which it was a pity could not be more generally known by the public, was as to ornament—the proper use of ornament in design. As to Vauxhall Bridge, with its columns extending into the air and carrying dolphins, the suggestion made at the recent Architectural Association soirée was a good one, viz., that they were intended to be drain ventilators. And that led to another point. The County Council had been spoiling the Embankment at Chelsea by putting up columns of about the same height as the proposed columns at Vauxhall Bridge, but in this case they were really drain ventilators. Obviously, if such things were necessary, they should be treated in the most simple and straightforward manner, and to treat them "ornamentally," as the London County Council had done, was a great mistake. That was a special case of the seeming impossibility for the engineer to realise what ornament was for. The London County Council said that these "ornamental" columns had been adopted after grave deliberation.

The vote of thanks was heartily agreed to.

Mr. Statham, in reply, said as to Mr. Walmisley's remarks about painting the Forth Bridge inside, that that was contrary to his recollection. He had a distinct recollection of seeing an internal hand-ladder for going up the tubular struts; and he thought the matter had been provided for. As to Professor Kerr's remarks about photographs on the screen being delusive, that in some respects was so; but photographs showed the general character of a structure, and while they could cook a drawing they could not cook a photograph. It was really a difficult matter to illustrate a subject before a large meeting in any other way. As to whether or not engineering works should all be beautiful, he had given his reasons for thinking that in some cases it was almost a waste of time to ornament a thing—a railway girder, for instance, which served purely practical purposes and which had to be considered in relation to the dividend. To treat it ornamentally would be out of place. A girder, as a thing of pure construction, was not so ugly as some people appeared to think, but we had had only three quarters of a century of it and had not got used to it. In regard to Westminster Bridge, it was a very creditable attempt to make a bridge look well, but it lost its interest as soon as one knew that those elliptical arches which rise at the piers and turn over with graceful lines were not the real iron construction, which went behind them. As soon as he knew that he felt his respect for the graceful lines diminish.

The Chairman said that Mr. Eidlitz, the well-known American architect, in a letter read before the Institute about a year ago, pointed out that beauty in nature depends on perfection of structure, and no doubt if architects and engineers were as able as nature they would, as a rule, in solving a problem produce as beautiful a result; but, unfortunately, they had not nature's skill, and had to hide their failure with extraneous ornament.

It was announced that a special general meeting will be held on Monday, the 29th inst., to receive and consider a recommendation of the Council to suspend temporarily the regulation under by-laws 3 and 7 and to admit to candidature as a Fellow Mr. Bodley, A.R.A. The election to take place at the business meeting on June 12, after which an ordinary general meeting will be held, when a paper will be read by Mr. T. J. Bailey, on "Planning and Construction of Board Schools." The meeting then terminated.

## THE ARCHITECTURAL ASSOCIATION:

### ASPECT AND SOIL IN RELATION TO THE DWELLING HOUSE.

THE last ordinary fortnightly meeting of this Association for the present session was held on Friday last week in the Meeting-room of the Royal Institute of British Architects, No. 9, Conduit-street, Regent-street, Mr. G. H. Fellowes Prynne, President, occupying the chair.

The minutes of the last meeting having been read and confirmed, the following gentlemen were elected members of the Association:—Messrs. W. H. Baines, H. MacGowan Bowes, J. Farraday, G. H. Lovegrove, G. A. Peache, W. J. Windrum, J. Saunders, and N. D. Sheffield.

The Chairman announced that the first summer visit will be held on June 3 to Cobham Hall, Kent, instead of to Hatfield, as stated in the last issue of the *Builder*.

Mr. G. B. Carvill, junior hon. secretary, proposed the following votes of thanks, which were heartily agreed to:—To the President, and to Mr. F. A. Walters for conducting visits over churches at Ealing on April 29*, and to Mr. E. R. Barrow for his hospitality on the occasion; and to Mr. H. Greville Montgomery for arranging the visit on the 6th inst. to the Building Trades Exhibition and for providing refreshments.

Donations to the Library having been announced, and votes of thanks to the donors having been agreed to,

Mr. E. Howley Sim, senior hon. secretary, announced that the annual dinner will be held on Wednesday, May 31, at the Holborn Restaurant.

### *The Travelling Studentship.*

The Chairman then announced that five sets of drawings were sent in in competition for the Travelling Studentship, and that after careful consideration of the drawings, which were of exceptional interest, and which reflected great credit on those who sent them in, the prizes were awarded as follows:—The Studentship awarded to Mr. D. T. Fyfe; the second prize of 5*l*. awarded to Mr. H. Tanner, jun.; and hon. mention to Mr. H. Farquharson.

Dr. G. V. Poore then read the following paper on "Aspect and Soil in Relation to the Dwelling House":—

Although I have presumed to accept the invitation of the Architectural Society to read a paper, I hope I shall be acquitted of any desire to step outside my province and to lecture architects on matters which they obviously understand much better than I.

My excuse for addressing you must be found in the fact that, as a physician and sanitarian, I believe that of all circumstances which make for or against the health of the public, the dwelling-house is most important.

The conditions under which dwelling-houses are built have been revolutionised by steam machinery. Houses are nowadays run up in a wholesale fashion. Modern facilities as regards water supply and sewerage have made curtilage unnecessary, and have enabled us to build towers of flats which, from the sanitarian's point of view, are most undesirable.

We all recognise that overcrowding is the greatest of social evils, whether it be regarded from the point of view of morals or health, and we all protest that it is useless to attempt to check it. Most of us, I hope, are sensible of the magic influence of the word "home." Many of us believe that the "home" and the "family" are the units out of which the greatness of a nation is constructed, and that if a nation is to continue to be imbued with feeling of true patriotism, the sacredness of the home and the sentiment of family must be maintained. I wonder if the offspring of parents who fluctuate between Capel Court and Newmarket, and whose only dwellings are West-end flats, on a three years' agreement, and rooms in hotels at fashionable resorts has any home sentiments? Would these sentiments be increased if his fashionable mother died of constructive murder in getting quit of that which might have been a brother or sister? and lastly, can any such sentiment persist if papa and mamma are finally poked into a fashionable crematorium? It is very doubtful if the sentiments of home and family are likely to be strengthened by the mode of life of what are known as "smart" people.

The opinion has lately been expressed by a great authority on labour questions that the industrial classes do not want "homes," and that anything which tends to fix them in one spot or to create an affection for any locality is contrary to their best interests. Labour must be organised as an army and quick mobilisation is essential if the fight with "capital" is to be successful. There can be no doubt that public opinion is at present mainly in favour of overcrowding in cities and further, there can be no doubt that overcrowding is encouraged both directly and indirectly by modern municipalism and the by-laws which regulate building operations.

Very little attention is paid in the present day to the aspect of a house, and it is evident that the public barely consider the question of aspect. The speculative builder considers the question of cost and cost only, and until the public recognise that aspect has a real money value and is worth paying for there is no likelihood that the question of aspect will trouble the mind of the builder. It appears to me that the engineer and the surveyor have too much the "whip hand" of the architect, and that by the time the building estate has been laid out the whole question of aspect has been practically settled, and the architect has really no choice in the matter.

In the Thames valley, where I have a cottage, I have for the past twelve years watched the "development" (so-called) and the wholesale urbanising of a rural spot. This process is a simple one and is familiar to all of you.

1. The locality is constituted an "urban district."
2. The Council is elected for three years.
3. The Council immediately borrows a sum which works out to about 10,000*l*. for each councillor, and thus increases all existing rents for thirty years at least.
4. The roads (main roads and by-roads) are all provided with sewers and water-pipes.
5. The lands abutting on these roads suddenly change from farms and gardens to building sites.
6. These lands are bought by building societies or building speculators, and are laid out with one object, and one only, in view, *i.e.*, the placing thereupon of the maximum number of houses which is permitted by the by-laws. This means that no house has any curtilage other than a backyard 25 ft. deep.

In "laying out" a building estate the new roads are almost invariably at right angles to or are parallel to existing roads, and it is needless to say that they are absolutely straight. Curves of beauty are scarcely permissible in modern sanitation. The result of all this is that the building estate when complete has all the regularity and symmetry of a gridiron. The houses are possibly all built to pattern. There is no individuality, no variety, no change, no rest for the eye.

The extent to which this kind of thing is carried is well exemplified in the district to which I have alluded, in which there is a "recreation ground" dating from a time anterior to the sewering and urbanising. This recreation ground is five acres in extent, and its northern and southern boundaries are formed by high roads, while its eastern and western boundaries are formed by market gardens, which, in consequence of the changes indicated above, have suddenly developed into building estates. One would have thought that the building speculator would have turned the fronts of his houses to overlook the recreation ground, and that by giving his houses (as he might have done) a south-easterly aspect with the pleasant prospect of the recreation ground he might have commanded some extra rent.

This does not appear to be the case, for the privies and wash-houses have been turned to the recreation ground, while the chief rooms of the houses look at their stuccoed twins on the other side of the street. The recreation ground will, I suppose, remain a rather gaunt spot, hedged in by prim railings and flanked by lines of fluttering linen. The opportunity of making a pretty "village green" has been allowed to slip, and I am not aware that the Urban District Council have troubled their heads about the question.

If we are to continue to build houses in a wholesale fashion in straight rows it is almost useless to appeal to the architect on the question of aspect, although some good might be done by directing the attention of engineers and surveyors to the matter.

If we concede that the best aspect for the chief rooms of a house is one looking to the south-east, then it is obvious that if the main roads of a building estate run from south-west to north-east, the houses flanking such road would have one side turned to the south-east. On the north side of the road the fronts would face the south-east, and on the south side the backs would face the south-east, unless the Local Council permitted and the builder were willing to allow the backs of the houses on the southern side of the road to be turned to the street. Speaking as a doctor, I have no doubt that it would be advisable to turn the backs to the street, if by so doing a good aspect can be obtained for the chief rooms. By adopting this plan we have the additional advantage of bringing the culinary and sanitary arrangements close to the street and thereby greatly simplifying the sewerage arrangements which would result in some saving of money. It is very important from the point of view of health that food should be stored in a cool place. Sour milk and putrid food is a great cause of infantile diarrhœa. This is an additional reason for the rule of "living rooms to the sun, larders and kitchens to the north."

I need not remind this Association that some of the finest houses in London (Hyde Park-gardens) are built with their "backs" to the street, and with the main rooms overlooking a private garden with the Park beyond. Whether houses with their backs to the street would meet with the approval of "the masses," I cannot say. A stuccoed head over the front door probably does more to let to this class of house than the fact of its rooms being exposed to the sun. If it were considered *essential* that the chief rooms of a house should face the south-east, there could be no difficulty in attaining this end (except in streets running from north-west to south-east), provided the houses were placed obliquely to the street line and were built *en échelon*, a mode of building which tends to secure privacy, although it probably adds to the expense of building and the difficulties of plotting out the estate.

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* See our issue for May 6 for an account of the visit.

It is evident that the laying out of the roads on a building estate is a most important matter in relation to the aspect which the houses are to enjoy. Is it necessary that all such roads should be absolutely straight and at right angles to each other? Is it quite impossible to rest the eye and give some variety by an occasional curve? Is it any use to appeal to the ogre jerry builder on a purely æsthetic question?

The question of aspect is very much a question of sunlight, and there can be no doubt that sunlight has great influence on health. The Italians have a proverb which says "Dove non va il sole va il medico"—that the doctor comes to those places which the sun does not visit. It is an established fact that many of the microbes which are the causes of disease are killed by sunlight. This appears to be the case with regard to tuberculosis, and it is certain that there is most tuberculosis in places which are overcrowded, and to which the sun finds access with difficulty.

In the supplement to the fifty-fifth annual report of the Registrar-General is a table giving the annual death-rate per million living among children under five years of age from tuberculosis in the ten years, 1881-1890.

By selecting the death-rate among children under five we practically exclude the disturbing influences of varied age, sex, and occupation, and we may conclude that amongst this class the influences which make for health, or the reverse, are home influences. Again, when a man selects a house, no single consideration is of more importance than the effect which his dwelling is likely to have upon his children. This table of the Registrar General's is, therefore, one which ought to be carefully studied, and as it deals with a period of ten years it may be concluded that the statistical results arrived at are reliable.

Among children under five there is more tubercular disease in London than in any other county, and probably for the reason that the number of persons on a given area is greater in London than in any other county.

Thus the death-rates from tuberculosis are in

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|---|---|
| London | 6,581 |
| Durham | 5,650 |
| Lancashire | 5,364 |
| Dorsetshire | 2,401 |

Again, when we come to examine the death rates from tuberculosis in the different Registration districts of London we find them as follows:—

| | |
|---|---|
| Strand | 11,881 |
| Stepney | 9,310 |
| City | 8,858 |
| Chelsea | 8,129 |
| St. George's, Hanover-square | 7,952 |
| St. Saviour's | 7,839 |
| Holborn | 7,876 |
| Westminster | 7,766 |
| Shoreditch | 7,675 |
| Poplar | 7,219 |
| St. George, E. | 7,204 |
| St. Pancras | 7,064 |
| St. Giles | 7,055 |
| Marylebone | 6,920 |
| Bethnal Green | 6,988 |
| Fulham | 6,731 |
| Kensington | 6,571 |
| Islington | 6,532 |
| Whitechapel | 6,098 |
| Paddington | 6,029 |
| Hackney | 5,989 |
| Mile End | 5,975 |
| St. Olave | 5,910 |
| Lambeth | 5,907 |
| Woolwich | 5,641 |
| Wandsworth | 5,581 |
| Camberwell | 5,537 |
| Greenwich | 5,528 |
| ENGLAND AS A WHOLE | 4,499 |
| Lewisham | 4,018 |
| Hampstead | 3,661 |

It is a remarkable fact that in only two of the registration districts in London is the death-rate of children from tuberculosis less than it is in England as a whole. In all the other districts the death-rate from the tubercular diseases is much higher than in the country at large. Possibly some of the figures are influenced by the position of hospitals, but not to any great extent. Seeing that tubercular diseases are all chronic, and that many children are moved out of London at the first threatening, I am afraid it is impossible to conclude that the figures give an exaggerated idea as to the extent to which the malady prevails in this dark, overgrown town.

This prevalence of tuberculosis is due to overcrowding of houses on the land and overcrowding of people in the houses, to the dirt-laden air and the darkness and the gloom.

In London it is almost idle to talk of aspect. If aspect is mainly a question of sunlight, then in London it is not only necessary to have your house facing towards the sun, but also to make sure that no screen in the shape of a tower of flats intervene between it and the sun. To discuss the question is almost absurd. If what I have said, and the figures I have quoted, are sufficient to convince you and others that the conditions which pertain in London are to be avoided in less crowded places, a good work has been done. To have your house facing the sun, and with its chief living rooms well exposed to it, means a considerable saving of fuel and gas. I am unable to tell you what is the potential value of the heat in a room facing south over and above that of a room facing north, but we must all feel sure that it is considerable. I am fond of telling people to look at the north and south sides of a garden wall. Go to the south side and bask in the brightness and warmth, feast on the peaches ripe and ruddy and listen to the hum of insects glinting in the sunbeams. Then go to the north side, damp all in chilling shadow, content you with a few hard pears or acid cherries, scrape off the damp mildew growing in the mortar and sniff the fusty smell arising from the dank sour soil.

It is idle to contend that aspect has not a most important influence on health. If a house face right and has a verandah, the occupants can often enjoy the fresh air, instead of crowding into a stuffy room.

If a dwelling be detached and isolated it is generally possible to give the chief rooms any aspect which may be desired. It is common to find, however, that detached villas have their fronts parallel to the road, even though this position should entail a north-east aspect. How far by-laws and regulations may be answerable for this state of things I do not know.

Not only on account of the freedom as regards aspect, but on the general grounds that overcrowding is to be lessened by every means in our power, it seems to me that sanitary authorities should encourage the erection of detached and isolated dwellings.

The most important part about a "home" is not the house but the garden round it, and I have no hesitation in saying that the children of a country labourer, born in the commonest and cheapest erection of wood or mud and thatch, standing in its rood of potato-ground, have a much better chance of growing up healthy in body and mind than those who have been born under the fostering care of Urban District Councils in houses with concrete foundations, damp-proof walls, patent water-closets and traps, sewer pipes, and rain-water pipes; with an expensive paving in front, and a tiny concreted yard behind, which is practically an air-well with putrefication traps in its floor. This last class of dwelling, be it remembered, the outcome of by-laws which seem to be designed for the purpose of rapidly urbanising rural places, is very expensive, and the artisan finds that he has to pay, relatively, an enormous part of his earnings in rent and rates, and that his children have no private playground.

I freely admit that the stringent building by-laws which are now in force in many places are very necessary in crowded centres of population; and if they were still more strict on the question of height and the relation to be enforced between the cubic contents of the building and its surroundings, I for one should not object. On the other hand, it must be remembered that these by-laws very much augment the cost of building, and that it is becoming increasingly difficult to get an adequate return for houses erected for the wage-earning class. So much is this the case that it seems not unlikely that municipalities will be called upon to provide dwellings and run them at the expense of the ratepayers as a whole.

Many rural municipalities have adopted these by-laws and appear to me to enforce them very often to the detriment rather than the advantage of the locality. A little town in Hampshire, which I know well, includes within its official boundaries places which are three or four miles from the town hall, places which are in the wilds and as thinly populated as Sahara. And yet this municipality enforces its by-laws so that the farmers and gentry of these outlying spots are obliged to submit plans of even outhouses or ovens which they are proposing to erect, to the collection of tradesmen who happen to constitute the Council for the time being.

I am very strongly of opinion that the builder of an isolated dwelling ought to be allowed to escape from these harassing by-laws, and ought to be permitted greater freedom in the choice of building materials and in other matters than the speculator who is trying his hardest to put the maximum population on the minimum legal area. In relation to fire and infectious disease the surest preventive measure is the isolation of the dwelling. If the dwelling be separated from the boundaries of other premises and the public thoroughfare by a distance equal to its height (*i.e.*, the distance from the ground to the top of the highest chimney or gable) it ought to be allowed to escape from the by-laws. I need hardly say that the insurance offices will know how to enforce an adequate security against fire. Mr. Till, of Eynsford, in Kent, recently erected two timber cottages in the country on either side of a road. One of these cottages was condemned because it happened to be within the boundary of a Council which had adopted model by-laws. The only valid reason for such condemnation was the danger of fire. But it is evident that the danger of loss of *life* from fire is very slight in an isolated cottage with the bedroom windows some 10 ft. at most above the ground. On the other hand, the danger to loss of property is indicated by the fact that the insurance offices charge 2s. 6d. per cent. instead of 1s. 6d. If, however, a model by-law cottage costs 250*l.* while a wooden cottage equally large and wholesome costs 150*l.*, it is evident that the cost of insurance is equal in the two cases. The rent of the first at 5 per cent. would be 12*l.* 10s., and the rent of the second 7*l.* 10s. If the local charges (rates) be 4s. in the pound then we have as the annual cost of these two cottages:—

| Model By-law Cottage. | £ | s. | d. | Wooden Cottage. | £ | s. | d. |
|---|---|---|---|---|---|---|---|
| Rent | 12 | 10 | 0 | Rent | 7 | 10 | 0 |
| Rates | 2 | 10 | 0 | Rates | 1 | 10 | 0 |
| Insurance | 0 | 3 | 9 | Insurance | 0 | 3 | 9 |
| Total | £15 | 3 | 9 | Total | £9 | 3 | 6 |

By living in a wooden cottage the working man would save 6*l.* a year, or nearly 2s. 4d. a week. And if he have a rood of ground the produce will be worth at least 12*l.*, which will leave him with nearly 3*l.* in pocket after paying all charges on his house. Further, he will have made an intelligent use of his leisure instead of consecrating it all to beer and betting.

I need hardly say that even the isolated cottage must be under control as regards cesspools or any underground sanitary abominations, which may be an unseen danger to the neighbours, but I am very strongly of opinion that, on the grounds of the health and safety of the public, builders of isolated dwellings ought not to be harassed by by-laws, which are in their case merely a source of delay and increased expense.

I should be very happy if my remarks on this head should elicit a decided expression of opinion from an influential society such as I have the honour of addressing.

In these days of railways, trams, motor cars, telegraphs, telephones, and bicycles—machines which have practically multiplied time, and, to a great extent, annihilated space, it ought to be possible for populations to spread out and to live more decently and wholesomely than is the case in crowded cities.

It ought to be possible to build detached houses in increasing numbers, and as a consequence to give to the chief rooms of the house any aspect which may be desired.

The question of *Soil* in relation to the dwelling is necessarily one of great importance.

Assuming, in the first instance, that the soil selected is a pure soil, I may as well say that I have no evidence to bring before you that in the matter of wholesomeness there is any difference between rocks, sand, gravel, or chalk, and I am not aware that there is any evidence that either of these soils gives rise to unwholesome emanations.

The interstices of all porous soils are filled with air and a certain excess of carbonic acid, which may be considerable if there be much organic matter in the soil, and a house with lighted fires necessarily tends to aspirate the gases from the earth upon which it is built. Now I am not aware that there is any *real evidence* to show that damage has ever resulted to persons from the gases emanating from a pure soil.

In cities, where organic filth has been buried in the soil for ages, it seems likely that the gases of putrefaction may gain access to the house. In London we know that when the soil is opened up there is always a stink of illuminating gas, and, obviously, it is desirable to keep that out of our dwellings. Further, we know that impurities from sewers and cesspools are sure, under the existing order of things, to leak into the soils of populous places. Therefore, the model by-laws insist that the ground upon which a house is built shall be covered with a regulation thickness of concrete. This is a reasonable provision in a populous place, but I would remark that, so soon as a crack or pinhole is accidentally made in the concrete, the alleged security given by it vanishes. In country places which have adopted the model by-laws, the covering of pure chalk or sand or gravel with concrete is equally insisted upon before a cottage can be built. This has the effect of increasing the cost and rent of the cottage, unless it be thought advisable to make the floor of concrete finished with cement. It goes without saying that for houses built in low-lying damp situations, an impermeable layer of concrete is necessary. The above remarks are intended to apply to concrete as a barrier against the gases in dry soils.

The soil upon which a house is built influences the comfort and therefore the health of the indwellers. On a dry soil it is possible to take exercise in comfort, while on stiff clay soils walking or any other exercise in the winter months is a disagreeable and dirty proceeding.

It is quite possible to build a house upon clay which shall be perfectly dry, and through clay unwholesome gases find it difficult to travel, which is a theoretical advantage. Fogs are frequent on clay lands, but it is not clear that an occasional pure fog does any harm to a healthy person. I say nothing of the foul irritating fogs of London, which are dangerous to many and deadly to not a few.

The nature of the soil upon which a house is built has great influence on the ease with which the waste drainage waters are got rid of. On porous soils—such as sand, gravel, and many chalks—they soak away, and hence there has been a great temptation on such soils to construct soak-away cesspools, which in the days of our ancestors, before the use of water-closets and fixed baths, or even daily "tubs" became general, were little likely to contain infective matter, and continued to act efficiently for years. Modern sanitation has raised the amount of waste water enormously, and the invention of the water-closet has greatly increased the danger and foulness of the waste waters. It is probable that the amount of sewage to be dealt with in country houses, has, in modern times, as compared with the last century, been multiplied by ten, and it is now quite common for the owner of a biggish country house with stables to have to grapple with 1,000 gallons of sewage per diem, or 160 cubic ft., an amount which will stand about an inch high on an area measuring 50 ft. in length and 40 ft. wide, or which, in a month, will fill a water-tight cesspool measuring 24 ft. by 20 ft. and 10 ft. deep—the dimensions of a fine dining-room—and which, when full, will contain more than 130 tons of foul liquid, which will all have to be raised and distributed. On a porous soil such an amount of fluid, if delivered on the surface of the ground, may be got rid of with ease and without offence, if the few pounds weight of excreta (12 lbs. at the outside) of the twenty-five people living in one country house be dealt with separately.

On a clay soil, especially in winter, a very much larger area of ground must be used for the waste water.

The foulness of the River Brent, of which we have heard so much, is probably due to the fact that the foul liquids on the clay soil through which it flows, tend to run off the surface instead of percolating through the soil and thereby becoming purified.

I must not pursue this subject further, as it is not my intention to discuss the question of slop-drainage and sewage treatment, which I have dealt with at length in my little book "The Dwelling House." I will merely add that, whether a house be on a permeable or impermeable soil:—

1. All waste fluids should be dealt with before putrefaction sets in.
2. They should be delivered on to the surface and not beneath the surface of the ground.
3. They should never be allowed to collect in cesspools which encourage putrefaction, and merely postpone the inevitable work of distributing them over the ground.

My paper is illustrated by a few simple diagrams which almost explain themselves.

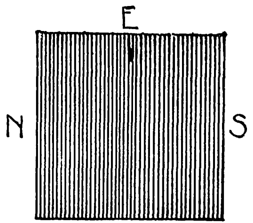

FIG:1

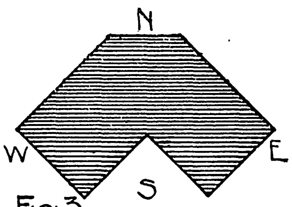

FIG:3

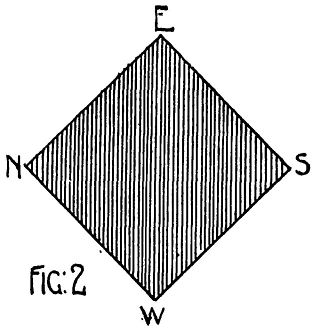

FIG:2

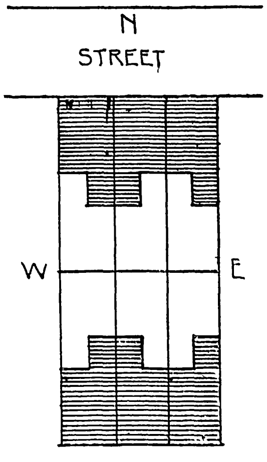

FIG:4 S

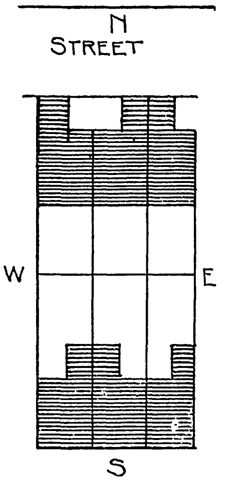

FIG:5 STREET

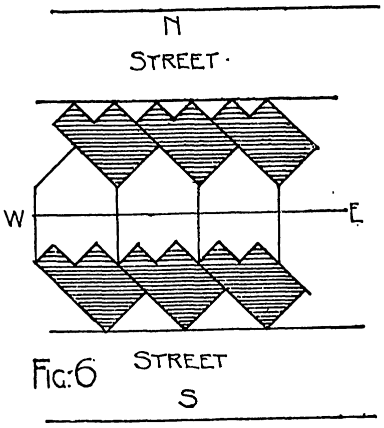

FIG:6

Figs. 1 and 2 represent a square house, having sides and angles respectively presented to the cardinal points. In fig. 1 the side N. would only receive an average of two hours' sun for six months in the year, whereas the sides N.E. and N.W. in fig. 2 would receive sun on every day except for a short time at the winter solstice.

Fig. 3 represents an idea of the author's for an invalid's bungalow, with a glazed verandah falling due south.

Figs. 4 and 5 represent six houses with the fronts all facing the street (in fig. 4), and with the backs of three facing the street (in fig. 5).

Fig. 6 represents the arrangement of houses obliquely and *en échelon*, so that the main living rooms in all of them may look to the south-east. These six houses occupy approximately the same area as those shown in figs. 4 and 5.

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The Chairman, in opening the discussion, said that they could all truthfully say that the last paper of the session had not been the least interesting. Dr. Poore had given them a most useful and scientific paper, and they were especially glad in getting his experience from a medical point of view—a point of view that they wanted such subjects treated from. Dr. Poore had alluded to the increase of the so-called tower flats as one of the things which, to a certain extent, was destroying home life among the working classes. That, in his (the Chairman's) opinion, was one of the greatest evils of those flats. The children were shut up in little cemented areas—worse than prison areas—and their white pasty faces bore evidence of being shut up in such places, breathing the poisonous gases which had been alluded to. In reference to the evil effect of these tower flats, one saw the same thing going on in America, where flats were carried up such an enormous height. The hotel life and the flat life in America seemed to be disintegrating real home life. There was no such thing as home life in America—that is in the way in which it existed in England or Germany—at all events, it was not a national thing. Germany and England were far above America in that respect, and he hoped that nothing would be done to destroy the English home life, though such a tendency was, unfortunately, noticeable amongst the working classes. Another matter for regret was that, in consequence of the degraded state in which many of our mechanics have got, they appeared to be absolutely indifferent to the beautiful; they seemed to have settled down to that sort of life, as though there was nothing better for them. Looking at the matter socially, it was a great evil, quite independently of health. As to Dr. Poore's figures as to the death rate of children, they made one realise that town children have a poor chance compared with country children; one saw it in the faces and the physique, and eventually it must be seen in the mind. As to the evils of the impurities of coal gas, faulty pipes were one of the greatest evils which we in London have to deal with. One could go into house after house and find faulty pipes under floors or in bedrooms; people did not get actually ill, but there was a sort of lassitude about them and they could not tell why; it was simply and solely due to the escape of this impure gas—not sewer gas, but simply illuminating gas.

A letter on the subject had been received by the Committee from Mr. Ambrose M. Poynter, who stated that had he been present he could have done little more than say "ditto" to Dr. Poore. There were two points in particular in regard to Dr. Poore's writings and investigations which seemed worthy of attention. One was the extreme undesirability of taking things for granted, or pinning one's faith on any system without satisfying one's own understanding, as far as one was able, how far it was based upon reason and good sense. Were we to listen to the voice of sanitary authorities, engineers, and experts, we should believe that all was for the best in the best of possible cities. Dr. Poore, at all events, had been unwilling to take things for granted, and the conclusions Dr. Poore had come to and the facts he had pointed out must give pause to even the blindest optimist. The second point was the extreme harm done to the well-being of rural and semi-rural districts—to say nothing of the art of architecture, which was quite pushed to the wall in the struggle—by the application to them of by-laws based on the Local Government Model Act. The chief aim of the Model was, he took it, to mitigate some of the evils of overcrowding in big towns; the application of its provisions undiluted, to rural districts, very naturally created in them a state of things which was a facsimile of all the evils we should be most anxious to avoid. It was almost incredible, but a study of the local building by-laws of many districts in the south of England showed that in every instance the laws for country towns and districts are severer than they are in London. In London buildings of certain size, situated at a certain distance from their neighbour's land and the public way, were exempt from those parts of the Act (Parts VI. and VII.) which related to construction. In no country Act that he had seen was this exemption granted. What were the effects of applying these conditions to rural districts, Dr. Poore had shown. How the art of architecture suffered from these unnecessary restrictions they could imagine. He felt that all architects should bond together and try and obtain a reasonable elasticity in the administration of these laws, and on the part of the Local Government Board a reasonable measure of intelligence in ensuring that the laws submitted to them for sanction were suited to the character of the districts for which they are destined. As regarded the sanitary effect of these laws, it could not be too clearly remembered, with regard to the building regulations which affect the thickness of walls, extent of curtilages, and other provisions which aim at securing substantial building and free circulation of air, that the legal minimum became the habitual maximum.

Mr. Till referred to the inconsistency of some local by-laws. At Eynsford, a few feet over the parish boundary, they had been permitted by the laws of one authority to build a wooden bungalow cottage of four rooms, but immediately the footings of a second similar cottage were in, 20 ft. distant, the local inspector reported contravention of the by-laws. They approached the Local Authority, who advised a memorial to the Local Government Board. The Local Authority expressed their sympathy with the objects of the memorial, and the matter had since been under the consideration of the Local Government Board. Houses were desperately needed, and he felt that a cottager ought not to pay more than one day's wage per week for rental. In his district, such was the dearth of houses for the labouring classes that two and more families had to inhabit the same house—and that, too, where agricultural land could be had for 10s. per acre. What was needed in rural districts was a bungalow cottage with four or five rooms, the cost of which should not exceed £100. What they were trying to do in his district was to obtain from the Local Government Board power to build isolated bungalow cottages of wood, with all necessary attention to sanitary requirements. They insisted that at the present price of material and labour they could not build houses the rent of which would permit labourers to inhabit them — that was if all the requirements of the Local Government Board were acted upon. They would build a suitable house for 100*l*., but if they adopted the by-laws it would ordinarily cost 200*l*. In rural districts the application of the urban by-laws practically stopped cottage building, and, where the population increased, people overcrowded, and there was no privacy for the family at all. There were no gardens, too, and in some rural districts the overcrowding was almost as bad as it is in London. He hoped that the Association would do all they could to show the Local Government Board that there is no necessity for the hard and fast laws which they had laid down, and which stopped the supply of cottages for rural labourers. He had suggested that the Local Government Board should make practically only one condition where they allowed a labourer's bungalow cottage to be built, viz., that it should be on a site of not less than one-eighth of an acre. That was about the size of an ordinary allotment, and if that were done they would ensure the building being properly isolated, and they would get the garden also.

Mr. F. T. W. Goldsmith, in seconding the vote of thanks, said that in the parish of Chislehurst an agitation was on foot to endeavour to get precisely the same conditions with regard to building artisans' dwellings that Dr. Poore had suggested and which Mr. Till had advocated. At Chislehurst the regulations made it practically impossible for any person to build workmen's cottages and get anything like a reasonable return for his money; and the Chislehurst authorities appointed a Committee to inquire how the by-laws could be modified. They had not reported, and it appeared that they were waiting for the Report of the Committee of the Royal Institute of British Architects, which was now dealing with the question. He should like to know how Dr. Poore arrived at his values with regard to the non-rural District Council cottage and the rural District Council cottage. A dwelling built according to a District Council's regulations would cost, according to Dr. Poore, 250*l*., and one of equal accommodation, and equally satisfactory, but not built according to those by-laws, would cost 150*l*. Several people he (the speaker) had spoken to on the subject thought that such a reduction as that was impossible, even if wood were substituted for brick and the party walls and footings were omitted. That was so, at all events, in regard to one part of Kent. As to Mr. Till's remarks, he (the speaker) thought it was far better that country labourers should live in small bungalow cottages, separated from each other by a space equal to the height of the house, instead of in those of the horrible regulation pattern. Cottages had to be made to pay, and Mr. Till had shown how this could be done where the District Council by-laws could be ignored. Workmen's cottages could not be built in compliance with the local requirements and yet be remunerative. He hoped that one result of Dr. Poore's paper would be that a set of by-laws would be obtained which could reasonably be applied to such buildings. He should like to know if Dr. Poore found that in the neighbourhood of large towns the earth-closet system was applicable to any large extent.

Mr. Swinfen Harris said that the great agricultural industry of England would soon be relegated to Normandy and Brittany unless something could be done to keep the farm labourer on the land, and one means of doing that was to provide him with a good homestead. Cheap things were nearly always nasty, and good homesteads could not be built cheaply. Wooden houses, well built, were not cheap. As to the question of aspect *v.* prospect, his experience was if there happened to be a beautiful view looking to the north or north-west, facing that his client would insist on having the drawing-room window, contrary to the architect's advice and plans. In fact, he (the speaker) usually made two sets of plans in such circumstances, for only one of which he got paid. Professor Kerr had written some excellent advice on the subject of aspect *v.* prospect, but, judging from the number of plans to be seen in the professional journals, he was afraid that the advice was not often acted upon. Another weakness in a good many modern houses was in regard to the position of the scullery and the larder. Very often the only approach to the larder was through the scullery—a most execrable arrangement. Every larder should be approached from the cool side of the kitchen or have a lobby outside, so as to keep it away from the smells of the scullery. In reference to the offices having a north aspect, he was quite in sympathy with that, but where there were servants who had to be humoured if they were to be kept, a servants' hall had to be provided, with a sunny aspect if possible. As to Dr. Poore's remarks in reference to the contamination of bath water with fœcal matter, he advised them, if they had a garden, never to let the bath waste go into the cesspool. It was very suitable for watering rose-trees round (*i.e.*, not *on*) the roots.

Mr. W. H. Bonner Hopkins said that the question very much resolved itself into the question of what open spaces should be possible about buildings. For without ample space it was not possible to place houses with the best aspect. The amount of open space which it was possible to give to houses depended ultimately on the original cost of the freehold land. He considered that the freeholder of land upon which houses were proposed to be built should be considered a public benefactor when he refused to put a price upon his land that made it impossible to leave an ample space about such buildings. He looked upon the system of building houses upon leasehold ground as the system which offered the best guarantee, in the hands of a large-minded and public-spirited owner, against overcrowding. And such landowner would have his reward, for in addition to the benefit to the public of ample space, there was substantial benefit to the ground landlord and the house-owner, for houses with ample space about them would never stand unlet (other things being equal), and those crowded and badly-situated would be deserted for houses at a greater distance from centres of population which had not yet become surrounded by other buildings. Dr. Poore's remarks as to turning backs of houses to the streets were worthy of attention; but there was the difficulty that if the houses were always to have their living rooms to the sun then they must sometimes have the noise and dirt of the street. There could be little difficulty in making the elevation of the dwelling rooms and that of the offices equally presentable, so that either could be turned to the street. Granted that this could be done, it would surely be best to have most of the living rooms facing a spacious garden at the back as was now done in the south-west of London, notably at Harrington Gardens, and at the same time facing south or some point south of the east and west axes. Both these conditions could be effected by having three quarter squares. [Mr. Hopkins then illustrated his idea on the blackboard.] As to a too rectangular lay out, there was much to be said *primâ facie* against it when the streets were narrow, all the houses alike, all ugly, and all with the minimum open space allowed by the by-laws. On the other hand, in civilised times it was not only natural but more satisfactory from both practical and artistic reasons to have a geometrical lay out and such could surely be done so as to look well, as by the use of straight lines, squares and polygons, regular curves, such as quadrants, crescents, circuses, ovals, and so on, in conjunction with ample open space, such space being necessary to avoid all bareness of this geometrical laying out by means of a judicious planting of trees and creepers, and by the natural diversity of the buildings or groups of buildings. As to the Local Government Model By-laws they were drawn up with a view to cope with the evils of existing overcrowded areas, and in that connexion they had, doubtless, been very beneficial, but when applied to new areas they were monstrously foolish. Could not something be done to have two codes of by-laws—one on the old lines for existing over-built areas, and one on far more beneficial and healthy lines for areas not yet built upon? With regard to the Model By-laws of the Local Government Board, he would draw attention to the fact that though drawn up and issued about seventeen years ago (he spoke of building by-laws), they had never yet been revised. When they thought of the immense advance which sanitary science had made during this period, he considered it nothing less than a disgrace that those Model By-laws had not been modified and brought up to date. He thought this was a point which demanded the serious attention of all public-spirited men, and that a body of public opinion ought to be formed, and pressure ought to be brought to bear in the proper quarters to remedy this scandalous evil. He heartily sympathised with Dr. Poore's suggestion that there ought to be some provision in the by-laws, or some elasticity of application whereby large open spaces should be encouraged. It only too often happened that new by-laws were drawn up by Urban Councils, the members of which Councils were in great part wholly unfitted for the task. With regard to soil in relation to house sites, he noticed that Dr. Poore did not include clay as a wholesome soil on which to build. It was productive of fog, but Dr. Poore did not emphasise the fact sufficiently. If fog was pure, and therefore not unwholesome to the body when taken in moderate doses, yet it was chilling and rheumatic, and had a most depressing effect on the mind. In addition to the evil of fog resulting from a clay soil, such a soil was most unsatisfactory as a foundation if at all on a slope, for it was then a constant and incurable source of settlements in buildings.

Mr. W. H. Seth-Smith said that in reference to the death rate of children under five years of age, it made a great difference whether or not the children were sent into the country or the seaside occasionally. It was satisfactory to know that owing to developing railway systems and the lower charges made for travelling, artisans were being encouraged to live out of London, at places like Ilford and Walthamstow. No doubt the movement would be very much developed. As to soils, clay was a good soil in preventing the percolation of gases and moisture on a contaminated site. He should like to know if Dr. Poore had formed an opinion as to how far cement-concrete could be relied on to prevent percolation. He had great doubts whether the regulations of the authorities were much of a safeguard in that respect. They all knew how careful they had to be in the case of sewage-contaminated gravel.

Mr. H. A. Satchell said that architects could do something to improve a dwelling house, set out at right angles to the road, by introducing a bay window. There were few cases where this could not be done, and where it was done, the occupants of the house had a choice of three aspects, and if the sun did not enter from the front it would from the sides. One always imagined that soil had a lot to do with health. As to the concrete floor being wholesome, he thought the chief objection to it was its coldness, and that wood blocks were more suitable. As to escaping gas, that was a very important matter, and it had occurred to him that in some respects it was a misfortune that gas was so well filtered, for it was then not so easily detected when it escaped through defective joints. As to bath water being turned on to land, it was generally thought best to flush the drains with such water. The two gallons from the closet cistern were not sufficient. As to a verandah, its provision was a luxury, especially in the country; but in towns it was often a great nuisance. In London, for instance, there were a certain number of days of gloom and depression and fog, which the verandah increased rather than lessened. It kept out the sun when it was wanted badly, and compared with that the advantage was very slight of keeping out the sun on the few days when it was not wanted.

Mr. Maule said that he had recently to make a report on some cottage property in Dorsetshire and Wiltshire, and in many instances he was told that the existing cottages were so defective that the farm labourers would not live in them, and as it did not pay to put up new cottages under the Local Government by-laws, the labourers were being driven to the towns. If those by-laws could be altered it would be an extremely good thing for the country at large. It was, doubtless, to a large extent in consequence of those by-laws that there was so much overcrowding, for the cost of building new cottages was such that the farm labourers could not afford to pay the rent that was necessarily charged for the landowners to get a fair return on the outlay. The by-laws were well enough in towns, but on estates or in small villages they were absurd.

The Chairman said that Dr. Poore had sent the Association a resolution, which he would like them to pass, stating that as the overcrowding was acknowledged to be a great cause of sanitary and moral evil, it is desirable to encourage the building of isolated cottage property. He (the Chairman) thought that Dr. Poore's interests would be better served by letting the Royal Institute of British Architects, who has the matter in hand, carry it through. The Association would be quite willing to pass such a resolution, but it was thought best to leave it to the Institute.

Mr. Arthur S. Flower said that the report of the Institute Committee was in print, and was now being considered by the Council, and in a few weeks it would be made public. The report goes thoroughly into the matter of all the by-laws.

The vote of thanks was then put and carried very heartily.

Dr. Poore, in reply, said that it was evident that on the main issues they were all agreed, and he was glad that the Association agreed that more freedom was necessary in building in rural districts. We are getting very much under the thumb of the half-educated class in this country; we are getting too much under the thumb of the sanitary inspector and the police. He was nearly sixty years of age, and yet he had never stood in the dock! Later on few would be able to say that. As to his estimate of the cost of cottages, he had arrived at his figures by inquiry, but he put them forward cautiously. The figures might be wrong, but still the principle would be the same; and in considering the cost of a cottage they must not forget the cost of submitting plans to the authorities and the usual delay, &c. As to the earth system, he was strongly in favour of it in the country, but he felt, as they all must feel, the enormous convenience of the water-closet in towns. We are getting dangerously squeamish on that matter, he felt; things were much simplified if fœcal matter could be dealt with on the earth, day by day; it simplified the drainage question, and it was worth considering. In his garden he dealt with the sewage of about twenty cottages, and he had done so for about sixteen years, and he had never had any trouble in the matter. The stuff was removed and buried every day. The size of the garden was 1 acre 1 rood and 7 perches, and the produce of the garden yielded 71*l.* 19s. 6d. last year. Thus there was a saving, in that there were no drains, no patent machinery, while there was the gain from the produce of the land. In Holland there were no water-closets—at least, in the part he was familiar with—for the country was on a dead level, and if water-closets were provided, Holland would become uninhabitable. And yet the country was quite healthy, and there had been the same reduction in deaths from enteric fever as with us. In the town of Groningen, with 63,000 inhabitants, there was not a water-closet in the place, and the whole of the excreta were removed two or three times a week, or oftener if people liked to pay for it. That place was the cleanest town he had ever seen, and the total cost of cleaning it was 90,000 florins per annum, while the excreta were sold to the farmer, realising 60,000 florins, with the result that the cleansing of Groningen was done for about 10d. a head. In England we are chucking our money by hatfuls down the sewer. Of course, in a crowded town like London we are doing the only possible thing, but in the country the excreta ought to be returned to the soil. The Dutchman had grasped the great principle that whatever was taken out of the soil must be returned to it, and with the most astonishing results in the way of exports of farm produce to this country. We have learnt our relationship to the air and the water, but we have yet to learn our relationship to the earth. In his own house he would not think of having sewer, or cesspool, or water-closet, and he would not live in a house with one if he could help it, for he knew so well the evils of putrefaction. As to Mr. Hopkins' criticisms of his curves of beauty, he admired as places of business shops like those in the Quadrant in Regent-street, and he should be glad if they were copied; but out of town, in a place where rest and recreation were sought, it was an important thing to get variety, and "these Chicagos" which were put up in the suburbs, looking like so many chess-boards on plan, had no variety. The variety he admired was to be seen in old village streets, built without by-laws, and which showed lines of beauty and variety. It was an important matter to get people out of town, and doubtless facilities for doing so would increase. As to concrete, it wanted watching when it was laid. Holes could be stopped by putting in cement, and it was then our own fault if they left holes for the gas to get through. In villages there were often no pavements, and earth gases and vapours had a chance of escaping anywhere; but in towns the pavements kept the gases in, and those gases escaped into the house. As to the effect of soil upon health, there was very little reliable evidence, though there was one disease which was undoubtedly influenced by local conditions, viz., spasmodic asthma.

### *Election of Officers for 1899-1900 and Votes of Thanks.*

The announcement of the election of officers for session 1899-1900 was then made.

Mr. J. W. Stonhold having raised some questions in regard to the election, which were answered by the Chairman, the following list of those elected was read:—

*President.*—Mr. G. H. Fellowes Prynne. *Vice-Presidents.*—Messrs. E. Howley Sim and H. T. Hare. *Committee.*—Messrs. B. Pite, W. A. Pite, P. J. Marvin, A. H. Hart, F. G. F. Hooper, H. A. Satchell, M. Garbutt, W. A. Forsyth, W. H. Seth-Smith, A. Bolton. *Hon. Treasurer.*—Mr. Hampden W. Pratt. *Hon. Librarian.*—Mr. A. S. Flower. *Hon. Secretaries.*—Messrs. G. B. Carvill and R. S. Balfour. The above form the Committee. Other officers:—Hon. Solicitor, Mr. W. H. Jamieson; Hon. Assistant Librarian, Mr. W. B. Dukes; Hon. Auditors, Messrs. J. W. Stonhold and W. E. Davis; Assistant Secretary and Registrar, Mr. D. G. Driver.

On the motion of Mr. G. B. Carvill a vote of thanks was accorded to the scrutineers, Messrs. W. A. Webb, A. Smithers, and W. A. Jeckells.

Mr. J. Osborne Smith proposed a vote of thanks to the President, Vice-Presidents, and members of the Committee. He was very pleased to know that Mr. Prynne had been re-elected President.

Mr. Swinfen Harris seconded the motion, which was agreed to.

Mr. W. H. Seth-Smith then proposed a vote of thanks to the Hon. Treasurer, Mr. H. W. Pratt. He also coupled with it thanks to the Librarian and the Assistant Librarian for their valuable services.

Mr. Goldsmith seconded, and the motion was agreed to.

On the motion of Mr. Beresford Pite, seconded by Mr. Satchell, a vote of thanks was heartily accorded to the Hon. Secretaries, Messrs. E. Howley Sim and G. B. Carvill, and to the Assistant Secretary and Registrar, Mr. D. G. Driver.

The following votes of thanks were also passed:—To the Institute, for the use of the Meeting-room; to the School of Design Visitors; and the Education Board, for facilities granted in connexion with workshop demonstrations.

The meeting then terminated.

## THE SURVEYORS' INSTITUTION:

### LAND PURCHASE IN IRELAND.

AN ordinary general meeting of this Institution was held on Monday in the temporary premises of the Institution, Savoy-street, Victoria Embankment, Mr. Robert Vigers, President, in the chair.

The minutes of last meeting having been read and confirmed, Mr. R. M. D. Sanders read a paper on "Land Purchase in Ireland." In the course of his remarks he said that the system of land tenure in Ireland, inaugurated by Mr. Gladstone in 1881, and perpetuated by the Land Act, 1896, had very few friends. Representatives of landlords and tenants alike condemned it. The economic loss to Ireland which it caused was very great. In July, 1895, Mr. Gerald Balfour gave a forecast of the Government policy in regard to Irish land, declaring that in his judgment the alternative solution of the difficulties would lie, not in any amendment of the Act of 1881, but rather in promoting the more rapid and effective working of the Land Purchase Acts of 1885 and 1891. But, unfortunately, Mr. Balfour's Land Act, 1896, aggravated the evils of the rent fixing system, which tended to discourage the tenants from adopting land purchase as a settlement. The administration of this Act necessitated the appointment of the Royal Commission, presided over by Mr. Justice Fry. That Commission issued a most valuable report, and it was to be regretted that the recommendations contained in it had not been fully carried out by the Government. A great social revolution had just been passing over Ireland with the establishment of Local Government. The landlords as a class had been relieved of their former local duties, and very great and far-reaching powers had been placed in the hands of the people. The importance of creating a strong and numerous body of peasant occupiers was increased, and the object of his paper was to consider how this could be encouraged. Compulsory purchase was not only undesirable but unnecessary, because we want to get back to the principles of "free contract." The basis of a voluntary system of purchase was "free contract," but compulsory purchase or sale must be founded upon an official valuation, which would not satisfy all parties nor would the State have the same security for the repayment of advances as under the voluntary system. He thought also that more rapid progress would be made by improving the present methods than by experimenting afresh. The Purchase Act of 1885 enabled the Land Commission to advance the whole of the purchase-money to the tenant keeping back one-fifth from the landlord as a guarantee deposit, upon which he received 3 per cent. interest and repayment of the cash at the end of about seventeen years, if there were no deductions to be made for purchaser's defaults in repayment of the instalments. The loans were made at 4 per cent., repaying principal and interest in 49 years. The advantages obtained induced many tenants to purchase, and ten million pounds were advanced in about six years, converting into owners 25,000 occupiers of 1,000,000 acres, who previously paid a rental of about 600,000*l.* per annum. In 1891, the system having passed the experimental stage, and the authorised direct grants from the Treasury having been used up, the Purchase of Land (Ireland) Act, 1891, became law, enabling the Land Commission to issue stock at 2¾ per cent. to the amount of 30,000,000*l.* The conditions attached to advances were not so favourable to the tenant purchasers as previously, and amendments improving these were enacted in 1896, which had now made the terms more acceptable. The landlord who sells receives payment in stock which now realises in cash 10 per cent. premium. Up to the end of the last financial year, land stock to the amount of 3,178,000*l.* had been issued, and 9,580 occupiers, who paid a rental of 190,000*l.*, were converted into owners under this new procedure.

It would be observed that steady progress was being made in this process of land purchase, and that land to the value of nearly 800,000*l.* per annum had been transferred to the occupiers. There were about half a million agricultural holdings, the total agricultural rental of Ireland was about 10,000,000*l.* a year, paid by half a million occupiers, three-fourths of whom paid less than 15*l.* per annum, but only occupied about a quarter of the agricultural land, and about a quarter of a million were less than fifteen acres. As half the 30,000,000*l.* available for land purchase must be applied for the purposes of small holdings, there was ample money available to deal with a very large proportion of occupiers. The advantages of the system to both landlord and tenant were very great. The tenant becomes fee simple owner subject to a terminable Government annuity which was very much less than his rent even when he agreed to pay his landlord a liberal price, and was reduced every ten years in proportion to the amount of principal paid off. The author then described the financial details as to purchase and repayment. Proceeding, he said that some change was necessary, and an extension of land purchase rather than a continuance of the present statutory rent-fixing system was apparently the policy of the Government. They could bring it about without any grand heroic measure of compulsory sale, but rather by the removal of the difficulties which now stood in the way of voluntary agreements. It was worthy of comment that out of thirteen millions which had already been advanced for land purchase default had taken place in very few cases, and the guarantee deposit in 999 cases out of 1,000 had never been drawn upon. The price which the tenant gave to his landlord was never the full value of his holding, and there was generally a large tenant right often exceeding that price which the Land Commission had as additional security. But the real block lies in the system of transfer of the land to the tenants. The Land Commission have a large staff engaged at the work, and they have been unable to vest on the average more than one million pounds' worth of property each year. At that rate it will take perhaps twenty-six years to use up the funds provided by the Land Purchase Act of 1891. What was the remedy? He believed it lies in establishing a proper system of registration of title under which the transfer of land in large or small parcels may be effected as rapidly and inexpensively as it can be in the colonies and on the Continent. The necessity for adopting registration of title in the case of peasant proprietors as a protection to the State in securing the advances made was admitted by the passing of the Local Registration of Title Act, 1891. Although this Act falls far short of what is required, it nevertheless creates a new system of transfer which can easily be developed to meet the requirements of the country. The Act creates two systems of registration: (*a*) Compulsory registration in the case of all tenant purchasers; and (*b*) Voluntary registration for any other landowner who desires to bring himself under the Act. When an estate had been registered, the title to it having previously been investigated by the Government office, sale and transfer was the simplest transaction possible. The landowner, in lieu of his title deeds, became possessed of a certificate of title which was good against all the world. If he desired to sell to his tenants under the Purchase Act, he had merely to produce his certificate and a sale could be made so soon as the farms had been valued and the advances provisionally sanctioned.

He was strongly of opinion that the ultimate success of land purchase would depend upon the improvement of this system, which, to be perfect, must comply with the following conditions:—1. It must be compulsory in all cases. 2. It must be founded upon an accurate survey officially prepared, and the boundaries between occupations must be made conclusive.

The perfecting of a good system of maps was of very great importance. There were at present mapping departments attached to the Land Commission. The Valuation Office, the Land Judges Court, and the Local Registration of Title Office. These should all be united under the Ordnance Survey Department, and the saving of expense to the State would be sufficient to enable that Department to produce a map of any district in Ireland with correct boundaries between the occupations. Public notice might be given that, after a certain period, the boundaries set out on the map would be deemed conclusive. There would be very few changes made, for the occupiers were only too ready to accept the ordnance map when disputes arise over their boundaries. When this mapping system had been completed for any area, and the title to an estate within that area had been cleared, it would be registered with a schedule of tenancies and reference numbers to the map, similar to a well made out estate map, and a transfer of ownership could be effected in a few days.

### *Professional Examinations, 1899.*

The following student candidates have passed the examination for the Professional Associateship:—R. W. Alderson, Leek Wooton, Warwick; J. W. W. Armstrong, Stratford-on-Avon; E. W. Booth, Morley; † A. G. Bradshaw, Lancaster; C. J. B. Bridgewater, London; B. V. Bruton, London; G. R. Church, South Hampstead, N.W.; G. H. Cole, Chelsea, S.W.; G. E. Cragg, Kendal; G. H. Croft, Brighton; G. A. Cutler, Blackheath, S.E.; H. Dann, Jun., Gravesend; J. W. S. H. Davies, London; *H. A. A. Gate, London; H. A. Gleed, London; J. C. Goff, Kingstown, Co. Dublin; A. Goodman, Upper Clapton, N.E.; R. G. Gurney, Aylesbury; J. S. Hall, Muswell Hill, N.: T. P. Hartley, West Hampstead, N.W.; L. G. Hawkins, Downham Market; E. R. Hinchsliff, Crewe; M. A. Hindmarsh, Alnwick; G. Howland, Coleshill, Amersham, Bucks; P. Hurlbutt, Flintshire, North Wales; G. P. Knowles, London; N. P. Laird, Kirby Muxloe, near Leicester; S. M. Lampard, Clapton Common, N.; H. Lemmoin-Cannon, London; H. Little, Carlisle; E. A. Lumley, London; S. Mager, Tufnell Park, N.; T. J. Meaby, Jun., Wimborne; H. A. Newman, Hampstead, N.W.; S. H. Potter, Edgbaston; F. P. Pratt, Ongar, Essex; T. R. Ransom, Upper Tooting, S.W.; D. W. Reeve, Sutton; M. C. Riddett, Ryde, Isle of Wight; A. D. Rutley, Caterham Valley, Surrey; W. H. Sanday, Chesham, Bucks; S. L. Sandell, Bromley, Kent; J. H. Simpson, Bryanston, Blandford; J. A. Smith, Knutsford; F. V. Tait, Chester; F. T. Terry, Streatham, S.W.; A. H. Tyack, Manchester; C. C. O. Whiteley, Streatham Common, S.W.; S. P. Wigley, London; A. C. Williams, Sparsholt, Winchester; T. H. Wright, Upper Tooting, S.W.

The following non-student candidates have passed the examination for the Professional Associateship:—G. C. Atkinson, Tufnell Park, N.; F. G. Barker, Fordingbridge, Hants; A. W. Baylis, Erith; E. Brand, Lewes; F. G. Brooker, Sevenoaks; W. N. Brooks, Witham, Essex; E. N. Buttenshaw, St. Albans; R. H. Chichester, Market Drayton; L. E. Clarke, London; J. T. Cole, Torquay; E. A. Cook, Framlingham; A. W. Crampton, Mansfield; H. A. Crook, Hammersmith, W.; H. H. Daniel, Henbury, near Bristol; R. H. A. Delves, Woodford, Essex; J. M. Dickinson, Ambleside; E. C. T. Dodd, Cirencester; D. O. Dunlop, Manchester; H. W. Ethelston, Hinton, Whitchurch, Salop; A. C. S. Fowler, Stroud Green, N.; ‡ G. Freeman, Wimbledon; W. P. Genge, Junr., Taunton; A. J. Hooley, Allestree, Derbyshire; A. E. Hope, Forest Gate, E.; A. H. Howgrave-Graham, Hampstead, N.W.; G. W. Hunt, Wye, Kent; A. P. Jolly, Newbury, Berks; P. V. Jones, Hengoed, viâ Cardiff; G. W. C. Kelly, Appleby, Westmoreland; A. T. Latham, South Norwood, S.E.; W. B. Laurence, Earl's Court, S.W.; L. Lickis, Parson's Green, S.W.; A. D. Lomas, Liverpool; J. Luke, Junr., Belgrave, Leicester; D. Luker, Ealing, W.; H. D. Lynes, Glanllynn, Bala, North Wales; D. S. Matthews, Fulham-road, S.W.; P. W. Meredith, Herne Hill, S.E.; F. W. Merrick, Stanwell Moor, near Staines; E. W. Moat, Kennington Oval, S.E.; E. F. Mumby, Upper Tooting, S.W.; E. J. Oram, Tottenham, N.; W. A. Palliser, Featherstone, Yorks; H. M. Parry, West Kensington, W.; J. S. Petch, Haltwhistle, near Carlisle; R. Prosser, Aberystwyth; A. E. Protheroe, Leytonstone, E.; E. E. Richardson, Crouch Hill, N.; P. Robertson, Monkton, Ayrshire, N.B.; S. M. Rowlandson, Durham; A. L. Rutter, Cambridge; H. C. Sands, Gravesend; D. Smith, Cardiff; R. Stephenson, Jun., Burwell, Cambridgeshire; E. F. Stimson, London; J. H. Sutcliffe, Hebden Bridge, York; F. W. Terry, Norwich; G. Thomas, London; R. S. Thorne, Reading; L. F. Thurgood, Putney, S.W.; A. Tighe, Upper Clapton, N.; H. Turner, Preston; M. O. Type, Moseley, Birmingham; D. A. Watson, Shirburn, Wallingford; H. S. Webber, Maidenhead; F. B. Wells, Bristol; H. J. West, Leytonstone, E.; E. B. Wetenhall, London; P. N. Wilkinson, Regent's Park, N.W.; J. B. Witham, Rhodes, near Middleton, Manchester; F. S. Woodcock, East Dulwich, S.E.; F. E. Yewdall, Barnsbury, N.

Irish Candidates.—D. R. O'Brien, Limerick; G. P. Stewart, Killiney, co. Dublin.

The following Professional Associates have passed the examination for the Fellowship in Division IV.:—S. W. Ambler, Woburn, Bedfordshire; F. H. Angel, Kensington, W.; B. B. Baddeley, Woodberry Down, N.; G. C. Baker, Lewes; S. A. Barns, Stoke Newington. N.; J. G. Bickford, West Kensington, W.; J. B. Bird, London; J. F. Bowden,* Barnstaple; W. N. Brackett, Colchester; A. E. Butler, Reading; C. Butler, Huddersfield; W. G. Cope, London; N. T. Cowin, King's Cross, W.C.; W. T. Creswell, Colchester; C. T. Cronk, Sevenoaks; C. G. F. Culverhouse, London; T. S. Dangerfield, South Kensington, S.W.; J. Everington, Norwood, S.E.; F. R. Fox, Barnstaple; R. S. Gardiner, Wenalt, Aberystwyth; D. F. Goldsmith, Petersfield, Hants; J. Gunter, Glasbury, Radnorshire; J. E. Harrison, Allestree, Derbyshire; M. M. Holl, Sywell, Northampton; J. M. Kerr, Llanidloes, Montgomeryshire; C. F. D. Lang, Weybridge; D. Lloyd, Wells, Somerset; A. G. Marshall, London; A. Morris, London; W. H. Morris, Chirbury, Shropshire; J. O. Nesbitt, Levenshulme; R. M. Ogilvie, Hayward's Heath; R. W. Oldnall, Kidderminster; W. H. Pain, Hackney, N.E.; R. G. G. Reed, Croydon; A B. Richardson, South Hackney, N.E.; A. L Scott, Bury St. Edmunds; J. E. Secker, Warrington; A. S. E. Sedgwick, London; R. H. Seel, Cardiff; H. Sheldon, Middlewich, Cheshire; C. A. M. Skues, South Croydon; G. H. Smith, New Malden, Surrey; S. A. Smith,† Haverstock Hill, N.W.; H. P. Stimson, London; F. S. Sutton, London; H. C. Waterfield, Bayswater, W.; R. S. Wigram, London; C. A. Willoughby, Croydon; F. R. Wilson, Upper Tooting, S.W.; T. J. Young, Wye, Kent.

The following candidates have passed the direct examination for the Fellowship:—F. W. Booker, Hollow Stone, Nottingham; W. H. Eve, London; B. F. Fletcher, London; T. M. Houghton, Wandsworth Common, S.W.; S. B. Saunders, London; A. C. Scott-Smith, Exeter; T. W. H. Taylor, Camborne; T. J. Woodrow, Feltham, Middlesex.

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## Illustrations.

### SOUTH HALL, BRANKSEA CASTLE, POOLE, DORSETSHIRE.

THE drawing shows an apartment in the castle, known as the South Hall. The vaulted portion, about 24 ft. square, is enclosed within the limits of the ancient keep, the walls of which on either side are over 9 ft. thick. The history of the castle and of the beautiful island in Poole Harbour on which it stands, is not without interest. In A.D. 1015 King Knut and his Danes landed there, and Roman remains have also been discovered, including a very beautiful marble bath out of a single block, with a finely-wrought fluted pattern on the outside. This bath has now been brought into use in one of the bath-rooms in the restored building.

The castle was built about 1545, and attained a position of considerable importance as a fortress during the Civil War, until, in 1722, it ceased to be a fortified stronghold. Its hospitality has been extended to many illustrious personages in days gone by. In 1665 Charles II. and the Duke of Monmouth, attended by a great retinue, journeyed there by water and spent a night. In 1741 Frederick Prince of Wales went there, and George IV. is also numbered among its guests. The castle has had many

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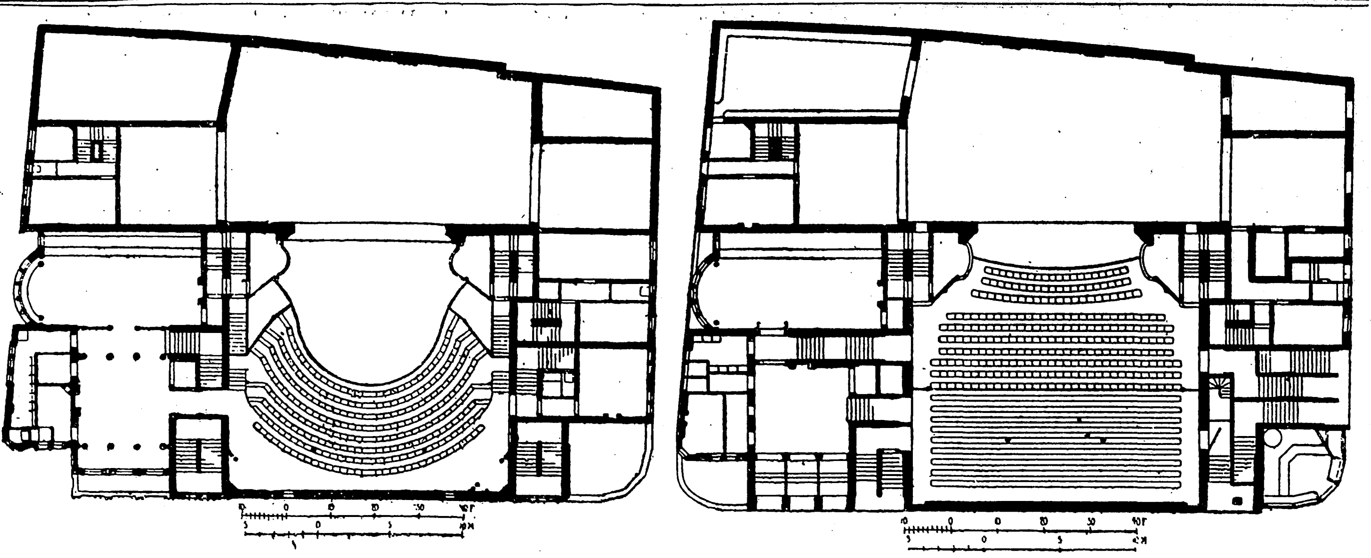
* Institution Prize. † Special Prize.
‡ "Driver" Prize and "Penfold" Silver Medal.

* "Crawter" Prize. † "Penfold" Gold Medal



*Plan at First Tier.* *The Crown Theatre, Peckham.* *Plan at Street Level.*

owners, among them the notorious Colonel Waugh. It is now the seat of Captain K. R. Balfour, 1st Royal Dragoons. On the afternoon of January 26, 1896, fire was found to have broken out in the billiard-room, which occupied the top floor of the tower, and in the course of a few hours the whole of the structure, including the famous carved oak staircase and elaborate panelling, was totally destroyed, the outer walls alone remaining.

The castle has now been completely restored and added to, though the internal arrangements have been largely modified to suit present-day requirements. The arcade seen in the drawing now carries the south wall of the tower, which it was found necessary to rebuild during the reconstruction, and by this means sufficient amount of daylight is now obtained in the inner portion of the room. The interior walls are now hung with a red and yellow silk brocade of fine design, which contrasts well with the fine old tiles which form the fireplace.

Previous to the fire many of the ceilings were elaborately frescoed by Italian painters, and it has been intended to reproduce something of the same kind on the new plaster ceiling of the South Hall.

R. S. BALFOUR.

## NEW CHURCH, GLASS HOUGHTON, CASTLEFORD.

THIS church is designed to accommodate 600, and for an elevated corner site. It is to be built of thin local bricks with stone tracery for the windows, &c. The roofs are to be covered with best Westmoreland slates and lead.

Messrs. Demaine & Brierley are the architects.

## NEW CHURCH, PARISH OF ST. THOMAS, YORK.

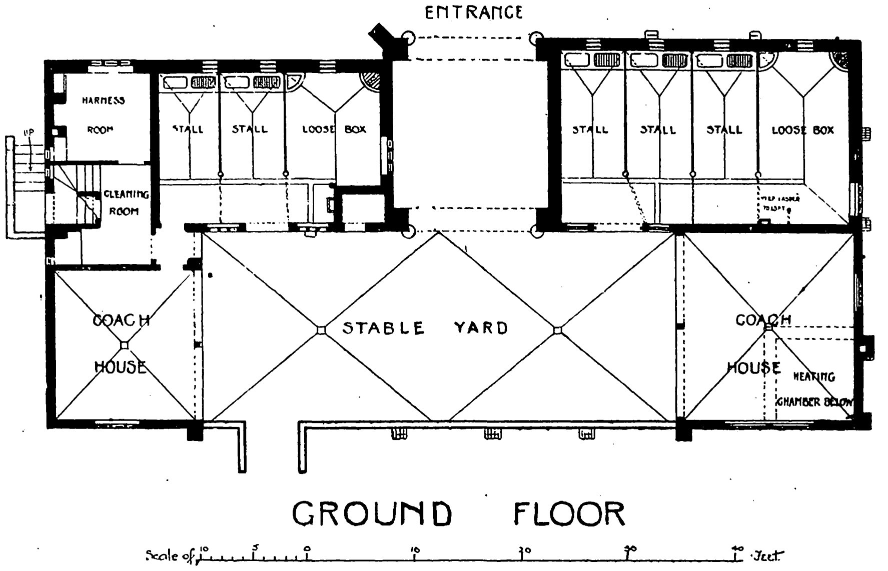
THE plan attached to the drawing will explain the arrangement of this church, which is planned to accommodate 700 worshippers and to be built in sections. The choir and choir aisles are to be built first, and will accommodate 300.

The turret staircases are for access to the organ chamber, which is over the south aisle, and to the screens and roofs. The one on the north side is also carried up as a bell turret.

The materials proposed to be used are thin hand-made red bricks with stone dressings. The aisle and vestry roofs are to be covered with lead and the others with green Westmoreland slates. Inside the walls will be plastered, with panelled wood dado.

Messrs. Demaine & Brierley are the architects.

## STABLES, LINGFIELD.



*Stables, Lingfield. Plan.*

THESE stables were erected in two sections. The portion to the left of archway shown in the view was erected as a stable complete in itself, and shortly afterwards the additional coach-house and stable accommodation was added. This accounts for the stable being divided into two sections.

The materials used are red brick for the lower portion, rough timbering and plaster for the upper part, and tiles for the roof, with local stone used for the dressings, &c., to archway.

Mr. Ernest Runtz is the architect.

## THE CROWN THEATRE, PECKHAM.

WE give the perspective view and two plans of this theatre, recently erected from the designs of Mr. Ernest Runtz.

The main entrance to the stalls is in the High-street, as also the pit entrance; the amphitheatre and gallery have entrances from Stafford-street.

The auditorium is divided up into an area and two tiers, and whilst the area floor is divided into the stalls and the pit, the first tier is known as the grand circle and balcony, and the second tier as amphitheatre and gallery. The total accommodation afforded is approximately for an audience of 2,600.

In the auditorium the proscenium has a frieze in which is a central group representing Britannia, with figures of Scotland and Ireland; a group representing Poetry, Music and Dancing, and another representing Literature, Art and Science.

The stalls saloon is decorated with some Flemish wood carving, with a display of old armour, halberds, antlers, &c. The saloon attached to the first tier is decorated in Renaissance style, with furniture of the Sheraton type. The lounge connected with this is ornamented with a fountain.

The stage, as will be observed, is unusually wide, for purposes of spectacular effect.

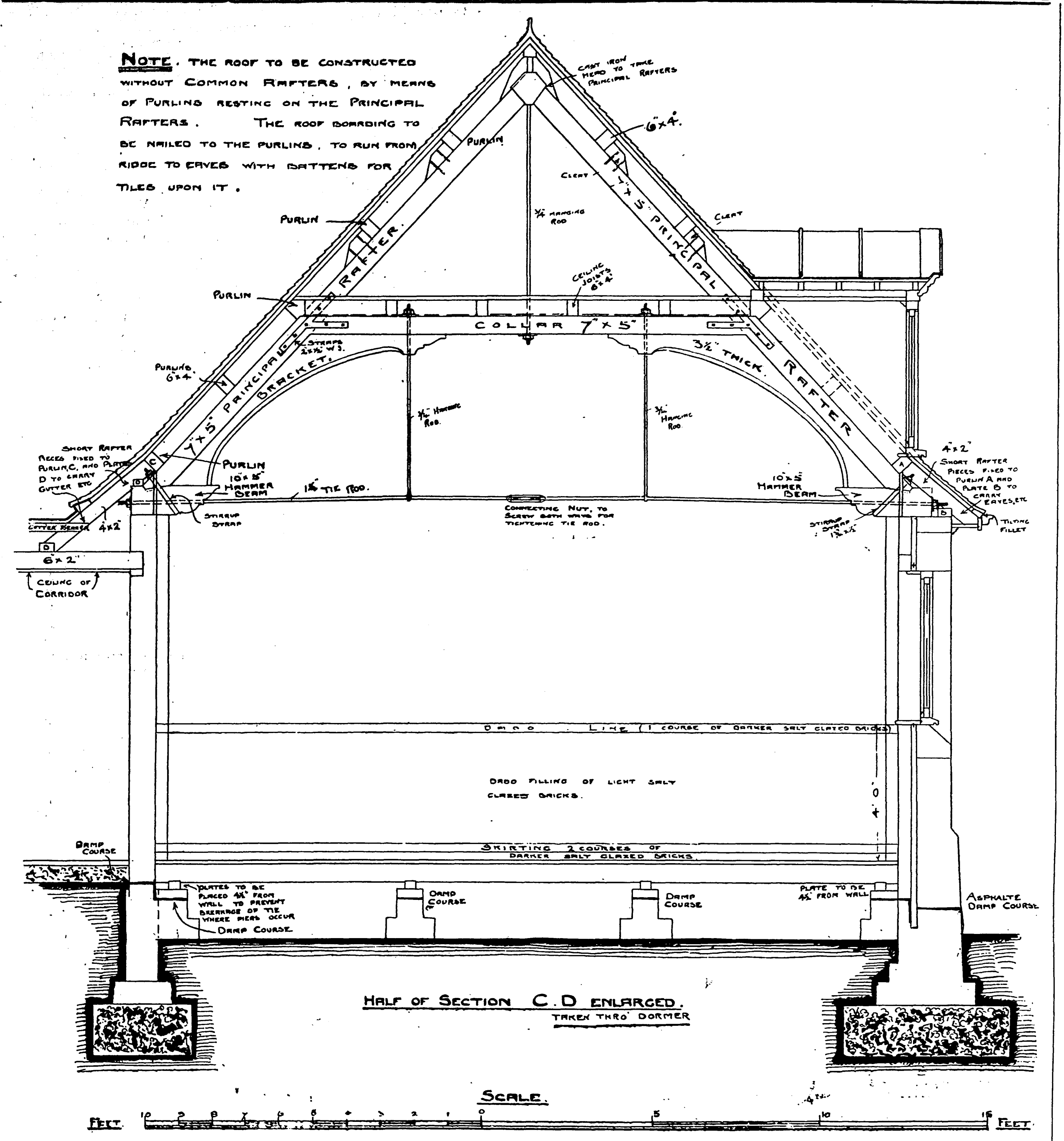
The theatre is lighted by electric light, and exhaust fans have been introduced for ventilation; the heating being by a low-pressure hot-water system.

The general contractors were Messrs. Colls & Sons. The decorative paintings were executed by Mr. Charles Buchel. Other works in the building were carried out by the following firms:—Constructional ironwork, Messrs. Dennett & Ingle; terra cotta work, Messrs. Doulton & Co.; electrical installation, Messrs. Strode & Co.; plastic decoration, Messrs. G. Jackson & Sons; furnishing and general equipment, Messrs. Wolfe & Hollander; stage appliances, Mr. I. N. Lyons and Mr. J. Cawdry; fire hydrants, Messrs. Merryweather & Son; "fire-proof" curtains and doors, Messrs. E. & E. Taylor; vitreous mosaic work, Messrs. Jesse Rust & Co.; brass work, Messrs. Carter & Aynsley; panelling and antique furniture, Messrs. Lennard & Son; bamboo work, the Fisher Bamboo Company; wall paper, Messrs. Chappell & Payne and Messrs. Rottmann & Co.; pottery ornaments, the Bareham Pottery Company; pewter work, Mr. Thomas Heath; and heating apparatus, Messrs. Rosser & Russell.

## AMHERST SCHOOLS, GUERNSEY.

THESE schools are about to be erected to supply a deficiency in the school accommodation of one of the suburban districts of St. Peter Port. Competitive designs were advertised for last year, and those submitted by Messrs. Colson, Farrow & Nisbett, architects, of Winchester and London, were selected as the most suitable.

The site is an uneven one, both the adjacent roads sloping away from their point of junction at which the land is highest. In order to obviate the inconvenience of having floors at different levels, or great difference between floor and outside ground levels, which would have been inevitable if the entire frontage of the school had been arranged parallel to and facing one of the roads, the architects decided to place the boys' and girls' schools in separate


NOTE. THE ROOF TO BE CONSTRUCTED WITHOUT COMMON RAFTERS, BY MEANS OF PURLINS RESTING ON THE PRINCIPAL RAFTERS. THE ROOF BOARDING TO BE NAILED TO THE PURLINS, TO RUN FROM RIDGE TO EAVES WITH BATTENS FOR TILES UPON IT.
CAST IRON HEAD TO TAKE PRINCIPAL RAFTERS
6"x4".
PURLIN
CLEAT
3/4 HANGING ROD
PURLIN
CLEAT
7"x5" PRINCIPAL
CEILING JOISTS 6"x4"
PURLIN
RAFTER
COLLAR 7"x5"
STRAPS 2x½ W.I.
PURLINS 6"x4".
7"x5" PRINCIPAL
BRACKET.
3½" THICK RAFTER
3/4" HANGING ROD.
3/4" HANGING ROD.
SHORT RAFTER PIECES FIXED TO PURLIN C, AND PLATE D TO CARRY GUTTER ETC
PURLIN
10"x5" HAMMER BEAM
1½" TIE ROD.
10"x5" HAMMER BEAM
4"x2"
SHORT RAFTER PIECES FIXED TO PURLIN A AND PLATE B TO CARRY EAVES, ETC
C
D
A
B
GUTTER BEARER
4"x2"
STIRRUP STRAP
CONNECTING NUT, TO SCREW BOTH WAYS FOR TIGHTENING TIE ROD.
STIRRUP STRAP 1½"x½"
TILTING FILLET
6"x2"
CEILING OF CORRIDOR
DADO LINE (1 COURSE OF DARKER SALT GLAZED BRICKS)
DADO FILLING OF LIGHT SALT GLAZED BRICKS.
4'0"
SKIRTING 2 COURSES OF DARKER SALT GLAZED BRICKS
DAMP COURSE
PLATES TO BE PLACED 4½" FROM WALL TO PREVENT BREAKAGE OF TIE WHERE PIERS OCCUR
DAMP COURSE
DAMP COURSE
DAMP COURSE
PLATE TO BE 4½" FROM WALL
ASPHALTE DAMP COURSE
HALF OF SECTION C.D ENLARGED.
TAKEN THRO' DORMER
SCALE.
FEET 12 9 6 3 0 5 10 15 FEET

*Amherst School: Enlarged Section.*

but symmetrical blocks, each facing one of the roads, and being united by means of the teachers' and cloak-room block. By this means the difference of the levels is rendered less conspicuous.

Each block will accommodate 252 children, making a total of 504 places. There are four class-rooms in each school, having places for sixty-eight, sixty-four, sixty, and sixty respectively. These are formed by dividing two large schoolrooms by means of Messrs. Peace & Norquay's sliding partitions, thereby obtaining the advantages of larger rooms for assembly and drill without the extra expense of a central hall. The cloak-rooms and lavatories for each sex are placed near the children's entrances, and two teachers' rooms which may be thrown together to form a parish meeting room occupy a central position, from which the whole building can be superintended.

The only local building material for external work is grey granite, and the elevations are accordingly treated in a style suitable to its use. The gables are "stepped," the stone is hammer-dressed, the general wall surface being light grey, with quoins, dressings, and plinth course of a darker tint. Internally the walls will have a dado 4 ft. high, formed with salt-glazed bricks, the upper part being of local bricks, and coloured. The roofs are to be constructed with wrought, rebated boarding upon purlins, stained and varnished internally, and covered externally with Broseley tiles. It is proposed to warm the building with low-pressure hot water.

Estimates are now being prepared by local builders, and it is hoped that the building may shortly be commenced.

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THE STUDENT'S COLUMN.—Owing to the pressure of other matter, our Student's Column article ("Architectural Hygiene") is held over until next week.

METHODIST NEW CONNEXION CHURCH, WEST HARTLEPOOL.—A new church for the Methodist New Connexion has been erected in Park-road, West Hartlepool. In the chapel, seating accommodation is provided for 550 persons, and there are vestries for the minister and choir. A church parlour separates the chapel from the schools, the principal room of which is 60 ft. by 30 ft., giving accommodation for between 350 and 400 scholars. There are also three class-rooms and a room for infants. The heating throughout is accomplished on the low-pressure hot-water system. The building contract has been carried out by Messrs. J. Howe & Co., of West Hartlepool. Mr. J. Garry, of West Hartlepool, was the architect.

## THE DECORATION OF ST. PAUL'S.

THE following memorial, signed by architects, was presented on the 12th inst. to the Dean and Chapter of St. Paul's:—

In a letter to the *Times*, which appeared on May 6, Sir W. Richmond has to all intents defied the instructed opinion of this country in regard to the decoration of St. Paul's. We, the undersigned architects, therefore feel it our duty to protest against the continuance of the works of decoration until full opportunity has been given for the consideration of the whole scheme by the best expert opinion available. St. Paul's Cathedral is the most characteristic of our national monuments. It is now in imminent danger of losing the grave dignity which has endeared it to the heart of the majority of Englishmen, and, in our opinion, this is due to the fact that Sir W. Richmond's scheme, whatever its abstract merits, has not been thought out in sympathy with and in subordination to the architecture of the cathedral.

1. The chief inspiration of Sir W. Richmond's design has been sought in Byzantine art, with certain motives suggested by English designers of this century. It would be impossible to conceive anything more alien to Wren's genius

and to the intellectual atmosphere in which he lived and worked.

2. In St. Paul's Cathedral, as in any other masterpiece in architecture, a certain scale has been set by the original designer which cannot be abandoned without serious injury to the effect of the whole building. The scale that Wren intended was followed by Stevens in the designs that he made for the spandrils under the central dome, and the discrepancy between this scale and that adopted by Sir W. Richmond can be measured by a comparison of the figures on the spandrils with Sir W. Richmond's figures in the half domes over the canted angles below. In our opinion a fatal injury is being done to the proportions of St. Paul's by this substitution of Sir W. Richmond's scale for the scale of Sir Christopher Wren.

3. The decorations now being carried out involve actual injury to the stonework of the cathedral as left by Wren.

In the four great arches at the north-east, south-east, north-west, and south-west angles under the dome, Wren, in order to satisfy the eye as to the constructive stability of his arches, left plain piers or abutment under the arches, and he deliberately abstained from any ornament to these piers in order to make clear the idea of strong support, which is their actual function. Sir W. Richmond has formed raised panels on these piers and studded the margins and divisions with *pateræ*—that is to say, Sir W. Richmond has stultified the architect's design, and in nearly every detail of his decoration he has, in our opinion, shown the same indifference to the clear intention of the architecture.

Sir William Richmond has practically admitted his dislike of that architecture in his letter of May 6, a letter more remarkable for its courage than for any appreciation of the gravity of the case. It seems to us that an artist so evidently out of touch with the conditions of his work should not be permitted to alter the character of the finest work of modern English architecture, and this feeling we believe to be that of the great majority of intelligent and educated Englishmen. We desire in no way to disparage Sir W. Richmond's attainments and well-earned reputation, but we cannot regard them in comparison with the fame of Sir Christopher Wren and the loyal preservation of his work. We protest as Englishmen against this subversion of the character of our national cathedral, and we resent, as artists and admirers of Wren, this tampering with the intention of one of the greatest of English architects.

Signatures.

JOHN BELCHER,
JOHN F. BENTLEY,
REGINALD BLOMFIELD,
J. M. BRYDON,
JAMES BROOKS,
BASIL CHAMPNEYS,
T. E. COLLCUTT,
ALEXANDER GRAHAM,
M. E. MACARTNEY,
E. W. MOUNTFORD,
W. C. MARSHALL,
E. NEWTON,
F. C. PENROSE,
BERESFORD PITE,
E. S. PRIOR,
E. R. ROBSON,
J. OLDRID SCOTT,
J. J. STEVENSON,
LEONARD STOKES,
E. P. WARREN,
THOMAS H. WATSON,
H. WILSON,
R. SELDON WORNUM.

## INSTITUTE OF BUILDERS:

### ANNUAL DINNER.

THE annual dinner of the Institute of Builders was held on Thursday evening last week at the Grand Hotel, Charing Cross. The chair was taken by the President, Mr. Joseph Randall, and among those present were the Rev. H. Hirsch, Colonel Gehle, R.E., Alderman W. Holdsworth (President of the National Association of Builders), Mr. J. Clusson Preston (Master of the Worshipful Company of Carpenters), Mr. G. H. F. Prynne (President of the Architectural Association), and Messrs. Edward White, L.C.C., A. Ritchie, C.C., Howell J. Williams, L.C.C., H. H. Bartlett, F. S. Bywaters, J. H. Docwra, F. J. Dove, B. J. Greenwood, T. Gregory, R. S. Henshaw, H. Holloway, H. W. Horner, F. May, H. Northcroft, A. Pennington, A. F. Randall, T. F. Rider, W. Shepherd, Strudwick, B. Tabberer, W. H. Turnbull, C. Wall, T. Costigan (secretary), and others.

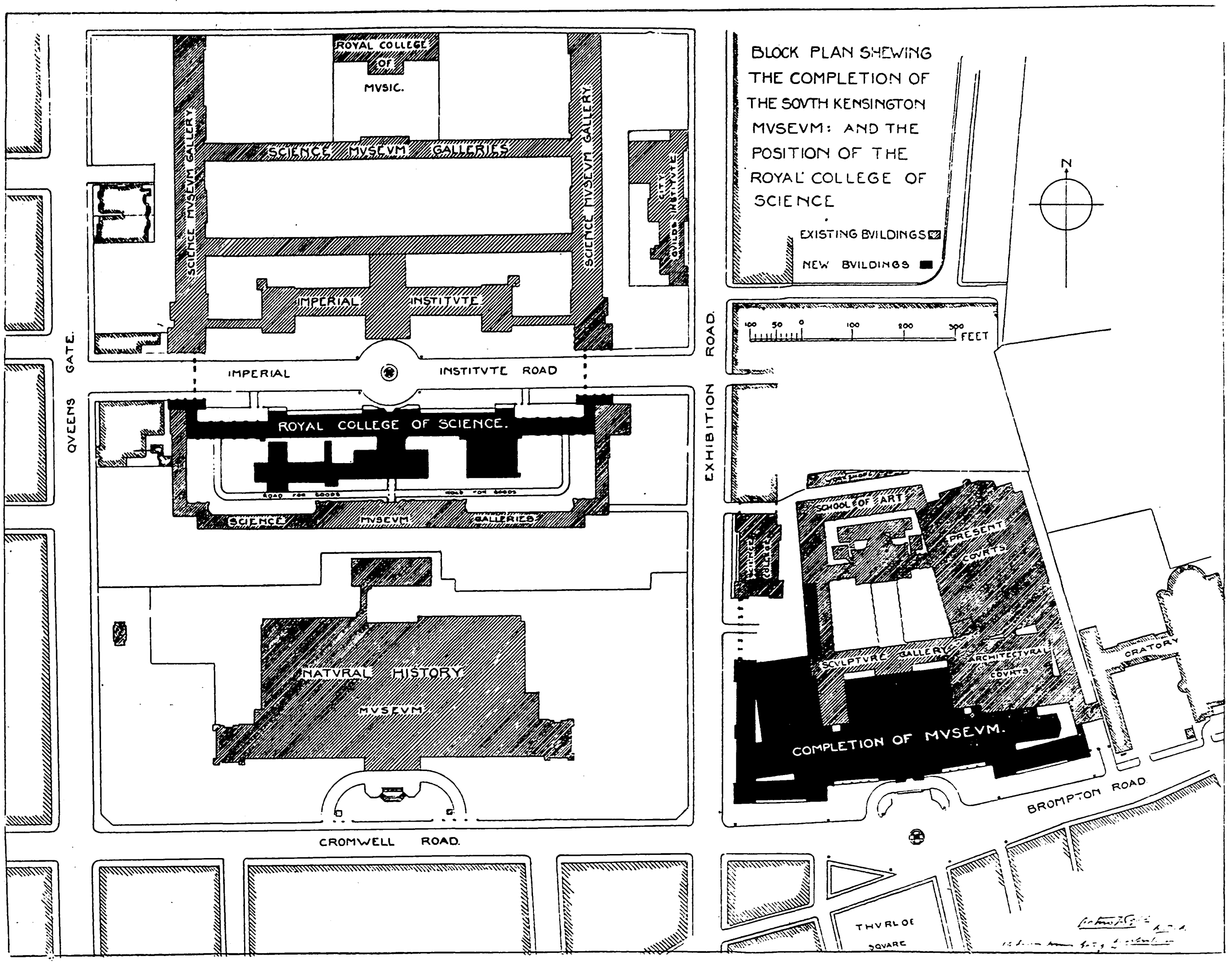
The usual loyal toasts having been duly honoured, Mr. H. J. Butter proposed "The Navy and Army," coupled with the name of Colonel Gehle, R.E., who responded.

The Chairman then gave the toast of the "Institute of Builders." He said that the object of the Institution was to uphold the honour and integrity of the building trade, and already it had earned an excellent reputation, although still young as an institution. He could not help regretting that the old modes and rules of work which had contributed so much to the greatness of this country were being abandoned, and that new rules were being forced upon them which caused great difficulties in the execution of their works. Legislation had become more exacting; they laboured under the terrible onus of the new Workmen's Compensation Act, disputes with labour had greatly increased their watchfulness, trouble, and anxiety; and not only had the cost of labour gone up, but the action of the unions made it impossible to estimate the cost of labour with any degree of accuracy. He had noticed in the *Builder* last week that there were no less than thirty disputes at present in the building trade in England and Wales, and he could not see that these differences had led or would lead to any beneficial result to one side or the other. A better feeling would be for the best interests of all concerned, and if they could have a good understanding once and for all it might help to bring back to England some of those businesses which had been driven out of the country. A great part of the steel trade—joists and girders, and engineering work and machinery—had gone away. No firm here could promise to complete a job in any reasonable time. Then they had to compete not only with America, but with Germany. The Germans had monopolised nearly the whole cement trade of America, which ten years ago belonged to this country. A great part of the furnishing trade was now Austrian and German, and a large part of the joiner's work used in this country was now imported ready manufactured. If he were building a thousand houses he could readily import sashes and frames and other joiner's work complete. Nine-tenths of the glass trade had gone to France and Belgium. Merchants in this country did not know where their glass came from because it went into a pool. Altogether the outlook was not very cheering. They noticed that the London County Council and other public bodies had taken up the idea of becoming builders, perhaps to aid in the extinction of the trade or possibly to help the peace of mind of its members. Public bodies might think they could become contractors, but all in the trade knew the long years it took to acquire the experience necessary for success. So far as they could see from the public records, there were more bankruptcies among builders than in any other trade. Their earnest desire in that Institute was to see building prosper, and to that end to condemn any practice which might lead to inferior work. The builders strongly desired that architects should establish some recognised standard of contract conditions. For years they had been trying to arrive at an agreement in this matter, the differences had been brought down to a narrow issue, and he thought it was high time that the remaining difficulties should be overcome. If both parties put their backs against the wall, of course very little progress would be made, but the settlement of fair conditions ought not to be an impossible task. Another point on which he would like to touch was the question of the quality of materials, and the tests applied. In the case of cement it was possible to go to an independent expert, but why should they hear so much about this or that cement being "best." Some latitude should be allowed to builders to suggest alterations in material and variations of structural detail in the event of strikes or other disturbances of trade. Also he would like to suggest that before a job was started the specifications and drawings should be complete. If they gave a builder imperfect drawings, and doled them out to him one by one, foot by foot, he would defy any living man, however clever he might be, properly to organise his work, or to carry it out with expedition or profit. When the work was begun the specifications should be properly explained, and the details should be accurate. When they had the drawings doled out one by one it set up that irritating, "pin-pricking" sort of business that was certain to lead to differences and disputes, and perhaps to arbitration or law suits. All that might be avoided if the drawings were properly made and details given before a job was started. Builders did not in any way seek to dictate their own terms, but there were many concessions the benefit of which would be felt not only by them but by the architect and his client. If a building was worth spending 10,000*l.* or 20,000*l.* upon, it was worth while also to get it done in the time agreed. Why should a client put his hand in his pocket and spend a lot of money unless he was to get the work done at the time when he had been led to expect it? At present it was quite impossible to get a guarantee of time from any one supplying ironwork. A spirit of mutual confidence between architect and builder would not interfere with the independence of either. Why should not a builder be able to go to the architect and say, "I am unable to get such and such things; will you allow me to substitute so and so, and if the cost is less, I will give you the advantage?" If the client's interest were served, the architect would see that the request was reasonable, and would agree to it. In conclusion, he hoped that for ages to come men would be able to look upon buildings which were monuments of the genius of the architects of to-day, and evidence of the faithful and enduring work of those by whom those creations of genius were erected.

The toast was honoured with enthusiasm, after which

Mr. B. J. Greenwood proposed the "Architects and Surveyors." Although the toast was "The Architects and Surveyors," the combination was not a happy one when both were found in the same individual. Combination was the order of the day, and some men had no hesitation in taking up fourteen or fifteen trades at once. Architects in these days had a great deal to put up with, and must be men of exceptional courage. When the plans were drawn for a building in the metropolis the trouble had only just begun. No sooner was the work begun than up sprang a legion of "ancient lights" all round, many of them so obscured by dirt and neglect that they had long ceased to be lights at all. The architect had to be a good lawyer, a good financier, and a good all-round man if he was to deal with all these claims in a satisfactory way. Then in walked the County Council to say "This won't do" and "That won't do," and after that the sanitary inspector came round. Then after that the architect had to deal with the builder, and last of all to go and deal with his client again; and perhaps that was the most difficult of all. As to styles of architecture, he was reminded of a story of the late Mr. C. H. Spurgeon, who on looking at a house in Norwood was told it was in the "Queen Anne" style. Then he went round and looked at the rear, and he said, "This style must be the *Mary* Anne." They all knew of a good deal of architecture in London that answered that description. Coming to the surveyors, he said that quantity surveyors were men in whom builders had the utmost confidence. In some cases quantities were not made part of the contract, and when the builder signed he was absolutely dependent on the quantity surveyor whose name appeared at the foot. If that name were well known he felt much safer than if the name were unknown and he had to put his trust in Providence.

Mr. G. H. Fellowes Prynne responded on behalf of the architects, and said that he was not only a member of the Institute, but represented the junior society of architects—the Architectural Association—which sought to educate the members of the profession, instead of leaving them, as had too often been the case, to be educated by the builder. As a member of the Council of the Institute, of course he knew how much had been done by the Institute of Builders in regard to the question of conditions of contract and also with regard to the important point of damages for want of detail. Of course there were two sides to the question, and the Council of the Institute had done their best to thrash out the whole matter. He saw perfectly the builders' view of the question. Under the arbitration clause they wished that any point of dispute that turned up during the contract should be at once arbitrated. But the architect's life was not a happy one. He had to put up with many difficulties that perhaps even contractors did not understand, and to add to those difficulties the continual worry of arbitration on every detail that arose during the progress of a contract would make life intolerable. He was sure that the contractor, putting himself in the place of the architect, would understand that view of the matter. There were builders and builders, just as there were architects and architects, and a



(*See second article in this issue, page 485-6.*)

builder wishing to make himself disagreeable might keep finding causes for arbitration all the time. As to the second point, damages for want of detail, that was another case in which the difficulties of the contractor must be very great indeed. He agreed that half-inch details at least ought to be signed with the contract. But the architect had the art side of his work to look at, and if it was a creation and not a mere copy, then in a building of considerable size it took a long time to fill in detail in an artistic way. If the architect was being pressed to get the building started and the contract signed, it was a very difficult thing to give the builder complete details at the outset. Again, in this case a builder might easily obtain an unfair advantage over an architect by threatening to claim damages for want of details. There were difficulties on both sides, and he could only hope that a proper settlement would be arrived at. If ever there was a time when an institute like the Institute of Builders was needed, it was now. Combination amongst master builders was more needed than ever before. Loss of trade was causing the greatest suffering among the poor. An enormous amount of work was going to America, and energetic agents were seeking high and low for orders for Germany. The building of the Egyptian bridge given an American firm the other day ought to be a warning to our working men. He had immense faith in the honest English workman, but he believed we were losing trade simply through the unsettled condition of labour. He believed workmen should have an absolutely free right to combine, but they could not be allowed to force their conditions on employers until the latter had no control over their own business. He was glad to see the admirable answer of the secretary of that Institute to the plasterers, whose demands went so far as to order that some plaster work should actually be taken down because it had been done by a bricklayer. He thought that if labour went to such extremes in its demands they could not wonder if masters were seeking abroad for men who would meet their wishes. He believed a strong line must be taken, and the Architectural Association had sent a resolution expressive of their fullest sympathy with the employers. In conclusion, he said that the one wish and desire of the Institute of Architects was to arrive at relations of complete friendliness with the builders as a body.

Mr. T. Franklin, on behalf of the Surveyors, in the course of his remarks, said that what the builders wanted was that the quantities should be taken out by some one who could do it thoroughly, and, if not done thoroughly, they wanted the right to have the work remeasured and paid for at prices that were fair. Then people would not employ surveyors whose work had to be measured over again, and came to double the money. He was not the only surveyor who had measured work done by others and made it come to double the money, and he could do it again !

Mr. T. F. Rider then, in a complimentary speech, gave the health of the President, who, in responding, regretted the absence, through illness, of their old friend, Colonel Stanley Bird.

Mr. Henry Holloway next proposed the toast of "The Visitors," referring to the pleasure with which they saw at their board such men as Mr. Preston, Master of the Carpenters' Company—a Company which had done so much for education in the building trade ; Alderman Holdsworth, President of the National Association of Builders, who had fought the battle for them against the plasterers ; and also another very distinguished gentleman, who had fought their battle in the London County Council, *i.e.*, Mr. Edward White. Then, of course, they welcomed their architect and surveyor friends.

He coupled the toast with the name of Mr. Harry Northcroft, who suitably responded.

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THE ARCHITECTURAL ASSOCIATION SUMMER VISITS.—There is a slight correction to be made as to the arrangements for the summer visits of the Association. On June 3 the visit will be to Cobham Hall, Kent, by permission of Lord Darnley ; the very interesting church and fifteenth century College will also probably be visited, conducted by Mr. T. W. Aldwinckle and Mr. G. A. Lansdowne. Under date July 29, Lea Park, near Godalming, is described as "Lee Park, near Blackheath."

## ASSOCIATION OF MUNICIPAL AND COUNTY ENGINEERS.

THIS Association held an Eastern Counties district meeting at Ipswich and Felixstowe on Friday and Saturday, May 12 and 13. The business proceedings of the meeting were commenced in the Town Hall, Ipswich, at mid-day on Friday. The President (Mr. C. Claude Robson, of Willesden), occupied the chair, and amongst those present were Professor Kennedy, Messrs. W. Weaver, Kensington ; J. P. Barber, Islington ; W. H. Savage, East Ham ; J. Pollard, Westminster ; T. Cole, Secretary, Westminster ; J. T. Eayrs, Birmingham ; E. Pritchard, Birmingham ; Bennett, Southampton ; E. Buckham, Ipswich ; H. Goodyear, Colchester ; A. Hayward, Sudbury ; Jeavons, Hertford ; Clare, Sleaford ; A. H. Campbell, Canterbury, and others.

The Mayor (Mr. E. P. Ridley) in welcoming the members of the Association, said there was no doubt modern life owed a great deal to the work of the municipal engineer.

The President acknowledged the cordial reception given to the members of the Association. They highly appreciated the privilege accorded by the Mayors and Corporations of various towns in offering invitations to the Association to hold its meetings in their respective towns. These meetings enabled the members to gain experience of new works and to gather up fresh facts and ideas which they would find it difficult, at any rate satisfactorily, to obtain in any other way.

On the proposition of Mr. A. E. Collins (Norwich), Mr. Cockrill, of Great Yarmouth, was re-elected Honorary District Secretary.

### *Electric Lighting.*

Professor Kennedy then delivered an address on the principles and equipment of an electric lighting station. In large towns where space was valuable he advocated the use of some form of tubular boiler, but where ground was not so expensive it was often advisable to economise cost and use the simpler form of Lancashire boiler. As to the types of engines to be used, they ought to use those which would drive the dynamos direct without the intervention of any belting. In America it was the custom to use slow speed engines, but in this country it was more usual to use a high speed engine, with a short stroke and a great many revolutions per minute. Personally, he thought the advantages in almost every case were on the side of the high speed engine, but he was perfectly well aware that engineers as good as he preferred the slow speed engines. He might say, however, that he had had high speed engines running for ten years, and that the maintenance cost had been small and the attention required in working a minimum. Coming next to the question of dynamos, he could not resist the temptation to give them Mr. Preece's account of how a dynamo worked. Mr. Preece stated that in this matter they started with the knowledge that if a conductor were moved between the poles of a magnet what was called a current of electricity would flow in that conductor. The earth was a magnet, though rather a feeble one, and if a man took a copper wire in his hands and skipped with it in the plane of the earth's magnetism, north and south, a current would pass through that wire and through his body. Such a current would be infinitesimally small, but there it was, and they could measure it if they had instruments sufficiently delicate. Instead of taking a single wire, however, they took a very large number of wires and arranged them in a proper fashion; instead of taking a man's movements as the source of power they took an engine of 500 or 5,000 horse-power; instead of taking a very feeble magnet they took an enormously strong electro-magnet—and there was the dynamo. The current, having been generated, was supplied to consumers by means of trunk and feeder wires, and though the pressure might vary at different points in the mains, was supplied at even pressure to consumers residing at varying distances from the stations. At Ipswich it was proposed to put down, independently of any question of traction, sufficient power for the lighting of 8,000 8-candle power lamps. The popular idea always was that they would have all those lamps alight at one time, but he wished he could find that happy land. In Glasgow, when they first started, they had 60 per cent. alight at once. At St. James's and Pall Mall, London, where the greater part of the supply was to clubs, hotels, and similar places, they had 66 per cent. alight at once; but that was quite exceptional. In the district supplied by the Westminster Company—which covered St. George's, Hanover-square, St. Margaret and St. John, Westminster, they never had more than 27 per cent. alight at once. In a place like Ipswich for the first 10,000 lamps they might get very nearly half a light at once; but afterwards, when they went into the suburbs and took up the private residences, they would never have one half the lamps alight at one time. As to the cost to persons using the light the Act of Parliament allowed 8d. per unit—or about a farthing per 8-candle lamp per hour. No municipality of any importance had lately been charging more than 6d. per unit, and that made the cost about three-sixteenths of a penny per 8-candle lamp per hour. The tendency was to reduce this charge as much as possible, so as to increase the demand and cheapen the production. It was proposed later on to try and supply current for driving electric trams from the electric light station. This was to the advantage of any town to do, as it provided a continuous day load, extending over fourteen or sixteen hours a day. The question whether the municipality should own the electric light was one which had practically solved itself. He had had the pleasure of dealing with a number of towns, and in every case the electric light had proved a success and had not imposed a burden upon the rates.

### *Use of Heat from Destructors.*

Mr. A. H. Campbell, City Surveyor, Canterbury, next read a paper on the use of heat from destructors to assist in steam generation. He remarked that the rapid increase in the number of electricity stations throughout the kingdom had given an impetus to the consideration of this subject. That there was much latent heat and power contained in the cremation of town refuse went without saying; that there was not so much in it as some of the enthusiasts averred was evident from the very few stations which had as yet been erected. Nevertheless there was such a sufficiency of power contained in the cremation of refuse as to justify full inquiry and careful research and investigation by those having the requisite facilities of test and observation. And at the very lowest estimate it was the turning to profitable use of power hitherto unappreciated or left undeveloped. He had erected a refuse destructor plant in connexion with the electricity works at Canterbury, which had not yet begun work, though the guarantee of the builders was that 1 lb. of steam would be produced per 1 lb. of refuse consumed. The author quoted the experience of Oldham, Shoreditch, Llandudno, and Hereford to show that there was a great reserve of power suitable to the generation of steam for electricity works contained in house refuse when properly cremated.

Mr. Bennett, Southampton, said that for the past fifteen years he had been trying to develop as much power as possible for the destruction of refuse, and had done so with considerable financial advantage, but he ought to say that the power obtained was not constant, and had to be supplemented at times during the past two years. The power obtained from the destructor had been utilised for lifting by the stroke ejectors a flow of sewage of from 1½ to 2 million gallons in twenty-four hours.

Dr. Elliston, Medical Officer of Health for Ipswich, expressed pleasure at the prospect of town refuse being put to profitable account. Now that a water-carriage system was becoming generally adopted in Ipswich, the ordinary town refuse would not be accepted by the farmers as a gift. The accumulation of town refuse had a very serious effect upon public health, and especially in hot and dry summers was a fruitful source of disease.

Mr. A. E. Collins, Norwich, admitted there was power to be obtained from the burning of refuse, but it was not well to depend upon it as it varied so greatly.

Mr. Weaver, Kensington, remarked that the calorific value of refuse varied not only in different places but at different seasons of the year. For instance, in winter, when people were burning a lot of coal, they got very good refuse and considerable power; but in the summer, when the dust carts were laden with cabbage leaves and cockle shells, they had to burn coal to supplement the power. He had made a proposal to the electric light companies who had Kensington portioned out among them that if they would put up a 30-cell destructor at a cost of 25,000*l.* he would guarantee them 30,000 tons of refuse a year, and pay them 1s. a ton for destroying it. After they had given that offer consideration, Mr. Crumpton and the other electrical engineers declined it, except with a condition that if they did not find it satisfactory they could call upon the Authority to take over the destructor and repay them the whole cost they had been put to. That showed that electricians, when it affected their own pockets, were not so enthusiastic about the power-raising property of house refuse as persons with destructors and furnaces to sell. He mentioned this as a caution to municipal engineers to be careful about embarking upon any expenditure for destroying house refuse, as they would find it both a varying quantity and a varying quality.

Mr. J. Parker, Hereford, claimed that he had been raising an average of 120 h.p. per day of ten hours for the destruction of his house refuse.

Mr. Barber, Islington, was exceedingly glad to hear so high an authority as Professor Kennedy speak of the advantage to be derived by a condensing plant, and the abolition of gearing in connexion with machinery. Sometimes one found it very difficult to make members of their committees understand the advantages to be derived from the use of a condensing plant and direct driving. He was glad Mr. Campbell had not taken too easy a view of the power to be derived from the burning of house refuse. Reference had been made to the varying quality of the refuse, and he might say that, by the adoption of a weekly system of collection in Islington he had found that the character of the refuse had changed entirely. It had become of a lighter character altogether, with a larger proportion of paper and vegetable matter of no calorific value.

The President said it was gratifying to all towns intending to adopt electric light to hear from Professor Kennedy that in all probability it would be a benefit rather than a burden to the rates, because there was no doubt that that bugbear, a burden on the rates, was keeping many towns from adopting this cleaner light. He suggested that the use of electric light might be largely increased if facilities could be provided for the free wiring of premises by the municipal authorities or the electric light company. Many persons would be willing to pay a small extra amount for the light who would not be willing to pay a larger capital sum for the wiring of their premises.

Professor Kennedy, in replying to the vote of thanks, which was accorded by acclamation, mentioned that one or two firms or companies were willing to make arrangements for free wiring.

The Mayor of Ipswich then entertained the company to luncheon in one of the rooms of the Town Hall. The Mayor presided, and in addition to the members of the Association attending the meeting, many of the members of the Town Council were present. The toast list was limited to the Queen, the Association of Municipal Engineers, and the health of the Mayor, and the afternoon was devoted to visits to the air compressing station, the Waterside Engineering Works of Messrs. Ransomes & Rapier, where the sluices for the Nile dam are being manufactured; the Orwell Works of Messrs. Ransome, Sims, & Jeffreys; and the waterworks. On Saturday morning, before leaving for Felixstowe, many of the members visited the new high-speed engine works of Messrs. Reavell & Co.

The scene of Saturday's meeting was Felixstowe. The day's proceedings commenced with a luncheon at the Bath Hotel, given by the chairman and members of the District Council. Subsequently a meeting was held in the Town Hall, at which Mr. J. T. Eayrs, Birmingham, presided, in the absence of the President (Mr. Robson).

### *Drainage Works of Felixstowe.*

Mr. G. S. Horton, Borough Surveyor of Felixstowe, contributed a paper on the Shone drainage system, and other works of Felixstowe. He said that after looking round and inspecting works on the Shone system he came to the conclusion that it was a system peculiarly well suited for a place like Felixstowe, and the Council were unanimous in approval of his recommendation that it should be adopted. Messrs. Shone & Ault, of Westminster, were appointed consulting engineers, and since the drainage had been completed, now over three years, the works had given complete satisfaction. The proposal to discharge the sewage into the sea encountered a lot of opposition from the Harwich Harbour Commissioners and the War Office, and after negotiation the present system of discharging the sewage was agreed upon. In order to ensure efficient self-cleansing, gravitation sewers throughout, &c., had divided the district into practically four separate drainage areas, and for these the sewage was collected automatically, and was ejected and delivered to the outfall tanks, near to which the air compressing station was erected. The drainage of Felixstowe was practically on the separate system, and the volume of sewage and rainfall combined was estimated, on the assumption that the sewage would amount on the average to twenty gallons per head per day, and that 1 in. of rain would fall per day of twenty-four hours on at least 400 square feet of hard surface connected with every house drained. The outfall works were placed on flat, wet, low-lying land, the surface of which was 344 ft. over ordnance datum, and 5 ft. below high-water spring tides. In order to comply with the conditions imposed by the War Department, and the Harwich Harbour Commissioners it was necessary to erect the outfall tanks of a capacity sufficient to discharge two-thirds of the maximum volume of sewage estimated to flow from the population of Felixstowe in 1924 within the prescribed time, that was for five hours during each receding tide. To do this two tanks were provided, each holding 295,000 gallons of sewage. The sewage, as it was to be delivered at the tanks, was to be deodorised by ferrozene. The discharge of the treated sewage effluent into the sea had to take place from one hour after high water to two hours before low water.

### *Rural Sanitation.*

Dr. C. G. Havell, Medical Officer of Health for Felixstowe, contributed a paper on "Some Aspects of Rural Sanitation." He said that while fully acknowledging the improvement in public health and comfort resulting from the sewerage system in Felixstowe, he would like, in passing to the general question of rural sanitation, to urge that there was too great a tendency to insist on a system of sewerage and drainage as a *sine quâ non* in sanitary reforms. The essence of sanitation, so far as excreta and refuse were concerned, was to secure its resolution into harmless and, if possible, useful elements, without nuisance or danger to population. This was best accomplished by its immediate and direct application to cultivable soil. Whether the water-carriage system of sewage was an economical and efficient mode of transport he must leave engineers to determine, but that it had many drawbacks none would dispute. In his opinion these disadvantages became so prominent in rural districts as to largely discount any merits it might possess. The difficulty of meeting the increased quantity of water required and the waste which was encouraged by the water-carriage system of sewage was becoming a matter of national importance. He would say nothing about rates, because any expense necessarily incurred in safeguarding public health was justifiable. But to his mind the most valid objection, and an almost insuperable one, was to be found in the difficulty of getting and maintaining the high standard of construction required to protect houses from the danger of sewer gases. The provision of the multiplicity of traps and the profusion of ventilation arrangements stipulated for were an admission of the danger; and although they might be efficiently worked out on paper he believed their execution was beyond the capacity of the average country workman. At any rate there was no doubt that either he was unable to comprehend the importance of good workmanship and sound jointing, or his conscience was so elastic that it enabled him to dispense with both. If trade organisations did half as much to encourage a good standard of workmanship as they did to screw up wages, their legitimate objects of improving the status of the workman would be more surely attained, and the public health would gain. But when all was done, and the outfall reached, they had often only arrived at the beginning of trouble in efforts to dispose of the sewage without the fouling of river or stream. Happily it seemed as though this were now in reach of attainment by the wonderful results of intermittent filtration in the bacterial tanks. But the resolution of excreta and refuse, and its utilisation, was a problem still to be faced by sanitary authorities after their sewerage scheme was completed,

Mr. Buckham, Ipswich, Mr. J. P. Barber, Islington, Mr. Shone, Westminster, Mr. Savage, East Ham, and Mr. Hayward, Sudbury, took part in the discussion on the papers. The remainder of the day was devoted to a visit to the Landgard Fort and to the sewage outfall tanks.

## THE LONDON COUNTY COUNCIL.

THE usual weekly meeting of this Council was held on Tuesday in the County Hall, Spring Gardens, Lord Welby, Chairman, presiding.

*Loans.*—On the recommendation of the Finance Committee, it was agreed to lend the Battersea Vestry 12,032*l.* for sewer reconstruction works, and 11,076*l.* for channelling, &c., works; St. Saviour's District Board 12,730*l.* for paving works; Whitechapel District Board 25,000*l.* for the purchase of land; Guardians of St. George's-in-the-East 1,600*l.* for works at infirmary; and the Whitechapel Guardians 7,000*l.* for purchase of land for the extension of their infirmary.

*Proposed New Fire Station, Redcross-street.*—The Fire Brigade Committee recommended, and it was agreed, (*a*) that the estimate of 31,500*l.* submitted by the Finance Committee in respect of the acquisition of a site for a new station in the City be approved; that the Council do acquire for 31,000*l.* the freehold of Nos. 35, 36, 37, and 38, Redcross-street, the Council paying in addition costs under the Lands Clauses Act and one surveyor's fee of 156*l.* 9s., and that the Solicitor do complete the matter. (*b*) That the Fire Brigade Committee be authorised to make the necessary preliminary arrangements for the erection on the above-mentioned site of a fire brigade station in substitution of the existing Whitecross-street station.

*Fire Station, Clapham.* — The same Committee reported, and it was agreed:—

(*a*) That the estimate of 3,100*l.* submitted by the Finance Committee in respect of the acquisition of a site for a new station at Clapham be approved; that the Council do agree to acquire for 3,000*l.* the freehold of the premises known as The Cedars, Old Town, Clapham, and that the Council do enter into an agreement to purchase the property at that price on March 25, 1901, or earlier should the owners be able to give possession before that date, the owners to convey to the Council a cleared site; and that the Solicitor do complete the matter.

(*b*) That the Fire Brigade Committee be authorised to make the necessary preliminary arrangements for the erection on the site of The Cedars, Old Town, of a station in substitution of the existing Clapham station.

*Electrical Traction for Tramways.*—The following recommendations of the Highways Committee were agreed to:—

(*a*) That the resolution of the Council of October 18, 1898, relative to the use of electrical traction on certain of the tramways of the London United Tramways, Limited, be rescinded.

(*b*) That the Council do consent, on the terms stated in the letter, dated September 27, 1898, from the managing director of the London United Tramways, Limited, to application being made by the company for power to reconstruct, in accordance with the overhead trolley system of electrical traction, the tramways (*a*) in that part of Uxbridge-road between the "Askew Arms" public-house and the railway-station, and (*b*) from Uxbridge-road railway-station *via* Goldhawk-road to Young's Corner, on condition that the company do also reconstruct, according to an underground system of electrical traction, the tramways (*c*) from Young's Corner *via* King-street to Hammersmith Broadway; it being understood that, should the Council when the proper time arrives decide to purchase those portions of the company's tramways which are situated within the County of London, the Council shall pay the "then value" of the tramways (*c*) above referred to.

*Turner, Ruskin, Romney, and Rossetti Buildings, Millbank Estate.*—The Report of the Housing of the Working Classes Committee contained the following paragraph:—

> "The Council is now proceeding with the erection of dwellings on the Millbank Estate. The estate is laid out so that seventeen blocks of dwellings may be erected, and these dwellings will provide accommodation for about 4,300 persons. One block only has so far been completed. In accordance with the usual practice, the Manager of Works was asked in December, 1898, whether he was prepared to erect two blocks of dwellings, to be called Leighton and Millais Buildings, at the amount of the Architect's estimate, viz., 12,380*l.* The Manager was not prepared to undertake the work at this amount, but before inviting tenders the Architect, under our instructions, endeavoured to arrange a schedule of prices with him for all the dwellings to be erected on the estate. The Manager, however, could not see his way to accept the schedule proposed. Tenders were, therefore, invited from selected firms, and on April 25, 1899, the Council accepted the tender, amounting to 12,380*l.*, of Messrs. Holloway Brothers for the erection of Leighton and Millais buildings. This tender was the lowest of the five submitted, and is at the amount of the Architect's estimate which will enable the dwellings to be erected without involving a charge on the county rate. Leighton and Millais buildings are two of the blocks of dwellings which will face the proposed open space on the estate. The other two blocks which will face this open space are Turner and Ruskin buildings, whilst two further blocks (Romney and Rossetti buildings) will be erected immediately at their rear. The sites of these four blocks can therefore be readily enclosed with those of Leighton and Millais buildings, so that building operations in respect of all six blocks could be expeditiously carried on at the same time by the same builder. Sketch plans and preliminary estimates of Turner, Ruskin, Romney, and Rossetti buildings have been already prepared, and these buildings will be similar in character to Leighton and Millais buildings. As the Architect strongly advised us that such a course would save both time and expense, we instructed him to ascertain whether Messrs. Holloway Brothers. would be prepared to proceed at once with the erection of Turner, Ruskin, Romney, and Rossetti buildings on the same terms and at the same schedule of prices as they had already undertaken to erect Leighton and Millais buildings. This schedule is in the aggregate lower than that which the Manager did not see his way to accept; it has been most carefully analysed in regard to the most recent data available, and we are advised that there is no recent schedule of any contract in hand which is so economical. The architect has now reported to us that Messrs. Holloway Brothers are willing to undertake the work, and we therefore propose that the contract for Leighton and Millais buildings should be extended as above indicated. The chief considerations that have led us to bring this proposal before the Council are—first, the necessity for expedition in the erection of the dwellings; and, secondly, the question of cost. The proposal we make will, if adopted by the Council, greatly accelerate the erection of the four blocks of dwellings now under consideration. On the other hand, if the Council should determine to adhere to the usual procedure, the process of preparing for fresh tenders involving bills of quantities, and the time necessary to enable such tenders to be received, will entail so much delay that the best months of the building season will have passed before building operations can possibly be commenced. Moreover, in view of the unsettled state of the building trade, it is highly improbable that such a satisfactory offer could again be obtained. The details of the four blocks are as follows—Turner and Ruskin buildings each contain 6 four-room, 78 three-room, and 86 two-room tenements. The average size of the living rooms is 157 square feet and of the bedrooms 112 square feet. The Architect estimates that the cost of these two block will not exceed 46,420*l.* for buildings and 700*l.* for architect's expenses, incidentals and supervision (not including quantities). Romney and Rossetti buildings each contain 50 three-room and 70 two-room tenements. The average size of the living rooms is 141 square ft., and of the bed-rooms 102 square ft. The Architect estimates that the cost of these two blocks will not exceed 27,930*l.* for buildings and 570*l.* for architect's expenses, incidentals and supervision (not including quantities). We have, therefore, forwarded estimates of 47,120*l.* and 28,500*l.* to the Finance Committee, who will report thereon in due course. We recommend—That the estimates of 47,120*l.* and 28,500*l.* submitted by the Finance Committee, in respect of the erection of Turner and Ruskin, and Romney and Rossetti buildings, Millbank Estate, be approved; that the offer of Messrs. Holloway Brothers to erect the dwellings on the same terms and at the same schedule of prices as that on which they have contracted for the erection of Leighton and Millais buildings on the same estate be accepted; that the Solicitor be instructed to prepare the necessary contract, and that the seal of the Council be affixed to such contract when ready."

A long discussion took place on this, during which the opinion was expressed by several councillors that such a large work ought to be put out to tender. Messrs. Holloway Brothers, it was stated, had tendered for the Leighton and Millais Buildings, and their tender was 8 per cent. lower than that of the Works Department, and for this reason the Architect recommended that the work of erecting Turner, Ruskin, and Romney, and Rossetti buildings be given to the same contractors. It was also stated that in a second offer by the Works Department for Leighton and Millais buildings, their tender was 3½ per cent. higher than Messrs. Holloway's. This statement was denied by several speakers, but Mr. Waterlow, Chairman of the Building Act Committee, adhered to it, and it was substantially confirmed by the Architect in a letter which was read. Mr. Burns spoke very strongly against what he called the favouritism shown towards Messrs. Holloway. On a division the recommendation was agreed to by a large majority.

*Tower Bridge Northern Approach.*—The Improvements Committee recommended, and it was agreed, that the estimate of 9,000*l.* submitted by the Finance Committee be approved, and that the Improvements Committee be authorised to acquire from the London and North Western Railway Company, upon the terms stated in the Committee's report, the land needed for widening Mansell-street at Nos. 60 to 78, and to take all necessary steps for completing the widening of that portion of the thoroughfare, as shown upon the plan approved by the Committee on May 3, 1899.

*The Old Tudor House, Bromley.*—The question of pulling down this house (for details of the matter, see our last issue, page 469) was again discussed.

Mr. B. Cooper last week moved an amendment to refer the report back for further consideration, on the ground that the house was a Tudor building of much archæological interest.

Mr. Renwick Seager said antiquarians were agreed that the demolition of the house would be a loss to London.

Mr. Torrance supported the Committee's recommendation, believing that this ramshackle building was of no historic interest, and that it would be a crime to deprive a crowded neighbourhood of any portion of the proposed open space.

Mr. Bull said the house was an interesting specimen of architecture, dating back to the reign of William and Mary, and ought to be preserved.

Colonel Rotton, Chairman of the Parks Committee, said the house had no artistic merit, and would cost 800*l.* to renovate. He thought that amount would be far better expended in laying out the land.

After further discussion, the Council divided:—For the amendment 65, against 31. The report was therefore referred back to the Committee.

*Deposit of Refuse in Plumstead.*—It was agreed that the Public Health Committee be authorised to take proceedings against, or in default of, the Vestry of Plumstead respecting the deposit of offensive refuse in contravention of the Council's by-laws, should necessity arise in the future.

*Building Trades School.*—On the recommendation of the Technical Education Board it was resolved: "That in the event of the Ferndale-road premises, known as the Brixton Baths, being sold or used for other than educational purposes, a sum of 4,000*l.* (in addition to the 4,000*l.* already sanctioned) be paid by the Council to the Vestry of Lambeth; and that the solicitor be instructed to make the necessary arrangements."

*Ground Plan of London.*—It was agreed that the supplemental estimate of 750*l.*, inclusive, submitted by the Finance Committee, be approved, and that it be an instruction to the Corporate Property Committee to bring and keep up to date the latest issue of the 5-ft. ordnance survey, and that when the survey is complete information be supplied to the public upon payment of fees hereafter to be determined.

*Enlargement of the Hampstead Fire Station*—The Fire Brigade Committee recommended,

(*a*) That the supplemental estimate of 442*l.* 10s. submitted by the Finance Committee in respect of the enlargement and alteration by the Works Department of the Hampstead fire-engine station be approved; and that the Council do sanction in connexion with the work a further expenditure of that amount, or such part of it as may be found necessary.

(*b*) That 52*l.* 10s. (part of the before-mentioned amount of 442*l.* 10s.) be paid in full settlement of claims in respect of interference with the light and air of No. 53, Heath-street, and the inconvenience occasioned to the tenant owing to the rebuilding of the party-wall of those premises; and that the solicitor do complete the matter.

The recommendations were agreed to.

*New Fire Station for Islington.*—The following recommendation of the same Committee was agreed to:—"That, in the event of the manager of works reporting that he is not satisfied of the sufficiency of the architect's estimate of the cost of erecting the proposed Islington fire station, tenders for the execution of the work be invited by public advertisement."

*Remetalling Victoria Embankment Carriageway.* — The Highways Committee recommended, and it was agreed:—"That the Council do sanction the expenditure by the Highways Committee of a sum not exceeding 5,450*l.* for the remetalling of the carriageway of the Victoria Embankment, and the laying of iron pipes from one side of the road to the other for the mains required in connexion with the electric lighting of the Embankment and Westminster Bridge; that the work be carried out without the intervention of a contractor; and that the specification, quantities, and estimates be referred to the manager of works for that purpose."

*New Police Offices, Victoria Embankment.*—Messrs. Lawrance & Sons are the contractors for the erection of new police offices on the Embankment on the site hitherto occupied by the offices of the Civil Service Commissioners, and permission was granted them to erect a hoarding along the inner side of the footway of the Embankment.

*Elthorne-road, Islington.* — On the recommendation of the Improvements Committee it was agreed that the amount of the Council's contribution to the Vestry of Islington, in respect of the widening of Elthorne-road between Holloway-road and the entrance to Messrs. Carter, Paterson's premises, be 3,454*l.*; and that the matter be referred to the Finance Committee with a view to the payment of the money.

*Overhead Traveller, Crossness Outfall.*—On the recommendation of the Main Drainage Committee it was agreed that the tender of Mr. J. M. Henderson, amounting to 416*l.*, for the supply and fixing of a 10-ton overhead traveller at the Crossness Outfall, be accepted.

*Dollis Hill Estate.*—On the recommendation of the Parks and Open Spaces Committee it was resolved: "That the Council do inform the Voluntary Committee formed for acquiring the Dollis Hill estate for the purpose of a public recreation ground, that upon the land being secured and dedicated for ever to the public, and upon Parliamentary Powers being obtained to enable the Council so to do, and subject to an estimate being at the proper time submitted to the Council by the Finance Committee, as required by statute, the Council will contribute a sum not exceeding 3,000*l.* towards the cost of purchasing the land, conditionally upon the Willesden Urban District Council undertaking to maintain the place for ever as a place of public recreation; and that it be referred to the Parliamentary Committee to take steps to insert in the General Powers Bill of next Session any clauses necessary to give effect to this resolution."

*New Theatres, Whitechapel and Woolwich.*—The Theatres and Music Halls Committee reported that they had considered nine drawings of a theatre which it is proposed to erect in the Whitechapel-road, on the site of premises known as Wonderland, which were until last November licensed by the Council for music. The total boundary of the site of the proposed theatre is 556 ft., of which 31 ft. front to the Whitechapel-road, 155 ft. to a footway 20 ft. wide, 51 ft. to a footway 15 ft. wide, 93 ft. to a footway 10 ft. wide, and 226 ft. to buildings. The total frontage to thoroughfares of the width required by the regulations is 186 ft., whereas it should be 278 ft. To compensate for this, however, 144 ft. of frontage are given on to footways of 10 ft. and 15 ft. in width. A great improvement, which has been sanctioned by the Council, has been effected in the locality, as a footway 20 ft. in width will be formed between the Whitechapel-road and Charlotte-street. The theatre will have seating accommodation for 1,646 people, and the regulations as to construction will be strictly adhered to. The drawings were approved.

The Committee had also considered eight drawings of a theatre which it is proposed to erect in Wellington-street and Lower Market-street, Woolwich. The former street is 56 ft. wide and the latter 35 ft., and 237 ft. (4 ft. less than half) of the total boundary of the site abut on these streets. The theatre will have seating accommodation for 1,680 persons, and the arrangements generally are satisfactory. There is, however, a question for the Building Act Committee in respect of a projecting portico and an enclosed area and steps. The Committee recommended that the eight drawings in regard to the theatre which it is intended to erect in Wellington-street and Lower Market-street, Woolwich, be approved subject to the Building Act Committee being satisfied as to the projecting portico and enclosed area and steps. The recommendation was agreed to.

Having transacted other business, the Council adjourned for the Whitsun recess.

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## APPLICATIONS UNDER THE LONDON BUILDING ACT, 1894.

AT the meeting of the London County Council on Tuesday, the Building Act Committee brought up the following list of applications under the 1894 London Building Act. Those applications to which consent has been given are granted on certain conditions.*

### *Lines of Frontage.*

*Lewisham.*—A one-story stable and coach-house on the south side of Taunton-road, Lee, at the rear of Nos. 32 and 34, Burnt Ash-road (Mr. W. T. Gates for Mr. W. Browne).—Consent.

### *Deviation from Certified Plans.*

*Strand.*—Certain deviations from the plans certified by the District Surveyor, under Section 43 of the London Building Act, 1894, so far as relates to the proposed re-building of the "Nag's Head" public-house, James-street, Covent Garden, at the corner of Floral-street, on the site of Nos. 10 and 10½, James-street, and portion of the site of stabling in Floral-street, at the rear (Mr. P. E. Pilditch for Mr. M. J. Atkins).—Consent.

*Lambeth, North.*—Certain deviations from the plans certified by the District Surveyor, under section 43 of the London Building Act, 1894, so far as relates to the proposed re-building of the "Rising Sun" public-house on the site of Nos. 54 and 56, York-road, Lambeth, at the corner of Vine-street (Mr. R. Sawyer for Mr. R. H. Barnes).—Refused.

### *Formation of Streets.*

*Lewisham.*—That an order be issued to Mr. J. Lockhead, refusing to sanction the formation or laying out of nine new streets for carriage traffic, and of two new streets for foot traffic, out of Athenlay-road, Ivydale-road, Lewisham (for the Governors of Christ's Hospital).—Agreed.

### *Buildings for the Supply of Electricity.*

*Greenwich.*—A deviation from the plans approved on March 7, 1899, for the construction of a generating-station and works on the north-west side of Blackwall-lane, East Greenwich, so far as relates to the extension of the engine-house (Mr. F. Forbes Glennie for the Blackheath and Greenwich District Electric Light Company, Limited).—Consent.

*Deptford.*—Additions to two furnace chimney-shafts at Stowage Wharf, Deptford (Messrs. R. B. Hilton & Sons for the London Electric Supply Corporation).—Refused.

### *Artisans' Dwellings.*

*Bermondsey.*—That the Council do make an order as follows:—Whereas Mr. J. Moore, of No. 33, Finsbury-square, London, E.C., on May 2, 1899, under the provisions of Section 42 of the London Building Act, 1894, delivered on behalf of the Improved Industrial Dwellings Company, Limited, at the County Hall, plans of a laundry addition on the flat roof of a block of intended dwelling-houses, to be inhabited by persons of the working class, and proposed to be erected, not abutting upon a street, between Waleran-buildings, Old Kent-road, and the garden at the rear of No. 155, Old Kent-road, Bermondsey. . . . Now the Council, in the exercise of its powers under Section 42, of the said Act, but in no way otherwise than under such section, does by this order sanction the said plans.—Agreed.

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## THE BUILDING TRADE DISPUTE.

A MEETING of masters in the Lancashire and Cheshire building trades was held at Manchester on the 11th inst. Those present included a deputation from the Yorkshire Employers' Federation. After discussion, it was resolved to recommend the National Association of Master Builders to order a general lock-out of 25 per cent. of all unionists in the building trades of the country as soon as convenient.

On the 12th inst., a conference of the Northern Counties Federation of Building Trade Employers was held at the Grand Hotel, Middlesbrough, Mr. Rankin, of Sunderland, presiding, when it was resolved to recommend the National Association of Master Employers to declare a lock-out of 25 per cent. of the union workmen throughout the country, the same to take effect as soon as practicable after the Birmingham Conference on the 18th inst. The meeting endorsed the action of the Yorkshire Federation in locking out 25 per cent. of their men, and further resolved to recommend the Tyne and Wear masters to refuse the joiners' application for an advance of wages. A deputation was appointed to meet the joiners.

The lock-out of the 25 per cent. of the union men engaged in the various branches of the Sheffield building trade came into operation on Saturday.

The trade unions whose members are engaged in the various departments of the building trade held on the 15th inst.—through their representatives—a conference in Manchester. They had under discussion the question as to the assurances asked for by the National Association of Master Builders of Great Britain and Ireland. The unions represented were the Operative Stonemasons' Society, the House and Ship Painters' Association, the Amalgamated Society of Carpenters and Joiners, the United Operative Plumbers' Association, the Amalgamated Society of House Decorators and Painters, the Operative Bricklayers' Society, the National Association of Operative Plasterers, the General Union of Operative Carpenters and Joiners, the National Amalgamated Society of Operative House and Ship Painters and Decorators, the United Builders' Labourers' Union, the Manchester Unity of Bricklayers, and the Gas Workers' and General Labourers' Union. Mr. W. T. Wilson, the chairman of the Amalgamated Society of Carpenters and Joiners, was elected chairman of the Conference, and Mr. G. B. Cherry, of the Operative Plumbers' Society, was appointed secretary. The Conference sat in private. The following resolution was agreed to.

**"That we condemn in the strongest possible terms the untrue and misleading statements contained in**

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* Names of applicants are given in brackets. Buildings are new erections unless otherwise stated.

the manifesto issued by the Yorkshire Federation of Master Builders. And as we are of opinion that the points raised by the master builders are not of sufficient importance to justify a lock-out in the building trades, we are prepared to meet the National Association of Master Builders in open conference and discuss the questions at issue."

It is to be hoped that this may lead to a conference betweeen the parties, and that the dispute may soon be brought to an end.

A meeting of the Manchester and Salford Master Builders' Association was held at Manchester on the 16th inst., when delegates were appointed to the conference of Master Builders at Birmingham on the 18th inst. The delegates were not provided with specific instructions as to adopting any particular attitude.

## *COMPETITIONS.*

THE CARTWRIGHT MEMORIAL HALL, BRADFORD.—The Cartwright Memorial Hall Committee met on the 11th inst. at the Bradford Technical College, Alderman T. Speight presiding. The purpose of the meeting was to confer with Mr. John W. Simpson, of London, a member of the firm of architects whose designs for the Cartwright Memorial Hall have been awarded the first premium in the competition recently decided. Eventually it was decided that Messrs. Simpson & Allen's designs and plans should be adopted, and the hall erected in accordance therewith. Mr. Simpson was instructed to proceed with the preparation of the detailed designs and working drawings.

## *ARCHITECTURAL SOCIETIES.*

EDINBURGH ARCHITECTURAL SOCIETY.—On the evening of Wednesday, the 10th instant, the session was brought to a successful conclusion, when a paper on "Furniture" was read by Mr. John Ednie. The styles of furniture in Italy, France, Germany, Spain, and England from the Renaissance downwards were lightly touched upon, choice examples being thrown on the screen. The later periods of English work were then more fully dealt with. The lecturer next went on to discuss the adverse circumstances of furniture production to-day, Commercialism and the state of public taste being the chief drawbacks. The conclusion of the paper was a strong plea for leaving the old styles on which one cannot improve and vindicating ourselves as designers by producing original work. In this connexion examples of what Mr. Ednie termed the "Arts and Crafts" style were shown. In the discussion which followed, these examples of the new style were freely criticised. Mr. A. Lorne Campbell, the President, occupied the chair.

# Correspondence.

*To the Editor of* THE BUILDER.

### ARCHITECTURE A FORGOTTEN ART.

SIR,—Every architect will feel grateful to Mr. Leonard Stokes for calling attention to the scant courtesy meted out to architecture by the President of the Royal Academy, in his speech at the recent dinner. It has occurred to me, however, that architects themselves—or at least those connected with the Royal Academy—may be in a measure responsible for the position. Mr. Leonard Stokes himself realises the impossibility of adequately representing the work of the architect on the walls of Burlington House, and this difficulty, coupled with the fact that the art of architecture is subordinated to the art of *architectural drawing*, makes any allusion to the position or progress of the real art extremely difficult; and this state of things, it seems to me, must exist so long as a poor drawing of a fine piece of work is rejected in favour of a fine drawing of a poor work, and the name of the artist, who in reality caused its acceptance, is suppressed in the catalogue. Under such circumstances, any allusion to the architectural exhibits would seem to entail a rather elaborate dissertation on the exact relation of these exhibits to the real art of architecture outside the Academy.

R. F. CHISHOLM.

*Heidelberg*, May 14, 1899.

## BOOKS RECEIVED.

CONFLAGRATIONS DURING THE LAST TEN YEARS. By C. E. Good (British Fire Prevention Committee).

THE VALUATION OF LAND AND HOUSES. By D. Thos. Davies and Ivor Curtis. (*Estates Gazette* Office).

## *OBITUARY.*

MR. J. E. GOODCHILD.—We announce with regret the death of Mr. John Eastty Goodchild, architect, in the eighty-ninth year of his age. He owed his architectural education to the late Professor Cockerell, with whom he was so intimately connected during nearly the whole of the Professor's career as to be familiarly known to most of the architects of that day, both in London and Liverpool. His own works were chiefly of a private character, including several city buildings, of which the best known is the North British and Mercantile Insurance Offices in Threadneedle-street. In 1888 he compiled and printed for private circulation "A Study of the Halicarnassian Marbles," and in 1889 "A Study of the Marbles from Ephesus," containing his restoration of the Temple of Diana at Ephesus, and in which he pointed out what he considered the errors of the discoverer (Mr. Wood). Between the ages of eighty and eighty-eight he prepared a number of fine drawings of various Greek and Egyptian temples, &c., and was engaged on a set of studies up to within about a week of his death.

## *GENERAL BUILDING NEWS.*

NEW CHURCH, DRIFFIELD.—The foundation-stone of St. John's Church, Driffield, was laid on the 6th inst. Some progress has already been made with the building of the church, which will be constructed principally of brick. The church will consist of a nave and chancel, with transepts. The drawings show a tower at the intersection of the nave and transepts. The chief entrance is on the west facing Beverley-street; double doors will here be provided, and other entrances will be on the north and south aisles, and the vestry will also be approached by an outer door. The church will be capable of seating 419 adult persons; the nave accommodating 276, the north and south aisles and transepts 44 each, the chancel aisle 27, and the chancel 28. The cost of the fabric and the stalls is estimated at about 3,500*l.* Messrs. W. Leason & Son, of Driffield, are the contractors, and the woodwork will be done in the town by Messrs. Shepherdson & Son, Limited. The architects are Messrs. Hicks & Charlewood, of Newcastle-on-Tyne. Mr. Joseph Berry, of Driffield, is the clerk of works.

CRICHTON CHURCH RESTORATION, N.B.—This collegiate church was one of many founded in the fifteenth century by nobles and gentry in the south of Scotland. The restoration, so far as completed, presents it nearly as it was when wrecked by the misdirected zeal of the Reformation mobs. After having remained for three centuries more or less in a ruinous condition, so far as architectural details of doors and windows are concerned, the work of restoration has been heavy. In 1645 the church was constituted the parish church, which was located in the transepts, and in the early part of the present century, owing to the increase of population, the church was rebuilt in the larger area of the choir. The plan comprises choir, tower, and transepts, the nave never having been erected. The church, so far as it has been restored, has all the characteristic features of its architecture complete with the exception of the pinnacles, the east window, and sacristy. The restoration of the interior masonry was heavy work from the great damage done to walls and pillars and arching by the gallery beams, wall-screen fixings, &c. The organ case and organ are erected on the under porch. All woodwork above the floor is in oak, and fumigated. Seating is of the modern design, with moulded bench ends. The roof of the tower has been renewed, the parapet repaired, its windows opened out, and a system of spouting and drainage carried out. The restoration, though not yet complete, has at least succeeded in recreating the original design as far as its masonry is concerned, and for the first time for 300 years after it was dismantled its interior can be seen. The east window and one of the side windows have been filled with memorial designs in stained glass, and a wall-screen at the east window and communion table, from Messrs. Jones & Willis's factory, have been given. The whole of the works have been carried out (from the plans by Messrs. Hardy & Wight, of Edinburgh) by tradesmen in the parish. —*Glasgow Herald.*

BAPTIST CHURCH, HERNE HILL.—The Church Hall erected by the Baptists of Herne Hill at the corner of Winterbrook-road was opened recently. This building will serve the purposes of the church pending the completion of the larger scheme, which includes the erection of a church and a school-room on the adjoining vacant land. The amount of the contract for the erection of the hall was 2,259*l.* The cost of the complete scheme will be 9,000*l.* The building has been erected by Messrs. W. J. Mitchell & Sons, of Dulwich, from the plans of Mr. Charles Barry.

PRIMITIVE METHODIST CHURCH, WEST BROMWICH.—The stone-laying ceremony of a new Primitive Methodist Church, to be built in the Lyng district of West Bromwich, took place on the 8th inst. The new church, to be erected from the plans of Mr. Alfred Long, will cost 4,990*l.* The building, which will accommodate 640 worshippers, is designed in the Early English style, and a feature of the exterior is a square tower, finished with a parapet and pinnacles. The work is being carried out by Mr. John Mullin, of West Bromwich.

RESTORATION OF A CHAPEL IN WORCESTER CATHEDRAL.—The chapel, which has been used as the baptistry, in the north transept of Worcester Cathedral, has been under restoration. The materials of the new altar and reredos have now arrived. The work was designed by Mr. R. A. Briggs, architect, of London, and has been carried out by Messrs. Martyn & Co., of Cheltenham.

RENOVATION OF PARISH CHURCH, AYLESBEARE, NEAR EXETER.—The parish church at Aylesbeare has just been opened after renovation. The nave has been re-roofed, and the north wall set right and supported by buttresses. The gallery has been removed, the west windows and the interior of the tower have been restored, and the east window filled with stained glass, the work of Mr. Drake, of Exeter. Mr. Harbottle, of Exeter, was the architect.

CATHOLIC CHURCH, CROSSGAR, CO. DOWN.—The new church of the Holy Family, Tyconnett, Crossgar, was dedicated on the 14th inst. It has been built by Messrs. Fitzpatrick Brothers, of Belfast, from the designs of Mr. J. J. McDonnell, J.P., architect, of the same city.

CATHOLIC CHURCH, TARMONBARRY, IRELAND.—On the 14th inst. was consecrated the Church of the Sacred Heart, Tarmonbarry. The building consists of chancel, nave, and side chapel, and was erected by Mr. Thomas Fee, of Longford, from the design of Mr. Kilgallon, of Sligo.

CHURCH AT THE LUNATIC ASYLUM, CORK.—On the 10th inst. the new Catholic Church at Cork Lunatic Asylum was consecrated. The church consists of a nave, two aisles, chancel, and side chapel, with sacristy, organ-loft, &c. The building occupies an area of about 120 ft. by 70 ft. The dressings of the doors and windows are of Cork limestone, the walls being of rubble from a local quarry. The building was erected by Mr. Patrick Murphy, of Cork, from the designs of Mr. W. H. Hill.

SUNDAY SCHOOLS, &C., ST. PAUL'S, WEST HARTLEPOOL.—The foundation stone has just been laid of the new Sunday schools, parish hall, and institute in connexion with St. Paul's Church, West Hartlepool. These buildings, which it is estimated will cost about 5,000*l.*, are in course of erection in Murray-street. The accommodation provided for Sunday school purposes is for 1,150 children. Seating accommodation in the hall for other purposes is 600. The buildings contain on the ground floor a hall 82 ft. by 32 ft., having platform and retiring rooms at the south end facing Milton-road, and a gallery at the other end. On either side are class-rooms, on the west side, facing into Milton-road, is an infants' class-room. On the first floor, approached by a separate entrance, is the institute off Murray-street, in which are games-rooms, billiard-room, &c. The buildings are to be faced with Commondale bricks and stone dressings, and Welsh slates, and are intended to be heated by hot water. The contractor is Mr. C. T. Watson, of West Hartlepool. The buildings have been designed and are being carried out under the superintendence of Mr. J. H. Morton, architect, of South Shields.

TECHNICAL SCHOOLS, OLDBURY.—Foundation stones have just been laid of "The Technical Institute Continuation Schools," Oldbury. The buildings are being erected by Mr. J. Dalton, of Blackheath, from plans by Messrs. Wood & Kendrick, architects, of West Bromwich. They comprise, in addition to the room for various science and art classes, workshops for giving manual instruction, a laboratory, lecture theatre, examination, committee, and exhibition rooms, teachers' and secretary's apartments, caretaker's house, &c.

BOARD SCHOOL, NOTTINGHAM.—The Mundella Higher Grade School and School of Science, in the Meadows, Nottingham, was opened on the 29th ult. The school is in two separate blocks, divided into the Higher Grade and Science Department, and the laundry, gymnasium, and dining-rooms. In these, accommodation is provided for 402 girls and 502 boys; whilst in a neighbouring building 230 infants will be accommodated. The front of the Graded school, which is in Mundella-road, is of brick, with yellow terra-cotta dressings. On the ground floor is situate the girls' school; on the first floor is the boys' school; and the laboratories, lecture-room, and drawing-class room occupy the second floor. Entrance to the girls' school has been established on Mundella-road, the managers' entrance being also at this point. The boys and infants will enter their schools from the Collygate-road. There is on the ground floor a girls' assembly hall, which is 64 ft. by 30 ft. 6 in., and is approached from two entrances, and on the same floor is the cookery-room, scullery, and cloak-room. The chemical laboratory, which is on the second floor, is 51 ft. 3 in. by 19 ft. 6 in.; the drawing class-room is 31 ft. by 27 ft. 6 in.; and the lecture-room is of the same dimensions. On the south side of the Graded school, in a separate building, are the gymnasium, the laundry, and separate dining-rooms for girls and boys, provided with cooking ranges. The infants' school in Collygate-road, on the north side of the Graded school, has a central hall, 48 ft. by 27 ft., and has two entrances. Three infants' class-rooms and one "babies'-room" have been provided. All the walls in the interior of the buildings, up to 4 ft. high, are faced with white glazed bricks. Mr. R. C. Clarke, of Nottingham, was the architect, his plans being accepted in competition. The contract for the erection of the schools and outbuildings was entrusted to Mr. Enoch Hind, the clerk of the works being Mr. W. H. Price. The contract for the schools and outbuildings, exclusive of fittings, amounted to 17,146*l.*

ART SCHOOL, BALSALL HEATH, BIRMINGHAM.—The memorial-stone was laid on the 8th inst. of the building which is to serve as a branch school of art for the Balsall Health district of Birmingham. The site is at the corner of Lime-grove and Moseley-road, and has a principal frontage of about 65 ft. A strip, a yard wide, has been given up to the widening of Lime-grove; and the new building, which occupies the front half of the remainder, has been planned with a view to its ultimately covering the whole of the land. The building when complete will present a façade of Classic character to Moseley-road, with the front entrance block advanced 7 ft. in front of the side wings, and crowned with a circular pediment. A large entrance hall will lead through an open colonnade to a stone staircase in the rear, which will readily admit to all parts of the building. Leading directly from the hall there will be rooms for the masters, the curator, and the library. Under the front portion of the building will be a basement to be devoted to modelling and metal work; and on the first floor, over the entrance-hall, a lecture-room will be provided, with an annexe for building construction. The rear portion of the building will consist of three class-rooms for elementary drawing, design, and study of the antique. They will be approached by a corridor running along the central axis of the building, and this will constitute the main artery of communication when the building is extended. The work is being carried out from the designs of Mr. W. H. Bidlake, architect, by Messrs. Smith & Pitts, who are under contract to complete the school by July 31 next, for the sum of 6,602*l.*, minus an allowance of 100*l.* for the old buildings.

PREMISES, GLASGOW.—A ten-story building (100 ft. high from street level and 110 ft. from basement to attics) is to be erected in St. Vincent-street, Glasgow. The building is to be erected by Mr. J. Millar, from the designs of Messrs. James Salmon & Son, architects.

NEW PAROCHIAL HALL, ANFIELD, LIVERPOOL.—On the 10th inst. a new parochial hall and new Sunday schools were opened in connexion with St. Simon and St. Jude's church. The new hall is situated in Watford-road, adjoining the church, and the design was prepared by Mr. Owens, architect. The contractors who had the erection of the structure in hand were Messrs. G. & J. Chappell, of Walton. The building really comprises a Sunday school capable of accommodating about 500 scholars, a parochial hall, and two class-rooms.

HOTEL, SOUTH SHIELDS.—The hotel, "The Britannia," at the corner of Charlotte-terrace and Claypath-lane, South Shields, has just been completed. The principal façade faces Westoe-lane. Internally the building consists of a smoke-room on the right of the main entrance a bar, 34 ft. by 16 ft., on the left, and behind the bar a sitting-room, and a wholesale and outdoor department with a side entrance. On the first floor is situated a billiard-room and a luncheon-room, the dwelling rooms being on the second floor. The architect was Mr. J. Wardle Donald. The general contractor was Mr. Robert Allison, of Whitburn, the other contractors being Messrs. Christie & Sons, slating; Mr. H. Niven, plastering; Messrs. T. Coulson & Son, glazing; ornamental window glass, Mr. Laws; Mr. A. Holme, painting; Messrs. Dagleas & Sons, plumbing; Mr. J. T. Dagleas, electric lighting; and Messrs. Bainbridge & Crimson, iron work; all of South Shields. The granite was supplied by Mr. Robert Beall, of Newcastle.

PAVILION, ASHBROOKE, SUNDERLAND.—A pavilion for the Sunderland Cricket and Football Club was opened recently at Ashbrooke. The building is of red bricks, with a red tiled roof. Mr. J. B. Stott, of Sunderland, was the contractor, the architects being Messrs. James Henderson, jun., and John Hall.

PUBLIC HALL, HALIFAX.—The memorial stone of the new Public Hall at Halifax was laid on the 6th inst. The building is situated at the corner of Commercial-street and Fountain-street, and will accommodate 2,600 persons, the cost, including the site, being about 30,000*l.* The scheme includes the erection of shops and a restaurant. The architect is Mr. W. C. Williams.

DRILL HALL, WARE.—A new drill hall is to be erected at Ware on the site of Dickinson's Yard. The main room will be 108 ft. long and 52 ft. wide. The frontage to the building will be red local brick, with glazed brick plinth and window dressings; the splayed angles and jambs on either side of the entrance will also be of glazed brick. Tenders have been received from five contractors, the lowest being 5,250*l.*, from Messrs. J. Simpson & Son, of Paddington. The architect is Mr. Vivian Young, of Westminster.

WORKHOUSE EXTENSIONS, WITHINGTON, LANCASHIRE.—It is proposed to make some extensions at the Withington Workhouse. Plans have been prepared by Mr. J. B. Broadbent, architect, showing the way in which the ground recently bought by the Guardians from Earl Egerton will be utilised. There will be ultimately eight new hospital pavilions, of three stories each, and as each pavilion will contain ninety beds, the number of additional inmates to be provided for will be 720. The existing pavilions have 630 beds, so that the total accommodation, if the scheme is fully carried out, will be for 1,350 patients. The probability is that the construction of two new pavilions, containing together 180 beds, will meet the requirements of the Union for some time to come. The new pavilions will be of brick, and will be connected on the first and second floors by bridges.

CUSTOM HOUSE, QUEENSTOWN.—The new Custom House at Queenstown has just been completed. The building is constructed of red Ruabon bricks with terra-cotta dressings, and consists of two stories. On the ground floor is a room for the boats, and another fitted up for the use of the boatmen. On the upper floor is the general office. The building, which has cost about 3,000*l.*, was erected by Mr. F. Dolan, under the supervision of Mr. J. J. Fitzpatrick, clerk of works to the Irish Board of Works, from the designs of Mr. T. J. Mallow, the Chief Surveyor to the same Board.

BUSINESS PREMISES, BELFAST.—The block of business premises, for Messrs. Anderson & M'Auley, at the corner of Donegall-place and Castle-street, Belfast, is almost completed. Electric light has been fitted by Messrs. W. T. Coates & Son, who have also supplied the elevators. Messrs. F. Sage & Co., Limited, of London, have executed the shop fittings, the contractors being Messrs. M'Laughlin & Harvey, and the architects Messrs. Young & Mackenzie.

NEW WORKHOUSE, IPSWICH.—The new workhouse at Ipswich has just been opened. The entrance block is under the supervision of the porter and assistant matron. The main buildings are recessed 200 ft. from the side of the Woodbridge-road. They consist of a central administrative block and two pavilions, one for male and the other for female inmates, in the central block being the office and apartments of the Master. The dining hall behind is warmed with hot water. The workhouse is lighted throughout by electricity, generated on the premises. The warming is chiefly by open stoves, but the passages and dining-hall are heated by steam. There is accommodation in the various buildings for 369 paupers. The architects were Messrs. Salter & Adams and Mr. W. Lister Newcombe, whose designs were selected in competition. The tender of Messrs. G. Grimwood & Sons, of Ipswich, was accepted at 25,773*l.* Mr. Cockrill was clerk of works.

NEW SCHOOLS, LLANELLY.—Two schools were opened last week at Llanelly, providing accommodation for 770 children. They are built from plans prepared by Mr. J. B. Morgan, architect, of Llanelly.

PROPOSED TECHNICAL COLLEGE, WIGAN.—It is proposed to erect a technical college for Wigan and district. The site of the structure is situated in Library-street, a new thoroughfare which will form a main artery in the town, and the erection of the buildings will, it is estimated, involve an outlay of close upon 40,000*l.* The plans of Messrs. Briggs & Wolstenholme, of Liverpool and Blackburn were selected in competition.

THEATRE FOR HUDDERSFIELD. — Mr. Frank Matcham, architect, has been commissioned by the Northern Theatres Company, Limited, to design and supervise the erection of the new Grand Theatre at Huddersfield. The site, in Northumberland-street, contains an area of 1,826 square yds.

CONSERVATIVE CLUB, WIGAN.—The foundation-stone has just been laid of a new Conservative Club for St. Andrew Ward, Wigan. The club building will be a two-story building with bay windows. The plans have been prepared by Mr. J. A. Johnson, and the work of erecting the premises has been let to Mr. John Bott.

THE SIR JOHN CASS NEW SCHOOL AND INSTITUTE, ALDGATE.—The Bishop of London (Dr. Creighton) laid the foundation-stone recently of the new school and technical institute in connexion with Sir John Cass's Foundation. The ground floor of the institute provides a large lecture theatre, with accommodation for 225 persons, and four rooms for instruction in arts and crafts. The Board-room and secretary's office will be in close proximity. Upon the first floor there will be fine class-rooms, a library, and a reading-room The second floor comprises a chemical laboratory, a tailor's workshop, and a women's department, including a laundry, a cookery school, and dressmaking-room. Two rooms will be used as an art school, and there will also be a gymnasium. In the basement provision will be made for the building and allied trades. Messrs. Killby & Gayford were the builders, and Mr. A. W. Cooksey was the architect. We illustrated the building in our issue for July 23, 1898.

A NEW HOSPITAL FOR LEEDS.—A new hospital for women is about to be erected in Leeds. The existing building is to be devoted to the treatment of children. There is ample space on which to erect the new structure, the grounds in which the old building stands covering about an acre and a half. Three sides front Woodbine-place, Blundell-street, and Little Woodhouse-street respectively. The plans of the new buildings, which have been prepared by Messrs. Chorley & Connon, Park-row, and adopted by the committee of the institution, comprise an out-patients' department, a hospital for women, and a maternity department. It has been decided, however, to defer the erection of the latter until the building fund reaches larger proportions. The estimated cost of the entire scheme is about 40,000*l.*, and of this the erection of the maternity department would absorb 17,000*l.* The out-patients' department will comprise an entrance-hall, a waiting-hall, an examination-room, and two consultation-rooms, each with ante-room and dressing-room. attached. There will likewise be a dispensary and drug store, accommodation for the hall porter, a room in which perambulators may be placed, and lavatory accommodation. The Women's Hospital will consist of three wards, each with eighteen beds, and four single wards. On each of these three floors there will also be a day-room and a ward scullery. The principal ward will likewise have attached an operating-room, with an anæsthetic-room and recovery-room. A lift sufficiently large to take up a patient and bed will be provided. The ground floor of this department will be occupied by the administrative rooms, including board-room, waiting hall, reception-room, accommodation for the medical staff, the house-surgeon, the matron, and nurses, and the kitchens. The boiler, engine, and laundry, &c., will occupy the basement. The maternity department, occupying the first and second floors of the building devoted to it, will contain four wards, each with four beds, or sixteen in all, and the arrangement will be such that each ward, in case of need, can be isolated. Other necessary accommodation will be provided, including a small isolation hospital, with disinfecting apparatus, a bed lift, and portable baths. The administrative apartments will be on the ground. The plans show that the out-patients' department will be of one story; the women's hospital of four stories, and the maternity department of three.

IMPROVEMENTS, ABBEY MILLS PUMPING STATION.—At the Stratford Town Hall, on the 12th inst., Colonel A. J. Hepper conducted an inquiry on behalf of the Local Government Board, into the application of the West Ham Town Council to borrow 5,500*l.* for the purposes of erecting a boundary wall and to improve the wharf and offices at the Abbey Mills Pumping Station. The Borough Engineer, Mr. Lewis Angell, submitted a plan of the work and explained the scheme.

CATHEDRAL EXTENSION, PERTH.—At a meeting of the Chapter of St. Ninian's Cathedral, Perth, on the 12th inst., the plans of the late Mr. Pearson, R.A., were considered. Some eight firms of builders in England and Scotland have tendered for the work, and it is understood that the tender of Messrs. Fraser & Morton, of Perth, has been accepted. The total estimates amounted to close on 15,000*l.* An order was given to proceed at once with the chapter-house in memory of the late Bishop Charles Wordsworth; with the cloister connecting the chapter-house with the Cathedral; with the structural alterations on the choir; with the new organ chamber to be built abutting on the south transept; and with the internal furnishing, comprising Bishop's throne, canons' stalls, choir stalls, and pulpit, all of carved oak. The cost of this work will be about 10,500*l.*

NEW BANK, PLYMOUTH.—The new banking premises of the Consolidated Bank of Cornwall, Plymouth, were opened this week. The ground floor and basement are planned for the business of the bank, the upper floors being arranged as chambers or offices with a separate entrance at the southern end. The banking room or public office is about 60 ft. by 42 ft. by 20 ft. high. The ceiling is supported by four Scagliola Corinthian columns. The woodwork of the room is entirely of mahogany, except the floor, which is of oak blocks set on concrete. The room will be lit by electric light from seven large pendants from the ceiling, and a number of standards on the desks and counters. The warming is by means of hot water from a boiler in the basement, with ornamental radiators fixed around the walls. The entire ground floor is built with steel joists and concrete, so as to be fireproof. The basement story contains various strong rooms, stationery rooms, deed inspection room, heating chamber and other apartments, and a hydraulic lift is provided for the purpose of taking the books from the banking rooms to the strong rooms. The exterior of the building is of limestone and granite up to the level of the ground floor windows, and above this of Portland stone. The architect is Mr. H. J. Snell, of Plymouth, and the contractors Messrs. Tozer & Son, also of Plymouth.

## *SANITARY AND ENGINEERING NEWS.*

KEW BRIDGE.—In consequence of the agitation made recently by those engaged in the carrying trade on the Thames, above Kew Bridge, on account of the inadequate width and height of the arches of the temporary structures to be erected during the construction of the new bridge, the Joint Committee of the Middlesex and Surrey County Councils have agreed upon a modification of the original plans, involving a cost of 500*l.* The original designs showed for both temporary structures a central opening of 60 ft., with a headway of 14 ft. above Trinity high-water mark, and side arches 40 ft. wide. It is now proposed to give a central working opening of 75 ft., with a headway of 15 ft.

REFUSE DESTRUCTOR, BRIDLINGTON.—A special meeting of the Bridlington Urban Council was held on the 9th inst., when the deputation which earlier in the year went on tour in the North of England visiting refuse destructors submitted their report and recommendations. Mr. Sawdon, in submitting a motion that a refuse destructor be erected within the district, said the deputation recommended the Council to cause a Beaman & Dea's destructor to be procured, and referred to the fact that at Fleetwood, Morecambe, Barrow, Cardiff, and other places similar destructors were being erected. Mr. J. Rennan seconded, and the motion was carried.

## *STAINED GLASS AND DECORATION.*

Memorial Window, St. Michael's Church, Appleby.—A stained glass window, the work of Mr. C. E. Kemp, of London, has just been placed in this church as a memorial to the late Mr. C. P. Colnaghi.

Windows, St. James's Church, Nottingham.—Two stained glass windows have recently been dedicated in this church. Both windows are the work of Messrs. Salisbury & Davies, of London and St. Albans, the masonry having been executed by Mr. Clark, of Lenton.

Windows, St. Stephen's, Hyson Green, Notts.—Two stained glass windows, one in the west end and one in the north-west end of this church, were dedicated on the 11th inst. The west window is divided into two parts. the left half representing the baptism of Christ and the right half the Transfiguration. The north-west window represents the presentation at the Temple. The work has been carried out by Messrs. Thomas Powell & Son, from designs by Mr. W. D. Caröe.

## *FOREIGN.*

France.—On Sunday last, at Père la Chaise, the monument erected by public subscription to Charles Floquet was inaugurated. This monument is by M. Dalou, the architectural part having been designed by M. Formigé. Before a column supporting the bust of Floquet is a tribune on which are flowers and palms. On the steps which lead up to it is an allegorical figure of the Republic, who is placing a crown on the tribune.——The work of rebuilding the fountain of Chatelet, has just been commenced. It was the work of Bralle and was built in 1806. M. Blanchard, sculptor, has been commissioned to remake the four decorative figures by Boizet, which represent Law, Force, Prudence, and Vigilance.——A bust of Racine has just been inaugurated at the Port Royal des Champs. The work is by M. Jean Féra.——Last Sunday, at Montdidier, a new Hotel de Ville was inaugurated. It is by M. Schmith, architect. The style of the building is in the Louis XV. age, and the sculptures are the work of M. Lucien Pallez.——M. de Saint Marceau has just submitted a model for the monument of Alexandre Dumas *fils*, which is to be erected on the Place Malesherbes, where the statue to the Dumas père, by Gustave Doré, already stands. This monument will consist of three figures, Dumas *fils* and two allegorical figures, one representing "Theâtre" and the other "Feminism," of which the great author was an apostle.——A Palais de Beaux Arts is to be built at Nice to enable them to have a permanent exhibition there.——In September the monument will be inaugurated at Chantilly in memory of the Duc d'Aumale. The equestrian statue is by Gerome, the pedestal by M. Daumet, member of the Institute. It will be decorated by bronze bas reliefs by M. Gerome. The whole monument will be 8 mètres high.——The Congress of the Société Archeologique Française will be held this year at Macon from the 14th to the 21st June.——The Government has just opened a competition for the designs for the diplomas to be given in the 1900 Exhibition. The sketches will have to be sent in on the 15th June, the Exhibition will be held from the 18th to the 25th June.

Bulawayo.—New buildings have just been erected at Bulawayo for the Mashonaland Agency. The new buildings are situate at the corner of Main-street and Sixth-avenue. Besides numerous suites of offices, they contain the High Court and telegraph office. The architect is Mr. W. Douslin, of Bulawayo. The building has a frontage on Main-street of 207 ft. and 100 ft. on Sixth-avenue. The material used is red and white freestone, quarried at Thabas Induna. The main building in Main-street is entered by a broad flight of steps leading into a large hall or vestibule, from which wide passages run to the different offices on the ground floor. A main staircase, constructed of native and Indian teak, leads to the upper floor. The fittings of the High Court and telegraph offices are made of the same woods. A most ingenious contrivance is provided for dealing with those destructive pests, the white ants. An air passage runs close to the foundations of all the inside and outside walls of the building. Trap-doors leading into this are placed at intervals where sulphur is burnt and the traps closed. The fumes from the burning sulphur are carried round the walls throughout the ground floor. This contrivance is in addition to the usual ones adopted. The portion of the building facing Main-street is divided into suites of offices of various sizes. One of the chief features is that each suite is provided with a large main office, and smaller private offices adjoining. The total cost of the building complete was 30,000*l.*—*South Africa.*

## *MISCELLANEOUS.*

Building Trades Exhibition.—In our notice of awards in the Smoke Prevention Department of this exhibition, the firm given as "Domestic Grates Co." should have been "Domestic Crater Co."

Court of Common Council.—At the meeting of the Court of Common Council on the 11th inst., the Finance and Improvement Committee submitted for approval a plan for making Lower Thames-street 60 ft. wide between Botolph-lane and Fish-street-hill, at an estimated cost of 199,000*l.*, towards which the London County Council had agreed to contribute 50,000*l.* The report was carried.—The Streets Committee submitted a further report on the question of the electric lighting contracts with the City of London Electric Lighting Company, which, in counsel's opinion, are null and void. It was resolved to authorise the committee to have a conference with the directors of the company. and to report to the committee the result.—On the motion of Mr. W. Cooper it was resolved to make an annual allowance of 500*l.* for the purchase of paintings or drawings to be exhibited in the Corporation Art Gallery at Guildhall.

Jerry Building in Sheffield.—At a recent meeting of the Sheffield City Council, Mr. Howell asked the Chairman of the Highway Committee whether the Highway Committee is taking any, and what steps, to put a stop to jerry building? Whether the committee will prosecute in some cases to endeavour to put down the evil? What steps are being taken with regard to the jerry-built property in Hangingwater-road. Mr. Furness, in reply, said the highway department was doing all it possibly could by means of four building inspectors to secure observance of the building by-law in the erection of all new property. The committee would continue to order prosecutions in all cases of infringements of the by-laws. At present their powers were limited to securing stability of buildings, the prevention of fire, and for purpose of health in the way of ventilation, air space, and drainage.—Mr. Charles Hobson presided over the usual monthly meeting of the Sheffield Federated Trades Council on the 12th inst. Mr. Shaw moved the following resolution :—"In the opinion of this Council the building by-laws of the city require to be more strictly enforced; we also consider that many important amendments are necessary to enable the Highways Committee to see that the citizens of Sheffield are provided with good, healthy houses; it is with great alarm we view the liberty allowed to speculating builders who are rapidly changing the picturesque suburbs of the city into dreary, unsightly, and insanitary slums." He remarked that the manner in which jerry buildings were being thrown together in all directions showed conclusively that the by-laws were not strictly enforced. He was told that the Highways Department was very much understaffed. He was certainly of opinion that more building inspectors were wanted, so that the work going on in the city could be more carefully watched. It was said that if they had better houses they would have to pay more rent. Better far that they should pay a little more rent than that they should suffer from sickness as a result of badly built and unhealthy houses. Sheffield has some of the most beautiful suburbs of any town in the kingdom, but those were all being spoilt by buildings which were a disgrace to the city. Mr. J. Bailey Howard seconded the resolution. The sanitary inspectors reported numerous cases of breaches of by-laws, which received no attention. Mr. J. C. Whiteley thought there should be in connexion with the Corporation a Works Department, apart from the Highway Department, so that such matters as building could receive much better attention. The resolution was carried.

West of England and South Wales Federation of Building Trade Employers.—On the 9th inst. the annual meeting of the West of England and South Wales Federation of Building Trade Employers was held at the Royal Hotel, Cardiff. There were present Mr. W. Symonds, of Cardiff, who presided; Messrs. A. Krauss, W. Church, George Humphreys, and F. N. Cowlin, Bristol; C. H. Long, E. J. B. Mercer, W. Webb, E. W. Wooster, and S. Ambrose, Bath; W. M. Blackburn and J. Linton, Newport; R. A. English, Stroud; J. E. Turner, D. Davies, A. J. Howell, and Holloway, Cardiff; F. J. Mingo and G. Herbert, Exeter; E. B. Turpin, A. N. Coles, and W. G. Lapthorn, Plymouth; M. Julian, Pontypridd; W. F. Drew, Chalford; A. W. Hook, Brimscombe; W. Lewis, Hereford; and H. J. Spear, secretary, Bristol. The President gave a hearty welcome to members of the Federation to the town of Cardiff, and then moved the adoption of the report. Mr. W. Church seconded the resolution, which was carried, and it was resolved that the report be printed and circulated among the members of the Federation. Mr. J. Linton presented the financial statement, which was adopted. On the motion of Mr. F. Cowlin, seconded by Mr. Blackburn, Mr. S. Ambrose, of Bath, was elected President. Mr. G. Humphreys proposed, and Mr. Lapthorn seconded, a vote of thanks to Mr. Symonds for the admirable manner in which he had conducted the business of the Federation during the last twelve months. This was carried by acclamation. Mr. Lewis moved, and Mr. Linton seconded, that Mr. Lapthorn be chosen vice-president, which was agreed to. The re-election of Mr. J. Linthorn as treasurer, on the motion of Mr. Long, seconded by Mr. Turner, followed. Messrs. E. J. B. Mercer, Bath, and C. Harris, Bridgwater, were re-elected auditors on the proposition of Mr. English, seconded by Mr. Blackburn. The question of the action taken by the Council of the county borough of Cardiff was introduced by Mr. A. Krauss, of Bristol, and he made some remarks relative to the subject. He then submitted the following proposition :—"That this meeting of the West of England and South Wales' Master Builders' Federation is of opinion that the action of the Cardiff Council with respect to the building trade dispute is a most dangerous precedent, and, having in view the fact that already there exists a fair wage clause compelling all County Council contractors to pay the full trade union rate of wages as agreed between the two respective parties, is an undue interference between employers and their workmen." Mr. Long seconded the proposition, and a discussion ensued, in which the difficulties of the position were explained. Mr. J. Linton referred to what had been done by the Newport Corporation, and said that this body was in accord with the Master Builders' Association of the town. The resolution was eventually carried, and it was resolved, on the motion of Mr. W. Church, of Bristol, seconded by Mr. E. B. Turpin, that a copy of the foregoing proposition be addressed to the town clerk of Cardiff. Mr. F. N. Cowlin introduced the question of the formation of a Builders' Foremen's and Clerks of Works' Association, and submitted a draft scheme which was adopted by the Lancashire Federation. He strongly urged the West of England and South Wales Federation to adopt a similar scheme, as he believed there was only one town in which such an association existed, namely, Bristol. He then proposed that a copy of a scheme should be forwarded to each association in Federation. Mr. W. M. Blackburn seconded the resolution, which was adopted, and this brought the business to a close. In the evening there was a dinner at the Royal Hotel, under the presidency of Mr. J. E. Turner, of the Cardiff Association. Mr. Long (Bath) proposed "The West of England and South Wales Federation." He considered they should hope for success in their movement, and not be discouraged by the work done up to now, as he felt that great results would be attained by the Federation. Mr. Symonds responded. He thought the Federation had not done a great work, but it had done a good and useful work, and whatever small failures there might have been they must persevere. The time had come when capital and labour must be affiliated; they must meet combination by combination, or else they would be a scattered flock. As to their local difficulty he did not think if the Cardiff Council knew what the real facts of the case were they would have acted as they had done. Mr. F. N. Cowlin proposed "Cardiff Master Builders' Association." He considered that they must acknowledge the part that Cardiff had played in the formation of the Federation, and the plucky determination in which the Cardiff Builders' Association had carried through their great strike. Mr. Turner, in acknowledging the toast, stated that he was sorry they could not have received the Federation in Cardiff at a more prosperous time. They did not know what the dispute with the masons would result in, but the employers would meet the men in a conciliatory manner. Mr. A. Krauss, in submitting "The Visitors," said he found in Cardiff that the tenders of local men were accepted, and that he did not complain of, but if they followed out that practice they must not be surprised if the rates went up. Mr. Ambrose returned thanks, and subsequently the health of the chairman was drunk on the proposition of Mr. Lewis.

Interesting Discovery at Bakewell Church.—The west front of Bakewell Parish Church is being restored, mainly with a view to the reopening of the fine Norman doorway at this end of the church. During the excavations the workmen laid bare the foundations thought to belong to a small western tower at the end of the south aisle, into which the arch behind the font originally opened in the eleventh century. Exact measurements were taken before the foundations were again filled in to be covered by the new pathway. It was conjectured that a similar foundation might be found on the north side of the doorway. This proved to be the case, for, on the 13th inst., the workmen exposed to view the foundations of another tower of almost precisely the same design and dimensions, but in a much better state of preservation. Although probably buried for centuries, the masonry still shows the chisel marks of the old Norman workmen, and the work, undoubtedly, belongs to the Norman period. Three steps are still existent.—*Nottingham Guardian.*

The Institute of Sanitary Engineers.—On Wednesday, the 10th inst., by invitation of the President, Mr. R. Reynolds Rowe, F.R.I.B.A., M.Inst.C.E., &c., a party of members of this Institute and their friends visited Ely and the neighbourhood.

On arriving at Ely the party was entertained to luncheon by the President, and afterwards conducted over the cathedral by him in his capacity as clerk of the works. They explored the building from the ground level to the leaden roof of the octagon lantern, as also the outlying buildings, "watch hill," &c., and a great deal of interesting information was given by Mr. Rowe.

THE SANITARY INSTITUTE.—At an examination in practical sanitary science, held in London on May 5 and 6, the following three candidates were granted certificates in practical sanitary science :—C. Barker, Bromley, Kent ; E. G. Browning, Bethnal Green ; and J. de Lanoy Dunk, Folkestone.

FONT AND LECTERN, ST. MARY'S CHURCH, ARNOLD, NOTTS.—On the 10th inst. a new font and lectern were dedicated in this church. The font is of Caen stone, and is octagonal in shape, the bowl being supported at the angles by four columns of red Ogwell marble with a centre shaft of stone. It was executed by Messrs. Jones & Willis, of Birmingham. The lectern, which is of British oak, was the work of Messrs. Harry Hems & Sons, of Exeter. The floor of the baptistry has been tiled in black and white Minton tiles by Messrs. Foss & Son, of Nottingham.

ABERDEEN BUILDING TRADES FEDERATION.—The fourth annual report states that the question as to raising the contributions to provide a strike fund, which was under discussion when last report was issued, did not result in any change being made in the constitution, some of the trades never having reported any decision on the matter. An effort was made to get the two trades which had never been connected with the Federation, viz., the masons and plasterers, to join, the result of which was that the plasterers became affiliated, but the masons again declined to do so, and it appears there is little probability of their becoming part of the Federation so long as the existing arrangement between their Union and the employers is continued. Relating to the "Contract's Clause" in schedules for Town, Council and School Board work, the question was raised as to whether or not an employer, holding such contracts, was bound to pay the standard rate to all in his employment or only to those engaged in that particular contract. After inquiry the Federation was convinced that the employers carrying out contracts for the Corporation or School Board were under obligation to pay all their employés the standard rate. A question of demarcation of work between plumbers and slaters, which had been periodically before the Federation for a considerable time, was at length disposed of. The decision, which was largely in favour of the plumbers on the points raised, did not meet with the approval of the slaters, who immediately thereafter withdrew their delegates. This result was much deplored, but, according to rule, the Federation had to decide the question and did so, to the best of their belief, in accordance with the evidence. During the year two conferences of building trade workers have been held under the auspices of the Federation, the whole of the trades in the building group being represented. The building trade continues very brisk and wages are still moving upwards. Most of the building trades in the city agitated for an advance of wages this spring, and, at the time of writing, all have succeeded in gaining increased pay except the masons, but there is reason to believe a settlement in favour of the men will be arrived at shortly. The joiners and painters were both a week on strike before their demands were granted.

REREDOS, HOLY TRINITY CHURCH, WESTWARD HO.—An oak reredos has just been placed in this church. In width it is the same as the east window, under which it has been fixed. The work was executed by Messrs. Harry Hems & Sons, of Exeter.

SALES OF BUILDING SITES IN THE CITY.—The fine position now occupied by the Lady Holle's Girls' School at the end of Fore-street, City, and by a branch of the City and Midland Bank, has just been sold by Messrs. Feltham, Woodrow, & Co. to the London County Council for 31,000*l.*, as a site upon which to build a new fire station commanding the district where the great Cripplegate fire took place in 1897. Last week also Messrs. David Burnett & Co. (in conjunction with Messrs. Feltham, Woodrow, & Co.) sold No. 54, Cheapside, a fine position in the heart of the City, for 28,500*l.*

THE NEW WAR OFFICE.—In the House of Lords on the 12th inst., the Marquis of Lothian asked her Majesty's Government whether they would cause a model of the proposed new buildings for the War Office to be made and placed in the precincts of the House for the inspection of members of both Houses of Parliament. The noble lord said he had no intention of detaining the House by going into the general question. The necessity of having such a model as he suggested was shown by what happened in the case of the new Admiralty. When a model was produced of the plan first accepted it was found that the proposed buildings would be such monstrosities that an entirely new plan had to be resorted to ; and the present Admiralty buildings were absolutely unworthy of the office they had to house. The architecture was weak where it ought to be strong, and there was at the top of the building a sort of trimming which appeared to be taken out of a child's box of bricks. When the new Admiralty was finished, it would not be large enough for its purpose, and it would be necessary either to add another story or to provide a fresh building elsewhere.—The Earl of Pembroke said he was afraid he could not give much comfort to his noble friend. The First Commissioner of Works did not see his way to grant the request with respect to a model of the new buildings. At the same time—as, perhaps, the noble lord was aware—the plans and elevations of these proposed new buildings had been in the tea-room of the House of Commons for some time, and he was quite sure that his right hon. friend would be glad to show them to any noble lord who took an interest in the matter. With respect to the present new Admiralty, one must remind his noble friend that that magnificent edifice was the result of a Committee of the House of Commons. This did not encourage his right hon. friend to carry on the same procedure with respect to the further buildings to be erected as was done in the case of the Admiralty. The Marquis of Lothian said the plans and elevations were absolutely no use for the purpose.

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## *CAPITAL AND LABOUR.*

THE JOINERS' STRIKE AT ST. ANNES-ON-THE-SEA.—The strike of joiners at St. Annes-on-the-Sea was settled on the 10th inst. Six months ago the men gave notice of a demand for an increase from 8d. to 9d. per hour. The masters made no response, and the men came out on May 1. The employers and men have met, and an advance to 8¼d. has been conceded, and 8½d. on August 1. A new set of rules has also been agreed to.

THE DISPUTE IN THE BELFAST BUILDING TRADE.—The carpenters and joiners affected by the strike which opened on the 1st inst. returned to work on the 8th inst. The dispute arose from a demand on the part of the employers for the alteration of the existing rules. As a result of the settlement arrived at, the conditions of employment hitherto observed will be adhered to, with the alteration that the limit within which certain allowances are made will be extended by half a mile.

THE BUILDING DISPUTE AT WOLVERHAMPTON.—In connexion with the building dispute at Wolverhampton, there has been an abrupt termination of the strike consequent upon the masters agreeing to the demand. On Friday last week, Mr. H. Gough, one of Wolverhampton's largest contractors, gave an undertaking to pay the advanced rate to the labourers viz., 6d. per hour. Mr. Gough is carrying out the contract of Messrs. Chubb & Sons for the erection of their new works in Wolverhampton. The day previous to this undertaking being given about 150 men were out, and at least sixty of them were affected by the decision of Mr. Gough. The other master builders of the town at once called a meeting, which was held in the Star and Garter Hotel, Wolverhampton. Mr. T. Skett (President of the Wolverhampton Branch of the National Association of Master Builders) occupied the chair. Eventually the following resolution was passed :—"That this meeting of the master builders of Wolverhampton and district expresses surprise at the action taken by Mr. H. Gough in writing privately to the labourers conceding their demand, after being the strongest opponent to do so at the meeting held on the 4th inst. ; and that we, after this action, are pleased to grant the advance asked for." Most of the labourers have resumed work.

WOLVERHAMPTON PLUMBERS' DISPUTE.—The application made by the plumbers of Wolverhampton for an advance of ½d. per hour has been considered by the Master Builders' Association and refused. At the present time the supply in the plumbing line is greater than the demand. For the past few days there has been no great change in the position of affairs. The men sent a request to the master builders that they should receive a deputation, but no reply to the communication has been received. With regard to the code of working rules that the men are asking for in addition to the advance, they state that these are merely what have been in force previously between themselves and the master plumbers. The master builders state that they have not yet considered the matter.

STRIKE OF BRICKLAYERS' LABOURERS AT ELVEDON, SUFFOLK.—The general labourers on the building works going on at Elvedon, have struck for an advance of ½d. per hour.

CHELTENHAM CARPENTERS' STRIKE.—The differences between the employers and the men at Cheltenham have been arranged in a satisfactory manner. Before the intervention of the Mayor, matters were at a hopeless deadlock, neither side being disposed to give way. At a meeting called by the Mayor the following propositions were agreed upon : That the wages shall be 7½d. per hour from this date, the men returning to work forthwith at this rate ; that on and after January 1 next (January 1, 1900), the rate of wages shall be 8d. per hour ; that the notice on either side shall be two hours, instead of one as at present ; that the same men shall be taken into their old places as far as practicable ; that it is agreed by the men that the question of an umpire is dispensed with. This was signed on behalf of the employers by Mr. A. C. Billings, and on behalf of the workmen by Mr. J. Grimes (A.S.) and Mr. C. Evans (G.U.). The Mayor also affixed his signature and certified the correctness of the terms set down. A meeting of the men was held afterwards, when the arrangements made were approved.

THE NORWICH BUILDING TRADE.—We understand that conciliatory relations still prevail as between the members of the Norwich and District Master Builders' Association and the carpenters, bricklayers, and labourers whom they employ. The carpenters, it will be remembered, ask for 7½d. an hour all round, but as most of them already are paid at that rate, it is not expected that any insuperable difficulty will arise in that quarter. The labourers are the chief element of trouble. They ask for an increase of one penny an hour all round. The masters are willing to grant a half-penny to the men whom they consider capable, but not to just any man who may have been employed as a labourer. They point out that there are various degrees of capacity in a bricklayer's labourer, and that while some are capable of mixing hair mortar and doing other things requiring experience more or less, there are others, as for instance, certain men who were displaced by the recent shoe strike, who are capable of little or nothing but to carry bricks in a hod up a ladder. The contention of the men is that the masters ought not to discriminate between labourers who have been admitted to membership of the union.—*Eastern Daily Press.*

BUILDING STRIKE, LOWESTOFT.—The bricklayers, labourers, and scaffolders employed by Johnson & Co., of Wandsworth, London, in the erection of the Empire Hotel, Kirkley Cliff, came out on strike on the 12th inst. The demand of the men is for an increase of a penny an hour. They are now receiving the following rates : Bricklayers, 8d. per hour ; labourers, 6d.

THE GATESHEAD BUILDING TRADE.—On Thursday last week, the Gateshead Master Builders held a meeting and agreed to make an offer to have the dispute with the labourers settled by arbitration. The lock-out—which affects between 150 and 200 men—arose out of a demand by the men for an advance of from 6½d. to 7d. per hour. The men have been locked out since the end of March, and many have obtained employment elsewhere.

ROTHERHAM BUILDING TRADE.—The position of affairs in the Rotherham building trade is assuming a serious aspect. The masons, some seventy in number, ceased work at the end of April in consequence of the refusal of the employers to concede 1d. and 1½d. per hour—according to class of labour—advance in wages. It is understood that the decision of the Sheffield builders is awaited, and that the two places will act together. The bricklayers are now making a movement. The stoppage of the masons has led to the non-employment of a number of labourers, and it is expected that all the other branches of the trade will be affected.

BUILDING TRADE DISPUTE, YORK.—A meeting of the York Master Builders' Association was held recently, when it was decided to comply with the request of the Federation and lock out 25 per cent. of the men of all trades on the 27th inst.

QUARRY DISPUTE IN BRISTOL.—The dispute in the quarry industry in Bristol does not seem to be any nearer a settlement than it was two or three months ago. In November last a letter was sent to the quarry owners of Bristol and district from the Gasworkers' and General Labourers' Union, enclosing a copy of suggested new rules. In this letter the firms were asked to make any suggestions as to alterations they might think desirable, with an assurance that any such suggestions would receive the fullest consideration. It was also hoped that a final arrangement would be made by January 30, 1899. The desire of the society was to get a code of working rules in definite form with a standard rate of wages, which was duly formulated, and which would have meant, generally speaking, an advance of ½d. an hour for the labourers only. The rules also aimed at the partial abolition of piecework. Several employers signed these new rules, but there are over 100 men out of employment.

THE BUILDING DISPUTE, HULL.—The men in Hull affected by the dispute in the building trade are, it is stated, so firm in their intention not to give way that there has been quite an exodus from the city. Out of 550 joiners affected no less than 350 have been found employment elsewhere. Bricklayers have also been departing rapidly. The question of the completion of the Corporate contracts has been under the consideration of the Joint Committee of bricklayers, plasterers, joiners, and builders' labourers, when the following resolution was unanimously passed :—"That in the event of the Corporation deciding to do their own work by employing workmen direct, we have no objection to the same, and will be prepared to actively co-operate with them to complete the work by supplying all the men they need. But under no circumstances are we prepared to advise our men to work for the Corporation should the contractor have any further control of the work from which our men have been locked out."

THE BUILDING TRADE DISPUTE, LEICESTER.—Leicester builders report that they are getting over their troubles much better than was at first anticipated, owing to the excellent substitutes they have been able to put in the places of the men now compulsorily idle. Few of them are now short of good plasterers, who have come over from Dublin and other places in Ireland, and have not only proved themselves to be in every respect capable and trustworthy workmen, but have expressed satisfaction with the treatment they are receiving. Some of the men have brought their wives and families with them, and all have expressed their willingness to remain in the town. With regard to a supply of labourers, there have been many applications from the Eastern counties. Leicester builders are not, therefore, so badly handicapped by the dispute as was at one time feared, and whilst remaining loyal to their Federation, they can afford to treat the position of affairs with equanimity.—*Leicester Post.*

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## *LEGAL.*

### ACTION ON BEHALF OF A BUILDER AGAINST A SOLICITOR.

THE case of Field *v.* Jessop came before the Court of Appeal, composed of the Master of the Rolls and the Lord Justices Rigby and Collins, on the 9th and 11th inst. on the appeal of the plaintiff from the judgment of Mr. Justice Kekewich in the Chancery Division, giving judgment for the defendant.

Mr. Renshaw, Q.C., and Mr. Jessel appeared for the appellant, and Mr. Warrington, Q.C., and Mr. Christopher James for the respondent.

Mr. Renshaw stated that the action was brought by the trustee in bankruptcy of a builder named Mackintosh, who carried on a business at Bedford, against the defendant, Mr. W. B. Jessop, a solicitor in partnership with his father at Bedford under the style of Jessop & Son, to recover the excess value of a house built by Mackintosh for the defendant under a contract at a price which was totally inadequate. The learned counsel said that the defendant had acted prior to that date when the contract was entered into as solicitor for Mackintosh, and had financed him in his building operations, and the allegation was that he had obtained from Mackintosh, by virtue of his position, a contract by which Mackintosh built a house for him at a gross undervalue. At the time when the contract was entered into in 1894, Mackintosh was a young man, he having been born in 1872. Mackintosh had been educated as a civil engineer, and in 1893 he went to Bedford, having in his pocket a capital of about 680*l.*, and he conceived the idea of setting up business at that place as a builder. In February, 1894, Mackintosh bought three plots of land on the Queen's Park estate at Bedford, and employed Messrs. Jessop & Son as his solicitors on that transaction, and the defendant acted for him. In February, 1894, Mackintosh bought another plot of land on the St. Peter's Glebe estate, and in March, 1894, he built a house in which his mother afterwards resided. Under the advice of the defendant Mackintosh bought another piece of land on a building estate adjoining the St. Peter's Glebe estate. By April or May, 1894, he had spent his 680*l.*, but by realising a reversion and some other small property which he had inherited he obtained another 650*l.* After that date Mr. Jessop began financing him for the purposes of his building, and the amount of the advances was considerable. On May 19, 1894, he contracted to sell a house he had built to a man named Cromarty for 1,150*l.* In that transaction the defendant acted as solicitor for Mackintosh, and soon after Jessop asked Mackintosh what would be the cost of a similar house to that sold to Cromarty in materials and labour. Mackintosh, being young and inexperienced, said that, as he had not quite finished Cromarty's house, he did not quite know, but said probably 600*l.* or 700*l.* About a fortnight after this time the defendant suggested to Mackintosh that he should build him a house on land which he had got in Park-avenue, and that he should build it for 600*l.*, the house to be similar to that sold to Cromarty. The foundations were already put in, as a man named Smith had entered into a contract with Jessop to build him a house, but after putting in the foundations he threw the contract up and went away. Mackintosh said that he could not build such a house for 600*l.* Interviews followed between Jessop and Mackintosh, when Jessop held out inducements to Mackintosh to build the house for that sum. He said it would be a good advertisement for him and promised to charge him no law costs, and to employ him on a building estate he (Jessop) had and so on. Jessop then got Mackintosh to bring him the plan and specifications of Cromarty's house, which was the house to be imitated, and he adapted these and to some extent moulded them into the terms of Smith's contract, which had proved abortive the previous year. The contract with Smith was for 1,150*l.*, but it was fair to say that it was not of the same kind of house as that Jessop now proposed to have. Jessop then told Mackintosh to get his own architect to prepare the plans under lines suggested, and the defendant at the same time copied out the specifications and the contract. Mackintosh asked for a quantity surveyor to be employed to take out the quantities, but this Jessop refused to allow. Mackintosh then asked that an architect should be employed by Jessop, but he would not do that. On July 7, 1894, Mackintosh was induced to sign the contract to build the house for 700*l.* By the contract Mackintosh was to build the house according to the specifications and plans, "or to be hereafter specified or required in explanatory instructions." Two days later Mackintosh got frightened at what he had done, and went to the defendant and asked him to release him from the contract, but this the defendant refused to do. The consequence was that Mackintosh had to build the house. The house was finished, and on July 2, 1895, Mr. Turnbull, the architect employed by the defendant wrote and certified that the work was "first-class." The settlement between the parties took place on July 28 or 29, and on that day the account was signed and passed, the extras coming to 77*l.* 8s. 11d. Immediately the defendant got the house built he let it for 100*l.* a year. In November, 1895, Mackintosh got into financial difficulties, and in January, 1896, he was adjudicated a bankrupt, the present plaintiff being the trustee in his bankruptcy. The learned counsel said that the evidence called on behalf of the plaintiff in the court below was that if the house in question had been constructed and paid for by measure, the actual cost without profits would have been 1,136*l.*, with profits at the ordinary 10 per cent., 1,282*l.* The defendant only called one witness on this part of the case, and he said that at cost price and no profit the house would cost 911*l.* The learned counsel said that the result was that Jessop had got from his client the extra value of the house over and above—about 750*l.*—and he submitted that, having regard to the relationship of solicitor and client which existed between them, the defendant was not entitled to retain that advantage to the detriment of the bankrupt's estate.

Mr. Warrington having addressed the Court on behalf of the defendant,

Their Lordships held that the defendant had acted quite properly throughout, and dismissed the appeal with costs.

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### IMPORTANT POINT UNDER THE WORKMEN'S COMPENSATION ACT.

THE case of Edwards *v.* Godfrey came before the Court of Appeal, composed of Lords Justices A. L. Smith, Vaughan Williams, and Romer, on the 13th inst., on the appeal of Mr. Godfrey from an award of the Judge of the Wandsworth County Court, upon proceedings to assess compensation under the Workmen's Compensation Act, 1897. It appeared that the respondent on the appeal, Edwards, was in the employment of Godfrey on a building over 30 ft. in height, upon the top story of which a studio was being erected. A scaffolding was being used in carrying out the work. The respondent was employed in glazing the studio, and on September 12, 1898, he was descending from the outside of the studio when he fell to the ground and was injured. Edwards then brought an action against Godfrey in the Wandsworth County Court, under the Employers' Liability Act, 1880, the action being tried on January 9, 1899, when the jury found that Edwards was guilty of contributory negligence, and judgment was given for Godfrey. No application was then made on behalf of Edwards to assess compensation under the Workmen's Compensation Act, 1897. On January 30, 1899, Edwards took proceedings to recover compensation under the Act of 1897, and on March 13 the County Court Judge made an award in his favour, and awarded him as compensation 11s. a week.

Mr. Frank Gover, for the appellant Godfrey, contended that by Section 1, Sub-section 2 (b), and Sub-section 4 of the Workmen's Compensation Act, 1897, the workman could claim compensation either under the Employers' Liability Act, 1880, or under the Act of 1897. He could not take two independent proceedings. By Section 1, Sub-section 4 of the Act of 1897, if an action was brought to recover damages independently of that Act, and the action was dismissed, the court might, if the plaintiff chose, proceed to assess compensation under the Act of 1897, and might deduct from such compensation the costs caused by the plaintiff having brought the action under the Employers' Liability Act, 1880. That was in favour of the workman, and if he did not apply for compensation to be then assessed under the Act of 1897, he could not subsequently take proceedings under that Act.

Mr. Colam having argued on behalf of the respondent Edwards in support of the County Court Judge's finding,

Their Lordships allowed the appeal, Lord Justice Smith stating that the question was whether the workman, after having exercised his option of suing under the Act of 1880, could rebut back to the Act of 1897. In his opinion, Section 1, Sub-section 2 (b) of the Act of 1897 gave the workman in the circumstances there mentioned the option of claiming compensation independently of the Act or under the Act. The workman in the present case had excused his option of claiming independently of the Act. If it had not been for Section 1, Sub-section 4 of the Act the matter would then have been *res judicata.* But that sub-section gave the workman the advantage when he had wrongly exercised his option of proceeding independently of the Act and had failed, of having compensation then and there assessed under the Act of 1897 by the court which had *seisin* of the case. At the same time a benefit was given to the employer by allowing the Judge to deduct from the compensation awarded the costs caused by the workman having wrongly brought the action.

The other Lords Justices concurred.

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### SHOULD "CRIPPLES" BE NAILED?

AT Brompton County Court on Monday, before Judge Stonor, Henry Blackman, a bricklayer, 76, Tonsley Hill, Wandsworth, London, S.W., sought to recover compensation under the Employers' Liability Act from Mr. Charles Wall, builder and contractor, Chelsea, S.W.

Mr. Colam was counsel for the plaintiff, and Mr. Clavel Salter, counsel, defended.

The plaintiff stated that on November 1 last, according to the directions of the defendant's foreman, he was working upon the hip and valley roof of a mortuary which was being erected by the defendant near Dartford. In order to get to the higher portions of the roof, it was necessary to have "cripples"—triangular frames—to hold the scaffold boards upon which the men worked. As there was a return roof, it was not possible to get the "cripples" within about 3 ft. or 4 ft. of the end of the roof at the top, and so the boards hung over beyond the "cripples" more than 3 ft. While the plaintiff was working upon the overhanging boards, they suddenly tipped up, and in saving himself from falling, he knocked the back of his hand against the slate battens. Through this blow his wrist was severely injured. He was unable to go back to work until February 1 last, and still felt pain and weakness in his wrist. His wages had been a little over 2*l.* a week.

The boards were not nailed to the "cripples," but he did not examine them before he went upon them. He maintained that it was not sufficient that the top and bottom boards should be nailed to the "cripples"; all the boards should be so nailed.

Dr. Williams, Wandsworth, stated that he had attended the plaintiff, and found him suffering from inflammation of the sheath of the tendons in the wrist. He considered that the man was not able to resume his work until February 1, and in his opinion there is a slight but permanent stiffening of the wrist.

Other bricklayers were called. Some thought it unnecessary to nail the boards; others said the usual thing was to nail the top and bottom boards, and the remainder said that all the boards should be nailed to the "cripples."

William Morgan, the defendant's general foreman, admitted that he could not say whether any of the boards were nailed to the "cripples."

Mr. Clavel Salter: After that admission I do not think that the matter can be carried any further.

The Judge: No; I find for the plaintiff for 30*l.*, and allow all costs.

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### IMPORTANT ACTION AGAINST A GAS COMPANY AND CONTRACTORS.

THE case of Jordeson *v.* the Sutton, Southcoates, and Dypool Gas Company came before the Court of Appeal, composed of the Master of the Rolls and Lords Justices Rigby and Vaughan Williams, for judgment on the 16th inst. on the appeal of the defendant Company and Messrs. Holmes & King, contractors, from a decision of Mr. Justice North, in the Chancery Division, who had granted the plaintiff, a solicitor of Hull, an injunction in respect of alleged obstruction to ancient lights and had granted him damages for injury to property caused by the defendants' works. The case was reported in the *Builder* of February 19, August 13, and October 29, 1898.

The Master of the Rolls, in giving judgment, having stated the nature of the order appealed from, said the contentions raised by the defendants were numerous. They contended that, assuming the plaintiff's ancient lights to have been darkened and the plaintiff's buildings to have been damaged, still no action would lie having regard to their Parliamentary powers; secondly, that as regarded the ancient lights, assuming an action would lie, no injunction ought to be granted, and that damages only ought to be awarded; and, thirdly, that as regarded the damage to buildings caused by subsidence no action would lie because such subsidence was occasioned by pumping water out of the defendants' own land, thereby drawing water from beneath plaintiff's land, which defendants urged gave no right of action. The plaintiff was the owner of some land in Hull, and on the land were erected a number of small houses, some of which had existed for more than thirty years before the commencement of the present action. The defendants were a gas company, whose works were within a short distance of the plaintiff's property, and they had power to buy land by agreement, but not compulsorily. The Gas Company's Acts clearly authorised some nuisances, such as breaking up streets, &c., and such nuisances, expressly authorised by Parliament, gave rise to no cause of action unless there was negligence in the exercise of those statutory powers. In the district where the plaintiff's land was situated there was a stratum of what was called running silt, which was well known to persons acquainted with the geological nature of the soil on which the town of Hull stood, and which was a constant source of trouble to persons who had to make excavations. This stratum was some 6 ft. thick, and was at a depth of about 22 ft. below the surface at the point where the defendants' and plaintiff's land was situate. The land on which the plaintiff's houses stood was, in fact, supported by this stratum of silt and the earth above and below. Before 1887 the defendants' works were comparatively small. There was one gasometer of no great height, and the works were not such as in any way to injure the plaintiff. But in 1887 the defendants resolved to enlarge their works and to construct a large gasholder having a diameter of about 52 ft. and a length of about 105 ft. at the ground level. The defendants began to excavate their land for the purpose of this gasometer and in doing so they cut into this bed of silt. They took all reasonable precautions which experience suggested to keep the silt from escaping into the excavation and the sides of the trench from falling in. Notwithstanding all their care, the land under the plaintiff's houses subsided and this subsidence caused damage. So far, there was no dispute about the facts. There was, however, a considerable controversy as to the nature of this silt, whether it was muddy water, as distinguished from wet sand. That the structural damage of which the plaintiff complained was caused by the defendants in the execution of their works was not disputed, and it was also not really disputed that there would be some obstruction to the light coming to the plaintiff's houses if the gas-holder was raised to its full height of 105 ft., and the defendants contended that whatever their liability might have been apart from their special Acts of Parliament, they were protected by their statutory powers against such actions as the present one. In 1867 and 1873 the defendant company obtained special statutes which gave it certain defined powers, and also incorporated the Gas Works clauses Acts of 1847 and 1871, and they relied upon these Acts to justify what they had done. He did not think they had made out their contention on this point. As regarded the injunction granted by Mr. Justice North against raising the gasometer to its full height, he did not think such an injunction ought to be refused. The plaintiff's rights could not be adequately vindicated by damages. The liability of the defendants to pay damages for subsidence required careful consideration. That the excavation caused subsidence was clear beyond all controversy. *Prima facie* the defendants had no right to do what they had done, and it was for them to justify their conduct if they could. They had attempted to do so by reason of their special statutory powers, but even then they would, in his opinion, be liable at common law. The defendants relied upon the case of Popplewell *v.* Hodgkinson, which they said laid down that a man could do what he liked with his own land, even though he might thereby cause injury to his neighbours. The question thus raised was of extreme importance, and by no means free from difficulty. The conclusion he had come to was that the operations of the defendants, carefully and skilfully conducted as they were, resulted in the removal from the plaintiff's land of a considerable quantity of silt, with the result that the equilibrium of the soil beneath the plaintiff's houses was disturbed and that there was a movement of the sand towards the excavation. The plaintiff's houses were supported by a bed of wet sand and not by a stream of water, and this was the conclusion at which Mr. Justice North also arrived. What had been done was a nuisance in common law and the judgment of Mr. Justice North being correct in all points, the appeal would be dismissed with costs.

Lord Justice Rigby concurred, but Lord Justice Vaughan Williams dissented from the rest of the Court on the subsidence point. The appeal, therefore, by a majority of the Court, was dismissed with costs.

Mr. Haldane, Q.C., Mr. Macnaghten, Q.C., and Mr. Boome appeared for the appellants; Mr. Upjohn, Q.C., and Mr. Dighton Pollock for the respondents; and Mr. Bardswell for Messrs. Holmes & King, the contractors.

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## MEETINGS.

FRIDAY, MAY 19.

*Royal Institution.*—The Bishop of Bristol on "Runic and Ogam Characters and Inscriptions in the British Isles." 9 p.m.

TUESDAY, MAY 23.

*Royal Institution.* — Professor W. J. Sollas on "Geology." II. 3 p.m.

THURSDAY, MAY 25.

*Carpenters' Hall, London Wall (Lectures on Carpentry and Joinery).*—Mr. James Bartlett on "Staircases, and Joints in Joinery." 7.30 p.m.

FRIDAY, MAY 26.

*Architectural Association (Discussion Section).*—Mr. J. Leonard Williams on "Houses of the Speculative Type."

## PRICES CURRENT OF MATERIALS:

### WOOD.*

Per Petersburg standard hundred.

| | £ | s. | d. | £ | s. | d. |
|---|---|---|---|---|---|---|
| White Sea: first yellow deals | 17 | 0 | 0 | 18 | 0 | 0 |
| Second do. | 13 | 5 | 0 | 14 | 15 | 0 |
| Third do. | 10 | 15 | 0 | 11 | 15 | 0 |
| Battens, 40s., 30s., and 15s. less respectively. | | | | | | |
| Petersburg: first yellow deals | 11 | 15 | 0 | 14 | 5 | 0 |
| Second do. | 10 | 15 | 0 | 12 | 5 | 0 |
| Battens, 30s. and 20s. less respectively. | | | | | | |
| Petersburg, white deals | 9 | 15 | 0 | 11 | 15 | 0 |
| Do. white battens | 7 | 10 | 0 | 9 | 0 | 0 |
| Riga, white deals | 8 | 5 | 0 | 9 | 5 | 0 |
| Swedish mixed yellow deals | 13 | 5 | 0 | 16 | 15 | 0 |
| Third do. | 12 | 5 | 0 | 14 | 5 | 0 |
| Fourth do. | 10 | 15 | 0 | 11 | 15 | 0 |
| Fifth do. | 9 | 15 | 0 | 10 | 15 | 0 |
| Battens, 30s., 20s., and 10s. less respectively. | | | | | | |
| Whitewood, 10 to 20 per cent. less. | | | | | | |
| Finnish unsorted yellow deals | 9 | 15 | 0 | 10 | 5 | 0 |
| Battens, 10s. and 5s. less respectively. | | | | | | |
| Whitewood, 5 to 10 per cent. less. | | | | | | |
| Norwegian second yellow battens | 7 | 10 | 0 | 8 | 10 | 0 |
| Third do. | 7 | 0 | 0 | 8 | 0 | 0 |
| Fourth do. | 6 | 10 | 0 | 7 | 10 | 0 |
| Whitewood, 10s. less. | | | | | | |
| Danzig, Crown Deck deals, per 40 ft. 3 in. | 0 | 15 | 0 | 1 | 5 | 0 |
| Brack | 0 | 12 | 0 | 1 | 0 | 0 |
| St. Lawrence Pine deals, &c., per P.S.H.:— | | | | | | |
| 1st, Bright and Dry, regular sizes | 18 | 15 | 0 | 25 | 5 | 0 |
| ,, ,, oddments | 11 | 15 | 0 | 18 | 10 | 0 |
| 2nd ,, regular sizes | 13 | 15 | 0 | 17 | 0 | 0 |
| ,, ,, oddments | 9 | 5 | 0 | 12 | 15 | 0 |
| 3rd ,, regular sizes | 9 | 0 | 0 | 10 | 0 | 0 |
| ,, ,, oddments | 6 | 15 | 0 | 8 | 5 | 0 |
| 4th ,, regular sizes | 6 | 0 | 0 | 7 | 0 | 0 |
| ,, ,, oddments | 5 | 10 | 0 | 6 | 10 | 0 |
| St. Lawrence Spruce deals, &c. | | | | | | |
| First, regular sizes | 8 | 5 | 0 | 10 | 5 | 0 |
| Second ,, | 7 | 5 | 0 | 8 | 5 | 0 |
| Third ,, | 7 | 0 | 0 | 7 | 15 | 0 |
| Fourth ,, | 5 | 15 | 0 | 6 | 15 | 0 |
| Oddments and battens at 20s., 10s., 7s. 6d., and 5s. less respectively. | | | | | | |
| New Brunswick Spruce deals, &c. | 7 | 0 | 0 | 7 | 15 | 0 |
| Oddments, battens, and fourths | 6 | 5 | 0 | 7 | 5 | 0 |
| United States pitch pine planks and boards | 9 | 5 | 0 | 12 | 15 | 0 |
| Prepared Boards, per square | | | | | | |
| 1¼ by 6½ and 7 in. 1st yellow | | 12 | 0 | | 15 | 3 |
| ,, ,, 2nd ,, | | 10 | 6 | | 12 | 3 |
| 1 by 6½ and 7 in. 1st ,, | | 9 | 0 | | 11 | 3 |
| ,, ,, ,, white | | 8 | 6 | | 9 | 3 |
| ,, ,, 2nd yellow | | 8 | 6 | | 10 | 3 |
| ,, ,, ,, white | | 7 | 0 | | 7 | 9 |
| ⅞ by 6½ & 7 in. 1st & 2nd yellow | | 7 | 9 | | 8 | 6 |
| ,, ,, ,, white | | 7 | 3 | | 8 | 0 |
| ¾ by 6½ and 7 in. 1st yellow and white (grooved, tongued, and beaded) | | 6 | 9 | | 9 | 3 |
| ¾ by 6½ and 7 in. 2nd yellow and white (ditto) | | 5 | 9 | | 8 | 0 |
| ⅝ by 6½ and 7 in. 1st yellow and white (ditto) | | 5 | 9 | | 6 | 6 |
| ⅝ by 6½ and 7 in. 2nd yellow and white (ditto) | | 5 | 3 | | 6 | 0 |
| Narrower widths at 10 per cent. less. | | | | | | |
| 3rd quality at 15 per cent. less than 2nd. | | | | | | |
| Danzig and Memel Fir Timber— per load | | | | | | |
| Best middling | 2 | 10 | 0 | 3 | 10 | 0 |
| Good middling and Second | 2 | 0 | 0 | 3 | 5 | 0 |
| Common middling | 1 | 10 | 0 | 2 | 10 | 0 |
| Undersized | 1 | 10 | 0 | 1 | 15 | 0 |
| Swedish and Norwegian Balks | 1 | 5 | 0 | 1 | 15 | 0 |
| Baltic Oak Timber— | | | | | | |
| Danzig and Stettin—Large | 3 | 10 | 0 | 4 | 0 | 0 |
| Small | 2 | 0 | 0 | 2 | 5 | 0 |
| Quebec Timber per load | | | | | | |
| Yellow Pine | 4 | 10 | 0 | 6 | 5 | 0 |
| Oak | 4 | 5 | 0 | 6 | 5 | 0 |
| Elm | 4 | 15 | 0 | 5 | 15 | 0 |
| Ash | 4 | 0 | 0 | 5 | 5 | 0 |
| Birch | 3 | 10 | 0 | 5 | 10 | 0 |
| New Brunswick, &c., Birch | 2 | 5 | 0 | 3 | 0 | 0 |
| American Pitch Pine Timber | 2 | 14 | 0 | 3 | 3 | 0 |
| Wainscot, per log, 18 cubic ft.— | | | | | | |
| Crown (Eng. & Dutch) } nominal | 4 | 10 | 0 | 6 | 5 | 0 |
| Brack } nominal | 3 | 15 | 0 | 4 | 15 | 0 |
| Lathwood, per cubic fathom— | | | | | | |
| Petersburg | 4 | 0 | 0 | 6 | 10 | 0 |
| Riga and Danzig | 4 | 10 | 0 | 5 | 10 | 0 |
| Norway Poles, per ft. run | 0 | 0 | 1 | 0 | 0 | 1½ |
| Oak Staves, per mille full size pipe | | | | | | |
| Memel, Crown | 210 | 0 | 0 | 220 | 0 | 0 |
| Brack | 180 | 0 | 0 | 190 | 0 | 0 |
| Danzig | 165 | 0 | 0 | 175 | 0 | 0 |
| Bosnia, single Barrel (nominal) | 28 | 0 | 0 | 30 | 0 | 0 |
| United States, Pipe | 35 | 0 | 0 | 42 | 10 | 0 |
| Hogshead, extra heavy and double extra | 27 | 10 | 0 | 32 | 10 | 0 |
| Indian Teake per load | 11 | 15 | 0 | 16 | 15 | 0 |
| British Guiana Greenheart | 0 | 0 | 0 | 8 | 0 | 0 |
| Mahogany, per foot superficial— | | | | | | |
| Honduras, cargo average | 0 | 0 | 4½ | 0 | 0 | 6 |
| Nicaragua, do. | 0 | 0 | 4¾ | 0 | 0 | 5¼ |
| Tabasco, do. | 0 | 0 | 4 | 0 | 0 | 6½ |
| Mexican, do. | 0 | 0 | 3½ | 0 | 0 | 4 |
| Panama, do. | 0 | 0 | 3 | 0 | 0 | 4 |
| African, do. | 0 | 0 | 3½ | 0 | 0 | 5 |
| Cuba, do. | 0 | 0 | 5½ | 0 | 0 | 7½ |
| St. Domingo, do. | 0 | 0 | 5 | 0 | 0 | 7 |
| Do. Curls (good to prime) | 0 | 0 | 9 | 0 | 1 | 3 |
| Walnut, American (logs) | 0 | 2 | 0 | 0 | 4 | 6 |
| Do. do. (planks and boards) | 0 | 2 | 0 | 0 | 7 | 6 |
| Italian, per foot superficial | 0 | 0 | 3 | 0 | 0 | 7½ |
| Black Sea, per ton | 6 | 0 | 0 | 12 | 0 | 0 |
| Satin Walnut (logs) per foot cube | 0 | 1 | 0 | 0 | 1 | 3 |
| ,, ,, (planks and boards) | 0 | 2 | 0 | 0 | 2 | 9 |
| Sequoia (Californian redwood), per foot cube | 0 | 1 | 9 | 0 | 2 | 0 |
| Whitewood, American (logs) | 0 | 1 | 3 | 0 | 1 | 6 |
| ,, ,, (planks and boards) | 0 | 1 | 6 | 0 | 2 | 9 |
| Quartered oak ,, ,, ,, | 0 | 2 | 3 | 0 | 4 | 0 |
| Kauri pine (logs) | 0 | 1 | 9 | 0 | 2 | 0 |
| ,, ,, (planks) | 0 | 2 | 3 | 0 | 2 | 9 |
| Jarrah (planks) | 0 | 2 | 3 | 0 | 2 | 6 |
| Lancewood spars each, fresh and large | 0 | 7 | 0 | 0 | 10 | 0 |
| Lancewood spars, ordinary to fair | 0 | 4 | 0 | 0 | 6 | 0 |
| Degame spars | 0 | 8 | 0 | 0 | 12 | 6 |

### METALS.

| | £ | s. | d. | £ | s. | d. |
|---|---|---|---|---|---|---|
| IRON—Pig, in Scotland ton | 3 | 3 | 9½ | 0 | 0 | 0 |
| Bar, Welsh, in London | 6 | 0 | 0 | 6 | 5 | 0 |
| Do. do. at works in Wales | 5 | 15 | 0 | 5 | 17 | 6 |
| Do. Staffordshire, in London | 6 | 5 | 0 | 7 | 10 | 0 |
| COPPER—British cake and ingot | 81 | 10 | 0 | 82 | 10 | 0 |
| Best selected | 82 | 10 | 0 | 83 | 10 | 0 |
| Sheets, strong | 84 | 0 | 0 | 86 | 0 | 0 |
| Chili bars | 79 | 0 | 0 | 0 | 0 | 0 |
| YELLOW METAL lb. | | | 7d. | | | 7½d. |
| LEAD—Pig | | | | | | |
| Spanish ton | 14 | 5 | 0 | 0 | 0 | 0 |
| English Com. Brands | 14 | 10 | 0 | 0 | 0 | 0 |
| Sheet, English, 6 lbs. per sq. ft. and upwards | 15 | 10 | 0 | 0 | 0 | 0 |
| Pipe | 16 | 0 | 0 | 0 | 0 | 0 |
| ZINC—English sheet ton | 31 | 0 | 0 | 0 | 0 | 0 |
| Vieille Montagne | 31 | 10 | 0 | 0 | 0 | 0 |
| Spelter | 28 | 10 | 0 | 0 | 0 | 0 |
| TIN—Straits | 117 | 10 | 0 | 0 | 0 | 0 |
| Australian | 118 | 0 | 0 | 118 | 10 | 0 |
| English Ingots | 120 | 10 | 0 | 121 | 10 | 0 |
| Banca | 114 | 0 | 0 | 0 | 0 | 0 |
| Billiton | 113 | 0 | 0 | 0 | 0 | 0 |

### OILS.

| | £ | s. | d. | £ | s. | d. |
|---|---|---|---|---|---|---|
| Linseed ton | 18 | 15 | 0 | 0 | 0 | 0 |
| Cocoanut, Cochin | 29 | 10 | 0 | 0 | 0 | 0 |
| Do. Ceylon | 25 | 15 | 0 | 0 | 0 | 0 |
| Palm, Lagos | 24 | 10 | 0 | 0 | 0 | 0 |
| Rapeseed, English, pale | 22 | 15 | 0 | 0 | 0 | 0 |
| Do. Brown | 21 | 5 | 0 | 0 | 0 | 0 |
| Cottonseed ref. | 16 | 10 | 0 | 17 | 10 | 0 |
| Oleine | 17 | 0 | 0 | 19 | 0 | 0 |
| Lubricating U.S. | 0 | 5 | 3 | 0 | 7 | 6 |
| Do. Black | 0 | 5 | 0 | 0 | 6 | 6 |
| TAR—Stockholm barrel | 1 | 6 | 6 | 0 | 0 | 0 |
| Archangel | 1 | 0 | 0 | 0 | 0 | 0 |
| Turpentine | 34 | 5 | 0 | 0 | 0 | 0 |

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* The prices for wood are shipping prices. Ten per cent., approximately, should be added in order to arrive at the current trade prices.

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## RECENT PATENTS:

### ACCEPTED SPECIFICATIONS.

*Open to Opposition until July 10.*

[1898.] 10,005, Adams, Disconnecting Chamber for Drains. 10,177, Meiklejohn, Lamp Irons for the Suspension of Electrical Fittings. 10,289, Hall, Owen, & Dayton, Gas Burners. 10,768, Miller, Combined Monkey and Pipe Wrench. 11,098, Place & Jolly, Valves and Taps. 11,627, Smith, Electrical Cables. 12,159, Hirth, Adjustable Drawing Tables. 12,336, Lindemann, Glass Panels, &c., for Decorative and similar Purposes. 12,495, Somerville, Prepayment Mechanism for Gas and other Fluid Meters. 12,876, Gjers & Harrison, Nozzles for Spraying Water, &c. 13,168, Lines, Water-closet Flushing Cistern. 13,413, Saunders, Ventilators. 13,417, Darling & Sellers, Dividing Apparatus. 13,725, Toifel, Production of Designs upon Paper, Woven Fabrics, &c., by means of Template Printing. 14,080, Watts, Bearings for Bridges, Girders, and Principals. 14,422, Heywood, Door Stop. 14,431 Simpson, Wire Fencing. 14,612, Björnstad & Easton Anderson & Goolden, Driving Gear for Lifts and Hoists. 14,626, Norman, Apparatus for Breaking, Crushing, or Pounding Stone, Flint, and other Friable Material. 14,810, Davy, Electrical Couplings. 14,817, Hüllinghorst, Preparing and Connecting Metal Caps, Edgings, &c., for and upon Roofs. 14,918, Owles, Concrete Mixer. 14,966, Wood, Rotary Pumps. 15,272, Miller & Miller, and [1899] 3,439, Davies & Still, Lanterns, Hand Lamps, &c. 15,911, Swarbrick, Window-blind Roller. 16,519, Augé & Blûm, Automatical Breaker for Coke, Coal, and Anthracite. 16,999, Andreas, Electrical Accumulators. 19,785, Kellner, Incandescent Bodies for Incandescent Electrical Lamps. 22,190, Wilkinson, Joint Boxes and Switches for Concentrical Systems of Electrical Conductors. 25,656, Maxim, Calcium Carbide. 26,539, De la Roche, Drying Oils. [1899] 387, Unterberg, Iron Wall-carriers for Electrical Insulators, &c. 573, Cobb, Doors for Hospitals and other Buildings. 3,850, Price & Turner, Gas Stoves. 4,400, Prentice, Working, Cleaning, Dressing, Polishing, and Preserving the Surface of Stone. 4,431, Ferrell, Impregnating Cellular Substances, such as Wood, with Fire-proofing, Preservative, and other Re-agents in Solution. 4,639, Zamboni, Rivetting Tools. 5,029, Grouvelle & Arquembourg, Jointing Tubes of Ductile Metal. 5,140, Bigwood & Hancher, Stop Tap Boxes and Manhole and Interceptor Covers and Frames. 5,174, McLachlan, Stone Sawing and Moulding Machines. 5,748, Loufer, Glueing Machines. 6,153, Burrell, Fluid Motors, especially Suitable as Water Meters. 6,157, Johnson & Wunderlich, and 6,478, Hall, Electrical Arc Lamps. 6,568, Andrew, Window Sash and Blind Balance. 6,645, Fiedeler, Joints and Connexions for Extensible Structures. 6,684, Bacon, Carbons for Electrical Arc Lamps. 6,934, Haendeler, Stench Trap for Discharge Basins, Sinks, &c. 6,948, Cranston, Burners for Incandescence Oil Lamps. 7,010, Schubert, Connecting the Carbide Reservoirs of Acetylene Gas Generators. 7,082, Prévost, Lifting Jacks. 7,116, Bray, Apparatus for Bending or Welding Pipe. 7,169, Coe, Apparatus for Applying Metallic Leaf from a Package Roll to any Surfaces. 7,277, Aron & Aron Electricity Meter, Ltd., Measuring and Recording Electrical Currents.

### ABSTRACTS OF PATENTED INVENTIONS.

1,087.—KILNS FOR BRICKS, CEMENT, POTTERY, &c. *H. Beyer & F. Becke.*—The novelty lies in the mode of putting the articles that are to be baked in a set of superimposed layers arranged spiral-wise around the central columns of each chamber within the kiln, and in such a manner as to cause the gaseous products of combustion to circulate in spirals through the mass of each kiln before it is discharged into the next one, or escapes, as the case may be. Side flues, together with the central columns of air, help to keep up the spiral course of the gases, and dampers control the passage of the gases through the connecting flues.

1,138.—FITTINGS FOR SHELVES, &c.: *E. H. Ledger.*—At the junction of the shelves and the uprights is screwed a plate which has two, or three, or four channels or ways, and may be bent or cast from a blank.

1,143.—TILES FOR STOVES AND FIRE-PLACES: *F. N. Butler.*—To facilitate the fixing and unfixing of tiles without disturbance of the stove-front or the use of nuts and screws, parts of the jamb-mouldings are made removable by means of dove-tailed joints, so inclined that the removable part shall not fall out of its position: the tiles are slipped into their places behind the flsnges that hold them, when the removable part is replaced.

1,152.—BRICKS AND TILES: *C. H. Collins.*—The invention consists in fashioning each tile or brick with a projecting rib at its lower edge in order to protect the mortar joints from the effects of the weather; the ribs may be plain or ornamented, and the tiles will serve for walls arches, chimneys, ranges, fireplaces, lavatories, &c.

1,161.—DRILLS FOR BLASTING STONE: *W. Westwood.*—For blasting stone in quarrying, grooves are driven in the sides of an ordinary round hole, in the direction in which fracture is desired when blasting, by means of a tool that has cutting-wings. A plug is inserted into the hole before it is charged with the explosive.

1,170.—PREVENTION OF FREEZING IN CISTERNS AND WATER-PIPES: *J. Archibald.*—The cisterns and supply pipes are covered with layers of non-conducting materials, say, wood, cork, flock, or slabs of ground cork and sawdust. A forked rod clamped to a cross-bar, made in two parts connected by clamping-screws, that extends across the cistern prevents the ball-cock from closing in frosty weather, by which means, it is claimed, a steady flow of water will be ensured.

1,195.—A SLIDE CALLIPER GAUGE: *H. Kienast.*—For the initial adjustment the slide is moved along a graduated bar together with a part to which a spring connects the slide. When the slide is clamped, by means of a screw, a graduated wedge is forced down for the taking of the fine adjustment, and the reading is taken opposite a line upon a plate which is screwed to the slide, or a vernier may be marked upon that plate, which is adjusted for wear by slots and screws.

1,212.—AN AUTOMATICALLY DISCHARGING SIPHON: *A. Wollheim.*—For sewer flushing purposes a bell to form a siphon, and trapped, covers the upper end of the discharge-pipe of the reservoir above, the upward branch of the siphon is made to project into the drain in order to facilitate the seal's displacement when there is a sufficient head of water in the reservoir, the top of the trap between the siphon branches is roughened or flattened in order that the air-seal may be retained as long as possible, and that the siphon's efficiency may be increased owing to the consequent escape of the air in a greater volume.

1,236.—FITTINGS FOR BATHS, LAVATORIES, SINKS, AND BASINS: *F. C. Lynde.*—Two levers are pivotted within a bracket bolted to the edge of the bath, one lever is connected to the top of the valve stem, when the other lever is turned to the left-hand a projection thereon engages with a similar projection on the stem which it thereby raises, the stem falling back by its own weight when the lever is turned back again, the valve-stem's bottom end has three side projections that register with internal or external recesses upon the top of the overflow pipe in which a screw fastens the stem.

1,284.—SIPHON DISCHARGE: *T. Gange.*—In order to prevent noise a spreader is provided for the incoming water, and the standpipe is fashioned with a trumpet mouth and flange. An annular flange at the bottom partially closes the bell, the standpipe being inserted before the bell's top is soldered down.

1,314.—CASTING BLOCKS FOR BUILDING PURPOSES: *F. Cohn & G. H. G. Brunckhorst.*—The mould has a base and four hinged sides, which, when closed together, are locked with latches, and two of them carry strips, forming grooves, for the union of the blocks by cement, &c., whilst a sectional core, to be expanded by a central wedge, is passed through openings in the two grooved sides. Channels for pouring in cement to reach the grooves are formed by means of core-rods, which pass through holes made in the two sides, or the holes may be utilised for iron rods to strengthen a conduit or chimney top which is made out of the blocks. In casting the cement is poured into the mould, the top surface is made smooth, and when the mass has become set the cores are taken out and the sides of the mould are unlatched.

1,319.—ARTIFICIAL STONE: *P. Kleber.*—The inventor makes a stone for fire-bricks, and building and paving blocks, &c., by wetting a mixture of ground calcined lime, sand, and quartz with diluted hydrochloric acid, and subjecting the moulded blocks to the pressure of super-heated steam in a closed vessel or drum; as a variant of the process he substitutes hydrochloric acid vapour, passed into the drum together with the steam, for the hydrochloric acid mixed with the compound.

1,356.—SASH FASTENINGS: *P. Meredith.*—To a lug upon a bracket fixed to the outer sash bar is pivotted a forked lever, which engages a tongue upon the inner sash-bar, and is drawn tightly by means of a thumb-screw; the lever is held in either an open or a closed position by a spring, and the inclined shoulders of the tongue serve to force the sashes upwards and downwards.

1,378.—CEMENTS FOR PAINTS AND SIMILAR PURPOSES: *Lithosite Manufacturing Company.*—The invention relates to cements that are applicable to paints or to any uses of Portland cement. Magnesium oxide is mixed with the solution of magnesium chloride obtained by evaporating sea-water, the evaporation being then continued at a higher temperature. With the material thus produced calcined magnesite is mixed, and the compound is ground to form cement; by an alternative process boracic acid is added to the mother liquor, and, after evaporation, the product is ground with calcined magnesite, or ground burned clay is added to the magnesium chloride; for use as mortar the cement is prepared by grinding sulphate of magnesium and sulphate of aluminium with the calcined magnesite; for use as paint the cement is finely ground and mixed with water.

1,474.—ANTI-CORROSION VALVES: *W. S. Newton.*—For resistance against corrosion the seat or face of the valve is enamelled, the opposing part being made, in each case, of soft material. The enamel can be fused into a groove in the valve seat, or a moulded ring of enamel may be cemented in the groove; by another method the enamelled seating is made detachable from the body of the valve or tap.

1,477.—ACETYLENE LAMPS: *J. G. A. Kitchen.*—For lamps that have feeding-wicks the supply of water to the calcium carbide is regulated by the following contrivance—one end of the wick passes through a hole in the upper plate of the carbide container, is coiled in a cylinder outside the plate, and is secured to a piston upon the end of a screw outside, when the cock is opened the quantity of water that is fed from the cylinder is determined by varying the amount of pressure upon the coiled wick by means of the screw; the carbide container is made in two parts, the lower and detachable part is secured by clips, and the water in the vessel above, or at the side, keeps the container cool.

1,536.—TRIPOD STANDS FOR SURVEYING INSTRUMENTS, &c.: *J. W. Bennetto.*—The invention is devised to provide means for limiting the stretch of the legs of tripod stands by jointing three stay rods to the legs of the stand and also to a sliding socket that can be clamped anywhere along a central rod which is fixed beneath the table of the stand.

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## SOME RECENT SALES OF PROPERTY.

### ESTATE EXCHANGE REPORT.

| | |
|---|---|
| May 3.—By LANCASTER & SON (at Barnsley). | |
| Thurgoland, Yorks.—Highfield Farm, 78 a. 3 r. 38 p., f. | £2,700 |
| A freehold house, also four closes, 6 a. 2 r. 7 p. | 426 |
| Crane Moor, Yorks.—Highfold Farm, 13 a. 0 r. 18 p., f. | 720 |
| By A. C. HIGGS (at Dorchester). | |
| Buckland Newton, Dorset.—The Plush Manor Estate, 911 a. 2 r. 29 p., f. | 8,300 |
| May 4.—By BLAKE & CARPENTER (at Croydon). | |
| Beddington, Surrey.—A freehold building estate, 36 a. 2 r. 35 p. | 4,700 |
| By MILLER & ABBOTTS (at Banbury). | |
| Shutford, Oxon.—A freehold estate, 93 a. 0 r. 31 p. | 1,900 |
| Range of farm buildings and two enclosures, 5 a. 1 r. 26 p., f. | 161 |
| Epwell, Oxon.—A freehold estate, 50 a. 2 r. 38 p. | 1,450 |
| May 6.—By BOURNE & SON (at Totnes). | |
| Diptford, Devon.—Farleigh Farm, 193 a. 2 r. 27 p., f. | 4,500 |
| Cleave Farm, 101 a. 3 r. 15 p., f. | 1,950 |
| May 8.—By BRODIE, TIMBS, & CO. | |
| Brixton.—11 and 13, Overton-rd., u.t. 63 yrs., g.r. 21*l.*, r. 90*l.* | 835 |
| 33, Wiltshire-rd., u.t. 63 yrs., g.r. 13*l.*, r. 55*l.* | 440 |
| By JONES, SON, & DAY. | |
| Plaistow.—24, Beaconsfield-rd., f., e.r. 30*l.* | 240 |
| East Ham.—Creighton-av., a corner house and shop, f., e.r. 40*l.* | 280 |
| Barking-rd., five building plots, f. | 730 |
| Katharine-rd., two building plots, f. | 130 |
| By MIDDLETON & CRACKNELL. | |
| Hampstead.—6, Hampstead Hill Gardens, u.t. 85 yrs., g.r. 22*l.* 10s., r. 180*l.* | 2,200 |
| By NIGHTINGALE, PHILLIPS, & PAGE. | |
| Malden, Surrey.—Chesnut Grove, Devonshire House, f. | 1,430 |
| Byfleet, Surrey.—Chertsey-rd., The Ferns, and 1 a. 1 r. 29 p., f. | 1,500 |
| Kingston Hill, Surrey.—3, 13, and 19, Gloucester-rd., u.t. 68 yrs., g.r. 20*l.*, r. 155*l.* | 1,500 |
| By ROBSON & PERRIN. | |
| Kilburn.—158, Glengall-rd., u.t. 89 yrs., g.r. 6*l.* | 330 |
| Kensal Green—18, Ravensworth-rd., u.t. 85 yrs., g.r. 5*l.* | 270 |
| Harlesden.—35, Burns-rd., u.t. 91 yrs., g.r. 5*l.* 10s., r. 30*l.* | 335 |
| Kilburn.—29, Kingsley-rd., u.t. 86½ yrs., g.r. 6*l.*, r. 32*l.* | 305 |
| Finsbury Pk.—3, 5, 7, and 9, Perth-rd., u.t. 68 yrs., g.r. 25*l.* 4s. | 1,300 |
| By GREEN & SON. | |
| Hackney.—27, 28, 29, 30, and 31, Church-cres., u.t. 34 yrs., g.r. 9*l.* | 1,035 |
| Wanstead.—Cambridge-rd., Cromer Lodge, f. | 1,780 |
| By HUMBERT & FLINT. | |
| Bloomsbury.—10, Great St. Andrew-st., area 1,040 ft., f. | 1,810 |
| Shelley, Essex.—The Shelley Hall Estate, with cottages, area 222 acres, f. | 6,805 |
| By H. DONALDSON & SON. | |
| Hackney.—28 and 29, Warburton-rd., u.t. 47 yrs., g.r. 5*l.* | 265 |
| 25 and 27, Holcroft-rd., u.t. 27 yrs., g.r. 6*l.* | 255 |
| 34 to 60 (even), Ash-grove, u.t. 68 yrs., g.r. 91*l.* 4s. | 3,575 |
| 45 and 47, Ash-grove, u.t. 27 yrs., g.r. 8*l.* | 410 |
| 6, Andrews-rd., u.t. 27 yrs., g.r. 8*l.* | 385 |
| 112 to 120 (even), Mare-st.; 1, Tudor-rd, and 3 to 9 (odd), Tryon's-ct., u.t. 3½ yrs., g.r. 75*l.* | 170 |
| 1 to 17, Ion-sq., u.t. 36 yrs., g.r. 100*l.* | 2,830 |
| By NORMAN & SON (at Stratford). | |
| Stratford.—32 and 47, Cullum-st., u.t. 77½ yrs., g.r. 10*l.* 10s. | 235 |
| West Ham.—West Ham-lane, a freehold building site | 310 |
| Canning Town.—103 and 105, Malmesbury-rd., f. | 640 |
| 83, Liverpool-rd., f., r. 40*l.* | 590 |
| 40, Ordnance-rd., f., r. 30*l.* | 450 |
| Ascot-st., a plot of building land, f. | 140 |
| Victoria Docks.—18 to 26 (even), Lansdowne-rd., u.t. 78½ yrs., g.r. 15*l.* | 755 |
| Upton Manor.—43, Terrace-rd., f., e.r. 42*l.* | 570 |
| May 9.—By BROAD & WILTSHIRE. | |
| Maida Vale.—2, Clifton-gdns., u.t. 49½ yrs., g.r. 20*l.*, e.r. 90*l.* | 610 |
| Brentwood.—9 to 12, Victoria-rd., u.t. 80½ yrs., g.r. 12*l.* | 630 |
| By BRADSHAW BROWN & CO. | |
| Millwall.—Chevall-st., a range of stabling, u.t. 28½ yrs., g.r. 1*l.* 7s. 6d. | 160 |
| Barnsbury.—89, Westbourne-rd., u.t. 60½ yrs., g.r. 7*l.* 10s., r. 42*l.* | 380 |
| By PERCY H. CLARKE. | |
| Strand.—5, Exeter-st., u.t. 13 yrs., g.r. 16*l.* | 400 |
| Kennington.—98 and 100, Kennington-rd., and 39, Richmond-st., u.t. 19 yrs., g.r. 15*l.* | 500 |
| Battersea.—28, Lindore-rd., u.t. 226 yrs., g.r. 6*l.* 6s., r. 28*l.* | 440 |
| Pimlico.—6, Denbeigh-pl., u.t. 28 yrs., g.r. 9*l.*, e.r. 65*l.* | 540 |
| Camberwell.—19, Bromar-rd., u.t. 77 yrs., g.r. 6*l.* 10s. | 301 |
| By COCKETT & HENDERSON. | |
| Peckham.—64, 66, and 68, Azenby-sq., u.t. 68 yrs., g.r. 13*l.* 10s. | 690 |
| By G. HEAD & CO. | |
| Westbourne Pk.—1, Lancaster-rd., u.t. 64¼ yrs., g.r. 10*l.*, e.r. 60*l.* | £450 |
| 28 and 29, St. Luke's Mews, u.t. 64¼ yrs., g.r. 5*l.* | 485 |
| St. John's Wood.—19, Belgrave-rd., u.t. 51 yrs., g.r. 104*l.* 10s., r. 40*l.* | 410 |
| By WILLIAM HOUGHTON. | |
| Woodford.—22, 23, and 24, Chase-rd., u.t. 71 yrs., g.r. 7*l.* 10s. | 370 |
| East Molesey, Surrey.—Manor-road, Cromwell Cottage, u.t. 67 yrs., g.r. 5*l.* 13s. 9d. | 270 |
| Walthamstow.—90, St. Andrew's-rd., u.t. 61 yrs., g.r. 3*l.* 3s., r. 39*l.* | 320 |
| Kentish Town.—81, Chetwynd-rd., f., r. 36*l.* | 655 |
| By OSBORN & MERCER. | |
| Stoke Poges, Bucks.—Carton Tower, and 4 a., f. | 4,225 |
| By ROGERS, CHAPMAN, & THOMAS. | |
| Belgravia.—15, Wilton-cres., and 28, Kinnerton-st., u.t. 25 yrs., g.r. 31*l.*, r. 320*l.* | 3,350 |
| By H. DONALDSON & SON. | |
| Hackney.—79 to 99 (odd), Sheep-lane, u.t. 68 yrs., g.r. nil | 1,400 |
| 1 to 6, Elm-ter., u.t. 27 yrs., g.r. 45*l.* | 1,100 |
| 14 to 17, Urban-pl., u.t. 37 yrs., g.r. 14*l.* 10s. | 620 |
| Clerkenwell.—8, Coldbath-sq., f., r. 48*l.* | 660 |
| Homerton.—120, 120A, and 120B, High-st., f., r. 86*l.* | 1,130 |
| Fortis Green.—Eastern-rd., Clifton Villa, and Shanklin villa, u.t. 81 yrs., g.r. 8*l.* 10s., r. 74*l.* | 1,015 |
| 1 & 4, Lansdowne Villas, u.t. 79 yrs., g.r. 18*l.* 16s., r. 116*l.* | 1,015 |
| By DEBENHAM, TEWSON, & CO. | |
| Fulham.—Hugon-rd., f.g.r. 20*l.*, reversion in 79½ yrs. | 520 |
| Breer-st., f.g.r. 24*l.*, reversion in 79½ yrs. | 640 |
| Wandsworth Bridge-rd., 27 plots of building land, f. | 4,395 |
| Breer-st., 12 plots of building land, f. | 1,245 |
| By HENRY HENDRIKS (at Birmingham). | |
| Handsworth, Staffs.—31, Villa-rd., u.t. 47 yrs., g.r. 8*l.* 7s. 6d., r. 38*l.* | 500 |
| 3 and 5, Salisbury-rd., u.t. 79 yrs., g.r. 5*l.*, r. 52*l.* | 745 |
| Birmingham.—1, Oozell's-st., u.t. 34½ yrs., g.r. 8*l.* 17s. 6d., r. 30*l.* | 200 |
| 62 and 63, Broad-st., and 2, Cumberland-st., u.t. 34¼ yrs., g.r. 13*l.* 10s., r. 140*l.* 6s. | 1,360 |
| 232, 234, and 235, Broad-st., with the "Granville Bar" b.-h., also 6 to 12 (even), Granville-st., and i.g.r. 10*l.* 4s., u.t. 34¾ and 31¾ yrs., g.r. 26*l.* 17s. 6d. | 3,760 |
| Sparkhill, Worcester.—Greswolde-rd., five freehold houses | 785 |
| Northfield, Worcester.—Maas-rd., two freehold building plots | 199 |
| By ALFRED RICHARDS (at Tottenham). | |
| Tottenham.—White Hart-lane, 18 plots of building land, f. | 963 |
| By JENKINS & SONS (at New Cross). | |
| Deptford.—2 to 40 (even), Berthon-st., u.t. 75½ yrs., g.r. 90*l* | 3,610 |
| 34 to 68 (even), Milton Court-rd., u.t. 48½ yrs., g.r. 72*l.* | 3,800 |
| By A. FLOWER (at Masons' Hall Tavern). | |
| Covent Garden.—James-st., "The White Lion," p.-h., u.t. 49 yrs., r. 110*l.*, with goodwill | 15,020 |
| May 10.—By BUTLER & HORDER. | |
| Tottenham.—1A and 5A, Woodland's Park-rd., f., r. 70*l.* | 940 |
| By ROBSON & CO. | |
| Stroud Green.—36, Lorne-rd., u.t. 79 yrs., g.r. 7*l.*, e.r. 42*l.* | 430 |
| By WAGSTAFF & SONS. | |
| Islington.—84, St. Peter's-st., f., r. 65*l.* | 1,040 |
| Highbury.—42 and 44, Battledean-rd., u.t. 94 yrs., g.r. 16*l.* 16s., r. 84*l.* | 790 |
| Holloway.—99, 101, and 103, Hornsey-rd., u.t. 39½ yrs., g.r. 18*l.* 18s. r. 130*l.* 10s. | 875 |
| By T. B. WESTACOTT. | |
| Canning Town.—4 to 20 (even), Roscoe-st., u.t. 51 yrs., g.r. 19*l.* 2s. 6d. | 810 |
| Hornsey.—9, Effingham-rd., f., r. 28*l.* | 440 |
| By Messrs. WOODS. | |
| Cubitt Town.—21 and 22, Strattondale-st., u.t. 42¼ yrs., g.r. 10*l.* | 215 |
| By ROBINS, SNELL & CO. | |
| Westminster.—77 to 103 (odd), Victoria-st. (Marlborough Mansions), u.t. 85½ yrs., g.r. 2,500*l.*, e.r. 8,448*l.* | 15,000 |
| By A. SAVILL & SON. | |
| Woodford Green, Essex.—Snake's-lane, Rosebrae, and ¾ a., u.t. 80½ yrs., g.r. 16*l.*, r. 120*l.* | 1,510 |
| By DOUGLAS YOUNG & CO. | |
| Ilford.—Balfour-rd., f.g.r. 37*l.* 16s., reversion in 97 yrs. | 1,000 |
| Morland-rd., f.g.r. 14*l.*, reversion in 97 yrs. | 370 |
| Walthamstow.—1, Fraser-rd., f., e.r. 32*l.* | 465 |
| Stepney.—9, Bromley-st., u.t. 19½ yrs., g.r. 3*l.*, r. 36*l.* | 265 |
| Croydon.—69 and 71, Canterbury-rd, u.t. 98 yrs., g.r. 10*l.*, r. 67*l.* 12s. | 930 |
| By FULLER, MOON, & FULLER (at Croydon). | |
| Croydon.—Johnson-rd., 20 plots of building land, f. | 976 |
| Mitcham.—1, 1a, 2, and 3, Tramway-ter., u.t. 81 yrs., g.r. 6*l.* 10s. | 380 |
| By Messrs. KEMSLEY (at Buckhurst Hill). | |
| Buckhurst Hill.—High-rd., Park House, and 1 a. 0 r. 16 p., f., r. 60*l.* | 1,210 |
| High-rd., two plots of building land, f. | 720 |
| Epping New-rd., &c., six plots of building land, f. | 500 |
| By N. EASTON & SON (at Hull). | |
| New Holland, Lincs.—Freehold brick and tile works, 21 a. 1 r. 28 p., with machinery, plant, &c. | 3,650 |
| By W. WESTON (at Harrow-road). | |
| Kilburn.—29, Oxford-rd., u.t. 59½ yrs., g.r. 11*l.*, r. 50*l.* | 480 |
| 17, 19, 23, and 25, Percy-rd., u.t. 65 yrs., g.r. 40*l.*, r. 144*l.* | 1,320 |
| By G. TINKER & SON (at Holmforth). | |
| Austonley, Yorks.—A freehold house, and 2 a. 0 r. 27 p. | 130 |
| Cartworth, Yorks.—Five enclosures of land, 23 a. 0 r. 13 p., f. | 690 |
| Upperthong, Yorks.—A freehold allotment, 10 a. 0 r. 30 p. | 300 |
| Two freehold houses and eight cottages | 1,286 |
| Three closes of land, 5 a. 1 r. 17 p., f. | 220 |

# COMPETITIONS, CONTRACTS, AND PUBLIC APPOINTMENTS.

## COMPETITIONS.

| Nature of Work. | By whom Advertised. | Premiums. | Designs to be delivered. |
|---|---|---|---|
| *Design for Grammar School | Governors, Lichfield Grammar School | 20*l.* | July 3 |

## CONTRACTS.

| Nature of Work or Materials. | By whom Required. | Forms of Tender, &c. Supplied by | Tenders to be delivered. |
|---|---|---|---|
| Additions to Farm, Sillerton, Auchterless, N.B. | —— | J. Duncan & Son, Archt. Turriff, Aberdeen | May 23 |
| Hospital, Laundry, &c. Oulton, near Lowestoft | —— | A. Clarke, Archt. 126, London-road, Lowestoft | do. |
| *Yellow Deals and Batten Ends (60 fathoms) | Eton Union | R. H. Barrett, Union Offices, Slough | do. |
| *Granite | Mile End Vestry | J. M. Knight, Vestry Hall, Bancroft-rd. E. | May 24 |
| *Wood Paving | Hackney Vestry | J. Lovegrove, Vestry Hall | do. |
| Viaduct Works, Inismore, co. Fermanagh | —— | Secretary, County Council Offices, Enniskillen | do. |
| Pumping Station, &c. Smallbrook Mill | Warminster U.D.C. | A. F. Long, Engr. Council Offices | do. |
| Four Houses and Shops, Elland, Yorks | —— | J. Wilson, Brook-street, Elland | do. |
| Reading Room, North Brentor, Tavistock | —— | J. N. Jackman, Burnville, North Brentor | do. |
| House, Lavatories, &c. Ruchill Park | Glasgow Corp. | A. B. M'Donald, Engr. City-chambers, Cochrane-street | do. |
| Additions to School, Granville-street | Runcorn Sch. Bd. | Clerk, Town Hall, Runcorn | do. |
| Bridge, Stonethwaite, Borrowdale | Cockermouth R.D.C. | J. B. Wilson, C.E. Court-bldgs. Cockermouth | do. |
| *Artesian Well | Wood Green U.D.C. | C. J. Gunyon, Town Hall, Wood Green | May 26 |
| Additions to Offices, Newmachar, N.B. | ... | Wilsons & Duffus, Aberdeen | do. |
| *Schools | Croydon Sch. Bd. | B. Rule, Offices, Katherine-st. Croydon | May 27 |
| Additions to Burman House, Henley-in-Arden | —— | F. B. Endall, Archt Solihull | do. |
| Villa, Haydon Bridge, Newcastle | —— | W. Bedlington, Archt. 23, Eldon-sq. Newcastle | do. |
| *Paving Works | Coventry Corp. | J. E. Swindlehurst, St. Mary's Hall, Coventry | May 29 |
| *Schools, Holyhead | Rev. R. D'Alton | Brodrick, Lowther & Walker, York-chmbrs. Hull | do. |
| School, Wells-road | Bristol Sch. Bd. | H. D. Bryan, 38, College-green, Bristol | do. |
| *Sea Wall, Road, &c. | Somerset C.C. | C. A. Brereton, 21, Delahay-st. Westminster, S.W. | do. |
| *Laying Wood Paving | Willesden D.C. | O. C. Robson, Offices, Dyne-rd. Kilburn | May 30 |
| *Brick Sewer | do. | do. | do. |
| *Kerbing, Making-up, &c. Roads | Barnet U.D.C. | W. H. Mansbridge, 40, High-st. Barnet | do. |
| *Painting and Distempering | Barnet Union | The Master at Workhouse | do. |
| *Various Road Materials | Maidstone U.D.C. | T. F. Bunting, Fair Meadow, Maidstone | do. |
| Sewerage Works | Guiseley U.D.C. | H. A. Johnson, C.E. 14, The Exchange, Bradford | do. |
| *Kerbing, Channelling and Paving | Lewisham B. of W. | Surveyor, Town Hall, Catford, S.E. | do. |
| *Pipe Sewers | Barnet R.D.C. | W. H. Mansbridge Office, High-st. Barnet | do. |
| *Sea Wall | Clacton-on-Sea Drainage Commrs. | T. A. Cressy, Town Hall, Clacton-on-Sea | May 31 |
| Shops, &c. Bridge-st. Evesham | W. & H. Smith, Ltd. | G. H. Hunt, Archt. Evesham | do. |
| Sewage Works, Salterhebble | Halifax Corp. | E. R. S. Escott, C.E. Town Hall | do. |
| *Granite and Jarrah Wood Paving | Greenwich B. of W. | 141, Greenwich-rd. S.E. | do. |
| *Administrative Block at Infirmary | Sunderland Union | W. & T. R. Milburn, 20, Fawcett-st. Sunderland | June 1 |
| *Band Stand | Gravesend T.C. | C. E. Hatton, Court House, Gravesend | do. |
| *Oak Fencing | Southgate U.D.C. | C. G. Lawson, Council Offices, Palmer's Green, N. | do. |
| Hospital, Sheriff Hill | Gateshead Corp | J. C. Bower, C.E. Town Hall | do. |
| Alterations, &c. to Chapel, High-st Merthyr | ...... | W. Probert, 11, New Castle-st. Merthyr Tydfil | June 2 |
| *Stoneware and Iron Sewers | Wycombe R.D.C. | Taylor, Sons, & Santo Crimp, 27, Gt. George-st. S.W. | June 3 |
| Cast Iron Pipes, Culvert, &c. | Pembroke Dock T.C. | Beesley, Son, & Nichols, Engr. 11, Victoria-street, S.W. | do. |
| Additions to County School, Pontypridd | —— | A. O. Evans, Archt. Pontypridd | do. |

## CONTRACTS—*Continued.*

| Nature of Work or Materials. | By whom Required. | Forms of Tender, &c. Supplied by | Tenders to be delivered. |
|---|---|---|---|
| *Road Making and Sewering | Hornsey U.D.C. | E. J. Lovegrove, Southwood-lane, Highgate, N. | June 5 |
| *Workmen's Dwellings | do. | do. | do. |
| Additions to Chapel, Cefn Mawr | —— | J. W. Jones, Archt. Brooklea, Acrefair, Ruabon | do. |
| School, Victoria-rd. | Morley S.B. | Buttery & Birds, Archt. Queen-st. Morley | do. |
| *New Station, Acton | G. W. Ry. Co. | The Engineer, Paddington Station, W. | June 6 |
| Carriage Shed, Canton, Cardiff | do. | G. K. Mills, Paddington Station, W. | do. |
| Hot-water Apparatus, &c. Brierley Hill School | Kingswinford (U.D.) Sch. Bd. | T. Robinson, Archt. Stourbridge | do. |
| *Boundary Wall, Fencing, and Convenience | Tottenham U.D.C. | P. E. Murphy, 712, High-rd. Tottenham | do. |
| *Surface Water Culvert | do. | do. | do. |
| *Surface Water Culvert, Chestnuts Estate | do. | do. | do. |
| *Repair of Tar and Asphalt Paving | do. | do. | do. |
| *Erection of Wall | Wandsworth Burial Bd | Offices, Town Hall, Wandsworth, S.W. | do. |
| *Chimney Shaft | Leyton U.D.C. | W. Dawson, Town Hall, Leyton | do. |
| *Police Cottage | County of Southampton | W. J. Taylor, The Castle, Winchester | June 7 |
| *Paving and Making-up Roads | Plumstead Vestry | W. G. Gow, Vestry Hall, Plumstead | do. |
| Street Work (22 streets) | Kettering U.D.C. | T. R. Smith, Surv. Market Hill | do. |
| *Construction and Sinking of Well | Cuckfield R.D.C. | J. Mansergh, 5, Victoria-st. S.W. | June 8 |
| *Repairs and Renovations at Infirmary | St. Pancras Guardians | Vestry Hall, St. Pancras, N.W. | do. |
| *Coastguard Buildings | Admiralty | Offices, 21, Northumberland-avenue, W.C. | June 9 |
| *Destructor Buildings and Chimney Shaft, Shelter Hall, Refreshment Rooms, &c. | Gt. Yarmouth T.C. | J. W. Cockrill, Town Hall, Gt. Yarmouth | do. |
| *Additions and Alterations at Workhouse | Blean Union | The Master at Workhouse, Herne Common, Herne Bay | June 12 |
| Pipe Sewers, &c. | Market Harborough R.D.C. | J. B. Everard, C.E. 6, Millstone-lane, Leicester | June 13 |
| *Sewers, &c.; also Settling Tank, &c. | Market Harboro R.D.C. | J. B. Everard, 6, Millstone-lane, Leicester | do. |
| *Police Buildings and Offices | Warrington Corp. | Boro. Engineer, Town Hall | June 15 |
| *Technical Institute and Swimming Baths, &c. | Beckenham U.D.C. | J. A. Angell, Council Offices, Beckenham | June 19 |
| *Alterations and Additions to Library | Brighton Corp. | F. J. C. May, Town Hall, Brighton | July 27 |
| *Sanitary Alterations, School, Ilford | Westminster Diocesan Fund | Archbishop's House, Westminster, S.W. | No date |
| Club House, Stalybridge | —— | J. Eaton, Sons & Co. Archt Ashton-under-Lyne | do. |
| Twenty-two Houses, Duckworth-lane, Manningham | W. Gratdaze | Fairbank & Wall, Archt. Bradford | do. |
| Road Works and Drainage, Whitchurch-rd. Cardiff | | E. H. Bruton, Archt. 15, Queen-st. Cardiff | do. |
| Kerbing, Setts, &c. Notton | Royston U.D.C. | S. Wilson, Surv. Royston | do. |
| Alterations to Britannia-buildings | County Perseverance Co-op. Soc. | G. & J. Steane, Archt 22, Little Park-st. Coventry | do. |
| House, Shop, &c. Manningham-lane, Bradford | ...... | J. Young & Co. Archt. 62, Market-st. Bradford | do. |
| Steam Laundry, Emsworth, Havant | ...... | F. Swinburne, Archt. West-st. Emsworth | do. |
| Alterations, &c. Black Swan Hotel, Pickering | ...... | A. D. Kaye, Archt. 71, Albion-st. Leeds | do. |
| Eight Houses, Pitsmoor, Sheffield | W. Oxley | Hall & Fenton, Archt. 14, St. James's-row, Sheffield | do. |
| Schools, Haslemere | —— | Chancellor & Hill, Archt. 12, Jewry-st. Winchester | do. |
| Three Houses, Irthlingborough | —— | M. R. Thompson, Archt. Wellingborough | do. |
| Hotel, High-st. Merthyr | —— | H. T. Thornley, Archt. 100, St. Mary-st. Cardiff | do. |
| Alterations, Theatre Royal Hotel, Cardiff | Mrs. Cohen | do. | do. |
| *Business Premises and Residence, High Wycombe | McIlroy Bros. | T. Thurlow, Archt. High Wycombe | do. |
| *Church, also House, Histon, Cambs. | —— | G. Baines, 5, Clement's-inn, W.C. | do. |

## PUBLIC APPOINTMENTS.

| Nature of Appointment. | By whom Advertised. | Salary. | Application to be in. |
|---|---|---|---|
| *Road Foreman | Wandsworth B. of W. | 30s. rising to 53s. per week house and gas | May 29 |
| *Clerk of Works | Romford R.D.C. | 3*l.* 3s. per week | do. |
| *Borough Surveyor and Inspector of Nuisances | Brecon Corp. | 100*l.* per annum | June 10 |
| *Draughtsman | H. M. Dockyard, Chatham | 2*l.* 14s. per week | No date |

*Those marked with an asterisk* (*) *are advertised in this Number. Competitions, p.* iv. *Contracts, pp.* iv. vi. vii. viii. x. & xxi. *Public Appointments, pp.* xviii. & xxi.

| | |
|---|---|
| Child-o'-th'-Edge farm, 20 a. 1 r. 14 p., f. | £410 |
| May 11.—By GOULDSMITH, SON, & CO. | |
| South Kensington.—39, Lennox-gardens, and 45, Clabon-mews, u.t. 74½ yrs., g.r. 20*l.* | 9,750 |
| By MARK LIELL & SON. | |
| Ilford.—Bessborough-rd., f.g.r.'s 66*l.* 10s., reversion in 98½ yrs. | 1,646 |
| Barking, Essex.—39, The Broadway, with slaughter house, &c., f., r. 60*l.* | 1,245 |
| Bow.—112, Malmesbury-rd., u.t. 47 yrs., g.r. 4*l.*, r. 28*l.* | 305 |
| By J. W. NEIGHBOUR. | |
| Canonbury.—29, St. Paul's-rd., u.t. 47 yrs., g.r. 7*l.*, e.r. 55*l.* | 480 |
| By HARDS & BRADLY. | |
| Norwood.—45 and 47, Percy-rd., u.t. 78 yrs., g.r. 7*l.* | 160 |
| 2, Sydney-rd., u.t. 78 yrs., g.r. 3*l.* 10s. | 210 |
| By H. J. BLISS & SONS. | |
| Victoria Park.—18, Approach-rd., u.t. 54 yrs., g.r. 6*l.*, e.r. 40*l.* | 400 |
| Bethnal Green.—43, 45, and 47, Patriot-sq., and I.g.r. 3*l.*, u.t. 58½ yrs., g.r. 11*l.* | 855 |
| Hackney.—68, 70, and 72, Minerva-st., u.t. 6 yrs., g.r. nil | 175 |
| Harringay.—83 to 95 (odd), Beresford-rd., u.t. 97 yrs., g.r. 45*l.* 10s., r. 236*l.* | 2,355 |
| By C. C. & T. MOORE. | |
| Mile End.—13, 15, and 27, Sceptre-st., f. | 1,230 |
| South Woodford.—3, Derby Villas, f., e.r. 28*l.* | 335 |
| Dalston.—13, Navarino-rd., u.t. 54 yrs., g.r. 6*l.* 17s. 6d., e.r. 55*l.* | 500 |
| By NEWBON, EDWARDS, & SHEPHARD. | |
| City-rd.—No. 310, u.t. 43 yrs., g.r. 8*l.*, r. 50*l.* | £580 |
| Islington.—5, Allen-st., u.t. 40 yrs., g.r. 6*l.*, r. 30*l.* | 260 |
| Hampstead.—Solent-rd., f.g.r. 19*l.* 10s., reversion in 88½ yrs. | 565 |
| By GEORGE PRATT. | |
| Sydenham.—145, Venner-rd., f., r. 40*l.* | 510 |
| 36 and 38, Coombe-rd., f. | 420 |
| Brockley.—204, Brockley-rd., u.t. 74½ yrs., g.r. 4*l.* 10s., r. 32*l.* | 400 |
| By STIMSON & SONS. | |
| Ball's Pond.—Ball's Pond-rd., f.g.r.'s 49*l.* 10s., reversion in 52 yrs. | 1,710 |
| Ball's Pond-rd., "The Marquis of Salisbury" p.-h., f.g.r. 30*l.*, reversion in 52 yrs. | 1,560 |
| Ball's Pond-rd., f.g.r.'s 44*l.* 10s., reversion in 52 yrs. | 1,555 |
| Stanley-rd., f.g.r.'s 232*l.* 5s., reversion in 52 yrs. | 7,245 |
| Canterbury-rd., f.g.r.'s 233*l.* 10s., reversion in 52 yrs. | 7,120 |
| Kingsbury-rd., f.g.r.'s 128*l.*, reversion in 52 yrs. | 4,020 |
| Hackney.—Urswick-rd., f.g.r. 15*l.*, reversion in 29½ yrs. | 640 |
| Urswick-rd., f.g.r. 15*l.*, reversion in 50 yrs. | 600 |
| Sutton-pl., f.g.r. 18*l.* 18s., reversion in 29½ yrs. | 740 |
| Sutton-pl., f.g.r. 21*l.* 10s., reversion in 29½ yrs. | 1,350 |
| 17, 18, 20, and 21, Sutton-pl., f., r. 156*l.* | 2,820 |
| Homerton.—18, Brooksby's-walk, c. | 1,200 |
| By FAREBROTHER, ELLIS, & CO. | |
| Holloway.—Holloway-rd., f.g.r. 10*l.*, reversion in 8½ yrs. | 1,620 |
| Holloway-rd., f.g.r. 5*l.* 10s., reversion in 7½ yrs. | 710 |
| 539, 545, and 547, Holloway-rd., f., r. 104*l.* | £2,190 |
| Holloway-rd., f.g.r.'s 17*l.*, reversion in 5 yrs. | 1,930 |
| Holloway-rd., f.g.r.'s 65*l.*, reversion in 5 yrs. | 3,300 |
| Wedmore-st., f.g.r.'s 45*l.*, reversions in 5 to 8½ yrs. | 1,350 |

*Contractions used in these lists.*—F.g.r. for freehold ground-rent; l.g.r. for leasehold ground-rent; i.g.r. for improved ground-rent; g.r. for ground-rent; r. for rent; f. for freehold; c. for copyhold; l. for leasehold; e.r. for estimated rental; u.t. for unexpired term; p.a. for per annum; yrs. for years; st. for street; rd. for road; sq. for square; pl. for place; ter. for terrace; cres. for crescent; yd. for yard, &c.

## TO CORRESPONDENTS.

NOTE.—The responsibility of signed articles, letters, and papers read at public meetings, rests, of course, with the authors.

*We cannot undertake to return rejected communications.*

Letters or communications (beyond mere news items) which have been duplicated for other journals are NOT DESIRED.

We are compelled to decline pointing out books and giving addresses.

Any commission to a contributor to write an article is given subject to the approval of the article, when written, by the Editor, who retains the right to reject it if unsatisfactory. The receipt by the author of a proof of an article in type does not necessarily imply its acceptance.

All communications regarding literary and artistic matters should be addressed to THE EDITOR: those relating to advertisements and other exclusively business matters should be addressed to THE PUBLISHER, and *not* to the Editor.

## TENDERS.

[Communications for insertion under this heading should be addressed to "The Editor," and must reach us *not later than* 10 *a.m. on Thursdays.* N.B.—We cannot publish Tenders unless authenticated by the name and address of the sender; and we cannot publish announcements of Tenders accepted unless the amount of the Tender is given, nor any list in which the lowest Tender is under £100, unless in some exceptional cases and for special reasons.]

* Denotes *accepted.* † Denotes *provisionally accepted.*

BANBURY.—For erecting a pair of semi-detached villas, in Middleton-road, for Mr. Lewis Oakley. Mr. J. Timms, architect, Banbury:—

| | | | |
|---|---|---|---|
| Orchard & Son | £1,075 | J. Grant* | £933 |
| J. F. Booth | 1,000 | | |

[All of Banbury.]

BANBURY.—For the erection of a dwelling-house and boundary fences, for Mr. John Riley. Mr. J. Timms, architect, Banbury:—

| | | | |
|---|---|---|---|
| J. S. Kimberley | £836 | J. F. Booth | £740 |
| Orchard & Son | 777 | | |

[All of Banbury.]

CLACTON-ON-SEA.—For the erection and completion of a detached residence, proposed to be erected on the Marine Parade, Clacton-on-Sea, for Mr. G. W. Thomson. Mr. James W. Martin, architect, Station Chambers, Clacton-on-Sea. Quantities by Mr. Alfred Boxall, 8, Adam-street, Adelphi, W.C.:—

| | | | |
|---|---|---|---|
| Shillitoe & Sons | £5,700 | Merredew & Wort | £4,790 |
| Everett & Son | 5,670 | Dupont | 4,567 |
| Lyle Manufacturing Co. | 5,400 | Linzell | 4,444 |
| | | McKay | 4,100 |

EDGWARE.—For the erection of Nos. 5 and 6, Canons Park, Edgware. Mr. J. H. May, architect, 249½, High Holborn:—

| | | | |
|---|---|---|---|
| Lovell | £3,278 | J. Christie | £2,988 |
| Britten | 3,200 | Dupont | 2,950 |
| Selerey | 3,189 | Tongee | 2,900 |
| Wall & Co. | 3,069 | Judge* | 2,750 |

EDMONTON.—For new schools, Silver-street, for the School Board for Edmonton. Mr. Henry W. Dobb, architect, 110, London Wall, E.C. Quantities by Messrs. Young & Brown, 7, Southampton-street, W.C.:—

| | | | |
|---|---|---|---|
| Hill | £25,350 | Hockley | £24,040 |
| Chessum | 24,300 | Lawrence | 23,399 |
| Stimpson | 24,170 | Monk* | 21,910 |

[Architect's Estimate £23,833.]

* Accepted subject to the sanction of the Educational Department.

FELIXSTOWE.—For the erection of a Presbyterian Church. Mr. George William Leighton, architect, 6, Princes-street, Ipswich and Orwell-road, Felixstowe:—

| | | | |
|---|---|---|---|
| Cornish & Gaymer | £4,326 0 | Thos. Ward | £3,045 0 |
| Ernest West | 3,300 0 | Wm. Wawman | 2,979 0 |
| R. W. Pratt | 3,240 0 | H. J. Linzell | 2,895 0 |
| Wm. Parmenter | 3,236 0 | F. C. Thurman* | 2,879 18 |

GLOUCESTER.—For the erection of mixed and infants' schools, caretaker's house, &c., in the Hatherley-road. Mr. Alfred J. Dunn, architect. Quantities by the architect:—

| | | | |
|---|---|---|---|
| J. W. Smith | £14,993 0 | Stephens, Bastow, & Co. | £13,478 0 |
| Parnell & Sons | 14,376 0 | Smith & Pitts | 12,487 0 |
| Forse & Son | 14,332 0 | Gurney & Sons, Gloucester* | 11,548 10 |
| Sapcote & Sons | 14,276 0 | Gurney Bros. | 8,700 0 |
| T. Broad | 13,878 0 | | |
| W. Jones | 13,730 0 | | |

GREAT YARMOUTH.—For a Mission Church and Institute, for "The Missions to Seamen." Quantities by the architects, Messrs. Bottle & Olley, 5, Queen-street, Great Yarmouth:—

| | | | |
|---|---|---|---|
| Jas. Rand | £1,780 0 | A. E. Bond | £1,645 0 |
| F. Grimble | 1,685 0 | Carter & Wright | 1,619 0 |
| J. Ward | 1,669 15 | W. Cork, Great Yarmouth* | 1,235 0 |
| J. S. Read | 1,650 0 | | |

*Plumbers' Work.*

R. A. Eastoe* £137

*Whole Tender.*

G. E. Hawes, Norwich £1,375

HUDDERSFIELD.—For the erection of five houses, Linthwaite, for Mr. G. Haigh. Mr. J. Berry, architect, 9, Queen-street, Huddersfield:—

| | |
|---|---|
| *Masonry.*—Alfred Hirst, Linthwaite<br>*Joinery.*—White & Brearley, Golcar<br>*Plumbing.*—F. Goodall, Slaithwaite<br>*Plastering and Painting.*—James Walker, Slaithwaite<br>*Slating.*—Pickles Bros., Fountain-street, Huddersfield | £1,500 |

ILFORD.—For erecting the Town Hall, Ilford. Mr. B. Woollard, architect, Finsbury-circus, E.C. Quantities by Mr. Geo. T. G. Wright, Great Winchester-street, E.C.:—

| | | | |
|---|---|---|---|
| Symes | £27,969 | Stephens, Bastow, & Co., Ltd. | £24,998 |
| Mitchell | 27,100 | Sharpe | 24,900 |
| Patman & Fotheringham | 26,500 | Pridmore | 23,948 |
| Chessum & Sons | 25,469 | | |

LONDON.—For alterations and decorations at "The Victory" p.-h., Clarence-rd., N.W. Messrs. Thorpe & Furness, architects:—

| | | | |
|---|---|---|---|
| Marchant & Hirst | £1,385 | Mitchell | £1,246 |
| Bloomfield & Evans | 1,299 | Fuller | 1,148 |

LONDON.—For alterations and additions to the "Prince Albert" p.-h., Weedington-road, N.W., for Messrs. Keates & Arnold. Messrs. Crickmay & Zimmermann, architects, Mincing-lane, E.C.:—

| | In Mahogany. | In Walnut. |
|---|---|---|
| Ransome | £2,065 | £2,090 |
| Marchant & Hirst | 1,868 | 1,918 |
| Edwards & Medway | 1,790 | 1,785 |
| Spencer | 1,757 | 1,757 |
| Bloomfield & Evans* | 1,595 | 1,610 |
| Green | 1,454 | 1,504 |

LONDON.—For alterations and additions for Messrs. Ponting Bros., High-street, Kensington. Mr. A. Sykes, architect, 45, Finsbury-pavement:—

| | | | |
|---|---|---|---|
| Marchant & Hirst | £8,476 | Polden & Co. | £7,840 |
| Kinnard & Co. | 8,410 | | |

LONDON.—For decorations and new drainage, for Mrs. Cook, 3, Upper Wimpole-street. Mr. A. J. Perrian, architect, 43, Cannon-street, E.C.:—

Marchant & Hirst* £704

LONDON.—For erecting new workshops at the Aske's Schools, Shoreditch Technical Institute, for the London County Council:—

| | | | |
|---|---|---|---|
| Marchant & Hirst | £3,500 | F. & F. J. Wood | £3,455 |
| L. H. & R. Roberts | 3,464 | Holloway Bros. | 3,179 |

LONDON.—For repairs and decorations at 102, Carleton-road, N.W. Messrs. Thorpe & Furness, architects, High-street, N.W.:—

| | | | |
|---|---|---|---|
| Marchant & Hirst | £210 | Leaf & Daughter | £170 0 |
| G. Cox | 175 | Gabin Bros. | 157 19 |

LONDON.—For alterations and repairs at No. 19, Rupert-street, W., for Mr. G. W. Pauley. Messrs. Shaw & Galette, architects, 49, Finsbury-pavement, E.C.:—

| | | Without shop front. |
|---|---|---|
| Beer & Gash | £2,100 0 0 | £1,910 0 0 |
| Patman & Fotheringham | 1,909 0 0 | 1,735 0 0 |
| Marchant & Hirst | 1,822 0 0 | 1,674 0 0 |
| Killby & Gayford | 1,683 0 0 | 1,506 0 0 |
| Woolsley & Co. | 1,630 0 0 | 1,500 0 0 |
| Lee | 1,597 0 0 | 1,449 0 0 |
| Lole & Lightfoot | 1,461 0 0 | 1,339 0 0 |
| Cordell | 1,442 8 9 | 1,302 2 9 |
| Hocking Bros. | 1,420 0 0 | 1,290 0 0 |

LONDON.—For alterations and repairs at 17 and 18, Rupert-street, for Mr. H. Baleson. Mr. G. Carter, architect, 513, Holloway-road:—

Marchant & Hirst* £690

LONDON.—For new lobby entrance to the "Hotel Provence," Leicester-square, for Mr. J. T. Davies. Mr. A. E. Pridmore, architect, 2, Broad-street-buildings:—

| | | | |
|---|---|---|---|
| Davenall | £475 | Marchant & Hirst* | £345 |
| Dixon | 405 | | |

LONDON.—For proposed new premises for Mansfield House University Settlement Boys' Club and Passmore Edwards Hall, Canning Town, E. Mr. H. Clapham Lander, architect, Effingham House, Arundel-street, Strand, W.C. Quantities by Mr. C. A. Jaques, 29, Darthmouth Park Avenue, N.W.:—

| | | | |
|---|---|---|---|
| Shillitoe & Son | £9,200 | Patman & Fotheringham | £8,529 |
| Williams & Son | 9,147 | W. J. Maddison | 8,430 |
| Mattock Brothers | 8,700 | Smith & Sons, South Norwood, S.E.† | 8,353 |
| John Greenwood | 8,695 | | |
| Wall & Co. | 8,632 | | |

LONDON.—For alterations and repairs to All Saints' Church, &c., Peckham. Mr. Walter Planck, architect:—

| | | | |
|---|---|---|---|
| Smith | £775 | Barlow & Roberts | £553 |
| Norton | 690 | G. Parker, Peckham* | 549 |
| Gilbeart | 650 | | |

LONDON.—For painting, whitewashing, and repairs to the Houseless Poor Wards, East-street, Baker-street, W., for the Guardians of Marylebone:—

J. J. Richards, Brixton* £151 11 10

LOUGHBOROUGH.—For extensions to main shops and foundry at the Falcon Works, Loughborough, for the Brush Electrical Engineering Company. Messrs. Edmeston & Gabriel, architects, 42, Old Broad-street, E.C. Quantities by Messrs. Parr & Sons, New Broad-street House, E.C.:—

*To complete in thirty weeks.*

A. G. Bell £6,180

*Dependent on supply of ironwork.*

E. Orton £6,038

*Twenty-five weeks.*

| | |
|---|---|
| Main, Kendall, & Main | £5,895 |
| Moss & Sons | 5,750 |

*Twenty-two weeks.*

Faulks, Loughborough* £5,620

NEWCASTLE (co. Down).—For the erection of a vicarage and enclosure, for the trustees of St. John's Church. Mr. J. Russell, C.E., 16, Waring-street, Belfast:—

F. & J. Neill, Newcastle, co. Down* £1,400

SALISBURY.—For the erection of a house and shop, Winchester-street, for the Trustees. Messrs. J. Harding & Son, architects, 58, High-street, Salisbury:—

| | | | |
|---|---|---|---|
| E. Hale | £602 10 | E. Pragnell | £556 10 |
| S. G. Grant | 582 0 | Wost & Way | 555 5 |
| W. Roles | 580 10 | E. Day, Salisbury‡ | 529 0 |
| F. Dibben | 570 0 | ‡ Recom'ded for acceptance. | |

SOUTHEND-ON-SEA.—For alterations and additions to the "Cliff Hotel." Southend-on-Sea. Messrs. Thompson & Greenhalgh, architects, Bank Chambers, Southend-on-Sea:—

| | | | |
|---|---|---|---|
| Simpson & Cove | £3,400 | J. Whuir | £2,985 |
| Edwards & Medway | 3,300 | A. E. Symes | 2,920 |
| Wm. Lancaster | 3,180 | Davis & Leaney | 2,902 |
| The Lyle Co., Ltd. | 3,150 | Shelbourne & Co.* | 2,895 |
| F. Dupont | 2,999 | | |

TAMWORTH.—For the erection of a new engine house, engine beds, &c., at Alders Mill, Tamworth, for Messrs. C. Marsden & Sons. Mr. J. W. Godderidge, architect and surveyor, Tamworth:—

| | | | |
|---|---|---|---|
| E. Williams*† | £1,350 | Clarson & Son‡ | £1,332 |

† Completed in three months. ‡ Completed in four months.

WATFORD.—For alteration and addition to coach-house, Harewood-road, Watford. Mr. C. P. Ayres, architect, Watford:—

| | | | |
|---|---|---|---|
| Waterman | £1,219 0 0 | Tyler | £1,147 18 0 |
| Weggs | 1,208 0 0 | Clarke | 1,090 3 11 |
| J. Christie | 1,197 0 0 | Tom | 1,089 0 0 |
| King | 1,180 0 0 | Watkins | 1,085 0 0 |
| Richardson | 1,168 0 0 | Gorfe | 1,060 0 0 |
| Webster & Cannon | 1,150 0 0 | | |

## LONDON SCHOOL BOARD TENDERS.

AT the last meeting of the London School Board, the Works Committee submitted the following lists of tenders:—

CHRISTIAN-STREET SITE (Commercial-road).—New school, to provide accommodation for 864 children (288 for each department), including a playground on the roof for girls:—

| | | | |
|---|---|---|---|
| J. & M. Patrick | £25,606 | Wallis & Sons | £23,985 |
| C. Cox | 24,775 | Johnson & Co., Ltd. | 23,712 |
| Lawrance & Sons | 24,287 | Edwards & Medway | 23,543 |
| J. Carmichael | 24,115 | Kirk & Randall | 23,123 |
| F. & H. F. Higgs | 24,042 | Leslie & Co., Ltd.* | 22,785 |

COMMERCIAL-STREET SITE (Whitechapel).—New school, to provide accommodation for 922 children:—

| | | | |
|---|---|---|---|
| C. Wall | £24,000 | W. Shurmur | £22,940 |
| Leslie & Co., Ltd. | 23,471 | Johnson & Co., Ltd. | 22,796 |
| T. L. Green | 23,462 | B. E. Nightingale | 22,682 |
| C. Cox | 23,400 | Perry & Co. | 22,682 |
| Grover & Son | 23,108 | Gregar & Son | 22,623 |
| Longley & Co. | 23,057 | Lawrance & Sons* | 22,131 |
| Wallis & Sons | 23,041 | | |

FARNCOMBE-STREET SCHOOL (Bermondsey).—For heating apparatus:—

| | | | |
|---|---|---|---|
| Matthews & Yates, Ltd. | £276 0 | Kite & Co. | £175 0 |
| Stevens & Sons | 266 0 | Dargue, Griffiths, & Co., Ltd. | 159 19 |
| Fraser & Son | 246 0 | Knight & Sons | 149 0 |
| Oldroyd & Co., Ltd. | 229 0 | Wenham & Waters Ltd. | 136 10 |
| J. & F. May | 206 0 | Seward & Co.* | 126 0 |
| Price, Lea, & Co. | 199 0 | | |

FINSBURY, GREENWICH, AND HACKNEY DIVISIONS.—Running Contracts for repairs on schedule:—

| | Finsbury, Group 6. p.c. | Greenwich, Groups 1 and 2. p.c. | Hackney, Groups 4, 5, and 6. p.c. |
|---|---|---|---|
| W. Banks | — | +33⅓ | — |
| Stevens Bros. | +22½ | — | +25 |
| E. Proctor | = | +22½ | — |
| T. L. Green | — | — | +30 |
| F. Britton | +25 | — | — |
| C. Foreman | — | 20 | — |
| McCormick & Sons | +27½ | — | +27½ |
| C. & W. Hunnings | *+15 | — | — |
| C. Jones | — | *+12½ | — |
| Johnson & Co. | — | — | *+20 |

GROVE-STREET SCHOOL (Deptford).—For heating apparatus:—

| | | | |
|---|---|---|---|
| J. Esson | £225 0 | H. C. Price Lea & Co. | £185 0 |
| J. & F. May | 215 0 | J. Grundy | 172 0 |
| Wippell Bros. & Row | 200 0 | Duffield & Co. | 160 0 |
| W. G. Cannon | 191 0 | Seward & Co. | 147 0 |
| Wenham & Waters, Ltd. | 188 0 | Lewis Hill* | 97 10 |

"HIGHWAY" SCHOOL (St. George's-in-the-East).—For new boiler:—

| | | | |
|---|---|---|---|
| J. C. & J. S. Ellis, Ltd. | £275 0 | Wontner Smith, Gray, & Co. | £112 10 |
| W. James Cooper | 135 0 | Price, Lea, & Co. | 99 10 |
| J. Grundy | 135 0 | Lewis Hill | 95 10 |
| Kite & Co. | 135 0 | Duffield & Co.* | 92 0 |

OLGA-STREET SCHOOL (Bethnal Green).—For heating apparatus:—

| | | | |
|---|---|---|---|
| Stevens & Sons | £710 10 | J. & F. May | £523 0 |
| Oldroyd & Co., Ld. | 597 0 | J. Esson | 515 0 |
| Price Lea & Co. | 555 0 | G. Davis | 468 0 |
| Wippell Bros. & Row | 540 0 | Duffield & Co.* | 438 0 |
| | | Kite & Co. | 395 0 |

[*See also next page.*

OFFORD-ROAD SITE (Barnsbury).—For new Pupil Teachers' School, to provide accommodation for 312 pupil teachers :—

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Dove Bros. .. | £23,849 | 0 | 0 | Grover & Son | £23,100 | 0 | 0 |
| Williams & Son ...... | 23,530 | 0 | 0 | L. H. & R. Roberts .. | 23,047 | 0 | 0 |
| Spencer, Santo, & Co., Lim. ...... | 23,402 | 0 | 0 | Scrivener & Co. ....... | 22,953 | 0 | 0 |
| Munday & Sons ...... | 23,281 | 0 | 0 | T. L. Green.. | 22,846 | 0 | 0 |
| C. Cox ...... | 23,189 | 0 | 0 | Lawrance & Sons ...... | 22,208 | 0 | 0 |
| Gough & Co. | 23,100 | 0 | 0 | C. Miskin & Sons* .... | 21,980 | 5 | 6 |

ROMAN-ROAD SCHOOL (North Bow).—Additional heating :—

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Stevens & Sons | £462 | 10 | 0 | J. Fraser & Son | £371 | 0 | 0 |
| Matthews & Yates, Ltd. .. | 436 | 0 | 0 | Truswell & Son | 356 | 16 | 7 |
| Vaughan & Brown, Ltd... | 404 | 0 | 0 | Dougill & Co., Ltd. ........ | 350 | 0 | 0 |
| Wippell Bros. & Row ........ | 387 | 10 | 0 | W. G. Cannon .. | 345 | 0 | 0 |
| | | | | Seward & Co. .. | 288 | 0 | 0 |
| | | | | W. J. Cooper*.. | 225 | 0 | 0 |

STAR-LANE.—Repairing stoves :—

| | | | | | |
|---|---|---|---|---|---|
| Rockhill Bros. (tender incomplete) .. | — | | Cannon & Sons.... | £70 | 0 |
| Comyn Ching & Co. | £88 | 10 | Hendry & Pattisson, Ltd. ............ | 54 | 10 |
| Wontner - Smith, Gray, & Co....... | 76 | 0 | Coules & Son*...... | 44 | 10 |

SUMMERFORD - STREET SCHOOL (Bethnal Green).—Sanitary and drainage work :—

| | | | |
|---|---|---|---|
| Ashby Bros. ........ | £3,314 | Johnson & Co. ...... | £2,600 |
| Gough & Co. ...... | 2,889 | Lawrance & Sons .. | 2,599 |
| J. Carmichael ...... | 2,681 | L. H. & R. Roberts* | 2,497 |
| Williams & Son .... | 2,621 | | |

SUNNYHILL-ROAD SITE (Streatham).—New school for 800 children, and the provision of Manual Training, Cookery, and Laundry Centres in connexion with the school :—

| | | | |
|---|---|---|---|
| W. Smith.......... | £22,695 | B. E. Nightingale.. | £21,285 |
| S. Hart............ | 22,243 | F. & H. F. Higgs.. | 21,146 |
| W. Downs ........ | 21,983 | J. & M. Patrick.... | 21,090 |
| Holloway Bros..... | 21,854 | Johnson & Co., Ltd. | 20,927 |
| Parsons & Co. .... | 21,464 | Lawrance & Sons .. | 20,707 |
| J. Carmichael .... | 21,397 | Edwards & Medway* .......... | 20,652 |
| C. Wall .......... | 21,289 | | |

WHITE LION-STREET SCHOOL (Pentonville).—For heating apparatus :—

| | | | | | |
|---|---|---|---|---|---|
| Vaughan & Brown, Ltd. ............ | £679 | 0 | Price Lea & Co. .. | £548 | 0 |
| Fraser & Son...... | 673 | 0 | J. & F. May ...... | 535 | 0 |
| J. Grundy ........ | 650 | 0 | Wippell Bros. & Row ............ | 525 | 0 |
| Matthews & Yates, Ltd. ............ | 636 | 0 | Knight & Sons .... | 520 | 0 |
| Harlow & Son .... | 627 | 0 | J. C. & J. S. Ellis, Ltd. ............ | 480 | 0 |
| W. G. Cannon .... | 599 | | Russell & Co. .... | 457 | 10 |
| Dougill & Co., Ltd. | 570 | 0 | A. J. Kallaway* .. | 379 | 7 |

Running contract for the supply of science cupboards (No. 2) :—

| | Each. | | | | Each. | | |
|---|---|---|---|---|---|---|---|
| W. Martin...... | £16 | 10 | 0 | Brake & Co. .... | £13 | 0 | 0 |
| General Builders Ltd. ........... | 15 | 15 | 0 | T. Cruwys ...... | 13 | 0 | 0 |
| Lascelles & Co... | 15 | 5 | 0 | H. Bouneau .... | 12 | 9 | 6 |
| Bruce & Croom.. | 14 | 17 | 6 | London School Furniture Co. | 11 | 17 | 6 |
| Hammer & Co., Ltd. .......... | 13 | 13 | 0 | W. G. & L. England* ........ | 8 | 15 | 0 |

Running Contract for the supply of timber to Manual Training Centres :—

| | Howard Bros & Co. | Illingworth, Ingham, & Co. | Ingram Perkins & Co.* | James Latham. |
|---|---|---|---|---|
| | d. | d. | d. | d. |
| Yellow deal (machine planed, in 8 ft. lengths) :— | | | | |
| 2½ in. by 1½ in.......per foot run | 1 | 1½ | ⅞ | 1 |
| 1½ in. by 9 in. ...... ,, ,, | 3 | 5 | 3¼ | 3⅞ |
| ¾ in. by 9 in. ...... ,, ,, | 2 | 2½ | 1$\frac{1}{10}$ | 2¼ |
| Yellow pine :— | | | | |
| 1 in. by 11 in. ...... ,, ,, | 4 | 4¼ | 3⅜ | 3¼ |
| ¾ in. by 11 in. .... ,, ,, | 3¼ | 3½ | 2 | 2¾ |
| ½ in. by 11 in. .... ,, ,, | 2½ | 2¾ | 2 | 2 |

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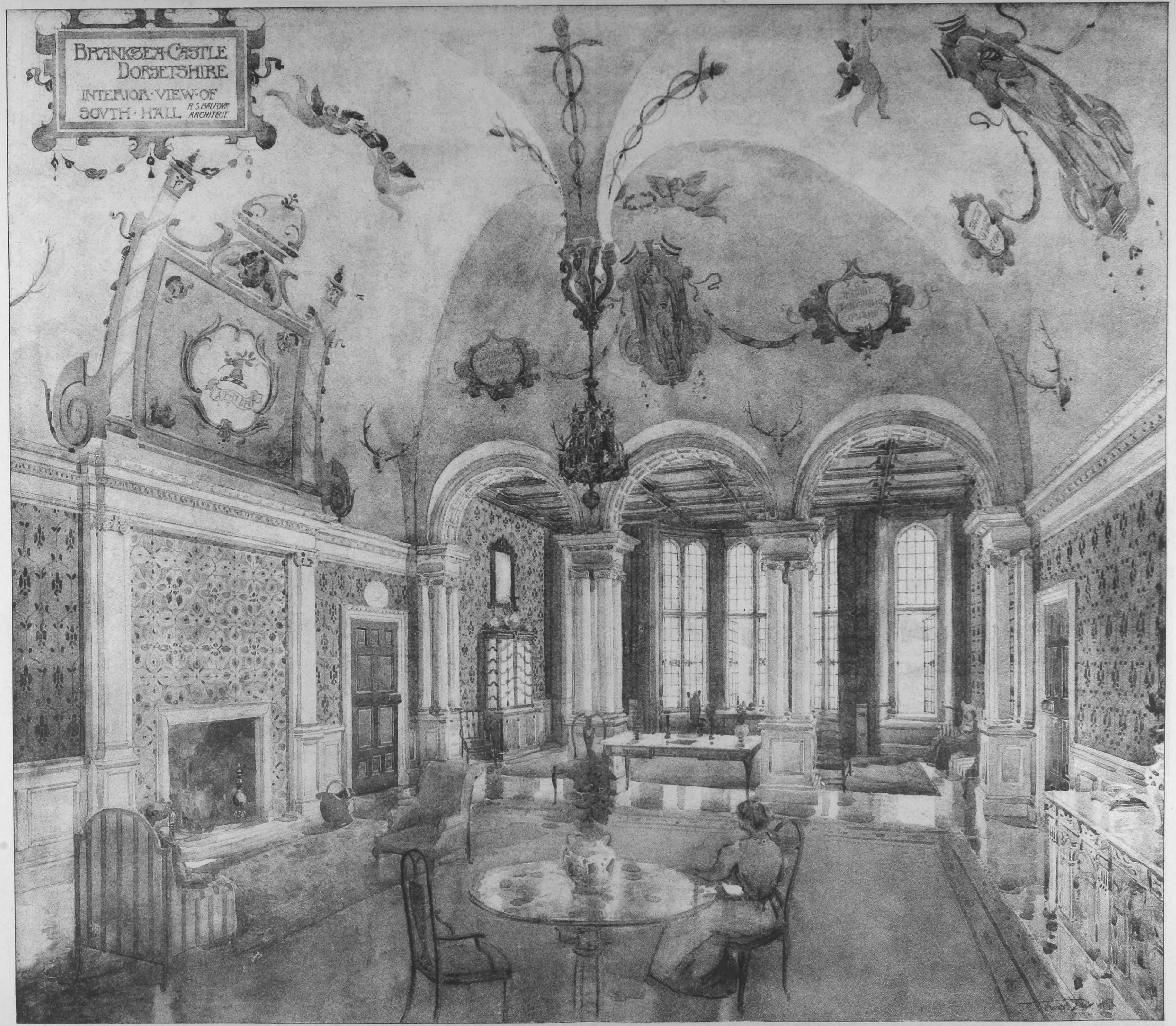
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R. S. BALFOUR
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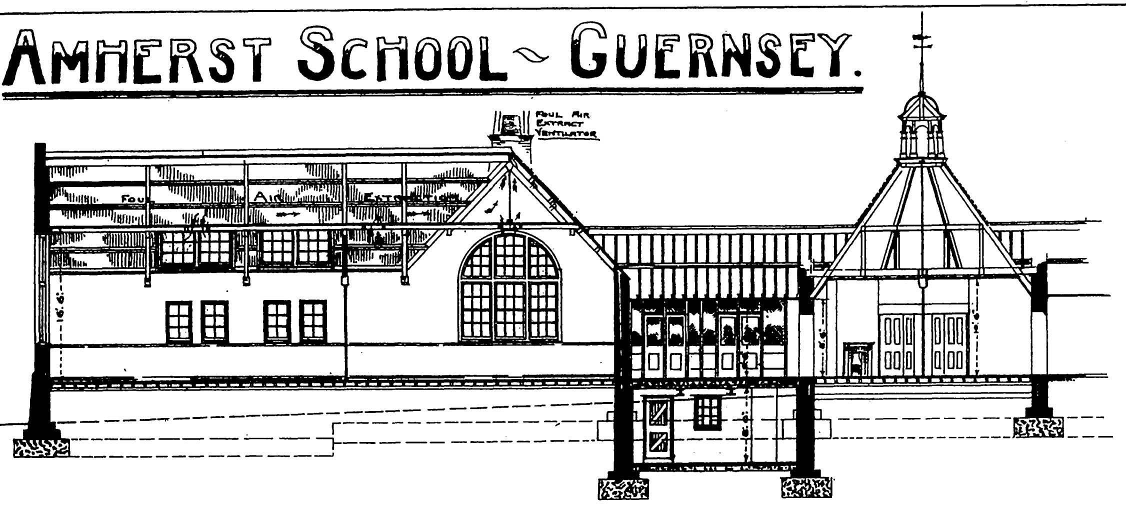
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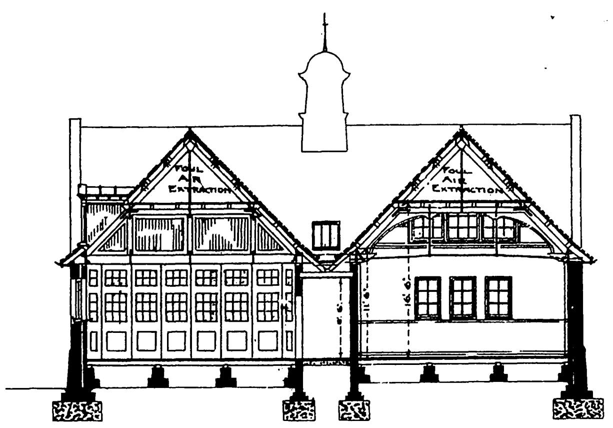
Foul Air Extraction
Foul Air Extraction

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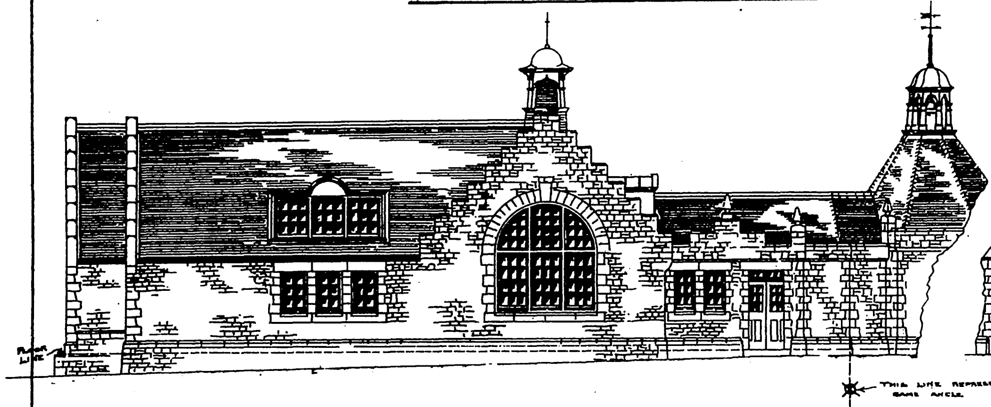
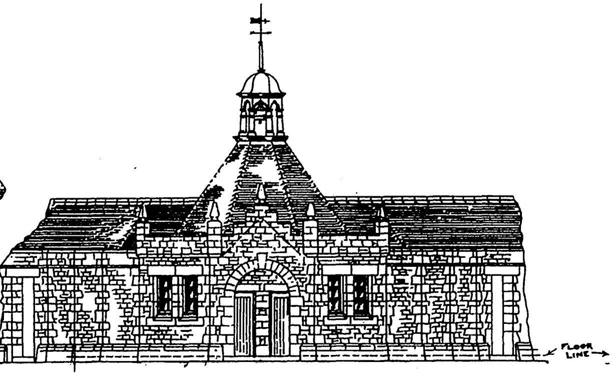

Floor Line
This line represents the same angle

ELEVATION OF BOYS' SCHOOL TO LES MAUREPAS ROAD
(ELEVATION OF GIRLS' SCHOOL TO LES CUIELLES ROAD IS THE SAME BUT REVERSED).



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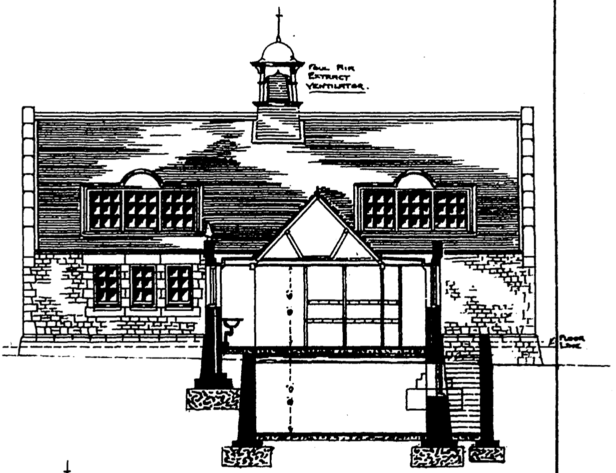
Foul Air Extract Ventilator.
Floor Line

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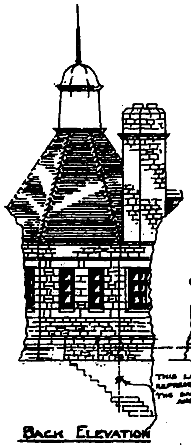
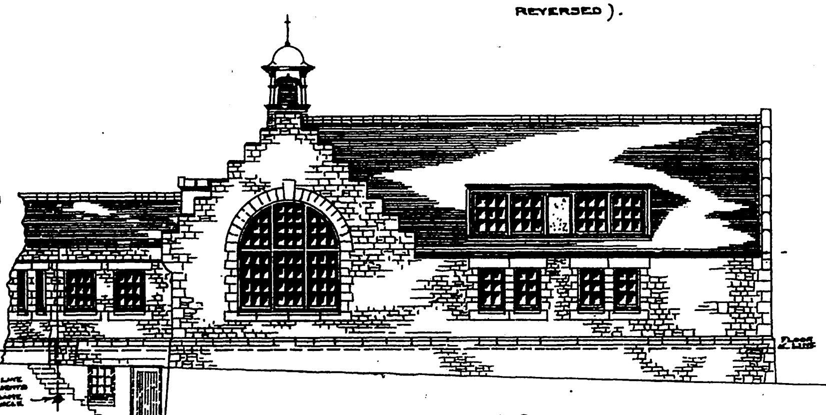

This line represents the same angle

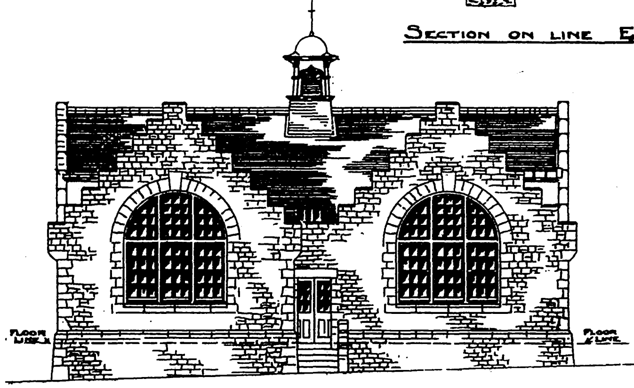
BACK ELEVATION OF THE PARISH MEETING ROOM (TEACHERS' ROOMS)



BACK ELEVATION OF BOYS' SCHOOL
(GIRLS' SCHOOL IS THE SAME BUT REVERSED)

SCALE

INCHES.
12 0 1
5
10
15
20
25
30
35
40
45
50
FEET.


Floor Line
Floor Line

END ELEVATION OF BOYS' SCHOOL
GIRLS' SCHOOL SAME BUT REVERSED

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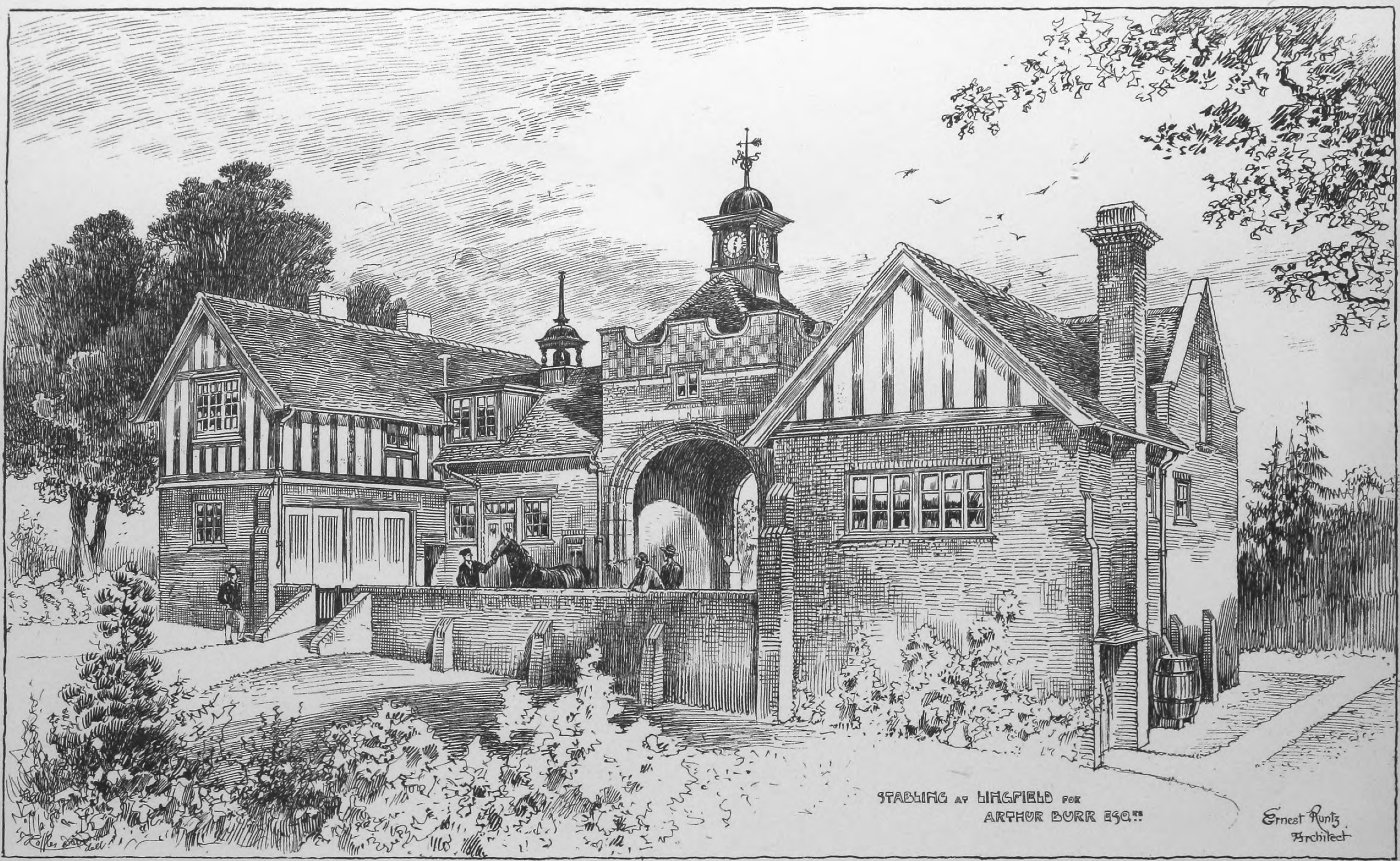
T. Raffles Davison delt.

STABLING AT LINGFIELD FOR ARTHUR BURR ESQ.re

Ernest Runtz, Architect

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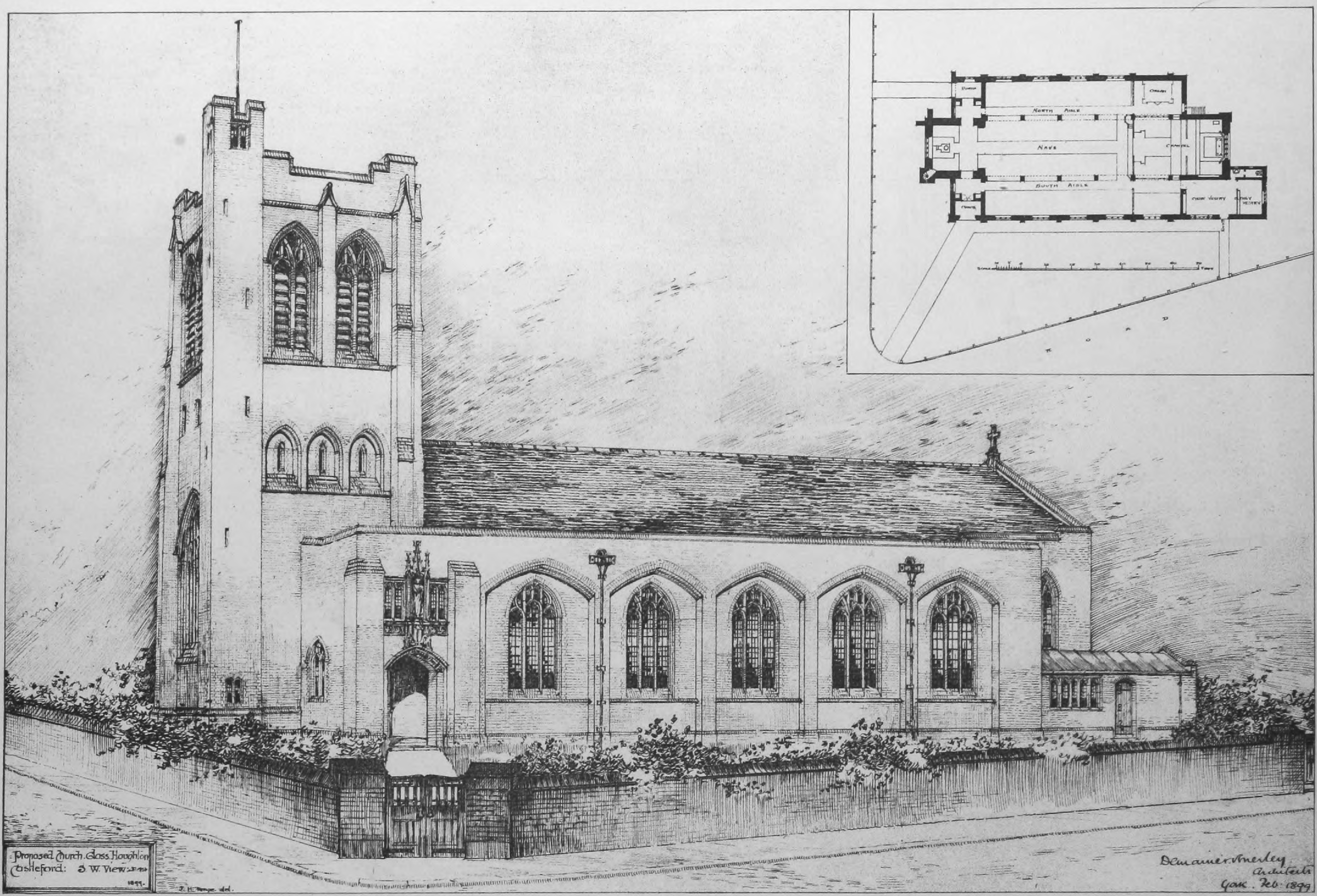
PORCH
ORGAN
NORTH AISLE
NAVE
CHANCEL
SOUTH AISLE
PORCH
CHOIR VESTRY
VESTRY
SCALE
FEET
R O A D

Proposed Church. Glass Houghton
Castleford: S. W. View.
1899.

[illegible] del.

Demaine & Brierley
Architects
York. Feb. 1899

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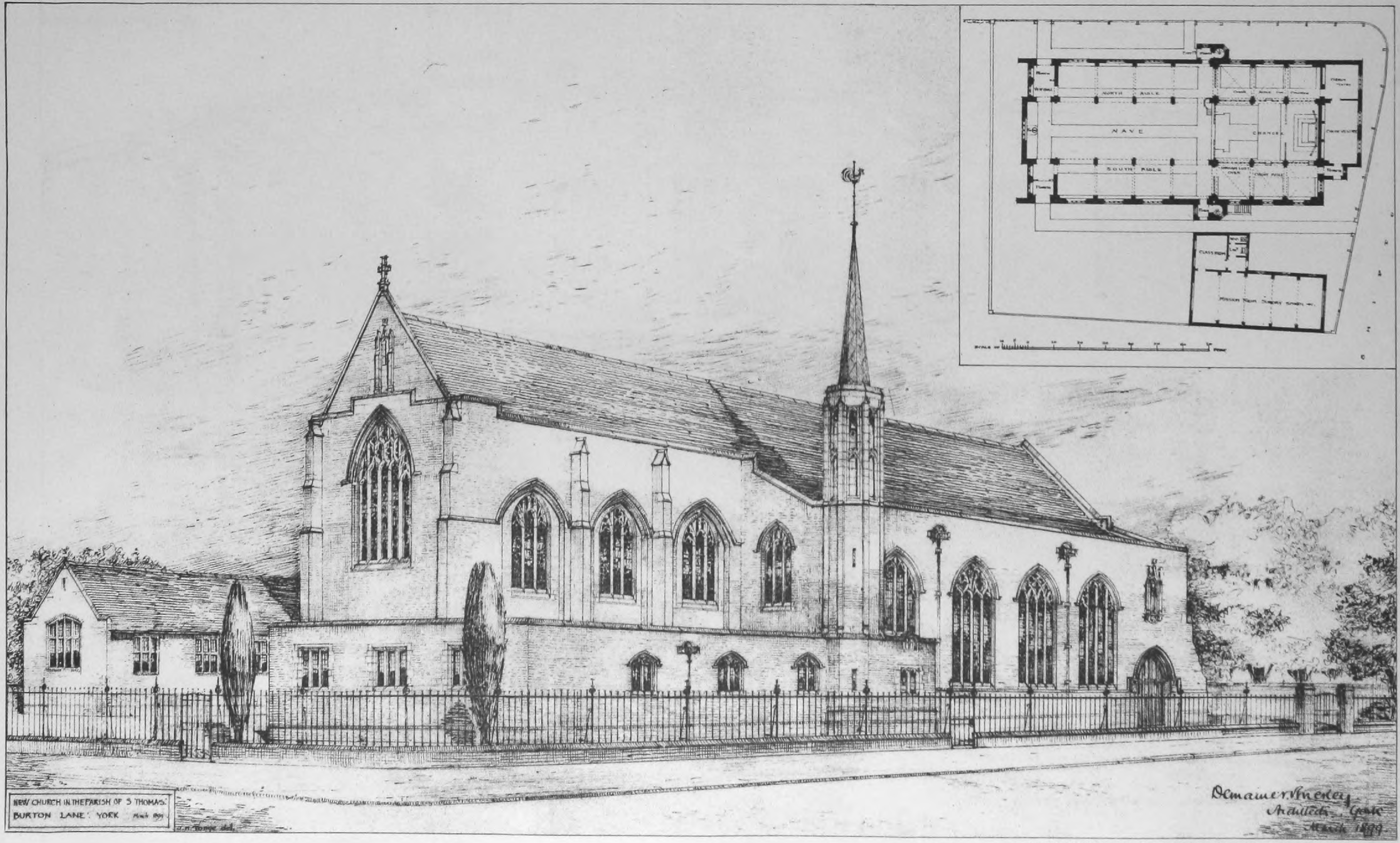
NORTH AISLE
NAVE
SOUTH AISLE
CHANCEL
CHOIR VESTRY
ORGAN LOFT OVER
CLASS ROOM
MISSION ROOM SUNDAY SCHOOL &c.
SCALE OF FEET

NEW CHURCH IN THE PARISH OF S. THOMAS:
BURTON LANE: YORK March 1899

J. H. Tonge del.

Demaine & Brierley
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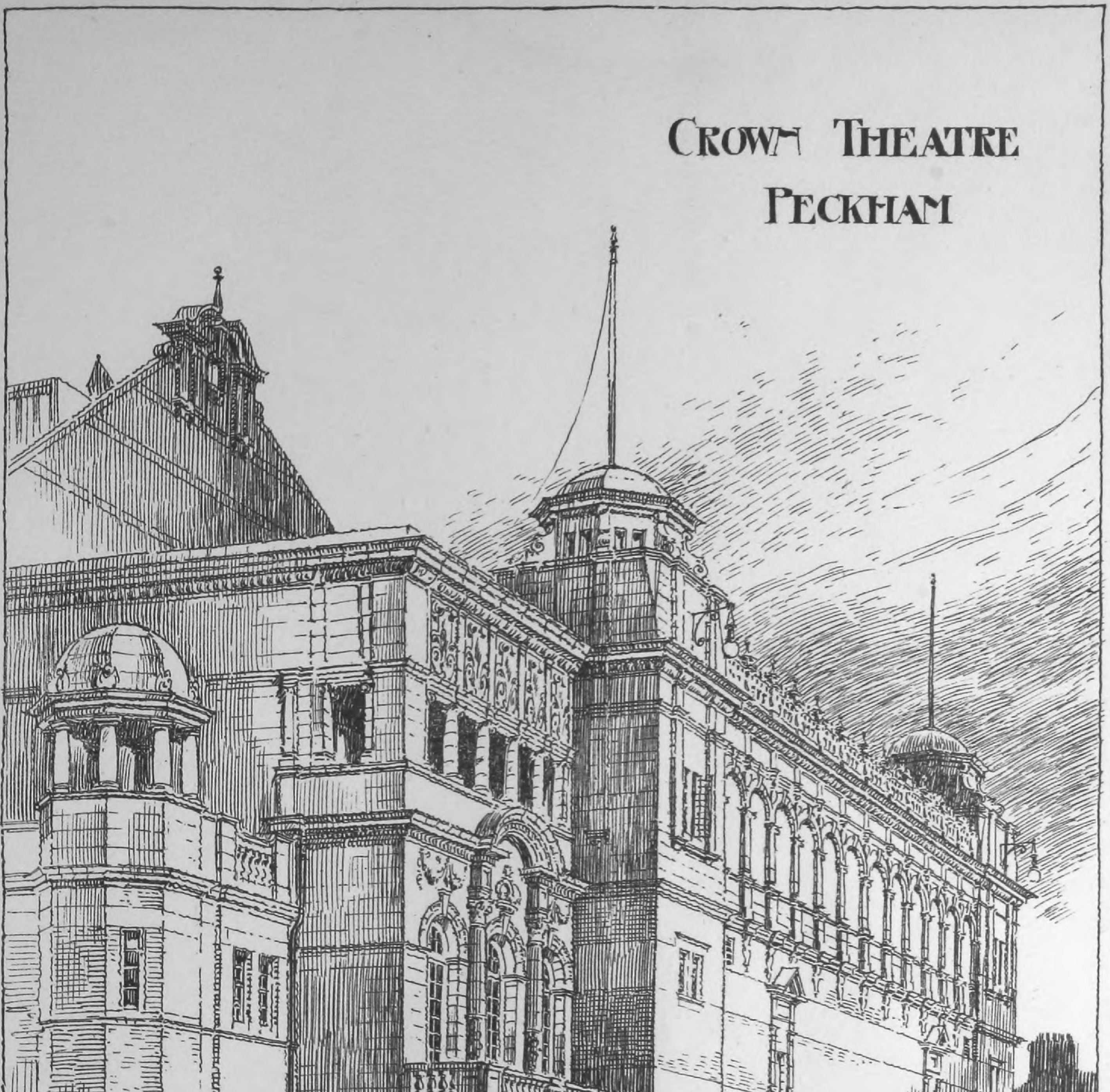
CROWN THEATRE
PECKHAM
T. Raffles Davison del.
Ernest Runtz
architect.

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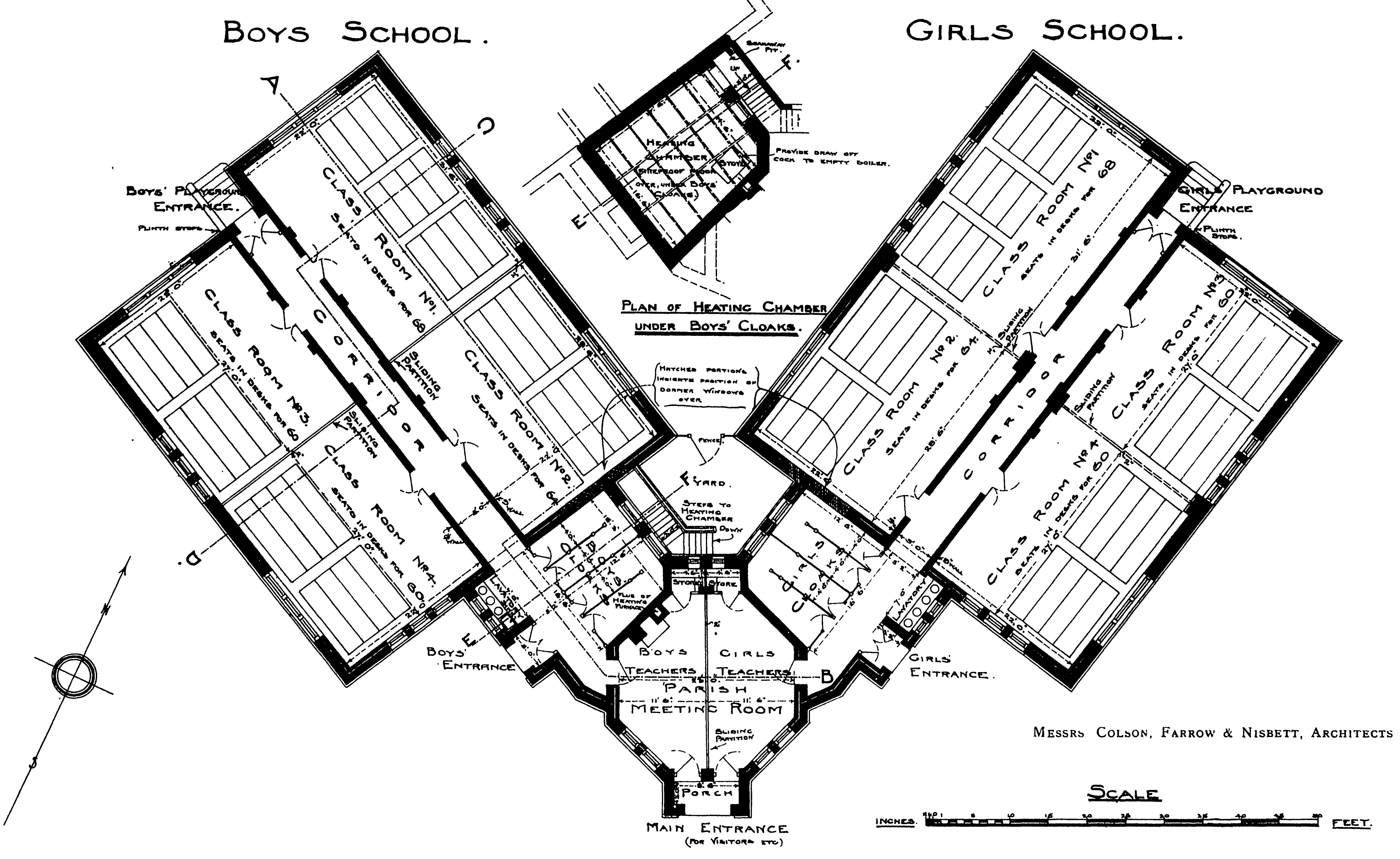
BOYS SCHOOL.
GIRLS SCHOOL.
CLASS ROOM No. 1 SEATS IN DESKS FOR 68
CLASS ROOM No. 2 SEATS IN DESKS FOR 64
CLASS ROOM No. 3 SEATS IN DESKS FOR 60
CLASS ROOM No. 4 SEATS IN DESKS FOR 60
CORRIDOR
SLIDING PARTITION
BOYS' PLAYGROUND ENTRANCE.
GIRLS' PLAYGROUND ENTRANCE
PLINTH STOPS.
BOYS' ENTRANCE
GIRLS' ENTRANCE.
BOYS CLOAKS
GIRLS CLOAKS
FLUE OF HEATING FURNACE
LAVATORY
STORE
BOYS TEACHERS
GIRLS TEACHERS
PARISH MEETING ROOM
PORCH
MAIN ENTRANCE (FOR VISITORS ETC)
YARD.
STEPS TO HEATING CHAMBER DOWN
FENCE
HATCHED PORTIONS INDICATE POSITION OF DORMER WINDOWS OVER
PLAN OF HEATING CHAMBER UNDER BOYS' CLOAKS.
HEATING CHAMBER (FIREPROOF FLOOR OVER, UNDER BOYS' CLOAKS)
STOVE
PROVIDE DRAW OFF COCK TO EMPTY BOILER.
SOAKAWAY PIT.
UP
A
B
C
D.
E
F
N
S
SCALE
INCHES.
FEET.

MESSRS COLSON, FARROW & NISBETT, ARCHITECTS

PHOTO LITHO SPRAGUE & Co L. 4 & 5 EAST HARDING STREET FETTER LANE E C

# The Builder.

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Ground Floor Plan of South Kensington Museum.—Mr. Aston Webb, A.R.A., F.R.I.B.A., Architect .......... *Double-Page Photo-Litho.*
Liverpool Museum and Technical School: Elevation to Byrom-street.—Mr. E. W. Mountford, F.R.I.B.A., Architect .......... *Double-Page Ink-Photo.*
New Chancel and Transepts, Chard Church.—Mr. Roland W. Paul, Architect .......... *Single-Page Photo-Litho.*
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## *American Competition.*

IN (another column we publish some quotations from an interesting letter on the subject of American competition, and the reasons why America is outstripping us in practical and technical work. Public attention is being rapidly directed to a matter which those who have watched the commercial progress of the world have for some time been well aware is increasing in importance. The more the subject is discussed, the more will the public mind become impressed with its importance to our national prosperity. As we have said over and over again in considering the subject of technical education, no real progress can ever be made with it until public interest is so aroused as to create a public opinion. When we get that we shall have obtained the motive power to set the legislative machine in motion.

It is natural, however, that when the country begins to realise the serious character of American competition it should look round in a dazed and puzzled manner. When it hears of large contracts for bridges or railway rolling stock being sent to the United States, there is at once something which appeals to the public imagination. Little bits of household ware, corkscrews and such like, are appreciated as desirable innovations. When the amount paid to American manufacturers is calculated in thousands of pounds the Englishman begins to perceive that things are getting serious.

The correspondent whose letter we quote elsewhere fastens on the discouragement of invention in this country as one reason why the manufacturers of the United States are gaining upon us. But we must go to broader, more fundamental reasons. The United States manufacturers are now getting enormous supplies of the raw material. It is impossible here to go into statistics, but it is the production of raw material, and the creation of the means of transit, which are largely responsible for the present competition. The truth is that, to a great extent, England for many years had, owing very much to her coal mines, a monopoly of many manufactures. She is now beginning to find that if a competitor enters the field profits are at once cut down. We may cry out as much as we like; nothing, however, can minimise this cardinal fact.

As soon, however, as we have competitors it is found that a condition of affairs which did well enough in what we may call pre-historic days is unsuitable now. For example, the competitors have plant and machinery of the newest kind; their rates and taxes are, probably, lower than those to be found in an old country such as England. These things cannot be altered in a day. It is all very well to say to a manufacturer, "Your plant is old-fashioned," but new plant requires a large capital outlay, and it may be better commercial policy to be content with smaller profits arising from existing plant, than to risk investing new capital. There is also another point to be noted which is often overlooked. The proprietors of many of the most important undertakings are the sons or grandsons of those who first made them famous, or shareholders in limited companies. In the United States the leading manufacturers are usually men who have to make their fortunes. The difference is important. For the incentives to competition go a long way towards making such competition efficient.

Again, complaint is made of the cost of transit in England. But it has to be borne in mind that English railways as commercial undertakings are by no means remunerative. The rate of return which they pay would be regarded as small by a business man in connexion with his own business. The South Wales coal strike almost deprived the shareholders of the Great Western Railway of their dividends, thus showing what a narrow margin there is between the present rate of return on the capital and none at all. To ruin one industry to assist another is not sense, and railway directors who protect the interests of the shareholders who have elected them to office are acting as the agents of a large body of the most thrifty of the population. It is a mistake also to overlook the fact that the North of England manufacturers have seaports at their doors, and thus have full equality of opportunity, so far as regards foreign countries, with the manufacturers of the United States.

For this reason we do not think that the competition of the American manufacturer need be so greatly dreaded—we have still a large part of the world for our market. But we have in that market to face competition. We shall probably have to be content with smaller profits; and smaller profits, in an old country, and on smaller capitals than are becoming common in America, means much less return. In other words, it means for manufacturers a living as distinguished from a fortune. But it does not mean that the workman suffers or that the general consumer has anything to complain of. The former still earns good wages, the latter has a larger choice, and is supplied at a lower cost with what he needs.

What is now necessary in this country is an awakening to changing conditions. If this causes a greater keenness in inventions, better terms for inventors, better elementary and technical education, and a general bracing up of the mind of the capitalist and the artisan to the commercial struggle, it can do nothing but good. The English manufacturer, just like the English farmer, has not hitherto appreciated the changing circumstances of the century. But it is not state aid which will keep English manufactures in the front; they must depend on individual effort.

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## ARCHITECTURE AT THE ROYAL ACADEMY.—II.

WE may continue our remarks on the architectural designs at the Royal Academy by noticing, in the first place, some of the examples of church architecture which we have not already commented on. Church designs are not very numerous; nor is there very much of novelty or originality to be found among them. Character, however, there is in Messrs. Brewill & Baily's "Presbyterian Church, Nottingham" (1,654), chiefly shown in the design of the tower, with its long nearly unbroken buttresses built with a continuous batter. This use of battering lines, even in the main wall surface of buildings, is becoming rather a favourite one now; we see it again here in the small drawing of a tower by Mr. Grocock (1,685). Applied to the main wall surface it is a doubtful expedient, generally implying a waste of material; in buttresses it is legitimate enough. The curved or ogee lines of the copings of the battlements in Messrs. Brewill & Baily's design are a feature in line which was only introduced a few years ago, but is rapidly becoming a commonplace. The authors of this design (or their draughtsman) have something—one might say everything—to learn about the construction and meaning of a sundial, as they innocently show sundials on both the south and west faces of the tower, the gnomons of the dials at right angles with each other! Apparently therefore they are not aware that the gnomon of a sundial, wherever placed, whether on a pillar or on the surface of a vertical wall, is a line parallel with the earth's axis; they will find the matter intelligibly explained, with a diagram, in an article in the *Builder* for December 21, 1889. No plan of the church, by the way, is given. Mr. E. P. Warren does not fall into this latter condemnation, affixing a small plan to his pretty pencil sketch of the church of "St. Martin, Bryanston" (1,658), chiefly noticeable for the treatment of its massive tower with heavy buttresses, with which the rest of the building is well in keeping. Mr. Caröe's large and finely tinted drawing of the "Tower of St. Mary, Yate, Gloucester, as now completed" (1,675) does not show how much of the tower is old, as we suspect a portion of it is; this may account for the want of definite point and contrast in the design; if the blank traceried windows in the middle stage are ancient, there was nothing for it but to repeat somewhat the same design in the windows of the upper stage; otherwise, the middle stage would have been better left as blank wall.

Messrs. Mallows & Grocock's "St. Matthew's Church, Willesden" (1,709), a "passage-aisle" church in which a plan is shown on the same scale as the elevations (an unusual indulgence in the Architectural Room of the Academy), appears to have some special point in the arrangement of the plan, which, however, is hung too high to be well seen. Mr. R. W. Paul's three drawings, of the new chancel and transepts at Chard Church, Somerset (1,787), the lych-gate at Wootton Fitzpaine (1,708), and the new screen at Abbey Dore parish church (1,720), are illustrated in the present issue, and therefore require no description here; they all show knowledge of mediæval style combined with good drawing. Messrs. Walter A. Hills & Sons' "Proposed Church, Bromley-by-Bow" (1,715: no plan), shows in neat pencil elevations a simple design apparently with a single-span roof, a clearstory being formed by dormers in the roof slope. A more important work is Mr. Caröe's "St. Matthew's Willesden" (1,716), a tinted pencil perspective of the east end; it has the appearance of being a brick church, from the treatment of the drawing, with an east window divided by large mullions, almost of the scale of piers, into three sections, a treatment rather frequent now, and which gives a very solid appearance to a window design, though it may be questioned whether the effect of these decisive vertical lines butting against the arch line is always satisfactory. The east wall is flanked by two perfectly plain octagonal angle buttresses; the design of the transept end is in the same severe style; a small turret with a low-pitched hipped roof rises above the rest of the building, and is treated with a good deal of character; altogether this is a drawing to repay attention. A small plan is added. Messrs. Stokes & Hine's "All Saints' Convent, Colney Chapel, St. Albans" (1,723), may count with the church designs, though the chapel is not actually shown in the drawing; it is a view in the cloister court, noticeable for the treatment of the cloister windows, which are segments of circles springing directly from the sill line, with no vertical jamb, and filled with tracery; the effect is good and a little unusual; the gate-tower at the side is commendably massive in character, but has a somewhat unfinished appearance at the top. The projecting bays or oriels above the cloister arcade look rather intruders, and do not improve the general effect. Mr. J. W. Simpson's "Union Church, Brighton" (1,753), is the largest church design in the room, if, indeed, we are to call that a church which has more the character of an "Institution" or some other entirely secular building, but it probably belongs to a denomination with whom this is of no consequence. The plan consists of a square centre space out of three sides of which open large semi-circular bays, the fourth side being flat; not a very good outline of plan for an interior. The façade towards the principal street is treated partly as a kind of screen decorated with an order of attached columns, the staircase blocks at each end being emphasised by rather heavy lantern erections over them; there is a large dome over the centre, but its lines are not marked on the plan, and its relation to the substructure is not very apparent; its construction in fact must be rather a sham. The general effect is ambitious but the details are coarse and commonplace.

Three interiors should be mentioned; that by Mr. Fellowes Prynne of "Holy Trinity Church, Roehampton" (1,726), chiefly noticeable for its built stone traceried screen filling the chancel arch, a revival of a mediæval treatment which Mr. Prynne has made almost a feature of his own; Mr. Goldie's "Church of Our Lady of Lourdes, Acton" (1,832), a quasi-Romanesque interior of fine style, treated with a certain amount of colour in the ceiling and dome, with decorations on a blue ground; and Mr. Seth-Smith's "St. Luke's, Maidstone" (1,777), an interior showing a good deal of originality in the design of the piers and arcade.

Designs for church furniture, &c. (not very numerous), may fitly be grouped with church designs. The most important of these, the "Sketch working model for bronze screen at Whippingham" (1,925), by Mr. Alfred Gilbert, is among the sculpture in the lecture room, but was intended, we understand, for the Architectural Room. The model shows an arcade of Transitional character, the bays filled in with gilt metal-work of a very free style of design, and rather too sketchy to enable one quite to appreciate the detail. As far as it can be judged of, however, we are inclined to think that this very free style of design in metal-work, which Mr. Gilbert has had a good deal of influence in introducing, however well it may go with sculpture, tends rather to lose the quality of decision and purity of line which should characterise architectural metal work, and has rather too much the appearance of metal tied up into knots. To return to the Architectural Room, Mr. Horsley exhibits there a pen drawing of his "New Screen, Ipstones, Staffordshire" (1,623). This is generally Gothic in style, but with some rather new and free treatment of detail; the posts which form the chief upright members are square in section and unmoulded, and covered, as well as various panel portions of the design, with small conventional floral ornament. The impression produced by the drawing is that this ornament is intended to be painted, and that the whole would have been shown better in a coloured drawing; as it is, one has rather to guess at the effect in execution. Mr. Caröe exhibits a drawing of the wooden carved reredos for St. David's, Exeter (1,674); the wide panel margin springs from brackets at each side, and is carved with figures in the vertical portions, the horizontal panels being left plain. Mr. R. A. Briggs exhibits a design for an altar and folding reredos for Jesus Chapel (1,800; we are not told where the chapel is—is it that of Jesus College, Cambridge?); the general effect, all gilt, is very rich, but the drawing is sketchy and does not give the detail clearly. Mr. Ralph Knott exhibits a small sketch of a font (1,711) of very pleasing and original design, with tapering colonnettes at the sides, and a dome-shaped metal cover crowned by a little bronze winged figure. Mr. H. Wilson's "Design for a Chalice" (1,694) for St. Bartholomew's, Brighton, is hung rather high; the knops appear to be formed of a twisted serpent; the treatment of the base is rather wanting in decision of line. The drawing shows all the author's usual mastery of effect in water-colour drawing. The same exhibitor's "Design for a Calvary" (1,627) for the same church, a dark crayon drawing hung too high to be well seen, seems rather to come under the head of sculpture design than architecture. A small sketch exhibited by Messrs. Rogers, Bone, & Coles, for a pulpit and bench-end for St. Brelade's Church, Jersey, exhibits a good deal of character in work of a simple and inexpensive order.

Among the drawings representing civil architecture is Mr. H. B. Garling's "Study for the principal façades of the New War Office, in the original competition of 1857" (1,864). This at the present moment is of some interest, taking us back to the former epoch in the undertaking, and illustrating the design and drawing of nearly half a century back. The drawing is a large perspective view of the proposed building, which is grandiose in general character, with large square centre pavilions rising above the corniee line on each face, and smaller ones at the angles. What it wants is more concentration in the design; it is in fact Classic treated in a rather Gothic spirit, aiming at multiplicity rather than breadth of effect; the windows all separate and each with its own framework of pilasters, except in the two rusticated lower stories, forming a basement which does quite sufficiently detach itself from the rest of the design. The weak point in the design is the semicircular *frontons*, as the French call them, in the centre of the raised pavilions, with nothing behind them; a feature which would hardly be introduced in the present state of architectural taste. But the author did quite right to exhibit the design again, and has added a point of interest to the exhibition in doing so.

Among other works of secular architecture (excluding domestic, which we will deal with separately) Messrs. Bateman & Bateman's

"Cannon-street Hotel, Birmingham" (1,632), has more character than one generally sees in hotel architecture, and is entirely free from the "showy" element so disagreeably prominent in the average hotel building. It has a stone basement with plain mullioned windows, supporting a brick structure over it, with a boldly treated gable and semi-octagon turrets on carved stone corbels. The authors are to be commended for showing also complete plans of the building. Messrs. Lanchester, Stewart, & Rickards exhibit their very effective drawing of the selected design for Godalming Town Hall (1,636), published in the *Builder* of November 12, 1898; but they do not give the plans. In their competition design for memorial buildings, Singapore (1,647), Messrs. Ashley & Armstrong have cleverly contrived to impart a certain degree of oriental character and outline to a building mainly treated with classic details. Mr. W. S. Bates's clever design for a concert-hall (1,661), sent in competition for the Soane medallion, we have already published and commented on; we are glad to see it exhibited here. Mr. R. J. Lovell's "Newport and Monmouthshire Hospital" (1,683), a large perspective drawing of little architectural interest, is of no value without plans of the building, without which no hospital design ought to be exhibited at all; the picturesque, even if it were present (which it is not in this case), is not the object of hospital designing.

Messrs. Hall, Cooper, & Davis exhibit a small water-colour drawing, hung too high to be well seen, of the "North-east Angle of New College, Scarborough" (1,695), which looks a very effective bit of design, consisting of a brick tower-like erection, projected diagonally at the angles, and partially enclosing a polygonal two-storied bay in stone; the general effect is very picturesque. It certainly contrasts favourably, as a bit of collegiate architecture, with Mr. Champneys' bald and coarsely drawn elevation of "New Buildings, New College, Oxford," without a detail that could not be got out of books of late Gothic work, and which is hung on the line, one cannot tell why. "A Part of Trowbridge Technical School" (1,703), by Mr. Thos. Davison, deserves mention as a good coloured detail elevation of part of a stone front. In his "New Town Hall, Henley-on-Thames" (1,765), Mr. Hare has given municipal character to a town hall for a small town, without departing from the simplicity of treatment suitable in such a case; the building has what may be called a municipal front—a pediment on coupled pilasters and with boldly-carved Royal arms under; the projections at the side are pedimented also, to give a finish to the "municipal" front; behind it the building is very simply treated with rows of windows and no architectural pretension. This is one of the most satisfactory designs of its kind in the room; it is a pity that no plan has been added; Mr. Hare's plans are always so good that he ought to set an example of not exhibiting without them.

Messrs. W. A. Pite & Balfour's "Competition Design for Cardiff Law Courts" (1,789), an elevation, looks very good in general outline, but is hung too high to be seen. A competition design by Mr. R. O'B. North, for the Liverpool Royal Institution, is a curious and unsatisfactory combination of an Ionic order with very small cottage-like mullioned windows and a red-tiled roof; why it is hung in so good a position is another of the puzzles which meet us every year in the Architectural Room. Mr. G. D. Martin's "Flats at Kensington-square" (1,819) represents the commonplace disguised under effective drawing. Mr. Townsend's "Whitechapel Picture Gallery" (1,820), on the contrary, represents the too palpable effort to escape from the commonplace, resulting in eccentricity both in the moral and material sense. Why is the large arched doorway so uncomfortably out of the centre of the front, and what is the meaning of the kind of bracket forms by which the arch mouldings are interrupted? Eccentricities of this kind may interest for the moment, but people will soon tire of them. Mr. A. H. Hart's "Proposed Club House, Woodbury, Devon" (1,856) is a picturesque design with "country town" feeling about it; a little more simplicity in the details, without altering the general grouping, would have improved it. Mr. E. T. Hall exhibits two important drawings, but both without plans. The "Additions to the British Home for Incurables" (1,866) is a picturesque block chiefly in red brick, well contrasted with the stone erection containing the entrance porch; and the block which is evidently the dining-hall is so characteristically designed that there can be no mistake about it, even without the plan. The "Head Offices, Metropolitan Asylums Board" (1,868), is a building on an irregular site, looking rather like a large hotel, and to which a certain special character is given by the semi-circular projections which terminate in small domes; but this is just a case where a plan is required to give the explanation and justification of such features.

Among minor works in civil architecture the following may be mentioned: "Manufactory, Charing Cross-road" (1,748), by Messrs. Roumieu & Aitchison; a good deal more character might be got out of this class of building than is afforded by this regular repetition of cornices and rows of windows all alike; and what is the advantage of the immense vases on the top, as high as the windows—wholly unsuitable to the character of the building and destroying its scale? "Design for a Convalescent Home" (1,834) by Mr. F. D. Clapham; block plan only given, the perspective makes a pleasing group. "Design for Almshouses and Gardens" (Mr. W. E. Dobson (1,846), a pretty sketch, but a kind of thing very easily turned out where there is sufficient dexterity with pencil and brush. "Competition Design for Free Library, Putney" (1,816), by Mr. Sydney Perks; a small, rather bold elevation in Classic style, suitable for its purpose and situation. "Portion of Proposed Street of Flats in Dulwich" (1,784), by Mr. J. W. Rhodes, is a very meritorious design for the characteristic treatment of flats for lower-class tenements; they are mostly roughcast walls, with gabled brick portions at intervals; the gables are treated with a good deal of special character in a simple way. The turning round of the door arches into a three-quarter circle, stopped at the return by a stone upright, looks perhaps a little like a kind of joke; but in the main this is a very good attempt to give character and interest to lower-class street houses.

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THE NINETY-ONE ART CLUB.—This club will hold their annual exhibition of members' work at the Maddox-street Gallery, Maddox-street, during the first four days of June.

## NOTES.

**Decoration of St. Paul's.** IT is announced that at a meeting of the Decoration Committee of St. Paul's on the 15th inst. it was decided that the stencilling should be removed—which we are glad to hear of; and also that the south-west semi-dome should be completed without any decoration of the flat stonework, to consider what would be the best manner of finishing the arches. Thus the two points to which we mainly objected, before any of the hysterical writing in the daily papers commenced, are now secured, and it is to be hoped that there will in future be more caution and consideration exercised as to what is to be done. We are still of opinion that the nave and transepts should be left as Wren left them; but the dome must undoubtedly be decorated, as the choir has been, and as forming a portion of the ritual area of the services. But its treatment requires the greatest care and consideration. We cannot refer to the subject without a word as to the ridiculous exaggerations which have been made by people who talk of the "desecration" of the cathedral by Sir W. Richmond; a kind of expression which stultifies those who use it. The art students who memorialised the Committee got a deserved snub from Mr. Andrew Lang, to whom among others they submitted their memorial, who reminded them that "Sir W. Richmond is your fellow-being, and has probably been an art student." The whole case was very fairly put by the writer of an excellent letter signed "Candour," which appeared in Monday's *Times*, and formed a welcome contrast to much of the exaggerated and spiteful nonsense that has been written on the subject. Sir W. Richmond's exceedingly self-satisfied and "superior" attitude in the matter is of course in bad taste, and has done him no good with the public or the architects; but it does not follow that an artist is incompetent because he has a very good opinion of himself—a weakness which, in fact, is not uncommon with artists.

**The City and the London Gas Inquiry.** MR. A. C. MORTON, of the Corporation of the City of London, succeeded Mr. H. E. Jones as witness before the Select Committee of the House of Commons. The Corporation, like the London County Council, is dissatisfied with the price charged for gas by the Gas Light and Coke Company; but we do not think that the citizens of London would view with much favour Mr. Morton's proposal that the South Metropolitan Gas Company should be allowed to compete in the City with the Gas Light and Coke Company. One gas company's staff constantly at work breaking up and laying down City streets is nuisance enough; the presence of a second company would be almost intolerable. Referring to the fact that the City streets are mainly lighted by electric light, Mr. Morton said that, by reason of its great expense, the electric light was worse than the gas. Mr. Doughty, who appeared on behalf of the Vestry of St. Leonard's, Shoreditch, would also give the South Metropolitan Company power to supply gas on the north side of the Thames. We believe that this company would be able to supply gas north of the Thames at a lower price than that at which it is now supplied by the Gas Light and Coke Company; but, in view of the powers already granted by Parliament to the Gas Light and Coke Company, and the hopeless entanglement of mains and services that would necessarily ensue, the suggestion cannot be regarded as a very practical one. We understand that the Committee has adjourned until June 2.

**Electrical Engineers and Telegraphists.**

THERE has been considerable discontent lately amongst cable and telegraph engineers owing to the way their branch of the science has been treated by the Institution of Electrical Engineers. With the exception of the papers on wireless telegraphy, which is, of course, a very small branch of the subject, the only paper this year connected with telegraphy was Mr. Elton Young's on the measurement of capacity. Owing to his unavoidable absence the paper was taken as read, and the subsequent discussion was confined within very narrow limits by the chairman. Mr. Alexander Siemens, a former president, managed to make a few remarks praising up the speed of the signalling on one of the cables of the Commercial Company as compared with the cables of the Anglo-American Company. His remarks, based as they were on insufficient data, obviously required answering, considering the magnitude of the financial interests involved, and several of the subsequent speakers desired to do so. They were, however, ruled out of order by the chairman. Although he was technically within his rights, and although most of the members present were anxious that the discussion should be curtailed in order that they might hear the paper on electric traction read, yet as the rules regulating debates had been broken over and over again this year without let or hindrance, the cable experts present, some of whom had come great distances, were naturally indignant. The younger electricians, in their enthusiasm for the more modern developments of electricity, are apt to forget the enormous importance of submarine telegraphy, and the immense capital expended on it—a capital even yet greater than that expended on any other branch of the science. As the Institution was originally established by the telegraph engineers, it seems somewhat unfair that so little attention is paid to their science, and almost undutiful to closure their debates.

**British Association of Draughtsmen.**

WE have received the prospectus of a new society under this title, which at first looked like a kind of re-birth of the Architectural Association, since the latter institution had its origin in the wish of architectural draughtsmen to meet and know each other. The British Association of Draughtsmen, however, seems to attach a wider meaning to the word draughtsman, as it provides that "members shall be draughtsmen who shall have served at least seven years in office and works or yard of Architects; Civil, Consulting, or Mechanical Engineers; or Shipbuilders." Associates are to be "apprentices and improvers who are attached to and serving their time in any of the above departments from sixteen years of age, until qualified for the election of membership" ("to membership," it should surely be, grammatically). Moreover, the Association is not for London only, but is national. Apparently it is intended as a representative institution of all those who are employed in drawing out constructional work of any kind. Such an association can hardly be formed and properly worked without being of advantage to the large class of skilled workers whom it represents, and we hope it may be successful.

**Working Class Dwellings in Coventry.**

THE City Engineer and the Medical Officer of Health of Coventry have been commissioned to draw up a Report to the Artisans' Dwellings Committee of the Corporation on the provision of dwellings for the working class. It seems to be admitted that there is a great deal to be done. The Report includes a good deal of information as to experience in other towns, but it does not appear from it that the Coventry authorities are prepared to carry out any very strong measures of reform. In one paragraph it is remarked:—

> "They have continually to bear in mind their restricted powers, and to aim at achieving simply that which is the best possible under the circumstances. It would be puerile for them to lay down the dictum that back-to-back houses are undesirable, and should be demolished. We ourselves are fully convinced that their existence is undesirable, but the fact remains, that their cheaper construction allows their rents to be lower than through-ventilated houses, and some large towns at the present moment are allowing their construction. It is impossible, therefore, to condemn such houses, on that ground alone, as insanitary, for no magistrates with the facts fully placed before them would confirm the condemnation."

Surely in that case the Coventry magistrates want educating.

**Report on the Health of Liverpool.**

THE annual Report of the Medical Officer of Health of Liverpool, a volume of over 200 pages containing a great amount of statistical information, shows among other things that the Liverpool authorities have a great deal to do yet in the way of improving the humbler class of town dwellings and removing insanitary property, though they are evidently not idle in this matter. The last "presentment" in regard to insanitary property referred to a total of 365 houses (not all grouped together), of which fifty-four were uninhabited, owing, in many cases, to extreme dilapidation. The character of the property is thus described:—

> "The general arrangement of the dwellings correspond to the well-known and often-described court property in Liverpool, the houses being back-to-back and side-to-side with others, having no adequate or through ventilation,' and without a sufficient closet accommodation to fulfil the requirements of health and decency. In many instances little, if any, sunlight could get to the courts, and the atmosphere within the dwellings was always foul, owing largely to the saturated condition of the walls and ceilings, which for so many years had absorbed the exhalations of the occupants into their porous material. Singular testimony to the absence of sunlight in these courts was furnished by the action of the Parks and Gardens Committee, who desired to brighten the homes of the poorest class by gifts of growing flowers and window boxes; but these gifts could not be made in courts such as these, as flowers and plants were susceptible to the unwholesome surroundings, and would not live."

When we come to the case of human beings having to live in courts where no plant will live, we seem to have reached the extreme of insanitary condition. In one case the authorities compelled the demolition of a row of ten new houses built in defiance of the Building Regulations of the City, but it is added that "there are many disadvantages of cheap houses which are quite beyond the control of any public authority." Some photographs attached to the Report show one or two of the slums which are, or are to be, demolished, and one or two views of wholesome and substantial dwellings recently erected by the Corporation.

**Wolvesey Castle, Winchester.**

WE gather that in reply to a petition recently addressed to them by the House of Laymen for the diocese of Winchester, the Ecclesiastical Commissioners state they have no intention of alienating any part of the palace grounds in respect of the proposed national memorial to King Alfred. The remains of the castle—whose grounds for the greater part are now occupied by the Diocesan Church House trustees—stand on the east side of the Close, being separated from the precincts by the Lock Pond main stream. On that site Henry of Blois, who also founded (1132) the Hospital of St. Cross, built himself a palace in 1138, using the materials of that erected by William I. on the north-west side of the present cathedral grave-yard, but pulled down by Bishop Henry as an encroachment upon church lands. The bishop's palace was rebuilt by Morley in 1684, under Wren's superintendence, and improved by Trelawney (died 1721).[*] During the contest between King Stephen and Matilda some fire-balls thrown from the castle consumed the later Hyde Abbey, near the city's north wall, whither the remains of King Alfred, his consort, and his sons Edward the Elder and Ethelred had been removed from the New Minster, and on the site of which, near St. Bartholomew's Church, a bridewell was afterwards built. There are views of the palace and castle in Wavell's book, on the margin of Godson's old map, and in Buck's view of Winchester. The palace remained entire, Camden says, until the Civil War, when it was plundered by Waller, and dismantled by Oliver Cromwell. The stones of the castle came from the Binstead limestone quarries which supplied much of the stone for the earlier portions of the cathedral.

**Lichfield Grammar School Competition.**

THE Lichfield Grammar School competition is another example of the preposterous nature of the claims made upon architects in small competitions got up in small places. The following two quotations from the instructions to architects show what ideas the Lichfield Grammar School Committee have in regard to the treatment of competitors:—

> "The premium of 20*l.* will be awarded by the Governors to the design which shall, in their opinion, be the best adapted to meet their requirements. The Governors will adjudicate on the designs, and their decision shall be final, but they do not bind themselves to carry out the design to which the premium may be awarded, or any design which shall be submitted to them. . .
>
> In case no design is carried out no remuneration other than the premium shall be paid to the successful competitor, but he shall, if required, supply specifications and sections *without further payment.*"

We may add that, as is generally the case in competitions of this type, the sum named, 3,500*l.*, is quite inadequate to supply the building demanded, as the committee will certainly find out before they go much further into the matter.

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[*] See Mr. T. B. Nicol's drawing (to scale) of the west elevation, by Wren, in the *Builder*, September 24, 1898.

**Wanted—Designs for a Church.** THE following letter has actually been received by an architect in London. In forwarding it to us, he says, "I believe that this letter was written in all good faith, but it gives an amusing illustration of the view which I am afraid is held by numerous otherwise well-informed people." We omit, of course, any names which could identify the writer or receiver of the letter:—

> "*Re New Church*, . . . . .
>
> SIR,—As treasurer of the above, I should be obliged if you would forward, without prejudice, to the caretaker of the church at the address, any modern drawing you may have, suitable for a Congregational Church costing between the sums of 3,000*l.* and 10,000*l.* These drawings are for exhibition to the members, and would be required at once; they would be returned to you immediately when finished with.
>
> Should this kind of architecture not be in your way, I should be obliged if you would hand this letter to any one in the profession you think best."

**Modern Gallery, Bond-street.** LIKE the Irishman who fell from a scaffolding, and on being asked if he was much hurt, replied "that he was not dead, but speechless," so we may say at the present time of the art of needlework, that it is not dead, but lifeless. It is either confined to practical ends, or occupies the idle moments of young ladies between education and social duties. No doubt eminent artists have left the beaten track to turn some attention to it, with beautiful results; not enough, however, to revive it, or even put it in a healthy way of life. Like all crafts, it requires the sole attention of serious artists. There are few books on it; there is no public museum for its preservation, except for a meagre collection at South Kensington. It is therefore very interesting to see a fine collection of antique embroidered pictures, mirror-frames, and caskets on exhibition at the Modern Gallery, 175, Bond-street. Ladies of the seventeenth and eighteenth centuries must have had less to do than those of the present day; some of their work ranks high as art, and can only be the result of the greatest industry and patience. There are some rare pieces of Charles I. reign, and one by Queen Anne herself. Landscapes technically are more successful than the figure subjects, the faces of which are executed in pencil and must be the work of eminent miniaturists. South Kensington is making a slight attempt to imitate some of the beautiful little pictures of the eighteenth century; so is Dublin. But students are much hampered in this copying work by the difficulty in obtaining the same materials, and by the fact that some of the most beautiful of the old stitches are lost. There is no doubt that much of the leadwork of Charles I. can never be imitated, but in other respects we are not so far behind our ancestors in the matter of mere execution; it is the inspiration that is to seek. What is wanted is students' interest on the study for its own sake, instinct with sympathy for new materials and new methods, based on a careful and prolonged study of the historic periods of the art.

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NEW POST-OFFICE, GREENOCK.—A new Post-office in Greenock has been erected in Cathcart-street, nearly opposite the entrance to the Caledonian Railway Station. The building, designed by Mr. W. W. Robertson, of H.M. Office of Works, Edinburgh, is in the Renaissance style, and, with the ground, cost about 20,000*l.*

## KENSINGTON PALACE.

As the State apartments have been opened this week, we may give a brief account of the buildings. The Palace, standing in the parish of St. Margaret, Westminster, occupies, it is said, the site of Neyte manor-house (belonging to the Abbey), wherein Abbots Litlington and Islip died, the home for a while of John of Gaunt, and the birthplace of John, fifth son of Richard, Duke of York. In 1662 the estate belonged to Sir Heneage Finch—Lord Chancellor, 1675, and Earl of Nottingham, 1681—whose son and successor, Daniel, sold it for 18,000*l.* in 1689 to William III. The greater part of the house was consumed by fire on November 10, 1691. Of the present palace, comprising the Prince's, Princess's, and Clock Courts, and the then "Park," the earliest published survey is, we believe, that by Rocque, 1736. Wren, with Hawksmoor as clerk of the works, designed the south-east block, which contains the Long Gallery, 94 ft. by 21 ft., for William III., and the alcove lately removed from the south end of the Dial Walk to the hollow near Marlborough (formerly Buck Hill) Gate in Bayswater-road*. Hawksmoor carried out some improvements for Queen Anne and King George I. In the reign of the latter, Kent added the east block, with pediment, the entrance corridor, and the grand staircase. Kent's work comprises Queen Caroline's and the King's Drawing-rooms, and the Cupola or Cubic Room (37 ft.); those apartments, together with the Presence Chamber, the Admirals' Gallery, and the staircase, he painted and decorated—as depicted in the coloured views in W. H. Pyne's "Royal Residences," three vols., 4to, 1819. For the coved ceiling of the Presence Chamber he employed the then newly-adopted "Pompeian" style, and put gilt statues of heathen deities in marble niches, with gilt busts above, in the Cupola Room, where is a marble bas-relief of a Roman marriage, ascribed to Rysbrach. The sides and ceiling of the staircase are painted in imitation of a gallery, crowded with spectators, amongst them being Kent himself and two of his pupils; on the ceilings of the Queen's and King's drawing-rooms are, respectively, Minerva attended by the Arts and Sciences, and Jupiter and Semele. Some carvings in the Queen's Gallery and Presence Chamber, and a lime-wood bordure above the chimney-piece of the Queen's Bed-chamber, are attributed to Gibbons. Evelyn says that the private gardens, about 26 acres were laid out by Wise; and in No 477 of "The Spectator," Addison cites the work there of Loudon and Wise. They lay to the north, where some yew trees yet remain, and to the north-west, near the Gravelpits, and are sung by Tickell in his eclogue about Kenna and the elfin King Oberon's palace. The grounds added by Queen Caroline were planted by Kent and Bridgman, the wall along the north side of the gardens (274½ acres) was replaced by Loudon with a railing. Some remains of Nottingham House, including the door bearing the monogram of W. and M. repeated, are in the north block of the palace. Vanbrugh's water-tower, of brick, stood on the Green (or Moor), where also was the conduit-house, with a vaulted roof, demolished in 1871, which Henry VIII. built *circa* 1536 for supplying Chelsea with water; it is illustrated and described by Carter in the *Gentleman's Magazine*, 1815, Part I. In 1893 Messrs. Lionel & Creighton published an account of the six specimens of antique church-plate presented to the chapel by William and Mary, Anne, George I. and George II., the flagon, with cup and cover, being of *circa* 1660, and the helmet-shaped ewer, patens, and alms-dish bearing the several stamps of the famous artificers, George and Francis Garthorne, Henry Herbert, Joseph Allen, and Mordecai Fox. The chapel described in "Old Kensington," by Miss Thackeray, is not the original one, which was replaced during the residence of the Duchess of Kent. Amongst the 660 pictures described by Pyne, and catalogued by West in 1818, we may cite one or two interesting views: Old Hampton Court, by Dankers, Greenwich Palace, *temp.* Charles II., and the Senate House, Venice, by O. Fialletti, with Sir Henry Wotton presenting his credentials to the Doge. At Kensington Palace lived and died William III., Queens Mary II. and Anne, Prince George of Denmark, and George II. It has been the home of the Princess Caroline of Wales; her mother, the Duchess of Brunswick; the Duke of Sussex, who there formed his famous library; his wife, the Duchess of Inverness; and the Duke and Duchess of Kent. In a room at the south-east corner, overlooking the Princess Louise's seated statue of Her Majesty, is a brass tablet, inscribed: "In this room Queen Victoria was born, May 24, 1819."

## WHY AMERICA IS GETTING BEFORE US.

FROM a letter on this subject by Mr. James Keith, A.M.Inst.C.E., which has been sent to us, but which is too long to print in full, we extract the following passages:—

"We, in this country, only really require 'equality of opportunity' to hold our own against the whole world. . . .

It may be quite true that at this moment coal, iron, and steel of as good, if not better, quality can be produced in the United States at cheaper prices than in the United Kingdom—which may be accounted for to a large extent by the absence of royalties and the freedom from restrictions in America, and which are so burdensome on the prime cost of these staples in this country—but even with all this granted, a more valid explanation is requisite for the production of steel bridges, watches, printing machinery, sewing machines, steam pumps, type-writing machines, electric appliances, locomotives, wood-working machinery, agricultural implements, &c., &c., which necessitates the employment of the highest kind of skilled labour, in which the Americans excel, and with which they are now supplying the British and European markets, notwithstanding the high price of labour in the United States.

All the talk about the fault being with the workmen and because of strikes and lock-outs in this country is entirely beside the question and amounts to self-deception on our part, as, in the United States, the workmen are more difficult to deal with and are more unreasonable, while strikes and lock-outs there are of greater magnitude and the consequences are, as a rule, infinitely more disastrous than they are here.

The evil lies far deeper—has been growing for at least twenty-five years, has been increasing rapidly during the past ten or twelve years, and has now got to an acute stage—and that evil is, as has been stated, the lack of equality of opportunity in the United Kingdom. . . .

Invention—which is the life and soul of progress to any nation—instead of being welcomed and encouraged, as it is by the policy of the American Government, is distinctly discouraged and clogged in this country by the policy of the British Government, with the result that invention is still kept at a heavy discount by being taxed at a rate out of all reason, and by being utilised for the mere purpose of reaping a large revenue annually from its most talented and progressive countrymen—the inventors—without giving compensation of any kind of real protection or in even any assurance whatever as regards novelty and validity. The British patent system is a standing disgrace to the country and is incomparable from every point of view almost with the patent systems of Germany and the United States. There is no attempt in the British Patent Office to secure novelty, and when it is mentioned that should two or more identical applications for the same "inventions" be filed the same day and at the same hour at the Patent Office, the Comptroller (unless some outsider, who ostensibly knows nothing about the matter, lodges objections at his own charges), has no power to reject one of them (although the same may be already patented), and the granting of the patents must follow in regular course if the drafting and the drawings, &c., are in order, and the fees be paid; the full value of a British patent may be estimated.

The present Colonial Secretary is mainly responsible for the patent system at present in force in this country, and although since 'The Patents, Designs, and Trade Marks Act, 1883,' drafted and carried through Parliament by the right honourable gentleman, became law, sundry improvements have been effected by outside pressure only, still, the whole system is radically bad, and ought in the interests, not only of inventors, but of the nation at large, to be entirely remodelled on something like the lines of the American patent system, which, though perhaps not absolutely perfect, is the most perfect patent system at the present time in force in any country in the world.

In strong contrast to the policy of our Government, the Government of the United States considers that an encouragement of invention benefits the country and gives a stimulus to the genius and inventive faculties of the people; it very wisely does not attempt to reap a revenue from the brains of its people, but it rather puts a premium on invention—instead of unduly taxing it—by running the Patent Office Department most efficiently but yet as economically as possible. This far-seeing policy enables the American people to take their

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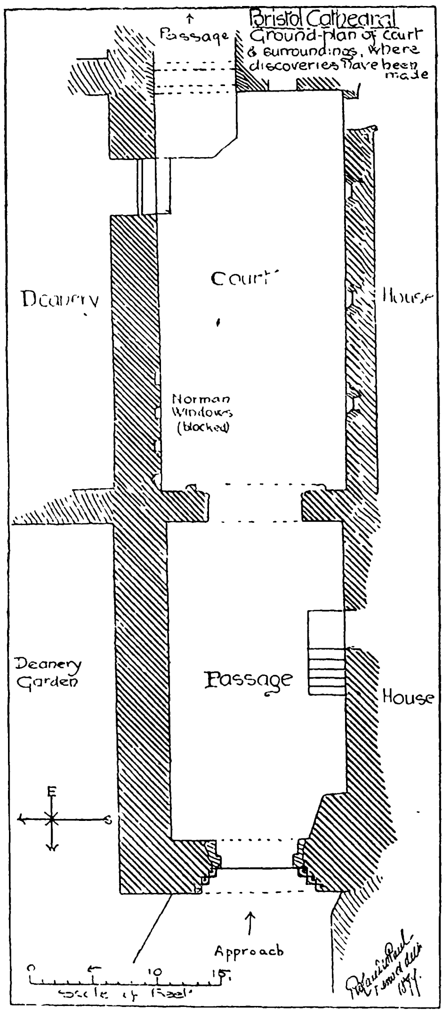
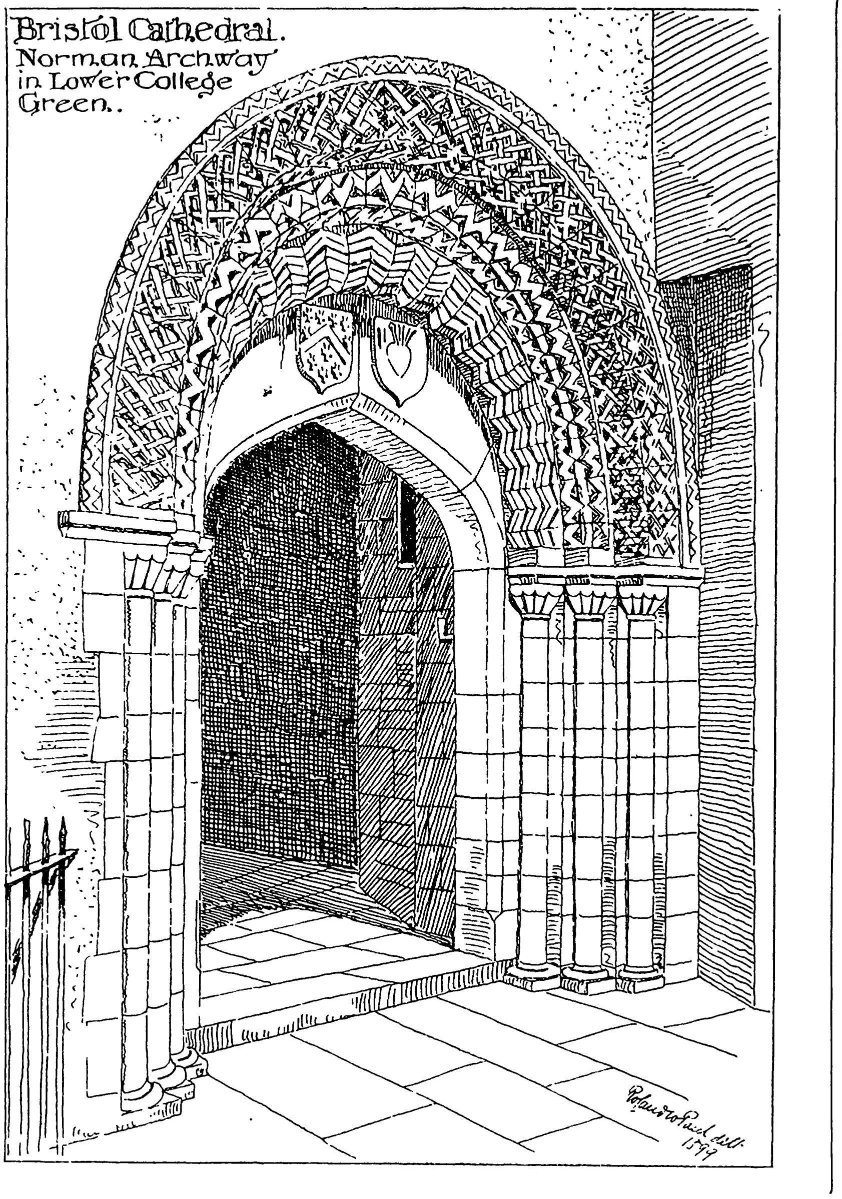
* To Wren is ascribed the Orangery, or "Banqueting House." See Mr. G. Weald's measured drawings, *Builder*, January 12, 1895; and our "Note" of January 22, 1898.




Bristol Cathedral.
Norman Archway in Lower College Green.

proper place in the van of industrial and scientific progress. . .”

See some further remarks on the subject on another page of this issue, under the head “American Competition.”

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## BRISTOL CATHEDRAL.

FOR some little time past, considerable alterations have been made in the neighbourhood of the Cathedral at Bristol, which was formerly the church of the Abbey of St. Augustine. Chief among these alterations has been the making of a new road on the south of the site of the abbey buildings, and the consequent opening-up of views of the monastery hitherto unobtainable. The monastic buildings, now much altered, mutilated, and rebuilt into more modern buildings, have not hitherto appeared very prominently in descriptions of the cathedral and abbey, but some recent discoveries, of which we give illustrations, have called attention to them, and it is much to be hoped may be the means of their being thoroughly investigated. The plan of the cathedral and the cloister court has already been given in the *Builder* Cathedral Series; and the cloister with the buildings on its east side were there shown. Both on the south and west are other buildings, into which remains of the monastic buildings have been incorporated. They consist chiefly of the frater on the south and the scanty remains of a long building, possibly the cellarer's building on the west. This, however, has been much mutilated, and only in the walls of the present deanery, near the south-west angle of the cloister are remains to be seen. The deanery itself apparently is of very early work, and at the south end is an open courtyard approached by a passage from Lower College Green. At both ends of this passage are fine Norman doorways, the western one semi-circular with a later insertion of late fifteenth century date, the eastern one of curious segmental form, perhaps rebuilt with old materials. The passage is 25 ft. long and 14 ft. wide, and is certainly original work of the Norman period. The courtyard is 30 ft. long and about 15 ft. wide. The walls were formerly covered with plaster and rough-cast. This has been removed, and some very interesting details have come to light. The north side is formed by the south wall of the deanery, and near its western end over a simple string-course, Norman lancets have been discovered, one altered in sixteenth century times. Traces of a Norman window are also visible near the north-east angle over a more modern square-headed doorway. The masonry for a few feet above the Norman windows is original; above this is some work of Perpendicular date with several windows of varying size, and the remains of a low-pitched parapet and gable. Both the south and east walls of the courtyard appear to be early work with later windows inserted, and in the east wall is a curious straight-sided arch leading to a passage formerly communicating with the kitchen, frater and lesser cloister. The head of this doorway bears the rebus of Abbot Nailheart (1481-1515), and this rebus with the arms of the Berkeley's also occurs on the western door of the passage (see sketch.) It is therefore probable that the Perpendicular work here is the work of Nailheart, who made considerable additions and alterations to the monastic buildings. The curious segmental form of the Norman arch at the east end of the passage is repeated in two arches south of the chapter-house in the east walk of the cloister, and on the east face of the wall Abbot Nailheart's rebus again occurs.

Of the other monastic buildings, the chief remains are those of the frater (now used as the cathedral school), mostly Perpendicular, but apparently standing on earlier walls. Some traces of Norman work are visible near the south-east corner. To the south of the frater was a second cloister. Of this some fragments remain of the north walls. Eastward are ruins—those of the Bishop's Palace destroyed during the Bristol Riots. There are, however, fragments of Norman and Early English work, and although it is generally said that the Palace was built on the site of the Abbot's lodgings, the ruins are probably those of the infirmary hall, and chapel. South of the great cloister the ground drops suddenly, and the buildings, therefore, were raised on cellarage. This is especially noticeable in the frater when seen from the south.

It is much to be wished that the site of the Bishop's Palace may be thoroughly cleared out. Any doubtful points as to the planning of the building which preceded it would then probably be settled, and give increased interest to the plan of the monastery.

We give illustrations of the western doorway (Norman) of the passages; also two views of the courtyard itself, showing the various features of interest found on the removal of the rough cast. The curious segmental head of the doorway already noted is shown on the left-hand side of the view looking north-west.

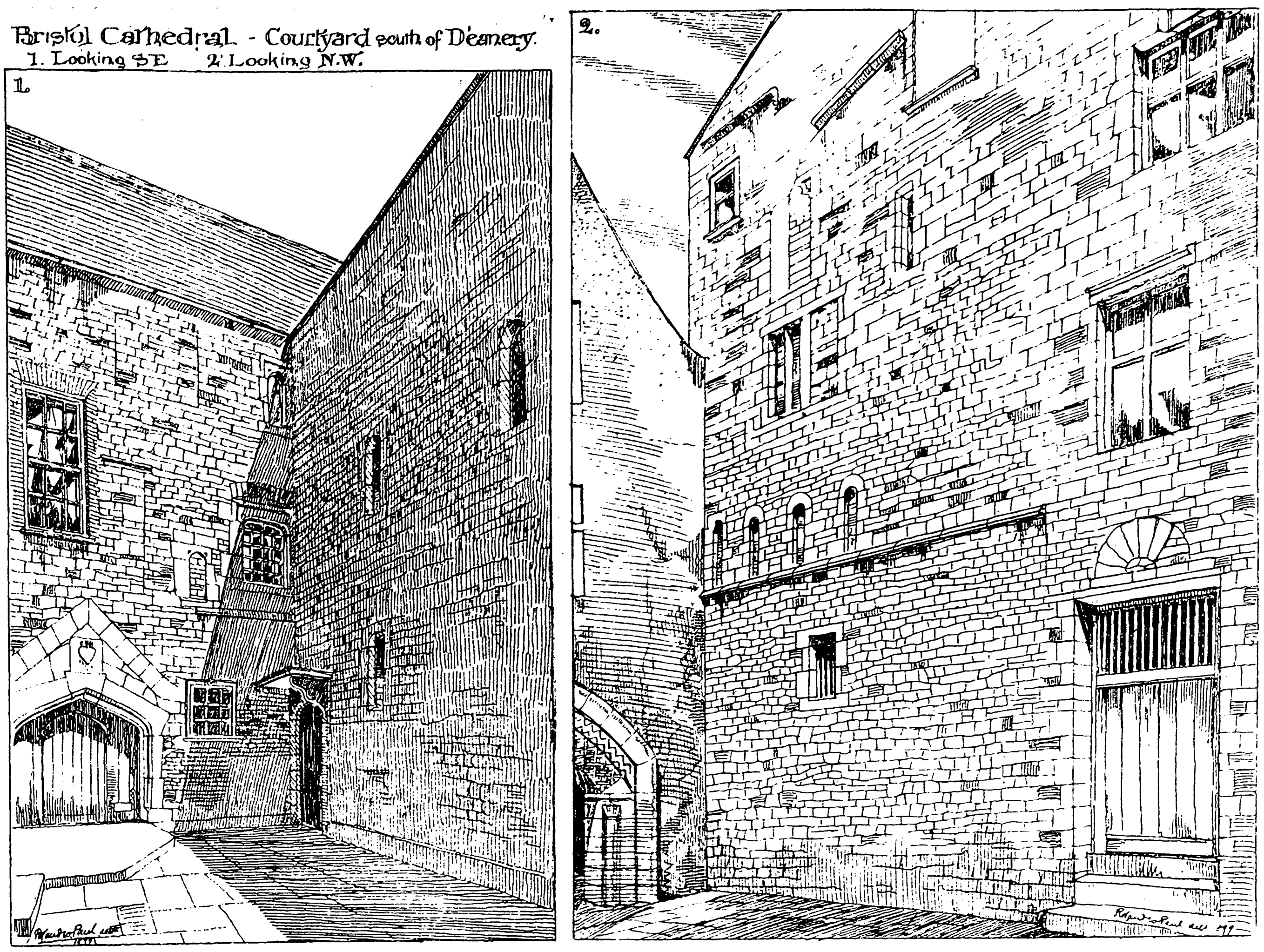
* * *

## *COMPETITIONS.*

SCHOOL, AIRDRIE.—The result of the adjudication upon the competitive plans for the new elementary school at Coatdyke, to be erected by the Airdrie School Board, is that the plan by Mr. James Shaw, architect, Coatbridge, has been chosen, that of Mr. William Shanks, Airdrie and Glasgow, being awarded the second place and premium of 10*l*.

* * *

NEW MORTUARY, YARMOUTH.—A public mortuary has just been erected at Yarmouth on the North Quay, from plans and designs by, and under the direction of, the Borough Surveyor, Mr. J. W. Cockrill



Bristol Cathedral - Courtyard south of Deanery.
1. Looking S.E. 2. Looking N.W.

## THE PHILADELPHIA EXHIBITION.

THE Philadelphia Exhibition of 1899, the first of its kind in the United States, is to be held under the joint auspices of the Philadelphia Commercial Museum and Franklin Institute from September 14 to November 30 of the present year.

The Exhibition grounds, situated on the west bank of the Schuylkill, comprise a tract of land of fifty-six acres. The grounds are easily accessible, being reached by trolley line within ten minutes' time from the City Hall; also by the Pennsylvania Railroad. Exhibits may be taken into the grounds in the cars in which they are transported.

The main group of buildings will comprise one structure about 400 ft. by 900 ft., and covering an area of more than eight acres. The approach is to be through a broad covered colonnade or porch 160 ft. wide, composed of double rows of columns leading into an open court 275 ft. square. The building west of the colonnade will contain an assembly hall, with seats for 1,200 people, in which will be held the meetings of the International Commercial Congress. From the entrance steps will descend into an open garden, enclosed at the sides by colonnades and ornamented with a central fountain. East of the central building and connected with it will be the Exhibition power-plant. It is adjacent to the Pennsylvania Railroad tracks, affording excellent facilities for landing heavy exhibits. Engines, air-compressors, and dynamo are to be located in one end of the power-house, and in the other the boilers.

A total area of 200,000 square feet of space is available in the main buildings for exhibits, and there is room in the grounds for the erection of such temporary buildings as may be desired by manufacturers, whose exhibits can be more advantageously displayed in separate buildings, and for concessions of amusement or other character.

The foreign buyers in the markets which should be accessible to American goods will find prepared for their inspection, at the Exhibition, an epitome of the products of the United States industries, and samples of similar competing wares from Europe, obtained for the Commercial Museum, for the purpose of comparison and study by American manufacturers, will be displayed. As the Franklin Institute will celebrate its seventy-fifth anniversary in connexion with the Exhibition, it may be anticipated that there will be present a large representation of its widely-distributed membership, embracing engineers, manufacturers, and professional men from all countries. The machinery exhibits, embracing the most improved machines, implements, tools, and labour-saving devices of the United States, will be a comprehensive and interesting group. As far as practicable, these will be operating exhibits.

The main practical object of the Exhibition will be to bring together the American manufacturer and the foreign buyer, whom it is designed to interest in American machinery and products. It is also intended to aid the American manufacturer by showing him how his goods must be packed, labelled, and put up for shipment in order to meet the approval and requirements of foreign trade. The management will, in addition, provide such attractions as will tend to interest the general public and ensure a large and constant attendance.

The Franklin Institute, whose object is the "promotion and encouragement of manufactures and the mechanical and useful arts," is appropriately united with the undertaking. Its history records the successful conduct of twenty-nine exhibitions, beginning with the first exhibition of American manufactures ever held, which took place in October, 1824, the year of its birth, in Carpenters' Hall. The reports and awards of the Franklin Institute are known and prized all over the world, and the grant of a diploma or medal, for the quality and excellence of machinery and products in an exhibition held under its auspices and those of the Commercial Museum, will be a prize of greater significance and value than such evidences ordinarily are.

All communications in regard to the exhibition should be addressed to Mr. W. P. Wilson, Director-General, 233, South Fourth-street, Philadelphia, U.S.A.

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NEW THEATRE FOR OLDBURY.—Plans have been passed for the erection at Oldbury, by Mr. Gilbert Osmund, of a new theatre with a seating capacity for 1,000. The architect is Mr. A. Ramsell, of Dudley.

## DERRICK CRANES FOR BUILDERS AND CONTRACTORS.

BY M. POWIS BALE, M.I.MECH.E., &C.

DURING recent years the use of steam cranes for building operations has been very largely extended with a correspondingly increased economy both in time and labour. This is perhaps more particularly noticeable in the erection of large buildings where derrick cranes erected on a tower or platform at the top of the building are now almost universally employed. As the derrick crane may be pronounced the builder's crane *par excellence*, we shall on the present occasion confine our remarks to this type. Although many first-class cranes are on the market it cannot be denied that there are also many indifferent ones; it may therefore be of service to our readers when making a selection if we deal in the first place with some of the chief points to be desired in their construction.

*Steam Derrick Cranes.*—As these cranes are usually fitted with hoisting, lowering, slewing, and derricking motions, and have often to be erected in dangerous places, it is of the utmost importance that they be constructed so as to work with the minimum amount of vibration. To secure this they should be made specially strong and substantial, not only in the framing and jib, but in the gearing and all the working parts, and the workmanship throughout should be of the first class. The centre post or mast should preferably be made of mild steel of ample section, set in a heavy cast-iron bed-plate, truly bored to receive post and turned on top to receive slewing ring and gear. Base-plates are sometimes made of wrought iron, but massive cast iron ones, cast in one piece, are found in practice to give greater rigidity. Crane cheeks made of steel and strongly braced are to be preferred, and the weight and strain of the crane to be carried on anti-friction rollers to secure light and easy slewing.

No overhung shafts should be allowed in the gearing, as they are a fruitful cause of vibration; and this can be readily remedied by fitting a cast-iron bracket on the side of the mast to take the ends of these shafts. All toothed gearing should be of extra heavy section, very carefully made and proportioned, with shafts, intermediate gearing, pins, feathers,

&c., made of steel. Two powerful brakes, capable of holding the full load, should be fitted, one on the barrel wheel and one on the second motion shaft, also safety gear to the derrick barrel. It is important that the hoisting and derricking drums and sheaves of jib be of large diameter (see "Wire Ropes"). All shaft bearings should be of phosphor bronze or good gun-metal, and be adjustable for wear. The hoisting, lowering, slewing, and derricking motions should all be steam-driven, with the lever readily under the control of the driver as he stands on the foot-plate.

As derrick cranes can be readily removed from place to place, are quick in action, and can be arranged to slew to a radius of about three-fourths of a circle, it can be readily seen a large saving may be effected in placing materials in position on a new building, or they may be placed on the ground for quarry work, &c., and the spurs backloaded. They may also be mounted on a travelling carriage, should occasion require, and be traversed by hand or steam; in point of fact, a well designed and constructed derrick crane may be pronounced the most generally useful type for all round builder and contractor's work. Where the crane is required for lifting both light and heavy loads, single and double purchase lifting gear is usually fitted, but where much light lifting has to be done an extra winding drum can be added with advantage. This should be of tolerably large diameter, and with a light steel rope moderate loads may be lifted at a high rate of speed, thus effecting a considerable saving in time over the ordinary gear.

*Engines for Crane.*—The engines usually fitted to these cranes are of the vertical type, with double cylinders, and there is little doubt there is less wear on cylinders placed vertically than in any other position. Single-cylinder engines are unsuitable for hoisting purposes as they are more difficult to start and are objectionable in other ways. The cylinders to be made of best hard cold blast iron, to be steam jacketted, felted, and lagged.

The crank shaft should be of steel, and to secure steady running, balanced disc cranks can be recommended. The link-motion reversing gear should be of substantial construction, and by preference be made of steel, and all joints, pins, &c., should be case-hardened; crank-shaft bearings to be of phosphor bronze and of ample area, as the pressure on them is oftentimes very severe. They should be made adjustable for wear, and efficient lubrication secured.

Piston rods to be of steel, and all glands bushed with gun-metal. Valves, plunger, and eccentric straps for pump to be of gun-metal.

It will be found advisable to provide both a pump, with an injector in reserve, for feeding the boiler in case of a breakdown, the increase in first cost being very little.

*Boilers and Fittings.*—A vertical cross-tube boiler made of Siemens-Martin or equal mild steel plates, double rivetted on the vertical seams, and of ample steaming capacity for the power required. Although they take a little longer to get up steam the writer prefers cross-tube boilers to vertical tubular boilers, as they are more readily cleaned and repaired, and less liable to burn out in case of bad feed-water and incrustation. The boiler should be complete with injector, dead-weight, or Salter's spring balance safety valve, pressure-gauge, protected water-gauge, and all usual fittings and mountings. The boiler and water tank are placed at the back of the base-plate to act as counter-balance, the driver standing in front of it, and care should be taken that the working levers are so placed that the driver can get a good view of the load when lifting or slewing. The boiler should be fitted and lagged or covered with a good non-conducting composition, such as "slag wool," and boxed in as far as may be to protect it from the winds and cold draughts, which are apt to cause leaky seams.

*Slewing Gear.*—In cranes of modern construction gearing is now provided enabling the crane to be slewed in either direction without reversing the engines. It is very important that this motion should come into action without shock, and be readily under the control of the driver. For this purpose double friction cone gearing is now generally employed. With the object also of preventing accidents from sudden stopping or starting, many manufacturers make the slewing roller path or ring loose and separate from the bed of the crane, and it is claimed for this arrangement that under ordinary conditions the pressure of the superstructure of the crane keeps it stationary when slewing; but should there be a suddenly applied shock, instead of breaking the gearing the loose path moves slightly on its seat till the power of the shock is spent. Another advantage of a loose path is that its wear can be equalised by moving it round, and it can be readily renewed when worn out.

*Crane Jibs or Derricks.*—These are usually made either of lattice steel or timber. Chiefly on account of the reduction in weight, the latter is largely employed for cranes to lift moderate weights erected at the top of high buildings. If timber is used, it need hardly be said it should be of the best possible quality, free from defects and thoroughly seasoned. Oak is usually employed for the mast and pitch pine for the derrick, spurs, and sleepers. They should be fitted with heads and shoes, and the head bolts be of ample strength. These latter should be carefully examined periodically, as when subjected to the weather dangerous decay may be going on in the wood and remain undetected. If considerable weight has to be lifted, the jib should be made double and firmly stayed and braced together, and the stays trussed to the sleepers. The diameter of the pulley sheaves and winding drum should in all cases be as large as may be convenient.

For lifting heavy weights a steel lattice-jib, with steel mast, is to be preferred to timber, which answers very well for moderate radius and weights, say two or three tons. A wind brake should be provided for holding the jib in any desired position.

*Wire Ropes for Lifting.*—After a lengthened experience, the writer can strongly recommend the use of special flexible steel wire ropes for lifting and hauling purposes in preference to chain, as being much safer and more convenient. It is very important, however, that the rope be exactly proportioned in size and strength to the maximum load it has to lift. If it is too small it is unsafe, and if too large, and it has to run quickly over sheaves and drums of small diameter, severe bending and other strains are at once set up, and it rapidly deteriorates. There is little doubt that the quality of the ropes is often blamed when the fault lies with the insufficient diameter of the sheaves and drum of the crane. It is now, I think, generally admitted that these should have a diameter not less than 25 to 30 times the diameter of the rope to secure the best results; in point of fact, within reasonable limits, the larger the better. Care should be taken that the rope is kept free from dirt and grit and should occasionally be thoroughly greased with a good lubricant such as black lead and tallow. Ropes may be changed without damage from a smaller to a larger drum, but not *vice versâ*. Ropes are often strained and damaged by suddenly starting and jerking the load; great care should therefore be exercised by the driver to secure a steady and even movement. Ropes should never be allowed to kink or strike against anything when at work or be allowed to get damp or rusty.

Owing to excessive competition numbers of ropes made of improper or inferior steel are on the market. For crane work best quality only should be used; these are manufactured from what is known as "extra plough steel" and made extra flexible. The breaking strain of these ropes—made of six strands with wire core, the centre core being of hemp—per square inch sectional area, is from 110 tons to 120 tons; but, owing to the varying nature of the steels employed, users would do well in all cases to require from the manufacturer a guarantee as regards breaking strains. The margin of safety or safe working load of round steel wire ropes should be one-seventh of the breaking load.

All ropes should be carefully examined and tested at intervals, as the constant bending of the rope over drum and sheaves sets up internal friction between the wire strands, which may become dangerous if worked long undetected. The less the diameter of the winding drum and sheaves the greater the friction; it therefore follows—as elsewhere remarked—that these should be of as large a diameter as possible.

*Management of Crane Boilers.*—Although vertical boilers are very useful in confined situations, the Boiler Insurance Company's returns show that, owing to their construction, they are more liable to deterioration and accidents than other types, consequently they should be very carefully managed and looked after. In the first place, the purest procurable feed-water should be used, and the boiler frequently cleaned, say, once a fortnight, if the feed-water is not good.

In boilers with an internally-fired cylindrical fire-box the water space between the box and shell is usually very confined, and somewhat difficult of access, and is especially liable to become furred up with incrustation; consequently the heat cannot be taken up rapidly by the water, and overheated fire-boxes and accidents from this cause are of frequent occurrence. It will pay well from an economical point of view to keep all boilers thoroughly clean; any incrustation, say, above $\frac{1}{16}$-in. thick should never be allowed to accumulate. Great care should be taken by the attendant in making the mudhole joints, as leakage from these is a fruitful cause of wasting of the plates; also if the boiler is out of use it should be thoroughly cleaned and dried and all ashes and soot removed. If out of use for some time, the fire-box and tubes should have a coat of anti-rust paint. Should slight leakage at any of the seams be discovered, they should immediately be carefully caulked. A frequent cause of deterioration in these boilers arises from overheating of the fire-box crown and chimney tube, especially if the firing of the boiler be forced. To protect the chimney tube, a cast-iron liner is now often fitted, with very satisfactory results.

Should the feed-water be bad, it should be purified before use. In conclusion, the boiler, engine, crane, and ropes should be periodically inspected by a competent engineer.

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## BY-LAWS AS TO DRAINAGE OF BUILDINGS.

AT the last meeting of the London County Council, the Public Health Committee brought up the following report, the recommendations being agreed to:—

"On March 21 last we submitted to the Council a series of drainage by-laws[*] proposed to be made under Section 202 of the Metropolis Management Act, 1855, and on the 2nd instant,[†] the Council considered them *seriatim*, and, having amended them in certain particulars, made by-laws number 1 to 7, and 9 to 22.

On By-law No. 8 an amendment was carried to add the following words to Sub-section (iv.), "or if the drains exceed 4 in. in internal diameter of a sectional area not less than that of a pipe of 4 in. internal diameter." The object of this amendment was to allow 4-in. ventilating pipes to ventilate drains of a larger diameter, and on the amendment being carried, By-law No. 8 was withdrawn in order that we might consider the most suitable words to give effect to the Council's wishes. We think that the best method of dealing with the matter would be to add to Sub-section (iv.) as brought up to the Council, a proviso in the following terms:—

> "provided always that such pipe or shaft, if it shall have an internal diameter of not less than 4 in., shall be deemed to provide adequate ventilation for any drain of a larger diameter."

We also wish to point out that By-laws Nos. 4 and 10, as amended by the Council, allow drains, and waste-pipes from lavatories and sinks, to be made of any metal. This, we think, is undesirable, as zinc or other pipes might be used, which might not be of proper weight and strength or might become oxidised and perish very rapidly. The alterations made in these by-laws were agreed to on the understanding that they were only consequential amendments to those made in certain other clauses, but as, on looking into the matter, we find they affect materially the meaning and intention of the by-laws, we hope the Council will allow the former words to be re-instated in the following paragraphs, viz., "cast iron" in place of "metal," in line 4 of paragraph 1 of By-law 4, and "lead, iron" in place of "metal," in lines 4 and 6 of paragraph 1 of By-law 10. Except for these slight alterations the by-laws will remain as made by the Council. In order to give effect to our wishes it will be necessary for the Council to repeal By-laws 4 and 10 and re-enact them altered as suggested.

The recommendations which we therefore make are—(*a*) That the Council do repeal Nos. 4 and 10 of the by-laws made by it on May 2, 1899, under Section 202 of the Metropolis Management Act, 1855. (*b*) That the Council do, pursuant to the provisions of Section 202 of the Metropolis Management Act, 1855, make by-laws numbered 4, 8, and 10 in the terms set out in the appendix to this report. (*c*) That the seal of the Council be affixed to by-laws numbered 4, 8, and 10 as set out in the appendix to this report, and to by-laws numbered 1 to 3, 5 to 7, 9, and 11 to 22, made by the Council on May 2, 1899, under Section 202 of the Metropolis Management Act, 1855."

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[*] In our issue for April 1 we printed the series of proposed by-laws.—ED.

[†] See our issue for May 6.

### APPENDIX.

4. *Materials, &c., for Drains.*—Except in the case of a drain constructed for the drainage of the subsoil of the site of a building, every person who shall erect a new building shall, in the construction of every drain of such building communicating with a sewer, use good sound pipes formed of glazed stoneware, or of cast iron, or of any other equally suitable material.

He shall not construct any such drain so as to pass under any building, except in any case where any other mode of construction may be impracticable.

*Size of Drain.*—He shall cause every such drain to be of adequate size, and, if constructed or adapted to be used for conveying sewage, to have an internal diameter of not less than four inches.

*Drain to be Laid on Concrete; and Fall of Drain.*—He shall also cause every such drain, whether or not constructed or adapted to be used for conveying sewage, to be laid on a bed of good concrete not less than 6 in. thick, and projecting on each side of the drain to an extent at least equal to the external diameter of the drain. He shall also cause such drain to be laid with a suitable fall.

*Joints of Drain.*—If he shall construct such drain of cast iron jointed with socket joints, he shall cause such joints to be not less than 2½ in. in depth, and to be made with molten lead properly caulked, and he shall also cause the annular space for the lead, in the case of 3-in. and 4-in. pipes, to be not less than ¼ in. in width, and in the case of 5-in. and 6-in. pipes, to be not less than ⅜ in. in width. If such drain be jointed with flange joints he shall cause such joints to be securely bolted together with some suitable insertion.

If he shall construct such drain of stoneware, or material other than metal, he shall cause such drain to be jointed with socket joints properly put together with cement or other equally suitable material.

*Drain to be Water-tight.*—He shall cause every such drain (other than a drain constructed for the drainage of the subsoil of the site of a building) to be so constructed as to be water-tight and to be capable of resisting a pressure of at least 2 ft. head of water.

*Concrete to be Filled in.*—He shall cause good concrete to be filled in so that it shall extend to the full width of the concrete bed already prescribed in this by-law, and so that such drain shall be embedded to the extent of not less than half its diameter.

*Thickness and Weight of Iron Pipes.*—If he shall construct any such drain of cast iron, the thickness and weight of the pipes in proportion to the diameter thereof shall be as follows :—

| Internal Diameter. Inches. | | Thickness of Metal, not less than | | Weight per 9 ft. length (including socket and beaded spigot or flanges —the socket not to be less than ⅜ in. thick), not less than |
|---|---|---|---|---|
| 3 | .... | 5/16 in. | .... | 110 lbs. |
| 4 | .... | ⅜ in. | .... | 160 lbs. |
| 5 | .... | 7/16 in. | ... | 190 lbs. |
| 6 | .... | 7/16 in. | ..... | 230 lbs. |

*Thickness, Sockets, and Joints of Stoneware Pipes.*—If he shall construct any such drain of stoneware or material other than metal, the thickness of the pipes, and depths of the sockets, and the annular space for the cement in proportion to the diameter shall be as follows :—

| Internal diameter, inches. | | Thickness of pipe, not less than | | Depth of socket, not less than, inches. | | Annular space for the cement, not less than |
|---|---|---|---|---|---|---|
| 3 | .... | ½ in. | .... | 1½ | .... | 5/16 in. |
| 4 | .... | ⅝ in. | .... | 1¾ | .... | 5/16 in. |
| 5 | .... | ⅝ in. | .... | 2 | .... | 5/16 in. |
| 6 | .... | ⅝ in. | .... | 2 | .... | 5/16 in. |
| 9 | .... | ¾ in. | .... | 2 | .... | 7/16 in. |

*Drains under Buildings.*—Where any such drain (other than a drain constructed for the drainage of the subsoil of the site of a building) passes under a building, he shall cause such part thereof as passes under the building to be laid, where practicable, in a direct line for the whole distance beneath such building, and to be completely embedded in and covered with good and solid concrete at least 6 in. thick all round.

Provided that in any case where such drain shall be constructed of iron, he shall not be required to cover such drain with concrete, but unless it be carried above ground and also be carried at least at each joint on adequate piers or other sufficient supports, constructed of iron, stone, brick, or cement concrete, it shall be laid on a bed of good concrete in accordance with the requirements of this by-law relating to drains which do not pass under a building.

He shall, whenever practicable, cause adequate means of access to such drain to be provided at each end of such portion thereof as is beneath such building.

*Composition of Concrete.*—He shall cause all concrete used in connexion with any such drain, whether under a building or not, to be composed of clean gravel, hard brick broken small, or other suitable ballast, well mixed with clean sand and good Portland cement in the proportion of one part of sand, one part of cement, and five parts of other material, or with clean sand and good blue lias lime in the proportion of one part of sand, one part of lime, and four parts of other material.

*Inlets to Drains to be Trapped.*—He shall cause every inlet to every such drain, not being an inlet provided in pursuance of the by-law in that behalf as an opening for the ventilation of such drain, to be properly trapped by an efficient trap so constructed as to be capable of maintaining a sufficient water seal. He shall not construct or fix in or in connexion with any such drain, any trap of the kind known as a bell-trap, a dip-trap, or a D-trap.

*Protection of Drain beneath Wall.*—He shall, in every case where any such drain is laid beneath a wall, cause such drain to be protected at the part beneath the wall by means of an arch, flagstone, or iron support, which shall not bear on the drain and shall be of sufficient size and strength to prevent any disturbance of or other injury to such drain.

8. *Ventilation of Drains.*—Every person who shall erect a new building shall, for the purpose of securing efficient ventilation of the drains of such building communicating with a sewer, comply with the following requirements :—

(*i.*) He shall provide at least two untrapped openings to the drains, and in the provision of such openings he shall adopt such of the arrangements hereinafter specified as the circumstances of the case may render the more suitable and effectual.

*Alternative Arrangements.*—(*a*) One opening being above and near the level of the surface of the ground adjoining such opening, shall communicate with the drains by means of a suitable pipe, shaft, or chamber, and shall be situated as near as may be practicable to the trap which, in pursuance of the by-law in that behalf, shall be provided between the main drain or other drain of the building and the sewer. The point at which such opening communicates with the drain shall also in every case be situated on that side of the trap which is the nearer to the building.

The second opening shall be obtained by carrying up from a point in the drains, as far distant as may be practicable from the point at which the first-mentioned opening shall be situated, a pipe or shaft, vertically, to such a height and in such a position as to afford by means of the open end of such pipe or shaft a safe outlet for foul air.

(*b*) In every case where the foregoing arrangement of the openings to the drains may be impracticable or undesirable, there may be substituted the arrangement hereinafter prescribed.

One opening shall be obtained by carrying up from a point, as near as may be practicable to the trap, which, in pursuance of the by-law in that behalf, shall be provided between the main drain or other drain of the building and the sewer, a pipe or shaft, vertically, to such a height and in such a position as to afford, by means of the open end of such pipe, a safe outlet for foul air. The point at which such opening communicates with the drain shall also in every case be situated on that side of the trap which is the nearer to the building.

The second opening, being at a point in the drains as far distant as may be practicable from the point at which such last-mentioned pipe or shaft shall be carried up, shall be above and near the level of the surface of the ground adjoining such opening, and shall communicate with the drains by means of a suitable pipe or shaft.

(*c*) If in any case neither of the two preceding arrangements are desirable, then both the first and second openings may be obtained by carrying up from the points referred to in the previous subsection suitable vertical pipes or shafts to such heights and in such positions that when either acts as an inlet the other may be a safe outlet for foul air.

*Gratings or Covers to Openings.*—(ii.) He shall cause every opening provided in accordance with any of the arrangements hereinbefore specified to be furnished with a suitable grating or other suitable cover for the purpose of preventing any obstruction in or injury to any pipe or drain by the introduction of any substance through any such opening. He shall, in every case, cause such grating or cover to be so constructed and fitted as to secure the free passage of air through such grating or cover by means of a sufficient number of apertures, of which the aggregate extent shall be not less than the sectional area of the pipe or drain to which such grating or cover may be fitted.

*No Bends or Angles in Pipes.*—(iii.) He shall not, except where unavoidable, cause any bend or angle to be made in any pipe or shaft used in connexion with any of the arrangements hereinbefore specified.

*Size of Pipes.*—(iv.) He shall cause every pipe or shaft which may be used in connexion with any of the arrangements hereinbefore specified to be of a sectional area not less than that of the drain with which such pipe or shaft may communicate; provided always that such pipe or shaft, if it shall have an internal diameter of not less than 4 in., shall be deemed to provide adequate ventilation for any drain of a larger diameter.

*Construction, Material and Weight of Pipes.*—(v.) He shall cause every pipe or shaft used in connexion with any of the arrangements hereinbefore specified to be constructed in the same manner and of the same material and weight as if such pipe or shaft were a soil pipe.

*Use of Soil Pipes as Ventilating Pipes.*—(vi.) Provided always, that for the purpose of any of the arrangements hereinbefore specified the soil pipe of any water-closet, or the waste pipe of any slop sink constructed or adapted to be used for receiving any solid or liquid excremental filth, in every case where the situation, sectional area, height and mode of construction of such soil pipe or such waste pipe shall be in accordance with the requirements applicable to the pipe or shaft to be carried up from the drains, shall be deemed to provide the necessary opening for ventilation which would otherwise be obtained by means of such last-mentioned pipe or shaft.

Provided also that any such soil pipe or waste pipe shall, where such soil pipe or waste pipe shall have an internal diameter of not less than 3½ in., and shall in all other respects comply with the requirements as to the position, height, and mode of construction of the pipe or shaft to be provided for the ventilation of any drain, be deemed to provide adequate ventilation for any drain having an internal diameter of not more than 4 in.

10. *Material of Waste-pipes. Traps to Waste-pipes.*—A person who shall erect a new building shall cause every pipe in such building for carrying off waste water from every lavatory or sink (not being a slop sink or urinal constructed or adapted to be used for receiving any solid or liquid excremental filth) to a sewer, to be constructed of lead, iron, or stoneware, and to be trapped immediately beneath such lavatory or sink by an efficient siphon trap, which shall be constructed of lead, iron, or stoneware, with adequate means for inspection and cleansing, and which shall be ventilated into the external air whenever such ventilation may be necessary to preserve the seal of such trap.

He shall not construct or fix in or in connexion with such waste pipe, lavatory, or sink, any trap of the kind known as a bell-trap, a dip-trap, or a D-trap.

*Waste Pipes to Discharge in the Open Air.*—He shall cause every pipe in such building for carrying off waste water to a sewer to be taken through an external wall of such building, and to discharge in the open air over a properly-trapped gully or into such a gully above the level of the water in the trap thereof, or over a channel leading to such a gully."

## CONGRESS OF FRENCH ARCHITECTS.

As already mentioned, the annual Congress of French architects will be held from June 18 to 24, at Tours for the sittings of sections and the usual visits, and at Paris for the distribution of awards and the final dinner. The following is the main scheme of the programme :—

*Sunday, June* 18.—Excursions to Langeais, Rigny, Les Islettes, and Azay-le-Rideau.

*Monday, June* 19.—Two meetings of sections to discuss, respectively, the law of April 9, 1898, on the responsibility for accidents on building work, and the subject of industrial art in the provinces. Visits in Tours, and dinner at Saint-Avertin.

*Tuesday, June* 20.—Excursion to Loches and departure for Poitiers.

*Wednesday, June* 21.—Visits to the curiosities of Poitiers : Notre Dame la Grande, Palais de Justice, Tour Saint-Porchaire, Lycée, Church of St. Hilaire, Gardens of Blossac, ramparts, temple of St. Jean, cathedral, Ste. Radegonde, walk along the river to Montierneux. Departure for Augoulême.

*Thursday, June* 22.—Visits in Augoulême : the Hôtel de Ville (a remarkable work by Abadie), the Theatre, the Carnot monument (by Henri Deglane and R. Verlet), the ramparts, the cathedral (restored by Abadie), St. Auzonne, the public gardens, Beaulieu, various interesting old houses, the chapel of the Lycée, the Prefecture, &c. In the evening, departure for Paris.

*Friday, June* 23.—General meeting of the Caisse de Defence Mutuelle, and visit to the works for the 1900 Exhibition.

*Saturday, June* 24.—Distribution of awards in the Hemicycle des Beaux Arts, and annual dinner.

## *ARCHÆOLOGICAL SOCIETIES.*

BRITISH ARCHÆOLOGICAL ASSOCIATION.—This Association met at the rooms in Sackville-street on the 17th inst., Mr. Compton, V.P., in the chair. Mr. Patrick, hon. sec., announced that the Marquess of Granby had accepted the office of President of the Congress and the Association for the ensuing twelve months. Two very interesting rubbings of incised designs on the headstone of the piscina in the south wall of the Templar's Chapel at Garway, Ross-on-Wye, were contributed by the Rev. Dr. Minos, the Vicar of Garway. They were discovered late last year on removing plaster. On the left side of the piscina is a fish, representing the baptised, and on the right a horned adder, representing the unbaptised. In the middle is a cup marked with a triangle, and raised a little above the top is a cross within a circle; the cup has two wings. Dr. Minos considers this to be emblematical of the exaltation of the consecrated wafer. The second rubbing was of incised work on the inside face of the broken tympanum of the west door of the Templar's Chapel; on the left side is a spear, and near it a ladder; on the right a cup with a cover, and near it a reed and a sponge. In the middle is a TAU cross with a crown over it, three nails and a sword beneath the arms. These clearly represent the instruments of the Passion and the Crown of Glory. The work is rude in character and of early date, probably pre-Norman. Mrs. Collier exhibited a rare volume of the early part of the seventeenth century, entitled "A History of the Gospel," in fine condition, and Mr. Grimsdale photographs of a pair of hand mill-stones recently dug up in a brickfield near Uxbridge. The stones are 14 in. in diameter and were found under about 4 ft. 6 in. of brick earth. A paper contributed by Dr. Russell Forbes on "The Cremating of Cæsar" and the recent "Discoveries in the Forum at Rome" was read, in the author's absence, by Mr. Patrick, hon. sec.

## Illustrations.

### THE NEW BUILDINGS FOR SOUTH KENSINGTON MUSEUM.

We give this week the view of the new façade for the South Kensington Museum, as remodelled by Mr. Webb, and the ground plan, to a larger scale than has yet appeared. We may refer the reader to our remarks on the whole scheme in the second article of our last week's issue; in the course of which we observed that the large-scale plan, now given, would render more clear the modifications made from the original plan, owing to the lines of the site, and the reasons for them.

### LIVERPOOL MUSEUM.

This drawing, which is exhibited at the Royal Academy, represents the west elevation, towards Byrom-street. The three lower rows of windows light the technical schools. Above them are two floors of museum galleries, the upper of which is top lighted.

The work is being executed in an extremely hard sandstone, known as Stancliffe stone, said to be the same as that of which the St. George's Hall is built. Mr. Pomeroy is doing all the sculpture.

The plans of the building were given when we published the competition drawings, under date August 8, 1896.

### CHARD CHURCH, SOMERSET.

Our illustration shows the south-east view of the proposed enlargement of the parish church at Chard, Somerset. At present the church consists of a spacious nave with aisles, transepts, and a very short chancel. To meet the required increased accommodation, it is proposed to double the transepts and lengthen the chancel. The architect is Mr. Roland W. Paul, of London. The drawing is exhibited at the Royal Academy.

### SCREENS, ABBEY DORE CHURCH, HEREFORD.

The two screens enclose one of the chapels of the south transept of the Abbey Church, now known as the Hoskyns Chapel. The family vault is below the pavement, and over it stands the monument of Sergeant Hoskyns, *temp.* Elizabeth, on the sides of which are some elaborate inscriptions and heraldry. The screens are of oak, and on the cornice of the front screen are the date of its erection, the initials of the donor, and the arms of the Hoskyns family. The screens were designed by Mr. Roland W. Paul, of London, and executed by Messrs. Yandle & Sons, of Martock. The shield of arms and its decoration was carried out by Mr. Thomas Martin, of Kennington-road. The drawing is exhibited at the Royal Academy.

### LYCH GATE, WOOTTON FITZPAINE, DORSET.

The lych gate forms the entrance to a new cemetery recently made a short distance from the church, the churchyard having been closed for burials. The materials are oak and Ham Hill stone, and old Ham stone slates have been used for the roof. The work has been carried out by Messrs. Yandle & Sons, of Martock, from the designs of the architect, Mr. Roland W. Paul. The drawing is exhibited at the Royal Academy.

## REGULATIONS AND STANDING ORDERS UNDER THE LONDON BUILDING ACT, 1894.

At the last meeting of the London County Council, the General Purposes Committee brought up the following report, the recommendations being agreed to without discussion:—

"The Building Act Committee have informed us that they consider it expedient that the regulations and standing orders under the London Building Act, 1894, should be revised, in view of the passing of the London Building Act, 1894 (Amendment) Act, 1898, and of the recent decision of the Council to reprint and issue in book form the Council's edition of the London Building Act, and the by-laws in force relative to buildings. The Building Act Committee have carefully gone through the existing regulations and standing orders, and the alterations and additions which they propose are those which their four years' experience of the working of the London Building Act, 1894, lead them to think desirable and necessary.

The new regulations deal chiefly with matters of detail and office routine, and closely follow the existing regulations, but the Building Act Committee deem it expedient that the regulations should be made more stringent in some matters, notably in the case of street formation, with regard to which many difficulties have in practice arisen. With the view, if possible, of preventing similar difficulties arising in future, the Committee propose that the following clause should be added to the regulations under this head—

'Every application for sanction to the formation or laying out of any street, or for the adaptation of any way as a street, must be accompanied by correct and sufficient particulars in writing (which must be verified by production of title deeds should the Council so require) showing how the person on whose behalf the application is made has acquired such control over the land forming the site of the proposed street shown on the plan accompanying his application, as may be requisite to enable him to form or lay out such street, or to adapt such way as the case may be. Such particulars must contain the date of, and the names and addresses of the parties to, the document or documents under which the applicant acquired such control.'

As the regulations are of the nature of standing orders, the Building Act Committee have thought it more convenient that they should be submitted with and at the same time as the revised standing orders.

The present standing orders were framed on the lines of the orders in force under the Building Act of 1855 before experience had been gained of the working of the London Building Act of 1894. The policy of the latter Act is to impose penalties for building, &c., contrary to conditions. Conditions must accordingly be framed in such a way as to enable them to form a basis for proceedings if deviations are made from the schemes approved by the Council. The old conditions rather aimed at making the Council's sanction void if deviations were made, but practice has shown that such deviations might be made at a period when it was too late to take proceedings for building without consent, even if the consent given by the Council were declared void. The Building Act Committee inform us that they have therefore especially framed the new conditions with a view of making proceedings possible at any time when a deviation occurs, and having regard to cases which have arisen in which, owing to some technicality in the wording of the present conditions, the Council has been unable to secure compliance with the plans sanctioned. It may be particularly noted as regards street formation that the evils the Committee have specially had in view and have endeavoured to meet are persons commencing in accordance with sanctioned plans and then stopping and leaving a *cul de sac* instead of completing the street as shown on the plan, or commencing properly and then continuing improperly. The Building Act Committee add that the conditions proposed have been to some extent tried in practice with good results, and the Committee have been able to recommend the Council to sanction schemes subject to such conditions, when, in the usual course, they would have been obliged to recommend the Council to refuse its consent.

Slight alterations have been made in the latter part of standing order No. 238 relative to the fees to be paid to district surveyors in accordance with Section 155 of the London Building Act in the direction of making clearer to the district surveyors the services required of them under the section of the Act referred to, but the amount of the fees remain as at present.

It is not proposed that the new regulations and standing orders (which are set out in the appendix to this report) shall come into force until October 1 next; and until that date, therefore, the existing regulations and standing orders will remain in force.

We agree with the proposals of the Building Act Committee and accordingly recommend:—

'That the Council do make regulations and standing orders in the terms set out in the appendix to this report, under the London Building Act, 1894, and the London Building Act, 1894 (Amendment) Act, 1898, and that such regulations and standing orders do come into force on and after October 1, 1899, and be then substituted for the existing standing orders, Nos. 217 to 238.'

### Appendix.

*Regulations and Rules as to applications for Sanction, Consent, and Licences, &c., under the London Building Act, 1894, and the London Building Act, 1894 (Amendment) Act, 1898.*

The attention of applicants is specially directed to the provisions of Section 194 of the London Building Act, 1894, whereby all applications, plans, and other documents delivered at the office of the Council, on delivery there become the property of the Council.

#### I.—*General.*

Every application (except those under Part XI. of the Act of 1894, as to which see paragraph II. (14) below) must be addressed to the Superintending Architect, County Hall, Spring-gardens, S.W., and must state under which section of the Acts it is made.

All applications must be in writing on foolscap paper, and all drawings (including plans, sections, and elevations) must be on tracing linen of sufficient size to permit of the approval of the Council being endorsed thereon.

The scale to which drawings are made must be drawn thereon and not expressed in words; the north point must be indicated on all plans.

The site must be coloured pink, the proposed building red, existing buildings grey, and any land to be dedicated and left open for the use of the public blue.

The full name and address of the person on whose behalf the application is made and the extent and character of his interest in the property, and whether the property is freehold, leasehold, or copyhold, must be stated. Particulars must be furnished as to the nature of the application and the situation of the street, building, or structure, and the purpose for which such building is required.

All drawings must be in duplicate, and be drawn on the unglazed side of the tracing linen.

#### *II.—Plans, Sections, and Particulars Required in Each Case.* (1) *Formation and Laying Out of New Streets—Adaptation of Ways for Streets and Widenings of Streets* (*see also 13 below*), *&c., Sec. 7 and Sec. 10 of the 1894 Act.*

Plans must be to a scale of 88 ft. to the inch, and must be accompanied by longitudinal sections to the same horizontal scale, but to a verticle scale of 11 ft. to the inch, showing the natural and intended surface levels of the streets (computed from ordnance or some other fixed datum), and by cross sections to a scale of 22 ft. to the inch.

The width of the new street must also be figured.

A key-plan of the locality, showing the surrounding property, must also be sent.

The names proposed to be given to the streets must be submitted; they must be such as are not already in use. An office list of names in use, together with a list of available names, can be consulted by applicants.

In the event of the application being sanctioned, two additional copies of the plans will be required.

In the case of the adaptation of ways for streets or the widening of streets under Section 10, sections will not be required.

Every application for sanction to the formation or laying out of any street or for the adaptation of any way as a street, must be accompanied by correct and sufficient particulars in writing (which must be verified by production of title deeds should the Council so require) showing how the person on whose behalf the application is made has acquired such control over the land forming the site of the proposed street shown on the plan accompanying his application, as may be requisite to enable him to form or lay out such street, or to adapt such way as the case may be. Such particulars must contain the date of, and the names and addresses of the parties to, the document or documents under which the applicant acquired such control.

#### (2) *Buildings (a) within the Prescribed Distance (b) in Advance of the General Line of Buildings, &c., Sec. 13, Sec. 17, and Sec. 22 of the 1894 Act, and Secs. 3 and 4 of the 1898 Act.*

Plans must be to a scale of 22 feet to the inch and must show the situation of the building in relation to others adjacent. The height and precise distance from the centre of the roadway of the proposed building and the width of the street are to be figured.

The names and addresses of the owners and occupiers of the nearest building on each side of the proposed building must also be sent.

In the event of an application being approved, an additional copy of the drawings will be required.

In the case of applications under Sec. 13 (5), the extent and height of the old buildings on the site must be shown to the same scale.

### (3) *Open Space at the Rear of Domestic Buildings, Sec. 41; and Open Space about Working Class Dwellings not Abutting upon a Street, Sec. 42 of the 1894 Act and Sec. 4 of the 1898 Act.*

Plans and sections must be to the scale of one-eighth of an inch to the foot; they must indicate the height of the proposed buildings in every part; there must also be a block plan to a scale of 22 ft. to 1 in., showing the adjoining premises, with the approximate height of any buildings thereon, and in any case where it is desired to extend a building or any part thereof above the diagonal line directed to be drawn by the Act of 1894, the diagonal line and also the horizontal line from which it is drawn must be shown on such drawings.

### (4) *Deviations from Certified Plans of Domestic Buildings Previously Existing on Old Sites, Sec. 43 of the 1894 Act.*

Plans and sections to a scale of one-eighth of an inch to a foot, showing the height and extent of the previously existing buildings, and certified by the district surveyor, must be sent, together with plans and sections of the proposed new buildings to the same scale. The position and approximate height of any adjacent buildings must be indicated on a block plan to a scale of 22 ft. to 1 in. The area of open space to be left and the height of new buildings must be figured.

### (5) *Laying Out New Streets on a Cleared Area, Sec. 44 of the 1894 Act.*

In all cases where the proposed new streets have been sanctioned but not formed the date of such sanction must be specified in any application submitted under Section 44, and every such application must be accompanied by a block plan to a scale of 44 ft. to 1 in., showing the width of all old streets on the area, and the extent and approximate height of all old buildings thereon, together with sections to a scale of one-eighth of an inch to the foot, showing the height of the proposed new buildings.

In any case where sanction has not been obtained to the formation or laying out of proposed new streets upon a cleared area, application for sanction to such streets must be made in accordance with Regulation II. (1), and should accompany any application made under Section 44.

Applications cannot be entertained under Section 44 for modification or relaxation of the previous provisions of Part V., except in respect of either existing streets or streets for the formation of which a sanction has been obtained under Part II. of the 1894 Act.

### (6) *Height of Buildings, Sec. 47 and Sec. 49 of the 1894 Act.*

A block plan to a scale of 22 ft. to an inch, showing the position of the proposed building and of any adjacent buildings, and the width of the street.

Also a plan and sections to a scale of one-eighth of an inch to the foot, showing the height of the several parts of the building.

### (7) *Recesses and Openings in External Walls and Recesses in Party Walls, Sec. 54 of the 1894 Act.*

A block plan to a scale of 22 ft. to an inch, showing the position of the building and of adjacent buildings.

Plans of the floors of the building and an elevation of the wall in which the recesses or openings cocur to a scale of one inch to the foot.

### (8) *Timber in External Walls, Sec. 55; and Furnace Chimney Shafts, Sec. 65 of the 1894 Act.*

Plans, sections, and elevations to the scale of one-eighth of an inch to a foot, together with such details to a larger scale as may be necessary to show the construction.

A block plan to a scale of 22 ft. to the inch, showing the position of the building.

### (9) *Means of Escape from the Upper Stories of High Buildings, Sec. 63 of the 1894 Act.*

A block plan to a scale of 22 ft. to an inch, showing the position of the building and of adjoining buildings.

Plans of the floors above 60 ft. from the street level to a scale of one-eighth of an inch to the foot, and full details of the means of escape to be provided.

### (10) *Projections, Sec. 73 of the 1894 Act.*

In addition to the drawings, &c., required by Regulation II. (2), a plan, section, and side elevation to a scale of one-eighth of an inch to a foot. In the case of the application being approved an additional copy of the drawings will be required.

### (11) *Additional Cubical Extent, Sec. 76; and Buildings for the Supply of Electricity, Sec. 203 of the 1894 Act.*

A block plan to a scale of 22 ft. to the inch, showing the position of the proposed building and buildings adjacent.

Plans and sections to a scale of $\frac{1}{8}$ in. to the foot, showing the height of the building in its various parts.

The use to which the various parts of the building are intended to be put is to be indicated, and any points bearing upon the question of liability to fire.

### (12) *Special and Temporary Buildings and Wooden Structures. Part VII. of the 1894 Act and Sec. 6 and 7 of the 1898 Act.*

Applications must be accompanied by a block plan of the premises, showing the position of the proposed building or structure, and of any adjacent buildings or structures, and also by a plan, elevation, and section of the proposed building or structure to a scale of one-eighth of an inch to a foot, together with such sections and details to a scale sufficiently large to clearly show the construction.

A fee of 5s. must be paid to the cashier of the Council on depositing the application, and a further fee of 5s. on obtaining a notification of the order of the Council, and in no case will the approval or licence be issued until the fees are paid.

Every application for a renewal of an approval or licence for a temporary building or structure for a further period must be accompanied by a certificate from the district surveyor that it has not been altered as to construction or position, and in cases where the building or structure has existed for three years or more, as to its stability for such further period as may be applied for, and also as to any repairs which may be requisite.

In cases where the building or structure has existed for less than three years, and if the inspection be merely to ascertain that the building has not been altered as to construction or position, and to certify that an extension of time may be allowed, a fee of 10s. may be demanded and received by the district surveyor.

In cases where the building or structure has existed for three years or more, and a certificate with regard to structural stability is required, a fee of 20s. may be demanded and received by the district surveyor.

### (13) *Naming of Streets and Numbering of Houses. Part IV. of the 1894 Act.*

Persons laying out new streets or building rows of houses would facilitate their own operations with reference to leases and the numbering of houses required by the Council under the statute by observing the following rules—

St. Paul's Cathedral is recognised as a central point; and the numbering of houses begins at the end or entrance of the street nearest to that building, except where a street leads from a main thoroughfare to a less important street, and then the numbering must start from the main thoroughfare.

Taking, therefore, the sides of a street as left and right (assuming that the back is towards St. Paul's) the odd numbers will be assigned to the left hand side, and the even numbers to the right hand side.

No name is to be used for a street unless with the approval of the Council; and it must be a name consisting, if possible, of one word, with the addition of "street," "road," or other like term, and not already in use within the county.

Only such streets as are leading thoroughfares of considerable length can be designated "roads."

No street under 50 ft. in width can be called an "avenue."

The names "gardens" and "grove" can only be used when the terms seem appropriate.

Names in some way associated with the locality are preferred.

Names for terraces or places, or other blocks of houses, and sections of streets, usually known as subsidiary names, are not recognised.

Any person interested in property affected by any order of the Council for re-naming streets or re-numbering houses, is permitted, on application, to make a copy of the order and a tracing of the plan attached thereto; or a certified copy of the order and plan may be furnished to him on his paying the cost of making the same.

A fee of 1s. is to be charged to all persons seeking information involving a reference to the records with regard to orders for re-naming streets or re-numbering houses.

If a copy of an order and plan be required, there will be a further fee of not less than 1s. 6d.

A more extended plan may be obtained for a larger payment.

Copies of orders and plans are to be made in the superintending architect's department.

### (14) *Dwelling-houses on Low-lying Lands. Part XI. (These Regulations were made by the Council on March 26, 1895, under Section 123 of the London Building Act, 1894, and the Concurrence of the Tribunal of Appeal was duly signified thereto on April 8, 1895).*

Every person who shall be desirous of erecting or adapting any building to be used wholly or in part as a dwelling-house on any land in the county of London, of which the surface is below the level of Trinity high-water mark, and which is so situate as not to admit of being drained by gravitation into an existing sewer of the Council, shall first make a written application for a licence. Such application shall be addressed to the Clerk of the Council.

Such application shall contain a statement as to the nature and extent of the interest of the applicant in the building or buildings proposed to be erected or adapted, and be accompanied by a plan and section of the lowest floor of such building or buildings and the curtilages thereof to a scale of $\frac{1}{8}$th of an inch to a foot, and by a block plan to a scale of not less than $\frac{1}{2500}$ (which may be on a sheet or sheets of the Ordnance Survey, or may be drawn on tracing linen), showing the position of such building or buildings, and the local sewer into which it is proposed to drain such building or buildings, and the connexion of such local sewer with an existing sewer of the Council.

Such plans and sections shall be accompanied by a description of the materials to be used in the construction of such building or buildings, and shall be coloured in accordance therewith. The points of the compass shall be marked on the block plan.

The position and course of the drainage system proposed to be adopted for the disposal of sewage and rain water, and its connexion with the local sewer or an existing sewer of the Council, shall be clearly shown on the plans and sections, and the diameter and inclination of the drain-pipes shall be figured thereon.

The plan and section shall also indicate in figures the level above or below ordnance datum at which it is proposed to construct the floor of the lowest rooms.

The decision given by the Chief Engineer of the Council upon such application shall be reported to the Building Act Committee, and the Committee shall report it to the Council, and thereupon, if it is to the effect that the erection or adaptation may not be permitted, the Clerk of the Council shall by letter inform the applicant that the Council, acting upon the decision of the Engineer, has refused permission. If it is to the effect that the erection or adaptation may be permitted, a licence under the seal of the Council embodying the conditions of the Engineer's decision shall be issued to the applicant.

### *Regulation made by the Council on March 26, 1895, under Section 122.*

It shall not be lawful to place the underside of the lowest floor of any permitted building at such a level as will render it liable to flooding, and every permitted building shall be efficiently and properly drained to the satisfaction of the Engineer for the time being of the Council either into a local sewer or into a main sewer of the Council.

### (15) *Fire-resisting Materials. Schedule II. of the London Building Act, 1894—The Council on March 28, 1899, passed the following Resolution:—*

That the Council do, in pursuance of the powers vested in it by the second schedule of the London Building Act, 1894, approve of the following material as fire-resisting—namely, concrete composed of properly burned coke breeze, free from dust and organic impurities, and Portland cement, in the following proportions, viz., five parts by measurement of coke breeze to one part by measurement of Portland cement, mixed together with clean water to the satisfaction of the district surveyor, when such concrete is used for filling in between the joists of floors, and is filled in to the depth of at least five inches.

## STANDING ORDERS.

### *Conditions upon which Applications may be Granted.*

In dealing with applications made under the London Building Act, 1894, and the Amending Act of 1898, with reference to the under-mentioned matters, the desirableness of imposing conditions to the following effect shall be considered, but this order shall not limit any power to vary such conditions or to impose such conditions in other matters than those mentioned or to impose any other conditions in any matter.

*In the matter of the formation or laying out of proposed streets,* conditions to the following effect:—

(1.) That within from the date of this order the roadway of the proposed street hereby sanctioned shall be clearly defined throughout by posts and rails or so otherwise as the Council shall permit, and be thrown open to the public as a highway.

(2.) That no building shall be commenced to be erected upon either side of such roadway, or upon a site abutting upon such roadway, unless such roadway shall have been and shall still remain so defined and thrown open as aforesaid, and unless such roadway shall have been and shall still remain so made as regards levels, direction, width, and gradients throughout as to comply with the provisions of any statutes and by-laws in force in London regulating streets and buildings, and unless such roadway shall also have been so made and shall still remain as to accord with the plans and sections attached hereto and the particulars which accompanied the application for the sanction contained in this order, and unless the name of the street approved by the Council shall have been affixed and be retained at both ends of the street.

*In the matter of the erection of one-story shops in advance of the general line of buildings*, a condition to the following effect:—

That no part of the proposed shop, or any structure or erection connected therewith, do exceed 16 ft. in height above the footway, or such other height as may be fixed by the Council.

*In the matter of temporary buildings or structures, or wooden structures dealt with under Part VII.*, conditions to the following effect:—

(1.) That the building or structure be commenced and completed within such periods as may be deemed expedient.

(2.) That if the building or structure be commenced or completed contrary to Condition 1, or be found at any time to have been so erected, set up, altered, or adapted, as not to be in all respects in accordance with the application for the approval or licence and the plans and particulars relating to such application, or (when approved or licensed for a special purpose) to have been used for any purpose other than a purpose named in the approval or licence, or to have had any unauthorised addition made thereto, or any word, advertisement, or device made or retained thereon, such building or structure shall, within seven days after service on any owner or occupier thereof for the time being of a notice from the Council requiring its removal, be entirely removed.

*In any matter in which land is to be given up* conditions to the following effect:—

(1.) That before the building is erected or within such period as may be named in the sanction, consent, licence, or approval, the land coloured blue upon the deposited plan shall be dedicated to and left open for the use of the public, and that no pier, pilaster, or other projection be placed on such land.

(2.) That no vault, arch, cellar, or other construction shall be made in or under the said land coloured blue on the said plan without the previous consent in writing of the Local Authority.

*And in all matters* conditions to the following effect:—

That the building, structure, or work be set up, erected, or carried out, as the case may be, and retained without any addition thereto and in exact accordance with the application for the sanction, consent, licence, or approval, and the plans and particulars which accompanied such application.

No sanction, consent, licence, or approval shall be issued until the conditions imposed by the Council in granting the same have been, if the Council so require, accepted in writing by such persons as the Council shall consider the proper parties to comply with such conditions.

Every written acceptance of conditions shall have a sixpenny stamp affixed thereto.

## DIRECTIONS TO BE OBSERVED BY THE COUNCIL'S OFFICIALS IN REGARD TO CERTAIN APPLICATIONS.

### *Formation and Widening of Streets—Part II. of the 1894 Act.*

A copy of each plan for the formation of a new street, or for the adaptation of a way for a street, or for the erection of a building or structure at less than the prescribed distance from the centre of the roadway, is to be sent to the Local Authority in whose district the proposed street, building, or structure is situated, with a request that they will inform the Council within fourteen days whether they have any suggestions to make with reference to such plan, and with an intimation in cases of proposed erection at less than the prescribed distance from the centre of the road, that the communication is to be treated as the Council's communication within the meaning of Section 13 of the 1894 Act of its intention to give the consent applied for if upon consideration of the application it should think it ought to be granted.

Whenever the Council has approved of a plan for the formation of a street to be laid out for carriage traffic, and open at both ends, the applicant is to be cautioned that if at any time, without the written consent of the Council, any posts or other obstructions are placed across the carriageway to prevent the access of carriages, he will be liable to prosecution under Section 199 of the 1894 Act.

Whenever plans of new streets to be laid out for foot traffic only are sanctioned, a condition is to be attached binding the applicant to pave the street over the entire surface, and by posts, bars or otherwise, to prevent such street from being used for carriage traffic.

### *Lines of Building Frontage—Part III. of the 1894 Act.*

On the receipt of an application to erect or extend buildings or structures beyond the general line of buildings, the fact of such application, together with copies or tracings of so much of the drawings accompanying the application as may be sufficient for identifying the property proposed to be dealt with, and explaining the object of the application, is to be communicated to the Local Authority of the district in which the site is situated; and the Local Authority is to be apprised that the Council will be prepared to receive any suggestions they may deem it desirable to make upon the subject within fourteen days; also, a notice that such application has been made, shall be sent to the owner and occupier of the nearest building on each side of the proposed building or structure; and no such application shall be brought before the Committee until after the expiration of fourteen days from the date of such notice.

### *Naming and Numbering of Streets—Part IV. of the 1894 Act.*

Whenever application is made for the re-naming of a street, or the re-numbering of houses, the Local Authority in whose jurisdiction the same may be situated is to be asked to state its views on the subject.

In cases of re-naming of streets, the decision of the Committee shall be reported to the Local Authority, and notice boards shall be attached to two or more lamp-posts in the street for the period of one month, notifying the intention of the Council. At the expiration of the time any protests that may have been received shall be reported to the Committee.

When an order has been made by the Council for re-naming a street or re-numbering houses, an officer responsible to the Superintending Architect is, at the expiration of three months from the transmission of the order to the Local Authority, to inspect the street in respect of which the order has been made, and to report to the Committee any non-compliance with the terms thereof.

Immediately after the making of an order for the re-naming of any street, an intimation thereof is to be sent to the Post Office authorities.

### *Construction of Buildings—Part VI. of the 1894 Act.*

Applications for projections under Section 73 of the 1894 Act are, where such projections extend into the street, to be treated in the same way as applications under Part III. of the 1894 Act.

### *Special and Temporary Buildings and Wooden Structures—Part VII. of the 1894 Act, and Sections 6 and 7 of the 1898 Act.*

A register is to be kept by the Superintending Architect, showing the periods for which temporary buildings or structures or wooden structures are licensed by the Council, and whenever a building or structure is not removed at the expiration of the term specified in the licence, he is to report the fact to the solicitor, who is forthwith to write and caution the holder of the licence, and report the result to the Committee.

### *Dangerous and Neglected Structures.—Part IX. of the 1894 Act. Dangerous Structures.*

When information of a dangerous structure is received, an order to survey shall be immediately sent to the district surveyor in whose district the structure is situated. District surveyors are not to certify unless required to do so, except in cases of imminent danger to life, not admitting of the least delay; all such very exceptional cases are to be specially notified to the Comptroller by the Superintending Architect.

A daily extract of fires, where structural damage has probably resulted, is to be made in the dangerous structures department from the fire brigade return, and the extract is to be forwarded to those district surveyors in whose districts the fires have occurred, in order that they may visit the premises and ascertain if any walls or buildings have been left in a dangerous condition, and take steps accordingly.

On receipt of a certificate from the district surveyor that the structure is dangerous, a notice in the terms of the certificate shall be served on the occupier, or be affixed to the building, and a copy sent by registered letter to the owner, if known.

Accompanying the notice a warning is to be sent that any delay in complying with the requirements of the notice will involve the owner in increased expense.

Where shoring or hoarding is required the owner shall be afforded an opportunity for executing the work when it can be done without risk of accident. In urgent cases, or on the owner's neglect, the manager of the Works Department of the Council shall be directed to carry out the necessary works.

The time to be allowed for works of repair or demolition must be limited according to circumstances.

At the expiration of the time given, the district surveyor is to report whether such works have been executed.

If the owner neglect to comply with the notice he shall, if the structure be in such a dangerous condition as to require immediate treatment, or if he do not within seven days from the service of the notice upon him give notice requiring that the subject shall be referred to arbitration, be summoned before a Petty Sessional Court as directed by the Act.

At the expiration of the time specified in the order, the district surveyor is again to report, stating that the danger has or has not been removed, and if the order shall not have been complied with, the required work shall be executed by the Works Department of the Council, under the supervision of an officer in the Superintending Architect's department.

On the completion of a case the amount for fees payable to the district surveyor shall be made out in accordance with the scale, and that account, together with the account for hoarding, shoring, and other works (if any) shall be forthwith submitted to the Finance Committee.

As soon as these accounts have passed the Finance Committee and been paid, the whole of the expenses incurred in relation to each dangerous structure shall be charged to the owner, and the necessary steps for the recovery of those expenses shall be taken by the Comptroller.

Licences are not to be taken out by the Council for hoarding or shoring, but the manager of the Works Department is in every case, upon the request of the Local Authority, to make good the pavement to the satisfaction of their surveyor, so soon as the hoarding and shoring is removed. The costs and expenses so incurred are to be recovered by the Council from the owner.

### *Neglected Structures.*

Upon receipt of information that a structure is in a dilapidated or neglected condition, an inspection shall be made by an officer responsible to the Superintending Architect, and the result of such inspection shall be reported to the Committee.

When the owner of the neglected or dilapidated structure is known, a communication shall be addressed to him, calling his attention to the condition of such structure, and allowing fourteen days for the repair or removal of the same; and should the works not be commenced at the expiration of that time, a summons shall be applied for.

When it is found necessary to procure evidence from a local source to satisfy the Petty Sessional Court that the condition of the structure is such as to be prejudicial to the property, or to the inhabitants of the neighbourhood, the Solicitor or the Superintending Architect shall be authorised to obtain such evidence.

If, upon the hearing of the summons by the magistrate, an order be made, the Superintending Architect shall, at the expiration of the time allowed by such order, further report to the Building Act Committee. In the event of the order not being complied with, the Committee may instruct the manager of the Works Department to carry out the necessary work.

Mr. Norman Bevan, of the Comptroller's Department, is to act as proxy on behalf of the Council to prove any debt due to the Council on account of, or in relation to dangerous or neglected structures, in cases of bankruptcy or liquidation.

Where the Council has incurred any expenses in respect of any dangerous or neglected structure, and has not been paid or has not recovered the same, and a Petty Sessional Court has (in accordance with Sec. 116) made an order fixing the amount due to the Council, the Comptroller shall give notice thereof to the district surveyor for the district in which the property is situated, and the district surveyor shall be requested to give immediate notice to the Council when any building is about to be commenced upon the site, with a view to the necessary steps being taken to obtain payment of the amount due. The register of such orders [Sec. 116 (3)] shall be kept in the Comptroller's Department.

### *District Surveyors.*

No person shall be accepted as a candidate for the appointment of district surveyor unless he shall have attained twenty-eight years of age and be under fifty years of age, and every such candidate shall deliver with his application satisfactory evidence of his age.

Every candidate shall be required to sign a declaration, and deliver it with his application, that he becomes a candidate, and will accept the appointment, if he should be appointed, on the following understanding:—

(*a*) That he will personally discharge the duties of his office subject to Section 142 of the London Building Act, 1894.

(*b*) That he will give his whole time to the duties of his office.

(*c*) That he will not during his continuance in office (except in the discharge of the duties thereof) carry on business as an architect, surveyor, or builder, or directly or indirectly as a partner or otherwise, be interested in such business.

(*d*) That he will make no claim for compensation in case a diminution of his income shall at any time hereafter arise.

(*e*) That he will keep his district office open from Monday to Friday (both inclusive) between the hours of 9.30 a.m. and 5 p.m., and on Saturday from 9.30 a.m. until 2 p.m., and give his personal attendance there daily from 9.30 a.m. to 11 a.m., and (except Saturday) from 4 to 5 p.m., or at such times (not exceeding two hours a day) as the Committee may from time to time appoint.

(*f*) That he will retire if required to do so on attaining the age of 65, or at any date subsequent to his attaining that age.

The declaration of the appointed candidate shall on his appointment be entered on the minutes of the Council.

The districts are to be re-arranged by the Committee as opportunities may occur, so that the average of the fees received may in no case amount to less than 500*l.* per annum.

The following fees are to be paid by the Council to District Surveyors, in accordance with section 155 of the London Building Act, 1894—

| | | | |
|---|---|---|---|
| On reporting that the roadway of a street sanctioned by the Council has been defined and made throughout, as regards levels, direction, width, and gradient, to comply with any statutes and by-laws for the time being in force regulating such street and to comply with the plans and sections attached to the Council's order sanctioning such street, and that all conditions (if any) attached to such sanction have been complied with | £2 | 2 | 0 |
| On reporting that a way has been adapted as a street, or that a street or way has been widened in accordance with a sanction given by the Council, on an application made under Section 10, and that all conditions (if any) annexed to such sanction have been complied with | 1 | 1 | 0 |
| On reporting that a building, forecourt boundary, or fence has been set back to the distance from the centre of the street sanctioned by the Council under Sections 13 or 17, and all conditions (if any) annexed to such sanction have been complied with, and all land (if any) that should have been, has been added to the public way | 0 | 5 | 0 |
| On reporting that a building, other than a building sanctioned by the Council under Sections 13 or 17 and upon which the District Surveyor is entitled to a fee under these standing orders, has been erected to the line of frontage for which the consent of the Council was given under Section 22, and all conditions (if any) annexed to such consent have been complied with | 0 | 5 | 0 |
| For attending a Police-court to give evidence on behalf of the Council in relation to any of the above matters; for each attendance | 0 | 10 | 0 |

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## THE DISPUTE IN THE BUILDING TRADE.

A MEETING of the National Association of Master Builders of Great Britain was held in Birmingham on the 18th inst. Nearly 500 delegates were present. When the last meeting was held in Birmingham it was decided to ask the unions of the various operatives for definite assurances that they had no sympathy with, and would not support, the plasterers, and that if such assurance were not forthcoming by May 6 the question of the terms of a general lock-out should be considered. As the result of inquiries made among the delegates at the meeting on the 18th inst., which was held in private, it was understood that the various operatives' unions had declined to give the assurance asked for. Before the general meeting the members of the council met and passed the following resolution:—"That this council approves of the action of the Yorkshire Federation in locking out their workmen in support of the Hull Master Builders' Association, and also approves of the terms of the manifesto issued by them." At the general meeting Alderman Holdsworth, of Bradford, presided. At the close the Press representatives were informed that the following resolutions had been passed:—(1) "That the proposals as set forth in the letter from the editor of the *Daily News* be accepted as a basis of a conference with the National Association of Operative Plasterers, and the representatives be appointed to attend." (2) "That, in view of the resolution passed at the meeting of the trade unions in Manchester on Monday last, this association will favourably receive any proposal for a conference with the view of an amicable adjustment of all matters in dispute, and that it is desirable such conference should be held before the end of this month." Though a settlement of the dispute has not been arrived at, there are good reasons for believing that matters will be satisfactorily adjusted shortly. The willingness of the parties to meet in conference again, affords ground for hope that a deadlock will be avoided. The conference between the National Association of Master Builders and the National Association of Operative Plasterers will be held on Tuesday next at the Salisbury Hotel, Salisbury-sq., E.C.

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## BOOKS RECEIVED.

PAPERS READ BEFORE THE TORONTO ENGINEERING SOCIETY. (The Carswell Co., Toronto.)

# Correspondence.

*To the Editor of* THE BUILDER.

## DUTY OF REPLACING PAVEMENTS.

SIR,—Under this heading, in your last issue, you blame the judgment of Mr. Justice Wills, possibly in consequence of the report of the case being imperfect.

As I was a witness, may I mention that the statement that the work was left "in such a condition that those who use the street can be injured as they walk through" is quite inaccurate? The hoarding was not removed, and thus not only could the street be used without danger, but as a fact was used without any injury to any one by the public for some eighteen months. The facts are interesting, and I think you will like to have them.

Some time after the London County Council had put the hoarding and removed the dangerous portions of the front wall, the claim for the work done and the hoarding was paid for by the owner. Even if before that date the Council could have removed the hoarding, their right to do so now ceased. (I fear to make this letter too long, or I would explain the reasons that I think in any case would have prevented their doing so. In this case danger would have resulted if they had taken such a course.) The owner, a long time after, used this same hoarding in rebuilding a portion of the house. Thereafter it was removed, and the accident occurred shortly after.

I draw no conclusion as to where the fault lay, but it is clear, I think, that the judgment of Mr. Justice Wills was right.

BANISTER FLETCHER.

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# The Student's Column.

## ARCHITECTURAL HYGIENE.

### XIX.—HEATING (*continued*).

### 5. STEAM PIPES.

THESE are not used for heating purposes to the same extent as hot water, but where waste steam is available it is convenient and economical to use it for heating. Where power is required in a building for working an engine for trade purposes or for electric light, &c., the same boiler can be used for the heating. Steam coils may be arranged in convenient places, and they are smaller *pro râta* than hot-water coils owing to the high temperature of the steam. Steam heating is somewhat difficult to control, and there is very often a noise caused in the coils. The "low-pressure one-pipe gravity return" method is used considerably in Chicago. Low pressure is there defined as not being more than 15 lb. per square inch above atmospheric pressure. The "gravity" refers to the return of the condensed steam to the boiler, and the "one-pipe" refers to the supply to the radiators of the steam, this same pipe draining off the water arising therefrom. Fig. 228 illustrates this method.* There is, of course, but one valve to each radiator, which, when it is open, allows the steam to enter and the water to pass away; when shut, this radiator cools down without affecting the rest of the system. A person, therefore, cannot misuse the radiator in respect of leaving one valve open and one shut as in the case of the two-pipe system.

The effective system for the utilisation of exhaust or low-pressure steam as a means of heating by direct circulation has been extensively adopted in the United States under the patents of Messrs. Warren-Webster & Co., of New Jersey. The use of exhaust steam as a means of heating in this country has generally been confined to the working of low-pressure hot-water apparatus by means of heaters or calorifers. Under this system there is a considerable waste of steam in many cases, and the difficulties attending the deposit of scale upon the tubes of the calorifers are too well known to require further comment.

The general principle upon which the Warren-Webster system is based is the suction of low-pressure or exhaust steam through the radiators or coils by means of a vacuum pump connected to a central receiver. No matter how remote a point the steam may have to be taken to, the circulation may be relied upon. No air cocks are required upon any radiators or coils; all air and gases, together with the water of condensation, being returned to the central receiver, where the gases escape, and the water is returned as a feed to the boilers. Each radiator or coil is fitted with a thermostatic valve or steam trap of a novel and compact description, exceedingly simple in principle and very effective in working. These valves are fixed on the outlets from the radiator to the return main. While a radiator is receiving its supply of steam, the valve remains closed, but it opens as soon as condensed water collects near the outlet—its action being very sensitive. Short circulating in any part of the system is thus effectually prevented. A special feature of the invention is the practicability of working the return mains from radiators situated below the level of the vacuum pump. With a vacuum of 15 in. it has been found possible to lift the condensed water in a return main with a difference in level of 7 ft. The feeder mains can be run without reference to levels if desired, but a thermostatic valve is required at the lowest point of each dip which may form a loop.

The common assumption that steam at a pressure exceeding that of the atmosphere does more work in heating is based upon the bare theory of the difference in temperatures. Comparing these, we find that while the latter is at 212 deg., a 5 lb. increase only adds 15 deg., or 7 per cent. to the heat supply, while a 10 lb. increase only adds 28 deg., or about 1·4 per cent. per lb. of pressure. As the removal of heat is effected by condensation and is in direct degree due to that condensation, the gain in radiating power must be shown to be greater than 1·4 per cent. per lb. of back pressure, in order to show any economic advantage over atmospheric circulation—this is not the case with the ordinary radiator, which does not so effectively circulate the air over its surfaces as to secure such an advantage.

The special features of the Warren-Webster system may be summarised as follows:—

1. Entire absence of back pressure on engines when exhaust steam is utilised.
2. Continuous automatic drainage of condensation.
3. A thoroughly effective circulation.
4. Absolute control of temperature. The valve on the inlet to a radiator can be closed down to the desired degree, admitting a smaller amount of steam than it is calculated to condense normally. Without any "water hammering" the radiator can then be kept, if desired, at a temperature just above that of the surrounding air, thus attaining that long-sought desideratum—the moderation of steam heating to suit mild weather.

Messrs. James Simpson & Co., of Pimlico, are now carrying out installations on these principles in England.

### 6. HOT-AIR.

This form of heating may be accomplished in two ways, (*a*) by passing fresh air through a furnace and leading it through pipe-ducts to various parts of a building; (*b*) by passing fresh air over a coil of hot-water pipes and using the warmed air for inlet ventilation. The first method is not used to any great extent in this country, but it has its doughty champions across the "herring-pond." The second method is in considerable use, and may often be carried out to advantage. Fig. 229 shows the principles of the systems used in the House of Commons, the fresh air passing through cotton-wool screens and then through hot-water pipes into the air chamber.* It then passes through the floor gratings to the House above. The smoke-flue in the clock tower forms the motive power for the extract. In this system dust particles are driven upwards from the floor and are inhaled into the lamp, and it has many other objections. In fact, it is not considered a successful scheme for the purpose. It is found in practice that the warmed air is advantageously brought in the apartments at a level of some 6 ft. from the floor.

### 7. ELECTRICITY.

The cheerful appearance of an open fire would probably prevent the very extended use of electricity for heating, even if the cost were of no consideration. However, that this may be accomplished with success is undeniable. Fig. 231 shows an electric radiator, which simply requires attaching to the wall-plug of an electric current when it will instantly commence to radiate heat. The electric current, in endeavouring to force its way through the small wire of the radiator, generates great heat, but the wire being buried in enamel, which expands in the same proportion as itself, is not permitted to become a source of danger. Electric cooking-stoves are

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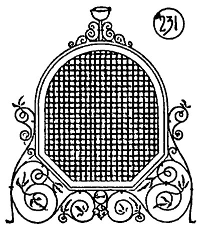
* For figures 228 and 229 see previous sheet of illustrations.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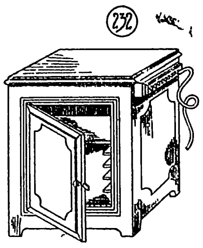
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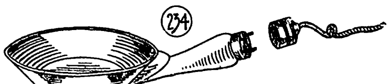
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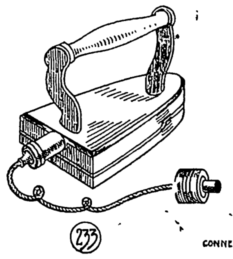
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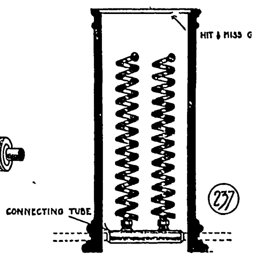

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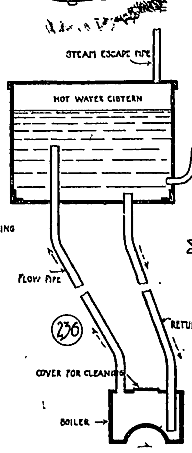

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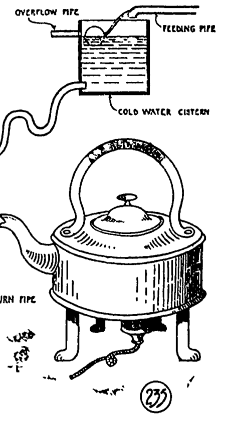
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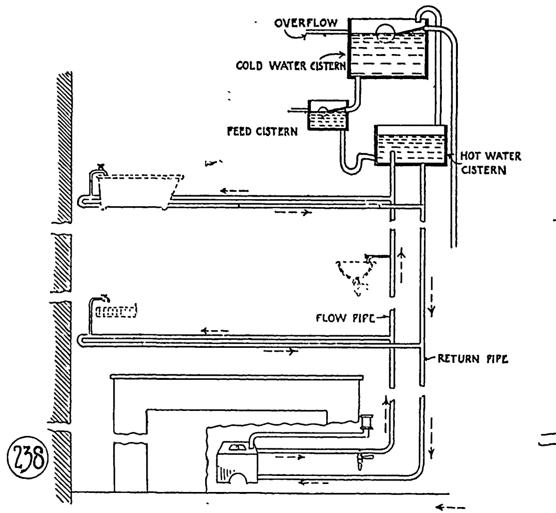

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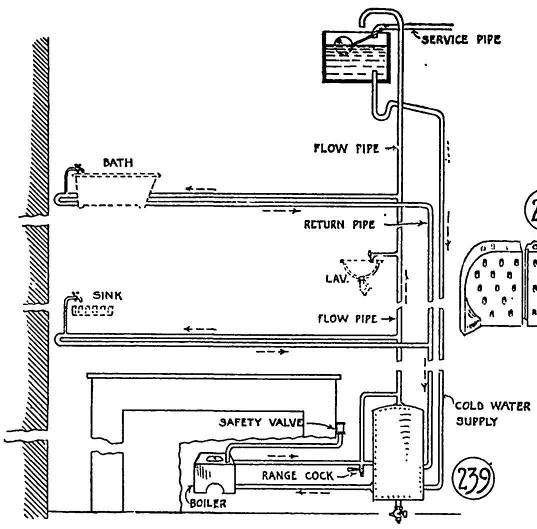

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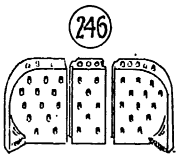
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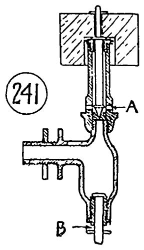

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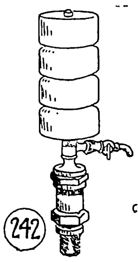
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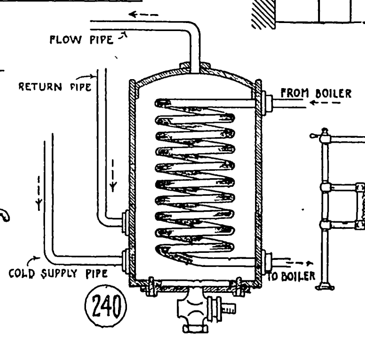

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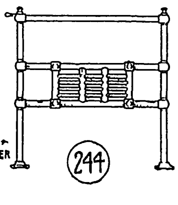
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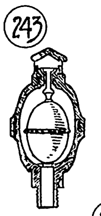
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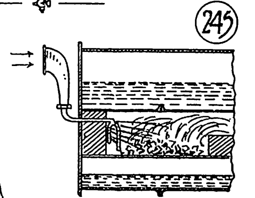
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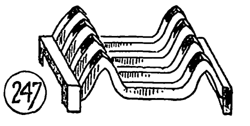
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*Illustrations to Student's Column.*

constructed on the same principle, and an illustration is shown in fig. 232; there are no fumes or smoke to taint the food being cooked; they are very cleanly, and take up little room. Figs. 233, 234, and 235 show an electric flat-iron, saucepan, and kettle that have been successfully used. Electric hot-plates are also designed and found useful in places where the current is available.

The cost is the great drawback to cooking by electricity, but the time must come when this will be reduced. At 3d. per unit, however, the cost is almost three times as great as ordinary coal for the same purpose, but electrical ironing (see fig. 233) is said not to be more expensive, besides being so much handier in every way. In Edinburgh, where current for heating is 1½d. to 2d., the difference in cost should not stop people from using electricity for this purpose. In country houses where an installation has been put in, it will be found convenient when the current is plentiful to use electric radiators for airing the rooms, &c.; they, of course, are portable, and are very useful for this purpose.

### 8. HOT-WATER SUPPLY.

The same principles as for heating buildings are embodied in the domestic supply of hot water. The pipes should not be of less diameter than 1 in., and for big public institutions are even used up to 2½ in.; they should be of wrought galvanised iron. Lead pipes are apt to sag, and thus impede the circulation. Boilers should have a safety valve attached to a pipe that is not in connexion with the circulation system. There are three systems in use, viz.:—

(*a*) *The Tank System.*
(*b*) *The Cylinder System.*
(*c*) *A Coil Enclosed in a Cylinder.*

(*a*) *The Tank System* is the one that is, perhaps, in more general use at the present time. Fig. 236 shows the principles involved, and fig. 238 shows its application. The feed-cistern, which is controlled by a ball-valve, is fed from the cold-water cistern, and in turn supplies the hot-water cistern, being connected thereto with a siphon. All these are placed at the top of the system. The *flow*-pipe is connected to the top of the boiler, and the *return*-pipe to the bottom. All branch pipes supplying hot water to the various fittings should be connected to both of the above pipes, and should enter the *return*-pipes at a lower level than at that from which they receive the *flow*. Where, however, a fitting is very adjacent to the *flow-pipe* this is not so necessary, as the amount of cold water, to be drawn out of the branch pipe (which, of course, does not form part of the circulation) before receiving the hot water from the flow-pipe, is small. In the case of a bath it is not so material to have the dual connexion. An escape-pipe for steam and air should be carried up above the level of the cold-water cistern, and be connected to the top of the hot-water tank.

The boiler in small systems is generally heated by the kitchen fire, and is of the saddle variety. Where, however, a large supply is required this independent boiler must be used.

(*b*) *The Cylinder System.*—Fig. 239 is now generally recognised to possess some important advantages over the *tank system*, the most apparent being that—

I. The system operates more quickly.
II. Temporary failure of supply does not stop the circulation.
III. More hot water is withdrawn before the temperature is lowered.
IV. Risk of incrustation to pipes is less owing to the shorter circulation of pipes between the boiler and the cylinder.

The principal difference lays in the fact that the reserve of hot water is at the base of the flow-pipe instead of at the top, as in the *tank* system. Care should be taken that the *cylinder* is a strong one, and that its cubical capacity is sufficient for the purpose required.

Either of the above systems may also be used for the dual purpose of heating various parts of the house as well as for the hot-water supply, provided that the boiler is large enough; and a towel-drier of piping in the bath-room should always be provided where possible.

Fig. 244 shows Potterton's combined radiator and towel airer. These are very convenient fixed in a bath-room, and, of course, can be used, if desired, for airing linen.

(*c*) *A Coil Enclosed in a Cylinder* (fig. 240) is sometimes used for heating water supply, and may be utilised with advantage where waste steam is available. As a rule, however, it is not advantageous to use this method if steam has to be generated especially for this purpose. Sometimes hot-water high-pressure coils are used in lieu of steam.

### 9. SAFETY VALVES.

There are, of course, several varieties of valves in use, but probably that shown in fig. 241, which is patented by a Mr. Stainton, of London, is as good as any. It is known as a dead-weight relief valve. The advantage claimed is that, in the case of excessive pressure, the water finds an exit at the outlet A into the supply cistern, and as the water becomes cooled it returns through the inlet B, owing to the reduction of pressure in the pipe.

Fig. 242 shows one of Potterton's patent indicating safety valves, which contain the following improvement:—The spindles of these valves are made of brass tubing, with a small cock connected to the latter, so that water can be drawn from the seating of the valve. If this is done it will indicate that the seating is free from incrustation, because if the seating became fixed by such cause, the hole at the bottom of the hollow spindle would be stopped up and no water could pass. The valve and pipe should, in this case, be disconnected and examined.

Fig. 243 shows a section of Shield's automatic air-valve. It is used for convenience where the usual air-cocks would be objectionable, and is said to be successful.

*Smoke Prevention.*—Fig. 245 shows Messrs. Belcher's prevention of smoke in steam boilers. The apparatus consists of an air-pipe fitted with regulating discs and with various valves and tubes fixed on the exterior of the boiler, by means of which a forced draught of air and steam is introduced into the fire, and by means of a "spreader" in the inside of the furnace the draught is concentrated upon the fuel.

The advantages claimed are simplicity in construction, necessitating no structural alterations to boilers; it is also under perfect control, and enables steam-power users to burn the cheapest fuel and even refuse without producing smoke.

## *OBITUARY.*

**COUNT HENRI DELABORDE.**—The Count Henri Delaborde, permanent Honorary Secretary of the French Académie des Beaux-Arts, and "Commandeur" in the Legion of Honour, has just died at the age of eighty-eight. His first choice in life was painting, which he studied under Paul Delaroche, and he made his first appearance at the Salon of 1836, with a painting, "Hagar in the Desert," which is now in the museum at Dijon. He executed also two pictures commissioned by Louis Philippe for the gallery of Versailles; the "Knights of St. John of Jerusalem," and the "Taking of Damietta." In the Salon of 1847 he obtained a "première medaille" for his "Dante at Verona." But after this he abandoned art for archæology, and became in 1855 assistant curator of engravings in the Imperial Library, and subsequently principal or honorary curator. He entered the Institut in 1868, and was appointed permanent Secretary of the Académie des Beaux-Arts in 1874. His failing health obliged him last year to resign. As a critic and historian of art he leaves a considerable amount of work behind him. Among other works may be mentioned his "Studes sur les Beaux-Arts en France et en Italie"; "Mélanges sur l'Art Contemporain"; "Ingres: Sa Vie et ses Œuvres"; "Le Cabinet des Etampes"; "L'Histoire de la Gravure"; "La Gravure en Italie avant Marc Antonin"; and lastly, "L'Académie des Beaux-Arts depuis la Fondation de l'Institut." Count Delaborde was connected, either directly or by marriage (we forget which) with M. César Daly, the well-remembered founder and conductor of the *Révue Générale de l'Architecture.*

**MR. CHARLES BELL.**—We regret to record the death of Mr. Charles Bell, a well-known City architect and a Fellow of the Institute of Architects. Mr. Bell was successful in some competitions, and carried out a good many buildings of considerable size and importance. Among them may be mentioned the circular ward of the Hampstead Infirmary; the Board schools for Basingstoke, selected in competition; the Northern Polytechnic Institute in Holloway-road, selected in a limited competition in which Mr. Wyatt Papworth was the assessor; Wesleyan churches at Bermondsey, Twickenham and Nunhead, and the completion of the buildings of Kent College, near Canterbury, for the Kent Wesleyan Methodist School Association.

**MR. J. W. H. BEDFORD.**—We regret to announce that Mr. J. W. H. Bedford, Secretary of the Provident Institution of Builders' Foremen and Clerks of Works for twenty-five years, died at his residence, Long Ditton, Surrey, on the 13th inst.

## *GENERAL BUILDING NEWS.*

**MISSION CHURCH, DUNDEE.**—A mission church is being erected by the congregation of St. Paul's Episcopal Church in Blackscroft, Dundee. The new building will be known as St. Roque's Church. The church will be provided with chancel, organ-chamber, vestry, baptistry, and mission rooms. The material to be employed in construction is red brick and stone, with green slates, and the cost is estimated at about 2,000*l.* The architect is Mr. T. Martin Cappon.

**CHURCH, GLASGOW.**—Queen's Cross Church, situated at the corner of Garseube-road and Springbank-street, is one of the first of the mission-planting scheme at present being carried out by the Free Church of Scotland. The plan shows a departure from the ordinary style of mission church, there being only a back and narrow transept gallery, the whole of the area being open to the roof. The passages are so arranged that every one of the congregation has an uninterrupted view of the preacher. The dimensions of the church are as follows:—Area, 71 ft. 6 in. by 43 ft., and the height of the closed-in roof is 41 ft.; transept, 33 ft. by 9 ft., and the chancel, in which the choir and Communion table are accommodated, 22 ft. by 14 ft. There is also provided an organ chamber. The pulpit is situated at the north side of the chancel arch, immediately in touch with a small vestry balancing the organ chamber on the opposite side of the chancel. The baptismal font is built on the ingoing of the chancel arch opposite the pulpit. The accommodation provided is:—Area, 559; back gallery, 160; transept gallery, 71; choir, 30; total, 820. At the back of the church there is a hall capable of accommodating 260 people, the dimensions of which are 34 ft. by 34 ft. and 22 ft. high. At the corner of the street is a tower rising to a height of 56 ft. from the street level, being at the base 20 ft. square and at the top narrowing to 15 ft. It is built of Locharbriggs stone, and roofed with Aberfoyle green slates. The contractors for the work are:—Mason work, Wm. Taylor; joiner work, Wm. M'Call & Sons; slater work, John Anderson; plaster work, Wm. Forbes; plumber work, Jas. Ingleton & Co.; heating work, Hunter, M'William, & Co. The architects are Messrs. John Honeyman & Keppie.—*Glasgow Evening Citizen.*

**BAPTIST BUILDINGS, BROADSTAIRS.**—The new Baptist School-room in Queen's-road, Broadstairs, is now in course of erection and will be used for services until the main building is erected. The building will be of red brick, with stone dressings, from designs by Mr. Arthur H. Clarke, of Broadstairs. The accommodation provides for the school-room, class-rooms, vestries, store-rooms, lavatories, furnace-room, &c.

**CHURCH SCHOOLS, WOLVERHAMPTON.**—The memorial-stone of the new school buildings in connexion with St. Andrew's Church, Wolverhampton, was laid recently. The site, which comprises 1¼ acres of land, is in Gates-street, Whitmore Reans. The buildings now being erected will provide accommodation for 292 girls and 335 infants. It is not proposed at present to bring the boys' department to the new buildings. The total cost is estimated at about 4,000*l.* The builder is Mr. J. Herbert, and the architect Mr. F. Hunter Lynes.

**CHURCH FOR NEW HINKSEY, BERKS.**—The foundations of the western half of a new church for the parish of New Hinksey are now being put in, the estimated cost of this part of the building being 5,000*l.* The architects are Messrs. Bucknall & Comper, of Westminster. The church, when completed, will accommodate 600.

**INTERMEDIATE SCHOOL, BUILTH.**—The new county school at Builth, established under the auspices of the Welsh Intermediate Education Act, was opened recently. The site of the new school covers nearly an acre of ground, and is situate in front of Groe Green. The walls of the building are worked with Llanelwedd stone, and all the dressings are of Hollington stone. The roof is covered with mottled red tiles and plain red cresting tiles. The building is L-shaped, and faces the Groe Green and the new Cross-road. Entering by the boys' porch, out of Cross-road, a wide corridor is reached. On the left are a cloak-room and lavatory, with master's room adjoining, and on the right a large school-room, 40 ft. by 20 ft. 6 in. and 13 ft. 6 in. high, with two fireplaces, and having a movable folding partition for dividing it into class-rooms. At the end of the corridor, facing the entrance, is placed the chemical laboratory. This is 25 ft. by 19 ft. 6 in., with store-room adjoining. There are also a fume chamber and a combustion chamber, with foul air flues, adjoining the laboratory, 20 ft. by 18 ft., on the east side, to be used as a class or lecture room. The entrance for the girls is from the Groe Green-road by a door adjoining the lecture-room. Ascending a stone staircase, 4 ft. wide, the first floor is reached. The girls' school and class-rooms are located over and are similar in size to those of the boys. Their technical room is above the chemical room. This room and the large room are 14 ft. 6 in. high. The rooms on the ground floor, all of which are 13 ft. 6 in. high, are laid with wood blocks, and the corridors on the ground and first floor with Terrazzo marble mosaic paving. The rooms are heated with patent Manchester school grates. The contract was let to Mr. Alfred Meredith, Newbridge-on-Wye, Radnorshire. Messrs. T. Potter & Co., London, were the contractors for the fire-proof flooring; and Messrs. B. Ward & Co., London and Cardiff, for the wood block flooring and the Terrazzo mosaic paving. The plumbing, painting, and colouring work was carried out by Mr. E. Dixon, Builth; the plastering by Mr. D. Evans, Builth; and the gas-piping, &c., by Mr. S. G. Tulk, Builth. Accommodation is provided for 120 children, and the building will allow for further extension when required. The original plans and specifications were by Mr. Stephen W. Williams, architect, Rhayader, while the amended contract, detailed drawings, and specifications were prepared by Mr. Telfer Smith, Builth, under whose superintendence the work has been carried out.

**SCHOOL, CRESWELL, NOTTINGHAM.**—A new school has been erected at Creswell from the designs of Messrs. Brewill & Baily, architects, of Nottingham. The school, which will accommodate 450 children, consists of a central hall, seven class-rooms, cloak-rooms, and lavatories, with master's and mistress's rooms.

**COUNTY SCHOOL, HAWARDEN.**—The Hawarden County School was formally opened on the 18th inst. by Miss Helen Gladstone. The building contract was for 2,450*l.*, exclusive of extras. The new buildings, of red brick, are situated on the main road through Hawarden; they consist of two central class-rooms, divided by a sliding partition, which when removed gives an assembly-room 44 ft. long by 22 ft. wide. To the west of this central block is the boys' wing, consisting of the headmaster's room, class-rooms, and laboratory, with coat-room, and lavatory, and boys' porch. To the east of the centre is the girls' department, while to the south of the central block is a luncheon-room and kitchen, with access by means of covered ways from both wings. Externally the walls are of red Ruabon bricks, with dressings and mullioned windows of red terra-cotta, from Mr. J. C. Edwards's works, and the roofs are of red Ruabon tiles. The arms of the county appear in the central gable. The schools were designed to accommodate fifty-four boys and forty-four girls. The architects are Messrs. Grayson & Ould, of Liverpool, and the contractors Messrs. W. & T. Bailey, of Hawarden.

**COUNTY SCHOOL, FESTINIOG.**—On the 20th inst. the foundation-stone of this school was laid. The structure is to cost about 6,000*l.* The architects are Messrs. Willink & Thickness, of Liverpool, and the contract has been let to Messrs. Hughes & Stilling, of the same city.

**INSURANCE BUILDINGS, GLASGOW.**—A new building for the Liverpool and London and Globe Insurance Company is to be erected at the south-east corner of Hope-street and St. Vincent-street. The buildings are expected to be completed in about a year. They are to be of Locharbriggs red freestone, relieved at points with Peterhead red granite. The frontage to Hope-street is 114 ft. and to St. Vincent-street 64 ft. The distance from the street to the highest point is 120 ft., there being eight stories and a basement. The Liverpool and London and Globe Insurance Company's office is to be entered from St. Vincent-street and it will extend back to the lane, 114 ft. The remainder of the space on the ground floor will be utilised for shops, and the upper floors will consist of offices. There will be two entrances to the upper floors, one from St. Vincent-street with one electric lift, and one from Hope-street with two electric lifts. The builders are Messrs. B. & W. Anderson. Mr. James Thomson is the architect.

**BUSINESS PREMISES, LINCOLN.**—A building, which will be used as a restaurant, has just been erected in Sincil-street, facing the Fish Market. Mr. J. T. Drury was the architect, the general contractor being Mr. Fanthorp and the plumber Mr. J. R. Green.

**COLLEGE ENLARGEMENT, BUXTON.**—A hall is being erected on the site of the tennis lawn on the west side of the present building. The hall is intended for assemblies and classes, and will be connected with the present building by an annexe. The present school-room will be divided up into class-rooms. Mr. Bryden is the architect, and Mr. Oakes the contractor for the alterations and additions.

**THE NEW COLSTON HALL, BRISTOL.**—The Bristol Sanitary Committee have approved of the plans for the new Colston Hall. Messrs. Jones & Cummings, the architects, whose plan took the first premium in the competition, have, in consultation with the directors of the company, introduced considerable modifications into their design. By the purchase of a wide strip of land, the site has been, roughly speaking, lengthened a third. The land secured extends a little beyond the line which will be taken by the new end wall at the back of the organ.

**HOME FOR CRIPPLED BOYS, LONDON.**—On the 19th inst. the Duchess of Albany reopened the Home for Crippled Boys in Margaret-street, Cavendish-square, which has lately been rebuilt. The home, or hospital, was founded sixteen years ago by the All Saints' Sisterhood, and has since been maintained mainly at their expense. Messrs. Lander, Bedells, & Crompton, of John-street, Bedford-row, were the architects.

**THEATRE ROYAL, PETERBOROUGH.**—The plans for the proposed reconstruction of the Theatre Royal, Peterborough, have been passed by the City Council. For some time the management of the Theatre Royal have contemplated the conversion of the present hall into a modern playhouse. The façade of the building will be in the Italian style, and it is nearly 50 ft. in height and 65 ft. in breadth, the centre portion being occupied by two entrances, and these in turn flanked by large double-fronted shops. To bring this about the whole of the present front to Broadway is to come down. One of the entrances is to the pit, and the other to the stalls, the gallery entrance being on the north side. With the exception of the front the three remaining walls will be retained, but considerably heightened. The interior will contain three tiers. On the ground floor the pit will accommodate 466 people, with stalls accommodating 120. On the south side there will be a refreshment bar and dressing-rooms. Above this is the dress circle, which will seat about 120 people, together with private boxes at each end of the circle overlooking the stage. At the rear of the dress circle seats there will be a ladies' room, a crush room, a refreshment bar, gentleman's cloak-room, and on the same level, near the stage, four dressing-rooms, having access by a staircase to the stage below. Above this tier is a gallery, giving accommodation for several hundreds. It is reached by a stone staircase, and, in addition, there is also an iron staircase on the outside of the building, which could be used in case of fire. The architect is Mr. J. P. Briggs, of London.

## *SANITARY AND ENGINEERING NEWS.*

Dronfield Sewage Works.—The new Sewage Disposal Works of the Dronfield Urban District Council, recently opened, have been completed in accordance with the designs of the Council's Engineer, Mr. G. White, C.E., of Mexboro,' and are on the International system, comprising Candy circular upward flow tanks with automatic sludge or detritus removal apparatus, clarifiers and polarite oxidising filterbeds, now popularly termed bacterie beds. The scheme has been carried out in accordance with the plans approved by the Local Government Board, the contractors being Messrs. Margerrison & Sons, of Dronfield.

Public Improvements, Dewsbury.—Colonel March, C.E., one of the Local Government Board Inspectors, held an inquiry at the Dewsbury Town Hall on the 18th inst. into the applications of the Corporation for sanction to borrow money for three separate purposes, *viz.*, for street improvements (Westgate, Wheelwright-street, and Boothroyd-lane), 650*l.*; for electric-lighting extension in buildings, plant, &c., 9,060*l.*; and for a covered market on a site bought several years ago, 3,000*l.* Evidence was given in support of the three proposals by the Borough Surveyor (Mr. H. Dearden) and in support of the second by Mr. O. Jonas, the Borough Electrician.

Drainage and Water Supply Works, Margate.—On the 19th inst. Colonel W. Langton Coke, M.Inst.C.E., held an inquiry on behalf of the Local Government Board, at the Town Hall, Margate, with reference to the applications of the Margate Town Council to borrow 5,440*l.* for works of sewerage, 4,100*l.* for works of water supply, and 1,000*l.* for public walks and pleasure grounds. The Borough Engineer and Surveyor (Mr. Albert Latham) was in attendance.

## *FOREIGN.*

France.—The Société Nationale des Architectes de France has chosen, for its eighth annual competition, the subject, "L'Auberge de Demain," in other words a model design for a modern wayside inn, with every provision for cyclists and motor cars.——It has been nearly decided that next year the two Salons will be organised in the Avenue de Breteuil, on the site of the former abattoirs of Grenelle.——M, Saint-Marceaux, the sculptor, has been commissioned to execute the monument which is to be erected in Père Lachaise to the memory of M. Faure, the late President.——The Council of Paris have decided that the stations at Hotel de Ville, Louvre, and Palais Royal, on the Metropolitan Railway, are not to have any visible buildings above them, in order not to spoil the perspective of the Rue de Rivoli. For the Place de la Concorde, Champs Elysées, and Avenue de l'Alma stations the question is deferred. There is at all events every desire to render the inevitable station entrances as little conspicuous as possible.——The Carnot monument at Dijon was inaugurated last Sunday. It is the joint work of M. Gasq and M. Mathurin-Moreau (sculptors) and M. Vionnois, architect. It consists of a rectangular pyramid in front of which, at half its height, is placed the statue of the late President, in marble. At the sides are two groups in stone, symbolising "La Douleur de la Bourgogne" and "L'Histoire inscrivant sur ses tablettes le nom de Carnot." On the apex of the pyramid is a figure personifying "La Gloire." Behind it is an altar to "La Patrie."——The death is announced of M. Louis Leroux, architect, member of the Société Centrale, and Directeur of Public Works to the town of Turcoing. M. Leroux, who was sixty-five at the time of his death, was one of the most prominent members of the Société des Architectes du Nord. He had built numerous schools and religious edifices, especially the churches of Watrelos, Préseau, Dorigny, and Doulieu. He was one of the competitors in the great competition for the church of Montmartre.——We have also to announce the decease, at Toulouse, of M. Henri Bach, for many years Professor at the Academy of Art in that town. He was an artist with a special knowledge of the art of the thirteenth century, and had been concerned in additions or restorations to several ancient churches of Toulouse. He was eighty-four years of age.

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Bristol Master Builders' Association.—Arrangements are being made for the annual excursion of the Bristol Master Builders' Association, which has been fixed for June 27. The visit will be to Bridgwater and the Quantocks. The annual conference of the National Association of Master Builders is to be held in Plymouth on July 18.

## *MISCELLANEOUS.*

Professional and Business Announcements.—Mr. Dennett H. Barry, Surveyor to the Hon. Society of Lincoln's Inn, has removed his offices to 21, Old-square, Lincoln's Inn.——The Surveyors' Institution give notice that they are in occupation of their new building, 12, Great George-street, Westminster, from May 26. Rooms for arbitrations &c., may be secured after May 31.

Demolition of Offices in Throgmorton-street.—We regret to hear of the demolition of Messrs. Capel & Norbury's offices in Throgmorton-street, which were designed by the late Mr. J. J. Cole, and were illustrated in the *Builder* of November 4, 1854. It was a very good building of its period, and is noticeable as being one of the first City office fronts, if not the first, in which polished granite was used as an element of decoration (though whether that is altogether an advantage may be matter of opinion); and Mr. Cole in this building also introduced the feature of carving and enrichment in the reveals of the windows, as a suitable position for decoration in a narrow street.

Northern Architectural Association.—The members of the Northern Architectural Association held an outdoor meeting at North and South Shields recently. The visitors were met at the North Shields railway station by the local representatives, and the company, numbering about thirty altogether, proceeded first of all to the new Board Schools in Coach-lane, North Shields, which have been erected from the designs prepared by Mr. Marshall, of Newcastle. Afterwards they crossed over the ferry to the new Empire Palace. Messrs. Milburn, of Sunderland, were associated with Mr. Frank Matcham, of London, in the designing of this building. Afterwards the party visited the Ingham Infirmary, where Mr. Harry Grieves, the architect, conducted them over the new extensions, and the last place visited was the Mortimer-road Infant Schools, erected from the plans of Mr. J. W. Donald.

Appointment.—The Croydon County Council have elected Mr. G. F. Carter, principal assistant to the Leeds City Engineer, as Deputy Borough Engineer of Croydon. The applications numbered 106.

Kensington Palace-gardens.—On June 27 will be offered for sale, at the Mart, No. 18, occupied by the late Baron Reuter. The house, on the east side, was built upon Crown lands, after the designs of Sir Charles Barry, and has two floors and a basement, with a picture gallery and two towers on the south side; the interior is richly decorated.

Open Spaces, Dollis Hill.—A sum of about 2,600*l.* is all that is now required to complete the purchase moneys for the Dollis Hill estate of 98 acres, to be acquired for 50,000*l.* Contributions have been made by the London County Council, 3,000*l.*; Middlesex County Council, 12,500*l.*; Willesden and Hendon District Councils, 30,000*l.* and 500*l.*; Hampstead Vestry, 1,000*l.*; and the Skinners' Company, 50 guineas.

Painting Work.—In these times when competition is so great architects should not lose an opportunity of seeing that the painting is carried out according to specifications. The painting trade gives many opportunities in all its branches to disregard the specifications and to scamp the work, unless there be an up-to-date foreman or clerk of works, and many tenders are let for this portion of the work at ridiculously low prices, the consequence of which is, to make the job pay, the painter has to get out of a coat of paint here and a coat of size there, and such like tactics, and it is almost impossible for any one, however expert, to be sure whether the work has had three or four coats without the architect specifies a distinct shade for each coat, and each coat to be passed before being painted with the next, and it is greatly the want of care in this department that enables unscrupulous contractors to go in for and take jobs at what is known to be a price that will just about cover the cost of the materials in the full determination of swindling and scamping in every part of the job. Too much care, therefore, cannot be exercised by architects, who should enforce the full letter of the specification and make an example of a few who go in for the cut-throat policy. If this were put into practice it would purify and elevate a trade which has fallen to such a low state, and enable master painters to pay a fair day's wage for a fair day's work. — *The Building, Engineering, and Mining Journal of Australia.*

Memorial Windows, Barnard Castle Parish Church.—The east window, and a window in the chancel of this church have just been filled with stained glass, the work of Messrs. Burlison & Grylls, of London.

## *CAPITAL AND LABOUR.*

Wolverhampton Plumbers' Dispute.—Practically there is no great change in the position of affairs relating to the plumbers' dispute at Wolverhampton. The men's notices should have expired on the 20th inst., but an understanding has been arrived at satisfactory to both sides, which has ended in the notices being extended into June. The Secretary of the plumbers' Wolverhampton branch received a communication from the master builders, who had been asked to receive a deputation of the men, requesting the latter to stay their hand and extend their notices over the holidays. A meeting was called on Friday last, when it was decided, after a lengthy consultation, to grant the request of the masters and extend the notices until June 3. It is said that the plumbing trade in Wolverhampton is very slack at the present time.

Bolton Builders' Strike.—A conference took place on the 23rd inst. between the Bolton master stonemasons and the operatives' representatives, to consider the demand made by the latter for an advance on wages of a penny per hour, and certain alterations in working rules, which would mean an increased cost of production to the employers. In order to avoid a strike the masters offered a halfpenny per hour increase, making the men's remuneration 9½d. This was refused by the operatives. The employers have withdrawn their offer, it is stated, and are determined to resist the men's demands.

## *LEGAL.*

### A BRISTOL BUILDING DISPUTE.

The case of Long and Others *v.* Thompson came before Mr. Justice North in the Chancery Division on the 19th inst., on a motion by the plaintiffs for an *interim* injunction to restrain the defendant until the trial of the action, or further order, from so building adjacent to the plaintiffs' premises, Manilla-road, Clifton, Bristol, as to interfere with the light and air coming to them.

Mr. Vernon Smith, Q.C., who appeared in support of the motion, said that the plaintiffs could not ask for relief upon the ground that their windows were ancient lights, but they rested their case on the ground that the vendor of the houses had derogated from his grant. The houses in question were Nos. 8, 9, and 10, Manilla-road, Clifton, Bristol, and the defendant's house had been put up at the side of them. The defendant's house was up, but he (counsel) should ask for a mandatory order to compel them to pull down, at all events, 5 ft. of wall which had been erected since the notice of motion was given. The plaintiffs were mortgagees in possession of Nos, 8, 9, and 10, Manilla-road; No. 8 was unlet, and had been so for more than two years, but the other two houses were in the possession of a Mr. Crawford. The defendant's house was distant from the plaintiffs only 29 ft. Its height was about 40 ft. to the bottom of the roof and about 36 ft. above the cills of the plaintiffs' basement windows, which were the windows principally affected. The defendant, in putting his house where he had, had deviated from the original plan of the estate, and so created a new road which he called Mortimer-road. The house, if it were allowed to remain up, would seriously affect the light and air coming to the plaintiffs' premises, and he (counsel) submitted that under the circumstances the plaintiffs were entitled to a mandatory injunction. The plaintiffs first knew what the defendant was doing on April 1, and on the 13th complained in writing, and on the 15th the writ was issued, which on the 19th was served on the defendant's solicitor. Subsequently, an undertaking was asked for but refused. On the 21st the present notice of motion was served. On April 22 the defendant put on extra men, and since the service of the notice of motion the wall had been raised by 5 ft. He contended that that 5 ft. ought to come down. The building estate upon which these houses were being erected was the property of Sir Joseph Weston, who in 1888 entered into a building agreement with a gentleman to build certain houses which included the three in respect of which this action was brought. Building plans were prepared which showed the Manilla-road with a road at the back called the Weston-road. The houses in the Weston-road and the Manilla-road had gardens at the back, so that between the backs of the houses, if built in accordance with the plans, there would have been a space of 48 ft. Sir Joseph Weston died in 1895, and since that date his representatives had sold or conveyed to the defendant the property upon which he had erected the house complained of. He had taken up Weston-road, which had already been metalled, and had made instead a road at right angles to Manilla-road, and had the side of his house against the plaintiffs' house. The defendant's allegation was that the plaintiffs had suffered no real damage.

Mr. Henry Jerrell, Q.C., for the defendant, did not deny that when this estate was laid out there was a building scheme, but submitted that when the defendant took his land he took it upon condition that he was not to be tied by the scheme.

After further argument, his lordship, in giving judgment, said the plaintiffs had made out a *prima facie* case of their right to the light on the conveyance, and it was clear defendant had run up the building to the eaves after he had been warned, and after the writ had been issued. Still, he did not intend to make a mandatory order, as he thought it would make very little difference to the plaintiffs at the trial, whilst, of course, it would be a very serious matter to the defendant to pull down a house which was finished, so far as the external parts were concerned. He would accept Mr. Jerrell's undertaking to abide by any order made at the trial, and there would be no order on the motion except that plaintiffs' costs should be costs in the action.

**Order accordingly**

## ARCHITECTS *v.* BUILDER.

AT the Wolverhampton County-court on Thursday last week, Messrs. Manton & Sons, architects, of Wolverhampton, brought an action against Mr. Philip Bowater, builder, Wolverhampton, claiming the sum of 23*l.* 18s. 9d., alleged to be due to them from defendant in respect of certain work done by the plaintiffs in the erection of houses at Wolverhampton between March and September last. Mr. R. A. Willcock appeared for the plaintiffs, and Mr. R. C. E. Plumptre for the defendant. The circumstances of the case as alleged by plaintiffs were that the defendant had received a contract for the erection of some houses for a Mr. Hickman, at Gorsebrook. Plaintiffs were the architects for the work, and prepared the plans, &c.

When the contract was presented for signature by Mr. Hickman and Mr. Bowater respectively, the former refused to sign because the plaintiffs also presented a bill of "extras" for £17 18s. for work done up to that point. As Mr. Hickman declined to pay or sign the contract, the defendant, who had already placed 150,000 bricks on the land, instructed the plaintiffs to transfer the amount of the extras to his own account and he would guarantee the payment.

Mr. Manton, senior, stated that the defendant had paid him 10s. and offered him £5 to settle the matter, but witness refused.

Mr. Plumptre, for the defence, admitted that plaintiffs were entitled to certain sums amounting to 34*l.* 11s., but, as a matter of fact, defendant paid on account to plaintiffs a sum of 56*l.* 19s., so that the plaintiffs were indebted to defendant for the sum of 22*l.* 18s., the overplus of money paid and lent.

A verdict was entered on the main issue for the plaintiffs for 17*l.* 18s. With regard to the counterclaim and several of the charges which were in dispute, those matters were regarded as matters of account and were referred to an arbitrator to decide on the reasonableness or otherwise of the charges involved.

## NETTLETON *v.* DUBIN.

AT the Weston-super-Mare Petty Sessions, held on the 19th inst., Mr. Montague Dubin, builder of that town, was summoned by Mr. Hugh Nettleton, Town Surveyor, for having unlawfully erected, or caused to be erected, certain buildings, without having previously given to the Urban District Council notice in writing of his intention so to do, and without having previously delivered to the Surveyor complete plans and sections of such buildings.

A fine of 3*l.* and costs was imposed.

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## MEETINGS.

### FRIDAY, MAY 26.

*Architectural Association (Discussion Section).*—Mr. J. Leonard Williams on "Houses of the Speculative Type."

### MONDAY, MAY 29.

*Royal Institute of British Architects.*—Special General meeting to admit to candidature as a Fellow Mr. Bodley, A.R.A. 8 p.m.

*Surveyors' Institution.*—Annual General meeting, to receive the report of the Council and the announcement of the result of the election of officers (meeting to be held at the new building, 12, Great George-street, Westminster). 3 p.m.

### TUESDAY, MAY 30.

*Royal Institution.* — Professor W. J. Sollas on "Geology." III. 3 p.m.

*Society of Arts (Applied Art Section).*—Mr. J. Starkie Gardner on "The Revival of Tradesmen's Signs." 8 p.m.

*Surveyors' Institution.*—Junior Meetings' Annual Dinner, to be held at the Monico Restaurant, Piccadilly-circus, W. 7 p.m.

### WEDNESDAY, MAY 31.

*Architectural Association.*—Annual Dinner, Holborn Restaurant. 7 p.m.

### THURSDAY, JUNE 1.

*Society for the Encouragement of the Fine Arts.*—Dr. J. S. Phené on "The Schools of Painting of Sicyon and Ephesus." 8 p.m.

*Carpenters' Hall, London Wall (Lectures on Carpentry and Joinery).*—Professor T. Roger Smith on "Timber: Decay and Preservation of." 7.30 p.m.

*Society of Arts (Indian Section).*—Sir Charles Cecil Stevens on "The Port of Calcutta." 4.30 p.m.

### SATURDAY, JUNE 3.

*Edinburgh Architectural Association.*—Annual excursion. Visit to Arbroath Abbey, &c.

*Northern Architectural Association.*—Visit to Chester-le-Street and Lumley.

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## RECENT PATENTS:

### ACCEPTED SPECIFICATIONS.

### *Open to Opposition until July 17.*

[1898] 2,089, Frommann, Automatical Opening and Closing of Doors. 8,499, Kittson & Browne, Pigment or Paint. 10,381, Crane, Flushing Apparatus. 10,435, Moulan, Water Meters, &c. 10,719, Balluet, Portable Drilling Machines. 11,640, Heimel, and 15,346, Faure, Accumulators or Secondary Batteries. 12,149, Pease, Roofs and similar Structural Work. 12,365, Walker, Portable Electrical Lamps for use in Mines and other places. 12,550, Purcell, Portable Fire Escapes and Extensible Ladders. 12,872, Adams, Flushing Closets. 13,028, Hamblet & Parkes, Dies and Appliances for making certain kinds of Sewer Blocks, Drain Pipes, Conduits, Channel Blocks, &c. 13,137, de Tunzelmann, Holder for Carrying Carbons or Electrodes for use in Electrical Welding, Brazing, &c. 13,409, Mould, a Combined Boiler, Bath, and Sink, &c. 13,518, Restall, Apparatus for Cleaning and Repairing Drain and other Pipes or Conduits. 13,636, Forbes, 15,423, Bohne, [1899] 5,090, Riemanns, and 6,925, Combier, Acetylene Generators. 13,858, Holland, Guard for Circular Wood-moulding Machines. 13,929, Barr & Thomson, Machine for Cutting Elliptical and other Eccentrical Forms. 13,993, Nall, and 22,144, Robinson, Automatical Guard or Shield for Circular Saws. 14,027, Legros, Self-locking Double-bolt Door Locks. 14,035, Wagner, Raising and Lowering High-hanging Gas Lamps or Lanterns. 14,247, Knoeferl, Slinging and Shifting Cradles, &c., for Builders' Purposes. 14,441, Hueter & Prügel, Boring Holes and Turning Bodies of Angular or Polygonal Shape or Section. 15,327, Russell, Open Fire Cooking Ranges. 15,732, Spanier, Controlling the Supply of Feed Water to Acetylene Gas Generators. 15,989, Barrodale, Aid to Model Drawing. 16,022, Kiefer & Herbst, Bricks. 16,187, Gürtler, Application of Expanded Metal to Constructional Purposes. 16,785, Strong, Gas Heating Stoves. 17,129, Rawlings, Automatical Flushing Cisterns. 17,822, Wells, Pumps. 18,331, Leaver & King, Holders and Fasteners for Sliding Windows. 22,666, Horne, Transparent Map Cases, with a Map cut or Folded to show two Sections at once. 24,956, Smith, Anti-vibrator for Incandescent Gas Lamps. 2,756, Matthias, Thermo-electrical Building Bricks or Blocks. 27,591, Adams, Gas Lighting Apparatus. [1899] 1,616, Moore, Centrifugal Pump. 2,456, Stretton, Pipe Connexions. 2,520, Viggars, Roof Tile. 3,793, Adams, Closets and Flushing Apparatus. 4,886, Greenall, Gas and similar Fluid Meters. 5,088, Farini, Drawing Squares or Triangles for Calculating and other Purposes. 5,111, Schünemann & Rieder, Electrically Operated Gas Tap and Apparatus for Lighting at a Distance. 5,190, Overshiner, Telephone Switch Boards. 5,414, Sidebottom, Ventilating, Humidifying, Warming, Cooling, and Disinfecting Apparatus. 5,572, Hüllstrung, Insulators for Carrying Electrical Line Wires. 5,752, Hartridge, Ash Sifters. 6,101, Winslow, Tread for Stairs and for Manhole Covers. 6,341, Schleicher, Utilisation of Household and similar Waste. 7,247, Galecki, Lopatin, & Lopatin, Manufacture of Bricks, &c., from Lime and Sand. 7,614, Fox & Wright, Safety Appliance for Lifts. 7,644, Boulot, Gas Burners. 7,694, Rust & Lewis, Gas Cookers.

### ABSTRACTS OF PATENTED INVENTIONS.

1,625.—ACETYLENE GAS HOLDER AND GENERATOR: *W. Owens.*—A tube inserted in the lower end of an inclined generator has a number of trays containing carbide, the water passes through a valve, which the bell of the gas-holder opens, and through a trap and a pipe to the trays in succession; the gas escapes to the bottom of a purifier, and after rising amongst a set of baffles, down which the water falls, passes into a dome at the top of the holder; the flow of water can be regulated by means of a cock, when it is desired to recharge the generator, and when the generator is exhausted it becomes filled with water, the water continuing to rise in the trap until it flows into another generator.

1,641.—GAS LIGHTING AND EXTINGUISHING: *A. Firth* —For gas lamps which have pilot jets a clockwork mechanism actuates at predetermined intervals the cocks which control the supply to the main burners. The apparatus—to be placed either in the ground or in the lamp-post—comprises an ordinary timepiece provided with a separate train of wheels. A time disc that rotates once in twenty-four hours carries projecting studs inserted opposite the hours for lighting or extinguishing the gas. At those appointed times the studs engage with a lever which sets in motion the separate train of wheels to move a cock that turns the gas on or off. A pilot jet supplied by means of a by-pass lights the main burner.

1,685.—HOT WATER SUPPLY: *W. H. Bashell & Tubular Bath Boiler Co.*—The invention relates to domestic hot water supply apparatus, and is intended to prevent the boiler and the pipes from becoming incrustated. The water to be heated circulates around a closed coil placed within the hot water cylinder, a tank supplies a non-furring liquid to the boiler, and after circulating in the cylinder the water is drawn off by branch pipes above the cylinder.

1,713.—DRYING FURNACES AND KILNS FOR BRICKS: *W. Tattersall.*—The bricks, being newly moulded, are heated by closing apertures in the walls of receiving chambers, wherein they are dried by the admission of hot air and furnace gases, as regulated by means of valves which control the side openings and of a valve in the chimney, the furnace gases being drawn by a fan and passing through channels beneath the chambers by means of doors, and then forced back into the furnace; when the bricks are hot enough not to crack side-ports are uncovered, and the chimney-valve is opened, thus the hot gases pass into and out of the chambers, whilst moist gases escape through a lower channel into the shaft.

1,750.—PLANING MACHINE FOR THE MITERED ENDS OF MOULDINGS: *R. Simpson.* — The plane-irons are arranged in two sets in the face of the rotary-disc, and are inclined so as to plane when the disc rotates in either direction, as it is driven by an open and crossed belt gearing upon the countershaft, a spring lever moves the reversing-fork which acts upon the pulley-clutch. The moulding rests against the rod-fence, and against one or other of the plate-fences—the fences being fitted adjustably upon the table.

1,753.—LAVATORY BASINS AND BATHS: *J. Gourlay.*—The basin is placed near the end of the bath in such a position that the handles of the supply-cocks and discharge-valve can be fixed in the bracket which supports the basin; the basin discharge pipe may pass to either the bath trap or a separate trap, and a hollow rib in the basin serves for an overflow passage.

1,758.—FIREPROOF FLOORS AND ROOFS: *H. K. Bromhead.*—Joists, of iron or steel, and about 4 in. deep, are laid about 18 in. apart, and blocks are fitted into the intervening spaces; the upper surface is covered with cement, asphalt, or other material, and the lower surface with plaster.

1,769.—FIREPROOF CEMENT AND ARTIFICIAL STONE: *P. Kleber.*—Ground burnt lime and quartz or sandstone are mixed together whilst a spray of diluted hydrochloric acid is directed upon them, and the plastic mass is then moulded into building blocks or other shapes, the acid is evaporated from the blocks within a steam-tight drum until a pressure equal to about seven atmospheres is obtained, the stones will be ready for use after exposure to the pressure during some hours, and the artificial stone thus formed may be finely ground for a cement.

1,818.—ATTACHMENT FOR DOOR-KNOBS AND HANDLES: *H. M. Williams.*—One knob, or handle, is secured to the spindle in the ordinary manner, the other has a locking plate mounted within its recess, which engages with the ratchet teeth upon the spindle, and is held in position by a flanged collar that is moved into place by the insertion of the plate and is then screwed on to the door.

1819.—MANUFACTURE OF CALCIUM CARBIDE: *J. W. Kelly & H. Roantree.*—The electrical furnace is provided with a brickwork bottom, roofs, and walls, an inclined floor, a coloured glass sliding-door, carbon electrodes raised upon blocks near their inner ends, and outlets; between the carbons is fed a shaped block composed of about equal parts of chalk and lime and coke, or coal breeze, the generated gases, carbonic oxide and acid, escaping through a top opening, may be collected and burned to form carbonic acid; the carbide falls down the inclined floor to its own outlet.

1,932.—TRAPS FOR SEWERS AND DRAINS: *A. T. Chorley.*—A division, triangular in section, is made across the siphon-chamber. The inlet is formed socket-wise and the outlet is formed spigot-wise. Stoppers close the openings for cleansing purposes, and a stopper, cemented in, closes the top opening if it has not a ventilating pipe.

2,003.—CERAMIC STONE: *L. A. Garchey.*—The inventor pulverises and sifts certain vitrifiable materials, such as waste glass, slag, scoriæ, potter's and other clay. If clay or other material not readily fusible is used, the mass is agglutinated with a silicate or gum to form a paste. The devitrification is effected in a furnace at a temperature below the fusing point of the materials, and suitable dies are used to finally shape the moulded articles.

2,032-3.—WRENCHES AND PLIERS: *J. Pusey.*—For wrenches, a jaw pivotted to the handle and a jaw which slides on the stem fixed to the former jaw grip the nut, or pipe, &c. The latter jaw being acted upon by projections upon the forked handle, when the handle's motion is reversed the sliding jaw is pressed back by a pin upon the handle. For parallel pliers, one jaw is pivotted to the handle, which has a pin that enters a slot in the other jaw fixed to a solid or forked bar, which slides in a slot, or slots, in the former jaw; by employing a thumb-screw running in a slot, the pliers may serve for a hand-vice.

2,106.—ARC LAMPS: *J. O. Girdlestone & C. F. G. Thorkelin.*—Rods, pinned to insulated supports, carry the globe and lower carbon, and can be turned up outside the globe in order to release the latter and its top, which is held by a spring; or the globe may be held by a spring upon the lower carbon-holder, the carbon and globe being carried by rods which hang, inside the globe, from a plate fixed apart from the lamp's casing; the carbon-holder is guided by rollers within a central tube, whilst a plate guides the carbon; a cord from a drum upon a shaft provided with a brake pully and controlled by a coiled spring, supports the upper holder; around the pully is a strap connected with a brake lever and with a regulating lever that carries cores in series and shunt coils; the lamp is adapted for use upon any circuit.

2,153.—VENTILATION OF DRAINS: *J. Hutchison.*—Concentrical pipes, connected by webs, are fitted on to the upper end of the ventilating pipe at the ground level, the air passes through the grating to the space around the inner tube, which may be converted into use as a silt-box by means of a removable disc resting upon the bottom flange In modified forms the silt-box assumes the shape and place of either an annular or a side chamber.

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## SOME RECENT SALES OF PROPERTY.

### ESTATE EXCHANGE REPORT.

| | |
|---|---|
| May 9.—By NICHOLSON, GREAVES, & CO. (at Sheffield). | |
| Fullwood, Yorks.—Yarncliffe Farm, 53 a. 2 r. 29 p., f. | £1,850 |
| By H. J. WAY & SON (at Cowes). | |
| Cowes, Isle of Wight.—9 and 10, High-st., f., r. 32*l.* | 1,325 |
| May 10.—By H. J. WAY & SON (at Newport). | |
| Newport, Isle of Wight.—84 and 85, High-st., f., r. 33*l.* | 500 |
| 11, Pyle-st., f., r. 12*l.* | 200 |
| Ryde-rd., Mount House, f. | 525 |
| Barton's Village, a freehold house and a tenement | 395 |
| Northwood, Isle of Wight.—Pallance-rd., a blacksmith's shop and premises, f., r. 24*l.* | 170 |
| By DRIVER & CO. (at Usk). | |
| Gwehelog.—The Tump Farm, 8 a. 0 r. 38 p., f. | 220 |
| The Oak Farm, 129 a. 1 r. 23 p., f. | 2,100 |
| Three freehold farms, 28 a. 1 r. 10 p., f. | 1,045 |
| Poplar Cottage Farm, 11 a. 2 r. 0 p., f. | 350 |
| Wainfield Farm, 12 a. 0 r. 2 p., f. | 265 |
| Birch Grove Farm, 21 a. 1 r. 16 p., f. | 490 |
| A freehold sheep farm, 60 a. 2 r. 16 p., f. | 910 |
| A freehold sporting estate, 93 a. 2 r. 29 p., f. | 1,050 |
| Wood Farm, 9 a. 2 r. 3 p., f. | 320 |
| Pant-y-Llacs, and 17 a. 2 r. 15 p., f. | 385 |
| Walnut Tree Farm, 9 a. 1 r. 23 p., f. | 200 |
| The Bank Farm, 10 a. 1 r. 24 p., f. | 300 |
| Bardus, and 7 a. 3 r. 32 p., f. | 145 |
| Various enclosures of land with cottages and buildings thereon, 103 a. 3 r. 11 p., f. (in lots) | 2,873 |
| Several cottages and gardens, 6 a. 2 r. 24 p., f. (in lots) | 657 |
| Three cottage holdings, 15 a. 3 r. 38 p., f. | 675 |
| Trostrey, Mon.—Various enclosures with cottages, 47 a. 2 r. 38 p., f. | 1,380 |
| Four cottage holdings, 14 a. 3 r. 2 p., f. | 385 |
| Walnut Tree Cottage, and 4 a. 1 r. 9 p., f. | 115 |
| Dyffrn House, Mill, and 8 a. 3 r. 38 p., f. | 200 |
| New Wood Farm, 22 a. 3 r. 21 p., f. | 410 |
| Lower House Farm, 19 a., f. | 345 |
| May 11.—By FAREBROTHER, ELLIS, & CO. | |
| Holloway.—Wedmore-st., f.g.r. 6*l.* 6s., reversion in 9 yrs. | 605 |
| 5, 11, and 13, Wedmore-st., f., r. 63 | 1,050 |
| 7 and 9, Wedmore-st., area 9,600 ft., f., r. 80*l.* | 1,420 |
| 18, Wedmore-st., area 19,100 ft., f., r. 57*l.* | 1,700 |
| Wedmore-st., f.g.r.'s 24*l.*, reversion in 8½ yrs. | 1,790 |
| Wedmore-st., f.g.r.'s. 44*l.*, reversion in 11 yrs. | 8,750 |
| Wedmore-st., the "Black Horse" p.-h., f.g.r. 31*l.*, reversion in 11 yrs. | 2,850 |
| Blackheath.—6, 8, and 12, Bennett-pk., u.t. 52 yrs., g.r. 45*l.*, r. 180*l.* | 885 |
| By LONG & FARLOW (at Gipsy Hill). | |
| Norwood.—109, Belvedere-rd., u.t. 219 yrs., g.r. 9*l.*, e.r. 50*l.* | 300 |
| 1 to 4, 6, and 7, Crown-villas, u.t. 70 yrs., g.r. 27*l.* | 840 |
| Dulwich.—25, Croxted-rd., u.t. 45 yrs., g.r. 5*l.* 5s., e.r. 45*l.* | 325 |
| By DRIVER & CO. (at Usk). | |
| Monkswood, Mon.—The Monkswood Estate, 1,116 a. 3 r. 9 p., f. | 27,000 |

# COMPETITIONS, CONTRACTS, AND PUBLIC APPOINTMENTS.

## CONTRACTS.

| Nature of Work or Materials. | By whom Required. | Forms of Tender, &c. Supplied by | Tenders to be delivered. |
|---|---|---|---|
| Excavation Works, Whiston | Rotherham Corp. | H. H. Hickmott, Council Hall | May 29 |
| *Paving Works | Coventry Corp. | J. E. Swindlehurst, St Mary's Hall, Coventry | do. |
| *Laying Wood Paving | Willesden D.C. | O. C. Robson, Offices, Dyne-rd. Kilburn | May 30 |
| *Brick Sewer | do. | do. | do. |
| *Kerbing, Channelling and Paving | Lewisham B. of W. | Surveyor, Town Hall, Catford, S.E. | do. |
| Sewerage Works, Walton-street | St. Alban's Corp. | City Surv. Victoria-st. St. Albans | do. |
| *Various Road Materials | Maidstone U.D.C. | T. F. Bunting, Fair Meadow, Maidstone | do. |
| Drainage Works, Holton-road, &c. | Barry (Glam.) U.D.C. | J. C. Pardoe, C.E. Holton-road, Barry | do. |
| Road Works, Romilly Park, &c. | do. | do. | do. |
| House, Groeslon, R.S.O. Wales | ........ | J. E. Jones, Carmel | May 31 |
| Sewering, &c. Deep-lane | Basingstoke Corp. | G. Fitton, Boro Surv. Town Hall | do. |
| Widening Cwm-road, Llangibby | Pontypool R.D.C. | T. Watkins, Club-chmbrs. Pontypool | do. |
| Lodge, Derby Park | Bootle (Lancs.) Corp. | T. Cox, Archt. 11, Dale-st. Liverpool | do. |
| Reservoir, &c. Clayton, Yorks. | ...... | Milnes & France, Archt. 99, Swan-arcade, Bradford | do. |
| Boring, Sinking, &c. Warning Camp | Littlehampton U.D.C. | H. Howard, Town Offices, Littlehampton | do. |
| Two Houses, Northfield-rd. Dewsbury | ....... | J. Kirk & Sons, Archt. Dewsbury | June 1 |
| Street Works, Woodhouse-terrace | Middlesbrough Corp. | F. Baker, C.E. Municipal Buildings | do. |
| Additions to Infirmary, Hylton-road | Sunderland Union | W. & T. R. Milburn, Archt 20, Fawcett-st. Sunderland | do. |
| Watercourse, Dovestone-Clough, Greenfield | Ashton-under-Lyne, &c. Waterworks | G. H. Hill & Sons, Engr. Albert-sq. Manchester | do. |
| Pair Villas, Spring-street, Bridlington Quay | F. G. Purdon | J. Earnshaw, Archt. Wellington-rd. Bridlington Quay | do. |
| Two Villas, Crawfordsburn-road, Bangor, Ireland | J. Mercer | Young & Mackenzie, Archt 7, Donegall-sq. Belfast | June 2 |
| Stores | Blackburn Brewery Co. Ltd. | J. Bertwistle, Archt. Tacketts-st. Blackburn | do. |
| Flint Road Metal | Eastbourne Union | L Jeffery, Trinity-chmbrs. Eastbourne | do. |
| Water Tower, &c. | Hunstanton U.D.C. | Stevenson & Burstal, 38, Parliament-st. S.W. | do. |
| Roof, Central Station, Leith | North British Railway Co. | Blythe & Westland, C.E. 135, George-st. Edinburgh | June 3 |
| Basalt Setts, &c. | Slough U.D.C. | W. W. Cooper, Surv. 1, Mackenzie-st. Slough | do. |
| Laying Cube Setts, &c. | do. | do. | do. |
| Sewerage Works, North Beach | Bridlington U.D.C. | C. Gray, Council Offices | do. |
| Sewers, West Heath | King's Norton, &c. U.D.C. | A. W. Cross, C.E. 23, Valentine-rd. King's Heath | do. |
| *Stoneware and Iron Sewers | Wycombe R.D.C. | Taylor, Sons, & Santo Crimp, 27, Gt. George-st. S.W. | do. |
| *Iron Water Main Pipes | Burgess Hill Water Co. | S. H. Norman, Offices, London-rd. Burgess Hill, Sussex | June 5 |
| Boundary Walls, Gates, &c. Clifton | Bristol Corp. | T. H. Yabbicom, C.E. 63, Queen-sq. Bristol | do. |
| Schools | Keighley Sch. Bd. | W. & J. B. Bailey, Archt. 9, Market-street, Bradford | do. |
| Four Cottages, Victoria Bridge Station, Dublin | G.N.R. Co. (Ireland) | T. Morrison, Amiens-st. Terminus, Dublin | do. |
| Station Building, Laytown | do. | do. | do. |
| Additions to Trinity Schools, Whitehaven | ...... | J. S. Moffat, Archt. 53, Church-st. Ulverston | do. |
| Tollhouse, Yar Bridge, Yarmouth, I.W. | Yar Bridge Co. | Newman & Cox, Surv. 5, Thomas-st. Ryde | do. |
| School, Moorfields, St. George | Bristol Sch. Bd. | J. Mackay, Kingswood, Bristol | do. |
| House, Shrivenham Station, Berks. | G. W. Ry. Co. | G. K. Mills, Paddington Station, W. | June 6 |
| Subway, Newbridge Station, Mon. | do | do. | do. |
| Granite Road Metal | Branksome U.D.C. | S. J. Newman, Surv. Ashley-rd Branksome | do. |
| *Boundary Wall, Fencing, and Convenience | Tottenham U.D.C. | P. E. Murphy, 712, High-rd. Tottenham | do. |
| *Surface Water Culvert | do. | do. | do. |
| *Surface Water Culvert, Chestnuts Estate | do. | do. | do. |
| *Repair of Tar and Asphalt Paving | do. | do. | do. |
| *Erection of Wall | Wandsworth Burial Bd | Offices, Town Hall, Wandsworth, S.W. | do. |
| *Deepening and Enlarging Well | High Welwyn Ld. | R. E. Middleton, 17, Victoria-st. S.W. | June 7 |

## CONTRACTS—*Continued.*

| Nature of Work or Materials. | By whom Required. | Forms of Tender, &c. Supplied by | Tenders to be delivered. |
|---|---|---|---|
| Cottage, Morn Hill, Winchester | ....... | W. J. Taylor, Cnty. Surv. The Castle, Winchester | June 7 |
| Well Sinking, Balcombe, Sussex | Cuckfield R.D.C. | J. Mansergh, Engr. 5, Victoria-st. Westminster | June 8 |
| Cast-iron Water Mains, Newbold-upon-Avon | Rugby R.D.C. | T. W. Willard, Surv. Rugby | do. |
| Destructor Buildings, Gorleston | Gt. Yarmouth T.C. | J. W. Cockrill, C.E. Municipal Bldgs. Gt. Yarmouth | June 9 |
| *Coastguard Buildings | Admiralty | Offices, 21, Northumberland-avenue, W.C. | do. |
| *Painting Works | Corpn. of London | The Engineer, Guildhall | do. |
| *Steel Joists | Battersea Vestry | Municipal Bldgs. Lavender Hill, S.W. | do. |
| *P. O. Balham | Commrs. H.M. Works | J. Wager, Offices, Storey's Gate, S.W. | do. |
| Broken Granite and Slag | Rushden (Northants.) U.D.C. | W. B. Madin, C.E. Vestry Hall, Rushden | June 10 |
| Street Works | Kettering U.D.C. | T. R. Smith, Surv. Market Hill | do. |
| *Police Cottages and Cells | County of Southampton | W. J. Taylor, The Castle, Winchester | June 12 |
| Additions to Workhouse, Herne Common | Blean (Kent) Union | J. E. Burch, 39, Castle-st. Canterbury | do. |
| *Wood Paving | Islington Vestry | J. P. Barber, Vestry Hall, Upper-st. N. | do. |
| Sewerage Works | Market Harborough R.D.C. | J. B. Everard, C.E. 6, Millstone-st. Leicester | June 13 |
| *Pitching and Private Street Works | Cnty. Boro. West Ham | Lewis Angell, Town Hall, Stratford, E. | do. |
| Excavation Works | Shotley Bridge, &c. Gas Co. | T. Newbigging & Son, Engr 5, Norfolk-st. Manchester | June 14 |
| Steel Gasholder Tank | do. | do. | do. |
| Walling, Fencing, &c. High Carley Hospital | Ulverston Joint Hospital Bd. | C. W. Dean, 3, Benson-st. Ulverston | do. |
| *Builder's Work connected with Water Tower | West Ham Union | Clerk at Workhouse, Leytonstone | do. |
| *Re-drainage, Reservoirs, &c. | Kent County Asylums Com. | W. J. Jennings, 4, St. Margaret-st. Canterbury | June 15 |
| *Reconstruction of Sewers, Manholes, &c. | Berkhampstead and Northchurch Joint Sewerage Com. | J. Lemon, 9, Victoria-st. S.W. | do. |
| *Making-up Roadways, &c. & Asphalting | Met. Asylums Board | Offices, Norfolk House, Norfolk-st. W.C. | do. |
| Electric Lighting Works | Dudley Corp. | Wilson & Storey, 66, Victoria-st. S.W. | June 17 |
| *Widening Bridge | County of Southampton | W. J. Taylor, The Castle, Winchester | June 19 |
| *Institute, Swimming Baths, Laundry, &c. | Beckenham U.D.C. | Council Offices | do. |
| *Farm Buildings, Hospital, Cottages, &c. | Herts C.C. | G. T. Hine, 35, Parliament st. S.W. | June 27 |
| *Alterations and Additions to Library | Brighton Corp. | F. J. C. May, Town Hall, Brighton | July 27 |
| *Schools | Woodford Sch. Bd. | E. Tidman, 34, Victoria-st. S.W. | No date |
| Two Houses and Stable, South Drive, Harrogate | ... | Bland & Bown, Archt North Park-rd. Harrogate | do. |
| Shop, Stabling, &c. near Carlisle | Dalston Co-op. Soc. Ld. | W. Pogson, Archt. 24, Devonshire-st. Carlisle | do. |
| Additions to Inn, &c. Llanelly Hill nr. Clydach | C. Edwards | B. J. Francis, Archt. Abergavenny | do. |
| Extensions, St. John's Church, Blackburn | .. .. | T. H. Duerden, Archt. 32, Richmond-ter. Blackburn | do. |
| Pipe Sewers, Edmondestown | Llantrisant R.D.C. | G. S. Morgan, Surv. School-st. Pontyclun | do. |
| Alterations to Asylum, Melrose, N.B. | ........ | Sydney, Mitchell & Co. Archts. 13, Young-st. Edinburgh | do. |
| Infirmary, Dearnley | Rochdale Union | Butterworth & Duncan, Archt. 4, South Parade, Rochdale | do. |
| Footpaths, &c Manselton, Swansea | ...... | Alex. Young, Kidwelly, Swansea | do. |

## PUBLIC APPOINTMENTS.

| Nature of Appointment. | By whom Advertised. | Salary. | Application to be in. |
|---|---|---|---|
| *Clerk of Works | Romford R.D.C. | 3*l.* 3*s.* per week | May 29 |
| *Clerk of Works | Tottenham U.D.C. | 2*l.* 10*s.* per week | June 6 |
| *Sanitary Inspector | Hammersmith Vestry | 110*l.* rising to 150*l.* | June 7 |
| *Headmaster, Arts and Crafts School | L.C.C. | 400*l.* per annum | June 19 |
| *Temporary Architectural Assistant | E. Sussex C.C. | ........ | No date |

*Those marked with an asterisk (*) are advertised in this Number. Competitions, p. —. Contracts, pp.* iv. vi. viii. x. & xxi. *Public Appointments, pp.* xviii. xix. & xxi.

| | |
|---|---|
| Llanbadock, Mon.—The Rhadyr Farm, 328 a. 0 r. 37 p., f. | £11,000 |
| Llan-Llwyd Farm, 38 a. 0 r. 35 p., f. | 400 |
| A freehold sporting estate, 151 a. 3 r. 32 p., f. | 5,100 |
| Fine freehold cottages and 1 a. 3 r. 26 p. | 565 |
| Several enclosures of land, 73 a. 2 r. 5 p., f. | 2,920 |
| Enclosures of building land, 15 a. 1 r. 29 p., f. | 1,325 |
| Kensington Cottage, and 3 a. 0 r. 24 p., f. | 425 |
| Gwehelog, Mon.—Baldwin's Castle and Little Castle farms, the Castle Brick and Tile Works, also the Castle House and ruins of Usk Castle, and 505 a. 2 r. 9 p., f. | 16,250 |
| Enclosures of building land, 17 a. 3 r. 13 p., f. | 2,265 |
| Enclosures of land, 2 a. 2 r. 8 p., f. | 200 |
| Usk, Mon.—Enclosures of land, 30 a. 0 r. 36 p., f. | 2,225 |
| Four Ash-st., Brook Cottage, and 0 a. 3 r. 14 p., f. | 275 |
| Four Ash-st., &c., two building sites, f. | 175 |
| Four Ash-st., the Estate Timber Yard, f. | 165 |
| St. Mary Port-st., Vine Tree Cottage, and 0 a. 3 r. 0 p., f. | 425 |
| The Town Hall and Market Tolls, also Twyn-square, area 8,100 ft., f. | 560 |
| By TOOTELL & SONS (at Maidstone). | |
| Langley, Kent.—Turkey Cottage, and 3 a. 0 r. 2 p., f. | 400 |
| Bearsted, Kent.—A plot of building land, with pumping station and waterworks thereon, f. | 185 |
| Maidstone, Kent.—5, King-st., f., r. 30*l.* | 750 |
| 5, 7, and 9, Stone-st., f., r. 37*l.* | 750 |
| 29, Upper Stone-st., f. | 450 |
| 2, 4, and 6, St. Peter's-st., f. | 380 |
| Aylesford, Kent.—Freehold premises, with wharf, &c., area 1 acre | 1,170 |
| May 12.—By JONES, LANG, & Co. | |
| Sydenham.—2 and 4, West-ter., u.t. 62 yrs., g.r. 1*l.* 10s. | 500 |
| By ROBERT REID. | |
| Soho.—16 and 17, Gerrard-st., f., r. 260*l.* | 5,900 |
| 2 and 3, Dansey-yard, f., e.r. 200*l.* | 2,870 |
| Hammersmith.—13 and 15, Girdler's-rd., u.t. 66½ yrs., g.r. 4*l.* | 1,095 |
| By A. J. SHEFFIELD. | |
| Sudbury.—Wembley Park-rd., The Woodlands, f., r. 30*l.* | £500 |
| Bethnal Green.—11 to 15, Tuscan-st., and 11 to 14, Bonwell-st., u.t. 48½ yrs., g.r. 60*l.* | 1,170 |
| Limehouse.—17, 19, 21, and 23, Parnham-st., and 6 and 8, Carr-st., u.t. 13½ yrs., g.r. 11*l.* 11s. | 420 |
| Bow.—31, Merchant-st., u.t. 64 yrs., g.r. 6*l.*, e.r. 40*l.* | 310 |
| By C. P. WHITELEY. | |
| Ealing.—1, 2, and 3, Blandford Villas, u.t. 69 yrs., g.r. 15*l.* 15s., r. 75*l.* | 660 |
| Bayswater.—155, Ledbury-rd., u.t. 60 yrs., g.r. 10*l.*, r. 55*l.* | 500 |
| Canonbury.—36, Alwyne-rd., u.t. 46 yrs., g.r. 10*l.*, r. 52*l.* 10s. | 450 |
| 4 and 5, Alwyne-pl., u.t. 46 yrs., g.r. 20*l.*, r. 130*l.* | 1,300 |
| 85 and 87, Marquess-rd., u.t. 47 yrs., g.r. nil, r. 120*l.* | 1,415 |
| By VERNON & SON (at High Wycombe). | |
| High Wycombe, Bucks.—A freehold building site, area 5,500 ft. | 460 |
| By THOMAS MARTIN (at Exeter). | |
| Whimple, Devon.—Church-rd, acre plot 1 acre, f. | 100 |
| Church-rd., &c., nine freehold cottages | 610 |
| By DRIVER & Co. (at Usk). | |
| Glascoed, Mon.—New Jerusalem, and 11 a. 3 r. 21 p., f. | 750 |
| Poplar Tree, and 1 a. 1 r. 11 p., f. | 135 |
| House, dairy, and 3 a. 3 r. 23 p., f. | 460 |
| Malsmawr Farm, 144 a. 0 r. 17 p., f. | 1,970 |
| A freehold farm, 32 a. 0 r. 15 p. | 550 |
| Upper Cwm Hir Cottage, and 24 a. 0 r. 34 p., f. | 540 |
| Hill Wood, 15 a. 0 r. 18 p., f. | 130 |
| The Ton Holding, 6 a. 3 r. 11 p., f. | 165 |
| Holly Bush Farm, 17 a. 2 r. 28 p., f. | 510 |
| Various enclosures, with cottages, 139 a. 3 r. 21 p., f. | 2,705 |
| Several cottages and orchards, 17 a., f. | 980 |
| Five freehold holdings, 33 a. 2 r. 11 p. | 950 |
| A freehold house and 15 a. 1 r. 22 p. | £525 |
| The Cross, and 7 a. 3 r. 38 p., f. | 315 |
| Ashford Cottage, and 3 a. 1 r. 31 p., f. | 285 |
| Ty Mawr, and 8 a. 3 r. 10 p., f. | 180 |
| Upper House Farm, 29 a. 1 r. 22 p., f. | 660 |
| Llanbadock, Mon.—Two freehold holdings, 77 a. 1 r. 16 p., f. | 740 |
| By HALL, WATERIDGE, & OWEN (at Shrewsbury). | |
| Cardington, Salop.—Comley Farm, 73 a. 0 r. 33 p., f. | 2,000 |
| Holly Hurst Farm, 30 a. 2 r. 6 p., f. | 1,250 |
| Hill House Farm, 27 a. 2 r. 27 p., f. | 790 |
| Broome Hall Farm, 46 a. 2 r. 17 p., f. | 1,100 |
| Shrewsbury.—18, 19, and 20, Swan Hill, f., r. 32*l.* 8s. | 830 |
| May 13.—By H. DUKE & SON (at Dorchester). | |
| Upwey, Dorset.—Upwey Manor and Stottingway Farm, 290 a. 1 r. 1 p., f. | 12,600 |
| Stottingway House, and 2 a. 2 r., f. (including manor) | 1,010 |
| Enclosure of pasture, 3 a. 1 r. 33 p., f. | 610 |
| A freehold cottage and garden | 330 |
| By BRUTON, KNOWLES, & Co. (at Gloucester). | |
| Gloucester (near).—The Wotton Court Estate, 208 a. 0 r. 20 p., f. | 29,000 |
| Berkeley, Glos.—"The Bell Inn" and Folly Farm, 70 a. 1 r. 4 p., f. | 3,500 |
| Awre, Glos.—Six freehold cottages and 2 a. 3 r. 26 p. | 395 |
| Various enclosures of land, 51 a. 2 r. 24 p., f. | 1,730 |
| May 15.—By BEALE & CAPPS. | |
| Willesden.—Stonebridge Pk., Highfield, f. | 1,400 |
| Kilburn.—220, Kilburn Park-rd., f., r. 52*l.* | 550 |
| Bowes Pk.—7, 19, and 21, Whittington-rd., u.t. 79½ yrs., g.r. 20*l.* 5s., r. 86*l.* | 885 |
| Brixton.—321 to 329 (odd), Coldharbour-lane, and four cottages (Mayo Cottages), r. 335*l.*, also l.g.r. 7*l.* 10s., u.t. 5 yrs. | 950 |

| | |
|---|---|
| Elstree, Herts.—Drayton-rd., a plot of building land, f. | £100 |
| **By W. A. Blakemore.** | |
| Twickenham.—1, Waldegrave Gardens, f., r. 40*l.* | 550 |
| Battersea.—5, 7, and 9, Harroway-rd., u.t. 86 yrs., g.r. 15*l.* | 605 |
| Buckhurst Hill.—Palmerston-rd., Maybank, Beechmont, Hawkenbury, and Dalefield, f., r. 220*l.* | 2,805 |
| Clapton.—3, Queen's Down-rd., f., r. 65*l.* | 955 |
| **By A. P. Clear.** | |
| North Fambridge, Essex.—Groom's Farm, 59 a. 0 r. 20 p., f. | 520 |
| **By T. H. Currie.** | |
| Westbourne Park.—All Saints'-rd., f.g.r. 60*l.*, reversion in 80 yrs. | 1,735 |
| Lancaster-rd., &c., f.g r. 64*l.*, reversion in 80 yrs. | 1,760 |
| Hammersmith.—50, Crefeld-rd., f., r. 45*l.* | 450 |
| Kentish Town.—41, Litcham-st., f. | 400 |
| 9 and 10, Litcham-st., u.t. 55 yrs., g.r. 12*l.* | 365 |
| Edgware-rd.—15 and 16, Hatton-st., u.t. 21 yrs., g.r. 10*l.* | 160 |
| **By Hampton & Sons.** | |
| South Kensington.—97, Cromwell-rd., u.t. 65 yrs., g.r., &c., 72*l.* 2s. | 2,400 |
| **By T. N. Turner.** | |
| Shepherd's Bush.—106, Coningham-rd., u.t. 81 yrs., g.r. 7*l.*, r. 32*l.* | 355 |
| Ealing.—14, The Park, u.t. 80 yrs., g.r. 7*l.*, r. 35*l.* | 400 |
| Highgate.—1 and 7, Orchard-rd., u.t. 80 yrs., g.r. 10*l.* 10s., r. 60*l.* | 550 |
| St. John's Wood.—62, Wellington-rd., u.t. 20 yrs., g.r. 10*l.*, r. 65*l.* | 530 |
| **By J. H. Bethell (at East Ham).** | |
| East Ham.—Gooseley-lane, 124 plots of building land, f. (in lots) | 4,925 |
| **May 16.—By David Burnett & Co.** | |
| City of London.—Cheapside, f.g.r. 400*l.*, reversion in 18 yrs. | 28,500 |
| Hornsey.—44 to 58 (even), Hampden-rd., u.t. 82 yrs., g.r. 60*l.*, r. 246*l.* | 2,040 |
| Wandsworth.—366, Merton-rd., u.t. 95½ yrs., g.r. 6*l.* | 330 |
| Dalston.—90, Greenwood-rd., u.t. 52 yrs., g.r. 6*l.*, r. 38*l.* | 415 |
| Homerton.—7, 9, and 11, Templar-rd., u.t. 78 yrs., g.r. 13*l.* 10s. | 515 |

*Contractions used in these lists.*—F.g.r. for freehold ground-rent; l.g.r. for leasehold ground-rent; i.g.r. for improved ground-rent; g.r. for ground-rent; r. for rent; f. for freehold; c. for copyhold; l. for leasehold; e.r. for estimated rental; u.t. for unexpired term; p.a. for per annum; yrs. for years; st. for street; rd. for road; sq. for square; pl. for place; ter. for terrace; cres. for crescent; yd. for yard, &c.

◆

## PRICES CURRENT OF MATERIALS:

### WOOD.*

| Per Petersburg standard hundred. | £ | s. | d. | £ | s. | d. |
|---|---|---|---|---|---|---|
| White Sea: first yellow deals | 17 | 0 | 0 | 18 | 0 | 0 |
| Second do. | 13 | 5 | 0 | 14 | 15 | 0 |
| Third do. | 10 | 15 | 0 | 11 | 15 | 0 |
| Battens, 40s., 30s., and 15s. less respectively. | | | | | | |
| Petersburg: first yellow deals | 11 | 15 | 0 | 14 | 5 | 0 |
| Second do. | 10 | 15 | 0 | 12 | 5 | 0 |
| Battens, 30s. and 20s. less respectively. | | | | | | |
| Petersburg, white deals | 9 | 15 | 0 | 11 | 15 | 0 |
| Do. white battens | 7 | 10 | 0 | 9 | 0 | 0 |
| Riga, white deals | 8 | 5 | 0 | 9 | 5 | 0 |
| Swedish mixed yellow deals | 13 | 5 | 0 | 16 | 15 | 0 |
| Third do. | 12 | 5 | 0 | 14 | 5 | 0 |
| Fourth do. | 10 | 15 | 0 | 11 | 15 | 0 |
| Fifth do. | 9 | 15 | 0 | 10 | 15 | 0 |
| Battens, 30s., 20s., and 10s. ess respectively. | | | | | | |
| Whitewood, 10 to 20 per cent. less. | | | | | | |
| Finnish unsorted yellow deals | 9 | 15 | 0 | 10 | 5 | 0 |
| Battens, 10s. and 5s. less respectively. | | | | | | |
| Whitewood, 5 to 10 per cent. less. | | | | | | |
| Norwegian second yellow battens | 7 | 10 | 0 | 8 | 10 | 0 |
| Third do. | 7 | 0 | 0 | 8 | 0 | 0 |
| Fourth do. | 6 | 10 | 0 | 7 | 10 | 0 |
| Whitewood, 10s. less. | | | | | | |
| Danzig, Crown Deck deals, per 40 ft. 3 in. | 0 | 15 | 0 | 1 | 5 | 0 |
| Brack | 0 | 12 | 0 | 1 | 0 | 0 |
| St. Lawrence Pine deals, &c., per P.S.H.:— | | | | | | |
| 1st, Bright and Dry, regular sizes | 19 | 0 | 0 | 25 | 10 | 0 |
| ,, ,, oddments | 12 | 0 | 0 | 18 | 15 | 0 |
| 2nd ,, regular sizes | 14 | 0 | 0 | 17 | 5 | 0 |
| ,, ,, oddments | 9 | 10 | 0 | 13 | 0 | 0 |
| 3rd ,, regular sizes | 9 | 5 | 0 | 10 | 5 | 0 |
| ,, ,, oddments | 7 | 0 | 0 | 8 | 10 | 0 |
| 4th ,, regular sizes | 6 | 5 | 0 | 7 | 5 | 0 |
| ,, ,, oddments | 5 | 15 | 0 | 6 | 15 | 0 |
| St. Lawrence Spruce deals, &c. | | | | | | |
| First, regular sizes | 8 | 5 | 0 | 10 | 5 | 0 |
| Second ,, | 7 | 5 | 0 | 8 | 5 | 0 |
| Third ,, | 7 | 0 | 0 | 7 | 15 | 0 |
| Fourth ,, | 5 | 15 | 0 | 6 | 15 | 0 |
| Oddments and battens at 20s., 10s., 7s. 6d., and 5s. less respectively. | | | | | | |
| New Brunswick Spruce deals, &c. | 7 | 0 | 0 | 7 | 15 | 0 |
| Oddments, battens, and fourths | 6 | 5 | 0 | 7 | 5 | 0 |
| United States pitch pine planks and boards | 8 | 15 | 0 | 12 | 5 | 0 |
| Prepared Boards, per square | | | | | | |
| 1¼ by 6½ and 7 in. 1st yellow | | 11 | 9 | | 15 | 0 |
| ,, ,, 2nd ,, | | 10 | 3 | | 12 | 0 |
| 1 by 6½ and 7 in. 1st ,, | | 8 | 9 | | 11 | 0 |
| ,, ,, ,, white | | 8 | 3 | | 9 | 0 |
| ,, ,, 2nd yellow | | 8 | 3 | | 10 | 0 |
| ,, ,, ,, white | | 6 | 9 | | 7 | 6 |
| ⅞ by 6½ & 7 in. 1st & 2nd yellow | | 7 | 6 | | 8 | 3 |
| ,, ,, ,, white | | 7 | 0 | | 7 | 9 |
| ¾ by 6½ and 7 in. 1st yellow and white (grooved, tongued, and beaded) | | 6 | 6 | | 9 | 0 |
| ¾ by 6½ and 7 in. 2nd yellow and white (ditto) | | 5 | 6 | | 7 | 9 |
| ⅝ by 6½ and 7 in. 1st yellow and white (ditto) | | 5 | 6 | | 6 | 3 |
| ⅝ by 6½ and 7 in. 2nd yellow and white (ditto) | | 5 | 0 | | 5 | 9 |
| Narrower widths at 10 per cent. less. | | | | | | |
| 3rd quality at 15 per cent. less than 2nd. | | | | | | |
| Danzig and Memel Fir Timber— per load | | | | | | |
| Best middling | 2 | 7 | 6 | 3 | 7 | 6 |
| Good middling and Second | 1 | 17 | 6 | 3 | 2 | 6 |
| Common middling | 1 | 7 | 6 | 2 | 7 | 6 |
| Undersized | 1 | 7 | 6 | 1 | 12 | 6 |
| Swedish and Norwegian Balks | 1 | 2 | 6 | 1 | 12 | 6 |
| Baltic Oak Timber— | | | | | | |
| Danzig and Stettin—Large | 3 | 15 | 0 | 4 | 5 | 0 |
| Small | 2 | 5 | 0 | 2 | 10 | 0 |
| Quebec Timber per load | | | | | | |
| Yellow Pine | 4 | 17 | 6 | 6 | 10 | 0 |
| Oak | 4 | 5 | 0 | 6 | 5 | 0 |
| Elm | 4 | 5 | 0 | 5 | 5 | 0 |
| Ash | 3 | 10 | 0 | 4 | 15 | 0 |
| Birch | 3 | 15 | 0 | 5 | 15 | 0 |
| New Brunswick, &c., Birch | 2 | 10 | 0 | 3 | 5 | 0 |
| American Pitch Pine Timber | 2 | 16 | 0 | 3 | 5 | 0 |
| Wainscot, per log, 18 cubic ft.— | | | | | | |
| Crown (Eng. & Dutch) } nominal | 4 | 5 | 0 | 6 | 0 | 0 |
| Brack } nominal | 3 | 10 | 0 | 4 | 10 | 0 |
| Lathwood, per cubic fathom— | | | | | | |
| Petersburg | 4 | 0 | 0 | 6 | 10 | 0 |
| Riga and Danzig | 4 | 10 | 0 | 5 | 10 | 0 |
| Norway Poles, per ft. run | 0 | 0 | 1 | 0 | 0 | 1½ |
| Oak Staves, per mille full size pipe | | | | | | |
| Memel, Crown | 210 | 0 | 0 | 220 | 0 | 0 |
| Brack | 180 | 0 | 0 | 190 | 0 | 0 |
| Danzig | 165 | 0 | 0 | 175 | 0 | 0 |
| Bosnia, single Barrel (nominal) | 28 | 0 | 0 | 30 | 0 | 0 |
| United States, Pipe | 35 | 0 | 0 | 42 | 10 | 0 |
| Hogshead, extra heavy and double extra | 27 | 10 | 0 | 32 | 10 | 0 |
| Indian Teake per load | 11 | 10 | 0 | 16 | 10 | 0 |
| British Guiana Greenheart | 0 | 0 | 0 | 8 | 0 | 0 |
| Mahogany, per foot superficial— | | | | | | |
| Honduras, cargo average | 0 | 0 | 4½ | 0 | 0 | 6 |
| Nicaragua, do. | 0 | 0 | 4¾ | 0 | 0 | 5¼ |
| Tabasco, do. | 0 | 0 | 4 | 0 | 0 | 6½ |
| Mexican, do. | 0 | 0 | 3½ | 0 | 0 | 4 |
| Panama, do. | 0 | 0 | 3 | 0 | 0 | 4 |
| African, do. | 0 | 0 | 3½ | 0 | 0 | 5 |
| Cuba, do. | 0 | 0 | 5½ | 0 | 0 | 7½ |
| St. Domingo, do. | 0 | 0 | 5 | 0 | 0 | 7 |
| Do. Curls (good to prime) | 0 | 0 | 9 | 0 | 1 | 3 |
| Walnut, American (logs) | 0 | 2 | 0 | 0 | 4 | 6 |
| Do. do. (planks and boards) | 0 | 2 | 0 | 0 | 7 | 6 |
| Italian, per foot superficial | 0 | 0 | 3 | 0 | 0 | 7½ |
| Black Sea, per ton | 6 | 0 | 0 | 12 | 0 | 0 |
| Satin Walnut (logs) per foot cube | 0 | 1 | 0 | 0 | 1 | 3 |
| ,, ,, (planks and boards) | 0 | 2 | 0 | 0 | 2 | 9 |
| Sequoia (Californian redwood), per foot cube | 0 | 1 | 9 | 0 | 2 | 0 |
| Whitewood, American (logs) | 0 | 1 | 3 | 0 | 1 | 6 |
| ,, ,, (planks and boards) | 0 | 1 | 6 | 0 | 2 | 9 |
| Quartered oak ,, ,, ,, | 0 | 2 | 3 | 0 | 4 | 0 |
| Kauri pine (logs) | 0 | 1 | 9 | 0 | 2 | 0 |
| ,, ,, (planks) | 0 | 2 | 3 | 0 | 2 | 9 |
| Jarrah (planks) | 0 | 2 | 3 | 0 | 2 | 6 |
| Lancewood spars each, fresh and large | 0 | 7 | 0 | 0 | 10 | 0 |
| Lancewood spars, ordinary to fair | 0 | 4 | 0 | 0 | 6 | 0 |
| Degame spars | 0 | 8 | 0 | 0 | 12 | 6 |

* The prices for wood are shipping prices. Ten per cent., approximately, should be added in order to arrive at the current trade prices.

### METALS.

| | £ | s. | d. | £ | s. | d. |
|---|---|---|---|---|---|---|
| IRON—Pig, in Scotland ton | 3 | 3 | 9 | 0 | 0 | 0 |
| Bar, Welsh, in London | 6 | 0 | 0 | 6 | 5 | 0 |
| Do. do. at works in Wales | 5 | 15 | 0 | 5 | 17 | 6 |
| Do. Staffordshire, in London | 6 | 5 | 0 | 7 | 10 | 0 |
| COPPER—British cake and ingot | 80 | 10 | 0 | 81 | 10 | 0 |
| Best selected | 81 | 10 | 0 | 82 | 10 | 0 |
| Sheets, strong | 83 | 0 | 0 | 85 | 0 | 0 |
| Chili bars | 79 | 0 | 0 | 0 | 0 | 0 |
| YELLOW METAL lb. | | 7d. | | | 7½d. | |
| LEAD—Pig | | | | | | |
| Spanish ton | 14 | 5 | 0 | 0 | 0 | 0 |
| English Com. Brands | 14 | 10 | 0 | 0 | 0 | 0 |
| Sheet, English, 6 lbs. per sq. ft. and upwards | 15 | 10 | 0 | 0 | 0 | 0 |
| Pipe | 16 | 0 | 0 | 0 | 0 | 0 |
| ZINC—English sheet ton | 31 | 0 | 0 | 0 | 0 | 0 |
| Vieille Montagne | 31 | 10 | 0 | 0 | 0 | 0 |
| Spelter | 28 | 10 | 0 | 28 | 12 | 6 |
| TIN—Straits | 117 | 15 | 0 | 0 | 0 | 0 |
| Australian | 118 | 0 | 0 | 118 | 10 | 0 |
| English Ingots | 120 | 10 | 0 | 121 | 10 | 0 |
| Banca | 114 | 0 | 0 | 0 | 0 | 0 |
| Billiton | 113 | 0 | 0 | 0 | 0 | 0 |

### OILS.

| | £ | s. | d. | £ | s. | d. |
|---|---|---|---|---|---|---|
| Linseed ton | 18 | 5 | 0 | 18 | 7 | 6 |
| Cocoanut, Cochin | 29 | 5 | 0 | 0 | 0 | 0 |
| Do. Ceylon | 25 | 15 | 0 | 0 | 0 | 0 |
| Palm, Lagos | 24 | 0 | 0 | 0 | 0 | 0 |
| Rapeseed, English, pale | 22 | 15 | 0 | 0 | 0 | 0 |
| Do. Brown | 21 | 5 | 0 | 0 | 0 | 0 |
| Cottonseed ref. | 16 | 5 | 0 | 17 | 0 | 0 |
| Oleine | 17 | 0 | 0 | 19 | 0 | 0 |
| Lubricating U.S. | 0 | 5 | 6 | 0 | 7 | 6 |
| Do. Black | 0 | 5 | 0 | 0 | 6 | 0 |
| TAR—Stockholm barrel | 1 | 6 | 6 | 0 | 0 | 0 |
| Archangel | 1 | 0 | 0 | 0 | 0 | 0 |
| Turpentine | 34 | 5 | 0 | 0 | 0 | 0 |

## TO CORRESPONDENTS.

NOTE.—The responsibility of signed articles, letters, and papers read at public meetings, rests, of course, with the authors.

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Letters or communications (beyond mere news items) which have been duplicated for other journals are NOT DESIRED.

We are compelled to decline pointing out books and giving addresses.

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## TENDERS.

[Communications for insertion under this heading should be addressed to "The Editor," and must reach us *not later than* 10 *a.m. on Thursdays.* N.B.—We cannot publish Tenders unless authenticated by the name and address of the sender; and we cannot publish announcements of Tenders accepted unless the amount of the Tender is given, nor any list in which the lowest Tender is under £100, unless in some exceptional cases and for special reasons.]

* Denotes *accepted.* † Denotes *provisionally accepted.*

BISHOPSTONE (Sussex).—For the erection of chimney-shaft, boiler-house, &c., Poverty Bottom, for the Newhaven and Seaford Water Company. Mr. F. S. Courtnay, engineer, Broad Sanctuary Chambers, Westminster:—

| | |
|---|---|
| Longley & Co. | £3,500 |
| King & Son | 3,350 |
| A. E. Nunn | 3,203 |
| Whitehead & Co. | 2,945 |
| Miles & Warner | £2,746 |
| Meredew & Wort | 2,639 |
| Bostel, Son, & Peattie, London* | 2,500 |

DEVONPORT.—For the erection of a dwelling house and offices at Alfred-road, Ford, for Mr. C. F. Hocking. Mr. Edgar M. Leest, architect, Public Hall Chambers, Devonport:—

S. Scott, Ford* ........ £220

DEVONPORT.—For alterations and additions to 21, Alfred-road, Ford, for Mr. C. F. Hocking. Mr. Edgar M. Leest, architect, Public Hall Chambers, Devonport:—

S. Scott, Ford* ........ £110

FORRES (N.B.).—For the erection of a house, West End. Mr. J. Forrest, architect, High-street, Forres:—

*Masonry.*—D. Ross, Tollbooth-street, Forres*
*Carpentry.*—G. Forrest, Mosset-place, Forres*
*Slating.*—A. Forbes, Tytler-street, Forres*
*Plumbing.*—Munro & Son, Urquhart-street, Forres*
*Plastering.*—J. & J. Munro, Aberlour*
*Painting.*—Arch. Macdonald, High-street, Forres*
*Grates.*—Smith & Son, High-street, Forres*
} £620

HADDENHAM (Bucks).—For the erection of house and shops, for Mr. Freeman Clarke. Messrs. W. F. Taylor & Son, architects, Aylesbury:—

| | | |
|---|---|---|
| Green & Co. | £1,287 | 0 |
| Webster & Cannon | 1,198 | 0 |
| W. W. Howland | 1,166 | 0 |
| Rose & Son | £1,080 | 0 |
| J. Holland | 1,060 | 25 |
| Folley, Blidlow* | 1,050 | 0 |

LEWES.—For the erection of a house on The Walland's Park Estate, for Mr. G. J. Wightman. Mr. H. Curtis Card, architect, Lewes:—

H. Cruse* (being erected at so much per cent. on prime cost).

LEWES.—For new Baptist Sunday School, for the trustees of the Eastgate-street Baptist Sunday Schools. Mr. H. Curtis Card, architect:—

| | | |
|---|---|---|
| Berry & Bussey | £1,125 | |
| R. Piper | £1,106 | |
| H. Constable* | £988 | 17 |

[All of Lewes.]

LONDON.—For the erection and completion of new Christchurch Schools and additions to the Bluecoat Schools, Caxton-street, Westminster, for the Vestry of St. Margaret and St. John, Westminster. Messrs. Beazley & Burrows, architects Messrs. Pryce Cuxon & Leigh, surveyors:—

| | £ | s. | Credit. |
|---|---|---|---|
| General Builders | £6,777 | 0 | — |
| Hockley & Sons | 4,750 | 0 | 30 |
| Wall & Co. | 4,861 | 0 | 10 |
| Minter | 4,715 | 0 | — |
| Martin Wells & Co. | 4,699 | 0 | 20 |
| Merredew & Co. | 4,615 | 0 | 20 |
| Haskins | 4,529 | 15 | 25 |
| Massom & Son | 4,493 | 0 | — |
| Nightingale | 4,515 | 0 | 30 |
| Braid, Patar, & Co. | 4,480 | 0 | — |
| Stimpson & Co. | 4,260 | 0 | 30 |

LONDON.—For enlargement of infants' department, Rolls-road School, for the School Board for London. Mr. T. J. Bailey, Architect. Mr. C. G. Downing, surveyor:—

| | |
|---|---|
| Johnson & Co. | £5,320 |
| Edwards & Medway | 4,763 |
| Outhwaite & Son | 4,547 |
| Smith & Sons | £4,527 |
| W. Downs | 4,396 |
| Stimpson & Co. | 4,280 |

LONDON.—For new shop front, 107, Rye-lane, Peckham, for Mr. C. Biucchi. Messrs. Shaw & Galetti, architects, 49, Finsbury-pavement, E.C.:—

| | £ | s. | d. |
|---|---|---|---|
| G. Parker | £275 | 0 | 0 |
| Swan & Son | 220 | 0 | 0 |
| Spreckley & Co. | 205 | 0 | 0 |
| C. Farley, Peckham* | £165 | 17 | 6 |

LONDON.—For the erection of premises in Johnson's-court, Fleet-street, for Mr. R. S. Cartwright:—

| | |
|---|---|
| J. Marsland | £9,965 |
| Howell J. Williams | 9,876 |
| Hornsey | 9,875 |
| Dove Bros. | 9,845 |
| Rider & Sons | £9,810 |
| Turtle & Appleton | 9,164 |
| Newton & Sons | 9,071 |
| Burman & Sons | 8,595 |

LOWESTOFT.—For the erection of a laundry at the workhouse, Oulton, for the Union Guardians. Mr. Alfred Clarke, architect, 126, London-road, Lowestoft:—

J. Welham, Commercial-road, Lowestoft* ..£975

MANCHESTER.—For the erection of residence and stabling, &c., at Fairfield, for Mr. Councillor James Pollitt, of Openshaw. Messrs. C. K. & T. C. Mayor, architects, 41, John Dalton-street, Manchester. Quantities by Mr. J. H. Stone, 53, King-street, Manchester:—

| | |
|---|---|
| Wm. Shaw | £3,337 |
| Burgess & Galt | 3,220 |
| Geo. Macfarlane | 3,216 |
| Megarity & Co. | 3,175 |
| Robt. Carlyle, jun. | £3,115 |
| Bullivant & Sons | 2,970 |
| E. & C. Jackson | 2,962 |

[*See also next page.*

NOTTINGHAM.—For the erection of a detached residence in Winchester-road, Sherwood, for Mr. J. F. Fox. Messrs. W. F. Taylor & Son, architects, Aylesbury :—

Wm. Marsh, Nottingham* ................£527

PONTYPOOL.—For the erection of four villas, Griffith's Town. Mr. B. J. Francis, architect, Abergavenny. Quantities by architect :—

| | | | |
|---|---|---|---|
| Lewis & Bradford | £2,103 14 | Sier & Denman.. | £1,540 0 |
| Jno. Morgan .... | 1,939 0 | F. C. Parfitt, Maindee, Newport, Mon.* .. | 1,520 0 |
| Ed. Francis...... | 1,750 0 | | |
| Jones Bros....... | 1,592 10 | | |

PONTYPOOL.—For alterations and additions to workhouse buildings, Panteg. Messrs. Lansdowne & Griggs, architects, Newport :—

| | | | |
|---|---|---|---|
| Stephens & Bastow .. | £19,994 0 0 | John Linton | £17,284 0 0 |
| Morgan .... | 18,228 6 8 | C. H. Reed.. | 17,255 0 0 |
| David Jones | 17,980 0 0 | Bailey Bros. | 16,779 0 0 |
| D. J. Davis | 17,955 0 0 | Richards, Newport* | 15,980 0 0 |
| Chas. Lock.. | 17,617 0 0 | | |

SOUTH SHIELDS.—For additions, &c., to engine-house at electricity works, West Holborn, for the Corporation. Mr. F. Rennoldson, architect, Union-chambers, King-street, South Shields. Quantities by the architect :—

| | | | |
|---|---|---|---|
| Robt. Allison | £2,622 12 2 | J. C. Nichol.. | £2,380 0 0 |
| S. Sheriff .... | 2,409 0 0 | W. Christie .. | 2,331 4 3 |
| W. Robertson | 2,400 8 11 | T. Lumsden, Jarrow-on-Tyne* | 2,296 0 0 |
| John Moore .. | 2,389 0 0 | | |

SOUTH SHIELDS.—For erecting new store, Imeary-street, South Shields, for Mr. J. W. Pratt. Mr. Fred. Rennoldson, architect, South Shields :—

| | | | |
|---|---|---|---|
| J. C. Nichol . | £1,702 0 0 | Wm. Christie | 1,561 12 0 |
| Robt. Allison | 1,700 0 0 | C. Henderson | 1,514 3 5 |
| S. Sheriff.... | 1,700 0 0 | Crawford & Sons ...... | 1,506 11 8½ |
| Wm. Wilson | 1,675 14 0 | John Moore, South Shields* | 1,481 0 0 |
| Alex. Ross .. | 1,660 0 0 | | |
| W. J. Robertson........ | 1,651 4 2 | | |

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| | | | |
|---|---|---|---|
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| Alex. Ross .. | 1,458 3 9 | W. J. Robertson, South Shields* .. | 1,388 13 2 |
| Robt. Allison | 1,446 11 8 | | |
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| | | | |
|---|---|---|---|
| G. H. Gibson .... | £2,391 0 | Green & Co., Aylesbury* .... | £2,163 10 |
| Webster & Cannon | 2,238 0 | | |
| Cook & Sons .... | 2,174 0 | | |

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| | | | |
|---|---|---|---|
| C. Williams .. | £4,257 17 0 | W. Chambers | £3,983 0 0 |
| H. & C. Spackman........ | 4,144 6 6 | A. J. Colborne | 3,641 10 10 |
| Flewelling & Huckson .. | 4,081 0 0 | [All of Swindon]. | |

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SWINDON.—For erection of bowling-alley at the Haydon-street Workmen's Club, for Mr. Howard Horsell. Messrs. William Drew & Sons, architects, Swindon :—

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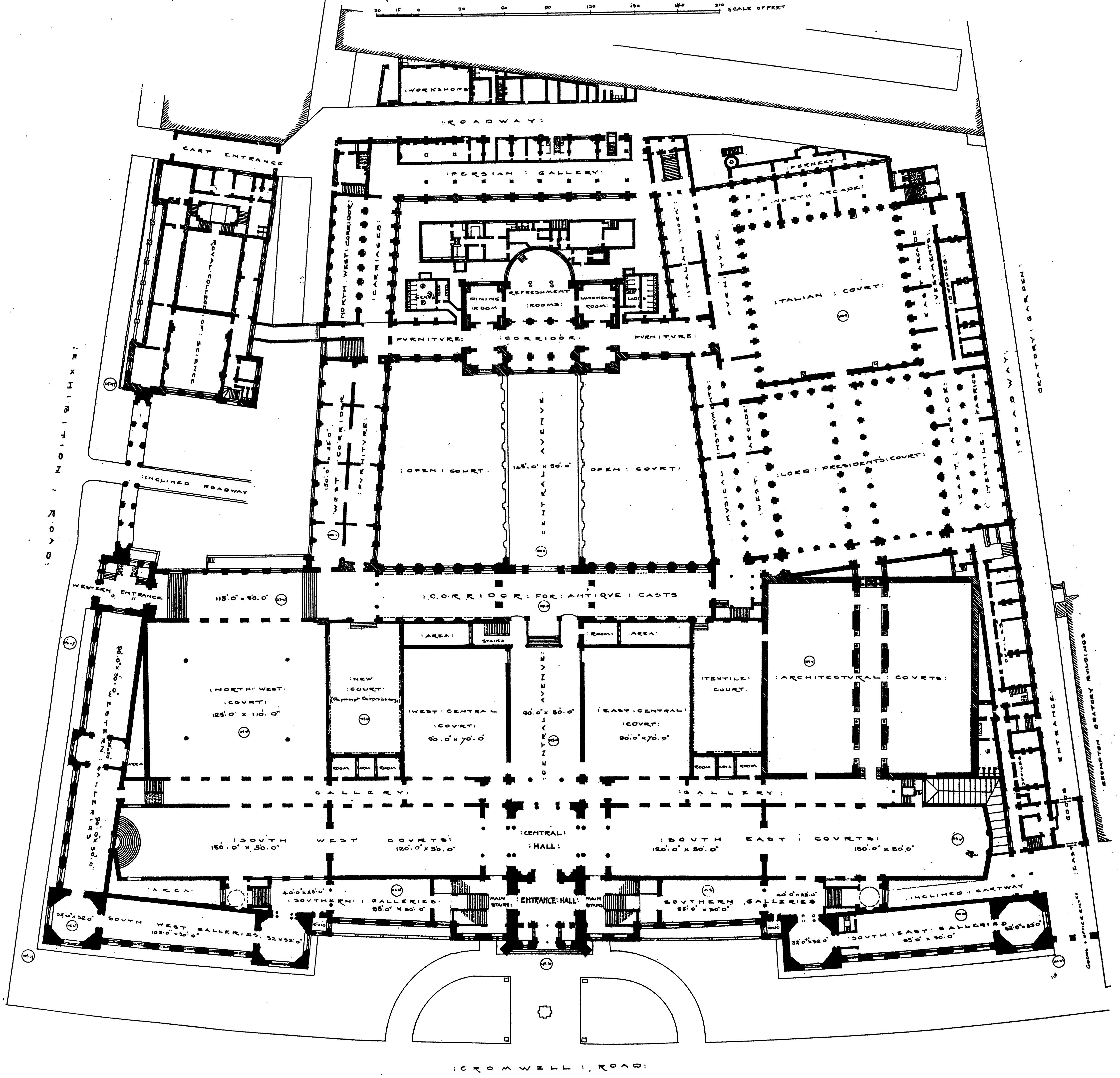
30 15 0 30 60 90 120 150 180 210 SCALE OF FEET
:WORKSHOPS:
:ROADWAY:
CART ENTRANCE
:PERSIAN : GALLERY:
:NORTH · WEST : CORRIDOR:
:CARRIAGES:
ROYAL : COLLEGE : OF : SCIENCE
GENTS
DINING ROOM
REFRESHMENT :ROOMS:
LUNCHEON ROOM:
LADIES
FURNITURE:
:CORRIDOR:
FURNITURE:
:ITALIAN : WORK:
:FURNITURE
:FERNERY:
NORTH ARCADE:
ITALIAN : COURT:
EAST ARCADE
:VESTMENTS:
:OFFICES:
:ROADWAY:
ORATORY : GARDEN
:EXHIBITION : ROAD:
:INCLINED ROADWAY
150'.0" x 25'.0"
:WEST : CORRIDOR
:FURNITURE:
:OPEN : COURT:
145'.0" x 50'.0"
CENTRAL AVENUE
:OPEN : COURT:
:MUSICAL : INSTRUMENTS:
:WEST : ARCADE:
:LORD : PRESIDENTS : COURT:
:EAST : ARCADE:
:TEXTILE : FABRICS:
WESTERN ENTRANCE
115'.0" x 50.0"
:C.O.R.R.I.D.O.R : FOR : ANTIQUE : CASTS
:AREA:
STAIRS
:ROOM:
AREA
:ROOM:
AREA
:NORTH · WEST:
:COURT:
125'.0" x 110'.0"
:NEW
:COURT:
(Occupied by Science Library)
ROOM
AREA
ROOM
:WEST : CENTRAL
:COURT:
90'.0" x 70'.0"
90'.0" x 50'.0"
:CENTRAL : AVENUE:
:EAST : CENTRAL:
:COURT:
90'.0" x 70'.0"
:TEXTILE:
:COURT:
ROOM
AREA
ROOM
:ARCHITECTURAL : COURTS:
OFFICES
OFFICES
ENTRANCE
GOODS
BROMPTON ORATORY BUILDINGS
:GALLERY:
:GALLERY:
90'.0" x 50'.0"
:WESTERN : GALLERIES:
90'.0" x 50'.0"
AREA
:SOUTH WEST COURTS:
150'.0" x 50'.0"
120'.0" x 50'.0"
:CENTRAL:
:HALL:
:SOUTH EAST : COURTS:
120'.0" x 50'.0"
150'.0" x 50'.0"
:EAST
:AREA:
40'.0" x 25'.0"
:SOUTHERN : GALLERIES:
85'.0" x 30'.0"
MAIN STAIRS
:ENTRANCE: HALL:
MAIN STAIRS
SOUTHERN GALLERIES
65'.0" x 30'.0"
40'.0" x 25'.0"
:INCLINED : CARTWAY
32'.0" x 32'.0"
SOUTH WEST GALLERIES
105'.0" x 50'.0"
32 x 32'.0"
32'.0" x 32'.0"
SOUTH : EAST : GALLERIES
95'.0" x 30'.0"
32'.0" x 32'.0"
GOODS & OFFICE ENTCE
:CROMWELL : ROAD:

May 1899.

Aston Webb. A.R.A.
Architect

## ·GROUND · FLOOR · PLAN·

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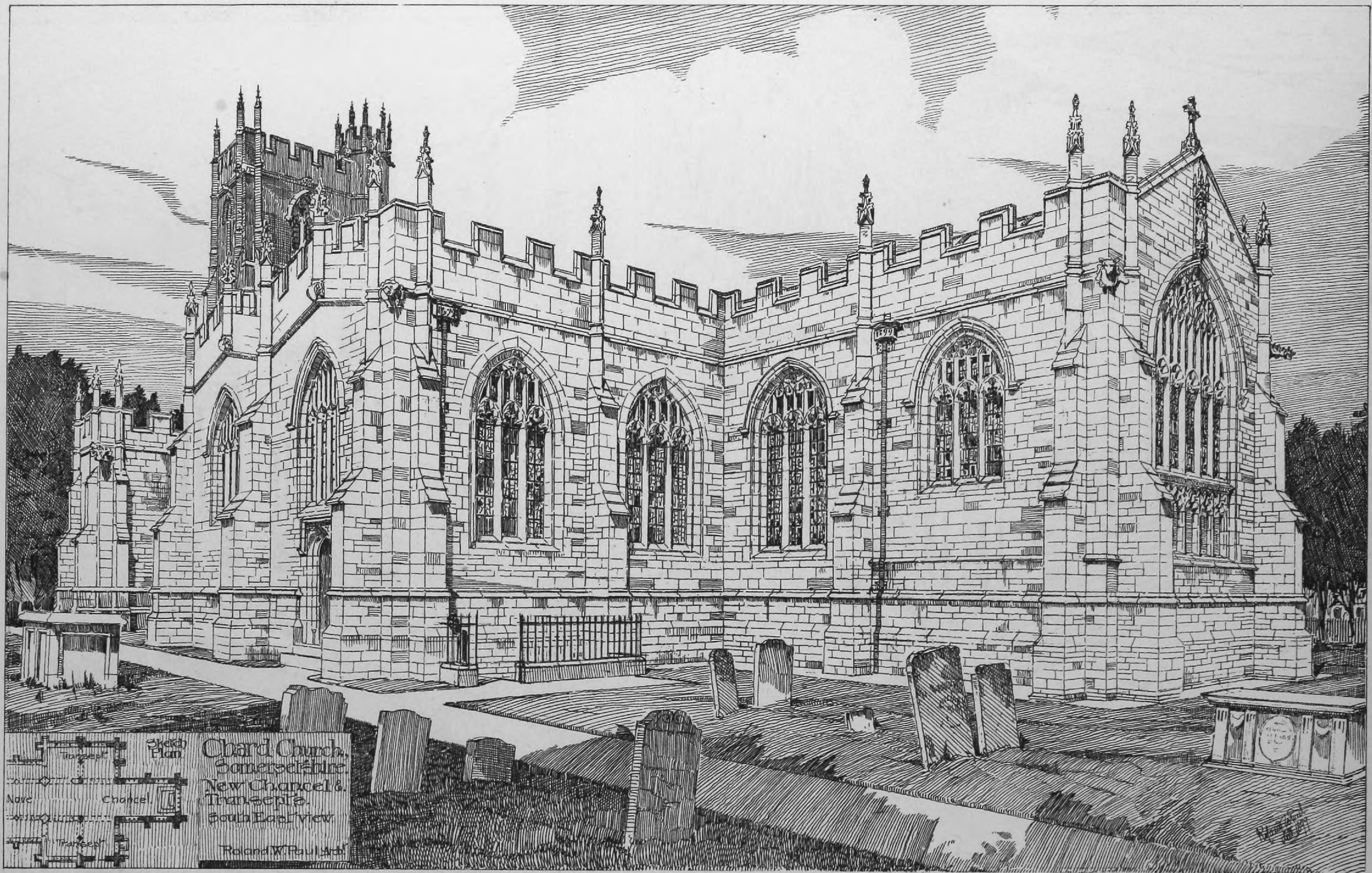
Sketch Plan
Transept
Nave
Chancel
Transept

Chard Church,
Somersetshire.
New Chancel &
Transepts.
South East view.

Roland W. Paul, Archt.

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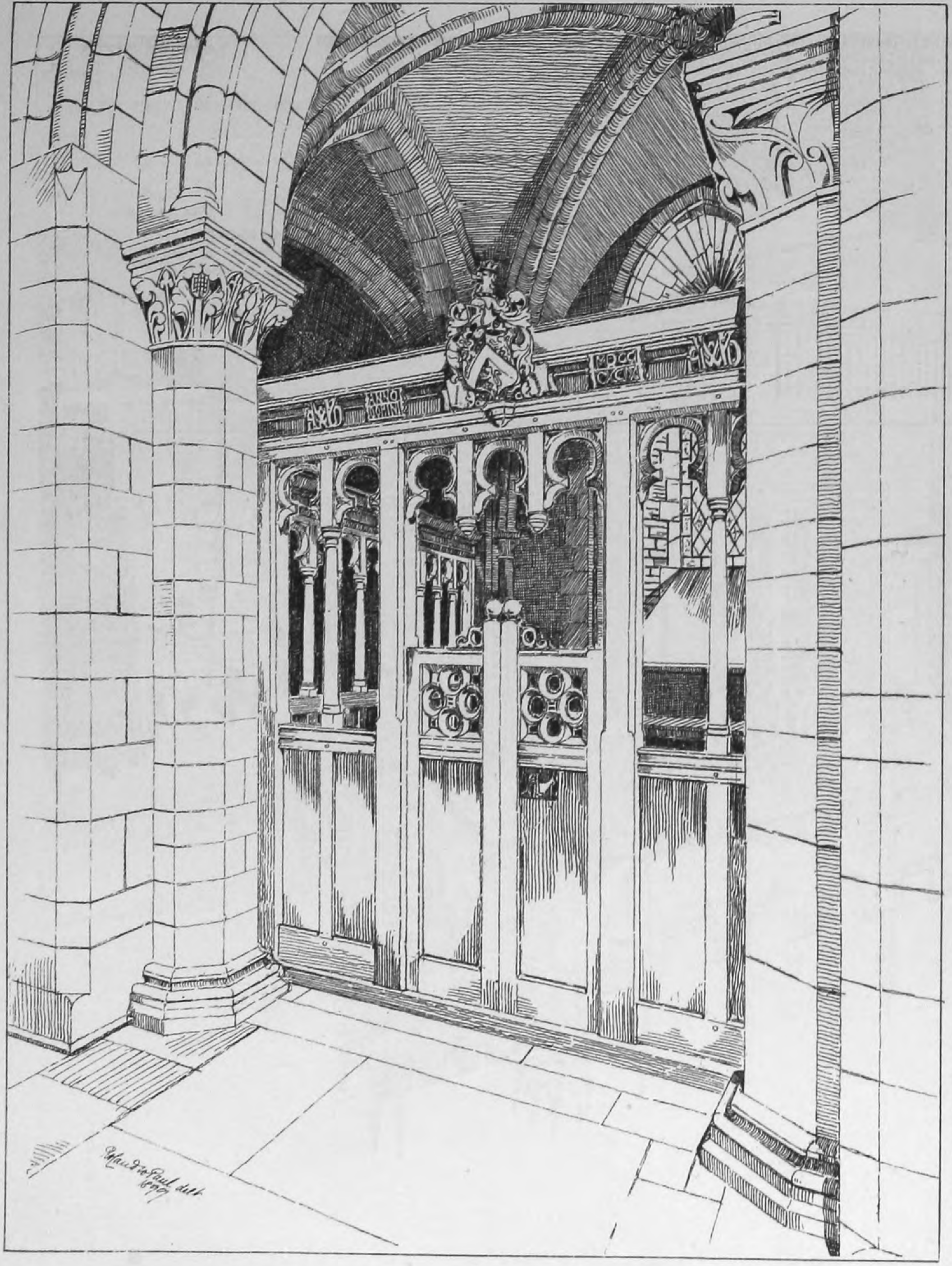
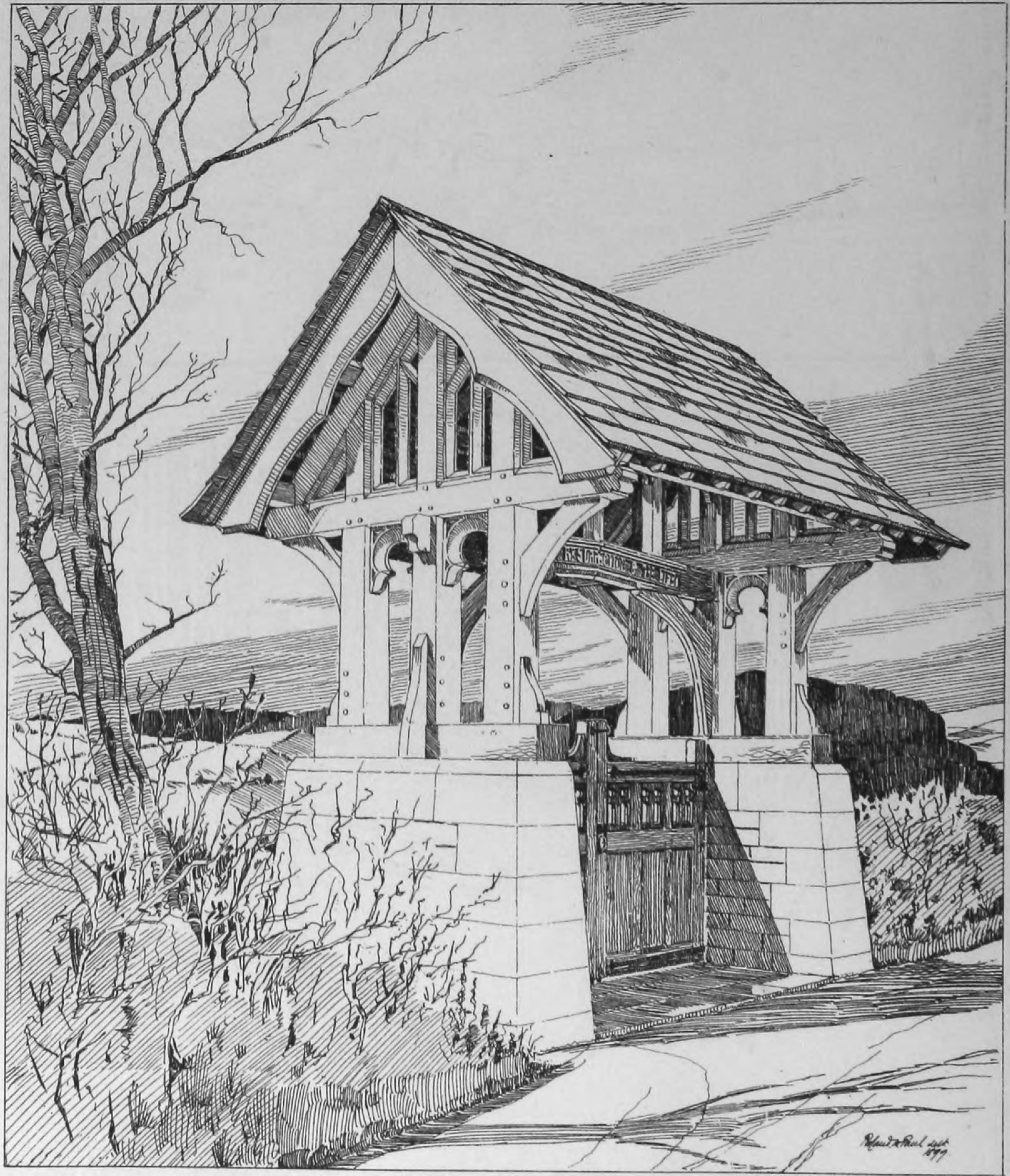


NEW SCREEN, ABBEY DORE CHURCH.—MR. R. W. PAUL, ARCHITECT.



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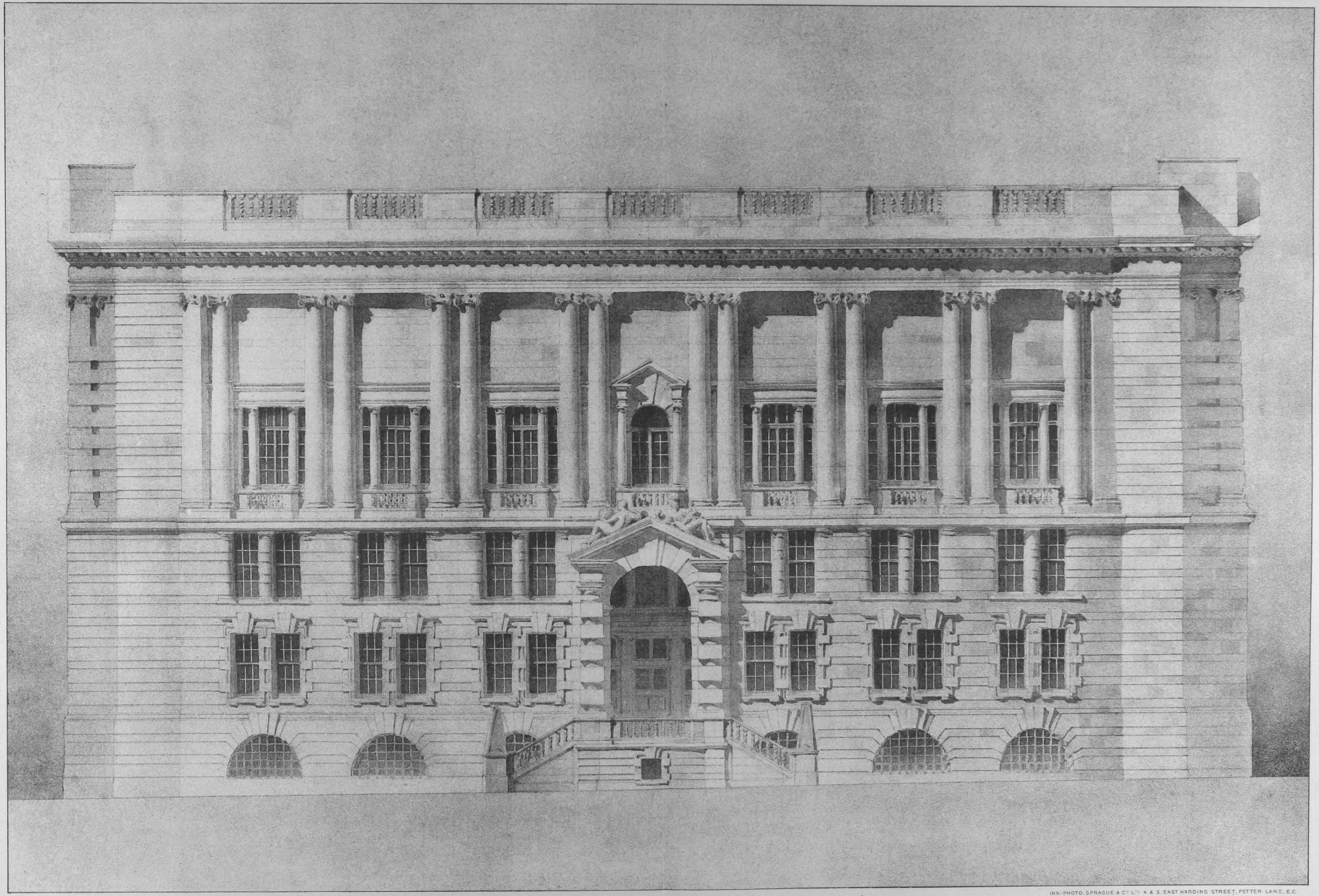
LYCH-GATE, WOOTTON FITZPAINE, DORSET.—MR. R. W. PAUL, ARCHITECT.



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# The Builder.

VOL. LXXVI. No. 2939. JUNE 3, 1899.

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Institution of Mechanical Engineers.—Mr. Basil Slade, Architect ........ *Two Single-Page Ink-Photos.*
Finsbury Pupil Teachers' Centre, Offord-road, N.—Mr. T. J. Bailey, F.R.I.B.A., Architect ........ *Single-Page Ink-Photo.*
An Old Folks' Home, Hitchin.—Mr. Walter Millard, A.R.I.B.A., Architect ........ *Single-Page Ink-Photo.*
Village Post Office, Broadway, Worcestershire.—Messrs. E. Guy Dawber and Whitwell, Architects ........ *Single-Page Photo-Litho.*
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## *A Book on Westminster Abbey.*

WESTMINSTER ABBEY has acquired such an exceptional position as the historical shrine of the nation, that comprehensiveness has come to be regarded as its special characteristic. We wish that this, the latest of works upon the subject,* had shared in that quality, for there is room for a treatment of the Abbey as a whole up to the present day, without any slurring over or omission of all that has been done since the sixteenth century. Incongruous as many of the additions of a later date have been, they are in the main *bonâ-fide* representations of the art, and often of the very best available, of each subsequent generation, and as far as the monuments are concerned there are among them works which would command admiration in another position. There is no standpoint from which the Abbey can be properly regarded as the product of even one century, and it becomes hardly possible to logically condemn the eighteenth century sculptor for cutting away the arcading of Henry III. when we find the latter's architects clearing away the old church of the Confessor. It is wiser to accept this great deposit of history as it stands, and let it be a temple of silence and reconciliation for the clashing standards of taste as well as of policies and creeds.

The backbone of the present book consists in a fine collection of photographs by Messrs. Bolas, of the buildings and monuments, seventy-five in all, with two diagram plans and two sections by Mr. Micklethwaite, to illustrate the successive dates of the building. The text consists of three sections: historical, by Mr. Henry J. Feasey (sixty-two pages); architectural, by Mr. Micklethwaite (twenty-seven pages); and a third on the mediæval monuments by Mr. Edward Bell (thirteen pages). A certain unavoidable want of unity results from the separation of the two first sections; the reader has an uneasy feeling that one account may not exactly bear out the other in regard to dates, while a certain amount of repetition is inevitable. In reality, two different classes of readers may be said to be catered for, and Mr. Feasey, addressing the more popular audience, glides rapidly over the historical part, especially after the mediæval period, one half-page taking us from the Henry VIII. to the Diamond Jubilee, in a concluding paragraph that closes too rapidly the long perspective of the Abbey as one of the centres of English life. In dealing with the dissolution of the Abbey the writer launches out into a eulogy of the monks that gives rise to the supposition that the order of St. Benedict suffered for the sins of others, otherwise it is difficult to understand how the extinction of so valuable a community was acquiesced in by the nation.

Mr. Micklethwaite is more philosophical, and scientifically traces out the gradual alteration in the habits of the monks from common to individual living, the change exercising a marked influence on their architectural surroundings. After pointing to the Roman country house as the derivative of monastic buildings, he says:—

> "The essence of the monastic plan, as was that of the villa, is the square enclosed court with portico round, which formed at once the general living place and the approach to the various apartments arranged round it."

While he looks on the chapter-house as the successor of the Tablinum.

The many religious houses founded in England during the twelfth century met, he tells us, a real want.

> "They were crowded with monks more quickly than they could be built. But this did not last long. After the middle of the fourteenth century there were scarcely monks enough to occupy the buildings; and at the suppression in the sixteenth we find but twenty or thirty in a house built for the accommodation of hundreds. With the decrease of numbers came an increase in the importance of the individual monk—he became a dignitary, and his abbot a prelate. The life of a Benedictine in the fifteenth century was more that of a canon than that of a monk, according to the ideas of earlier times, and the resemblance was increased by all monks receiving holy orders, which had not been the ancient custom. The essence of the Benedictine rule was the common life, but at last this was quite lost in some places. As early as the twelfth century the abbots of the greater Benedictine abbeys lived apart in their own houses, and had their separate property, as indeed their position as great secular lords compelled them to do. Then other officers, in gradually increasing numbers, had their separate apartments, and the custom which there was of assigning money to special offices put money into their hands, any balance of which, after the calls of their office had been met, seems to have been at their own disposal. Then we find ordinary monks receiving pensions out of the common property, and owning money and goods, some of them being rich men who are recorded as benefactors of their own churches. From this to the provision of a separate dwelling for each man is not far, and it was certainly reached in France in the seventeenth century. I cannot positively say that it was in England in the sixteenth, but I much suspect that it was at Westminster, where there were many private apartments, some of them being complete houses."

The provision of private apartments began with the Infirmary, which was a place not only for the sick but for all those who through old age or for other causes were not able to take their part in the duties of church and cloister; and the readiness with which some of the monks found excuses for residing in the Infirmary was a subject of contemporary satire. At Westminster the Infirmary was done away with altogether, and its place taken by a number of separate houses ranged round a cloistered court.

> "A like change seems to have been made in the dorter. Originally it was a long open gallery, in which the beds were arranged in rows. Then the cubicles became chambers, and at Westminster and some other places a number of houses and chambers were crowded round wherever there was space outside the dorter, with doors from it to satisfy that clause of St. Benedict's rule which says that a monk must always sleep in the common dorter."

Mr. Micklethwaite points out the traces of these alterations at Westminster, and regrets the destruction of blocks of chambers to which he ascribes an earlier date than had been hitherto given to them.

---

* "Westminster Abbey Historically Described." By Henry John Feasey. With an account of the Abbey Buildings by J. T. Micklethwaite, V.P.S.A., Architect to the Dean and Chapter. An Appendix on the Mediæval Monuments by Edward Bell, M.A., F.S.A. And seventy-five plates. London: George Bell & Sons, 1899.

The prominence given in this work to the monastic buildings emphasises what we are apt to overlook in the present day pre-eminence of the church itself—namely, that the latter was, after all, only the leading apartment in a group of buildings devoted to a special purpose, and that in a sense, in early times at any rate, the focus of the life of the community was to be found in the cloister.

> "The building of an abbey, though laid down from the first on a regular plan, often took many years. . . . . The ordinary course seems to have been that on settling in any spot the monks made use of any shelter they could get, and then cleared the ground and set out their future house as they hoped to build it, and put up temporary wooden buildings in the places of the permanent ones, which where then built quickly or slowly, according to the means of the house or the generosity of its benefactors. . . . ."

The further progress of the house may be summarised as follows:—The church came first, generally the eastern half only, to accommodate the services; then the cloister and the "regular" buildings round it. If the nave of the church was not finished, enough of its wall next the cloister was built to allow of the completion of that walk, usually the north. Next came the east side, with the chapter-house and monks' cloister. If the nave of the church had not been finished before, it was generally gone on with after the completion of the square of the cloister. Then the Infirmary was built towards the east, and last the buildings and the outer court towards the west, guest houses, workshops, stables, and the like, many of which remained wooden buildings at the Suppression. Bearing in mind these general lines, the historical development of the Abbey can be traced out with real interest and profit, because we see the architects of those ages proceeding on lines of natural growth and governed by the necessities of providing accommodation varying with each generation, hampered by the same restrictions of older buildings, continuous occupation, and want of funds, such as we know so well in our present day practice. Thus the history of the Abbey becomes no longer a matter of dry dates and dead royalties, but the solution of a series of interesting problems in an artistic manner.

Looking first at the site, Mr. Feasey endeavours to give us a picturesque account of the spot on which the Abbey was founded, the exact facts of which are difficult to distinguish from fiction. As with so many great buildings, the existing one is but a link in a long chain of occupants of a site marked out by some natural advantages from the first. As with St. Paul's, we have the tradition of a heathen temple preceding the church; while the mythical consecration by St. Peter, 610 A.D., is told at length and ascribed to the thirteenth century. Coming to actual facts, we have a genuine charter of 785 A.D., by Offa, King of Mercia, who had founded St. Albans in the preceding year. Mr. Feasey regards it as tolerably certain that King Edgar (958-975) and St. Dunstan, by bringing twelve monks, probably from the Benedictine Monastery of Glastonbury, and planting them at Westminster, practically founded the Abbey, although down to the time of the Confessor it does not appear to have been in anything like a flourishing state. This may be ascribed in part to the Danish rule of twenty-eight years, which ended in 1042, when Edward the Confessor came to the throne.

> "There are foundations under the turf of the north green some of which may belong to the earlier Saxon abbey, but there is nothing of which we can be sure, and we do not know even whether its buildings were of stone or wood."

The Confessor took up his abode close by, building a palace, the remains of which existed up to the Great Fire of 1835. He then turned his attention to the building of the Abbey. Mr. Feasey considers it probable that the Abbey had a twofold character, namely, that of Royal chapel attached to the new palace, and that of church of the ancient Benedictine monastery, the pious inclinations of the King marking it out as his prospective burial-place. The unique character of the building was thus early determined, while it is singular that the last characteristic, that of a great burial-place, should have come with time to predominate over the two former.

The Confessor's buildings are described as in a mode of construction then a novelty in England, *i.e.*, in the Norman style; the older Romanesque, of which a few nearly complete examples still exist, as at Bradford-on-Avon, Worth, and Escombe in Durham, having been hitherto the fashion of all English churches. Nothing now remains of this Norman church save the remnant of one of the choir piers on the north side (which can be seen by raising a square trap in the floor of the sacrarium), and a doorway high up on the southern face of the transept, together with some portions of the monastic buildings. The church as then built was cruciform in plan, comparatively low in height, its eastern portion terminating in a semicircular apse. It also appears to have had a massive central tower, with a couple of towers at the west end.

There are two descriptions of the church, the earlier written immediately after the death of Edward, when his work was scarcely finished, and the other about 1245, when the work of rebuilding was already begun. Both are printed in Dr. Luard's volume of "Lives of Edward the Confessor" in the Rolls series.

The earlier one was addressed to Queen Emma, and is described as certainly not later than 1074, when she died. Mr. Micklethwaite remarks that the passage is full of difficulties, as to the obscurity of an uncertain text and an inflated literary style must be added the writer's ignorance of the terms of building. His rendering of the passage is as follows:—

> "The main building is rounded, and built with very high and uniform arches of ashlar work. And the aisle enclosing that part is strongly vaulted with a double arch of stone springing from either side right and left. Then the cross of the church, which is contrived to go over the middle of the choir of the singers of the Lord, and by its double abutment on one side and on the other to support the lofty top of the central tower, starts first with a low and strong arch, then spreads out with many winding stairs, artfully going up, and is continued with plain walling up to the wooden roof, which is well covered with lead. Below and above, chapels are put out to be consecrated by their altars to the memories of apostles, martyrs, confessors and virgins. All this vast and complicated work was placed far enough eastwards of the old church for the brethren using it not to be interrupted in service of Christ, and also that there might be a sufficiently spacious approach between them."

Sir Gilbert Scott thought the description to mean that the aisles were vaulted at two levels—that is, above the triforium as well as above the ground story. Our author thinks that it is only an involved attempt to describe a vault by a writer used to arches only. The Bayeux tapestry picture is regarded as uncertain, but it is pointed out that the four angle turrets of the central tower are made very conspicuous, while the lower turrets shown may be those at the outer angles of the transepts. Chapels in two stories opening off the triforium exist at Gloucester; the description implies that they had not yet been consecrated.

> "The new work was built eastwards of the older Saxon church, which continued in use by the monks during the building; and afterwards it seems that they were joined by what is called a spacious intervening vestibule, so that the old became the nave, and the new the choir of one church."

More than this, Mr. Micklethwaite maintains, cannot have been done by the Confessor.

Whether while the choir was in building other works were begun by the Confessor is uncertain. There is early Norman work all through the building on the eastern and northern sides of the cloister, and it has usually been attributed to him. Mr. Micklethwaite argues that as he left the Abbey well endowed, the work need not have stopped at his death, and that it is likely that the choir was first of all got ready, and then that the other buildings were gone on with. The next step was to take down the old Saxon church, and to build a nave corresponding to the Confessor's choir. This had western towers, and Mr. Micklethwaite throws out the interesting idea that the peculiar form of the lower part of the present towers, which many students must have noted, may be due to inheritance from their predecessors, and even that some of the older work may be hidden beneath the present casing. The building of the nave was a great work, and probably took many years. It seems to have been finished about 1150. A space of seventy years brings us to the laying of the foundation-stone of the old Lady Chapel by Henry III. when a boy of thirteen. This was the work of the Abbey aided by the subscriptions of the outsiders, to whom Abbot Humez granted an indulgence. It was of the newer fashion, and for 200 years stood as part of the rebuilt church, but its plan and form were ruled by the old to which it joined on. The old Lady Chapel ended in a three-sided apse, the foundations of which have been found close to the great piers at the east end of the present chapel, which, leaving out the aisles and secondary chapels, agrees with it in plan. It is argued that the apse of the Confessor's church and the aisles round it, from which the Lady Chapel was entered, must have been near where the later ones are.

The rebuilding extended over twenty-four years, 1245–1269, according to Sir G. Scott. Mr. Micklethwaite is inclined to reduce the period, as the new chapter house was in use in 1253, and he considers that its four-light windows show an advance in style on the church, implying a rather later date. He believes that the north transept was the first part begun, and that the work there was kept well in advance on the south side, where the chapter house is.

Beginning with the north transept would cause less inconvenience to the daily life of the monks and in the use of the old church Mr. Micklethwaite considers that evidence is to be found of this in the triforium arcade, as all round the presbytery and the south transept the outer order of the arches varies in detail in a regular succession which had not been fixed when the north transept was built. Some of the caps also in the latter are carved, while all elsewhere in the triforium are moulded. Some special photographs illustrate this point. In 1261 the work up to that time was reckoned to have cost 29,345*l.* 19s. 8d. in the money of the time—equal to half a million now. We are given an interesting glimpse of how the funds were raised for church building in those days.

> "The enormous exactions by Henry III. have left their lasting traces on the English Constitution in the institution of the House of Commons, which rose into existence in consequence of the king's lavish expenditure on the Abbey."

Exactions from the Jews, from wealthy City burghers who would be barons, and the holding of compulsory fairs to the detriment of other markets, formed fruitful resources.

> "The new work was limited to the east of the already existing Lady Chapel, which was retained; the position of the transept was fixed in its place by the square of the cloister. The width of the main building was ruled by that of the Norman choir, to which the new work was joined on, and this with the cloister fixed the width of the aisles.
>
> Nevertheless the new building was larger in all possible directions than the old one. A ring of chapels was added round the east end. The transepts are longer and have aisles on both sides, the west on the south being carried over the cloister in a way which, I believe, is unique, because it might not cut into it. The new work rose above the old by, it would seem, the whole height of the clearstory.
>
> This work extended from the Lady Chapel on the east to the bay beyond the crossing on the west, thus covering the western aisles of the transepts. But the last bay was carried up only to the height of the old work; that is, that of the ground story and triforium of the new. The clearstory window on each side there has, as Sir G. Scott pointed out, the eastern jamb of this period and the western of the next. Temporary buttresses were no doubt put to support the great arches of the crossing until the clearstory was continued.
>
> Outside the church this work included the chapter house before mentioned, which was certainly built on a new site, the revestry, so much of the cloister as lay within the south transept, and its east wall to beyond the chapter house door.
>
> The next work was the rebuilding of that part of the western arm of the church which belongs to the choir, and one bay more in the ground story and triforium. The corresponding bays of the north walls of the cloister were rebuilt at the same time."

This portion has always been attributed to Edward I., but our author believes it is due to his father, and argues that, "while it was a distinct work, there was no interval." It shows only such slight alterations as might be made in the course of the work. "The plan of the pillars was improved, bronze bands were used to the shafts instead of marble, and a better treatment of the spandrels of the wall arcade was introduced, but the general feeling of the work is the same." It seems most likely that the first work was finished, or nearly so, in 1261, and that the choir as far west as the pulpit, or a little beyond, was built between that date and 1269, when the monks first sang the service in the new church on October 13. The nave was still of the twelfth century, one bay between being new up to the height of the old work, the clearstory jambs being left as before.

The story of the rebuilding of the nave is difficult to read, because, though it was spread over so many years, the design once laid down was kept to and the details not changed. "The design," says Mr. Micklethwaite, "is that of Henry III. work continued, and the details seem to me to belong rather to the fourteenth century than to the fifteenth. As early as 1342 we find a good deal of work going on in the nave. It is called 'new work in the old church,' and the account includes for whitewashing the walls." Mr. Micklethwaite thinks that at this time the intention was to modernise the old church, as at Norwich and Peterborough about this time, and he points out that most of the items seem to refer to windows. It is not, however, he says, until 1388 that we find any account for the pulling down of the old work. From that time the work seems to have gone on steadily but slowly all through the reign of Richard II. He is described as having erected a wooden porch to protect the delicate stonework of the north transept front, the entrances known as Solomon's Porch. "It was gorgeously decorated within, the walls covered with paintings, and three large pointed windows rose above its elaborate central door, beyond which the wooden porch projected 17 feet." This reads as a delightfully mediæval erection, such as Burges alone of modern mediævalists would have done justice to.

The nave was scarcely finished before the thirteenth-century Lady Chapel was pulled down to make way for the new Lady Chapel of Henry VII.—begun 1503 and finished 1519.

> "Meanwhile, changes had been going on in the other buildings of the Abbey which must have greatly altered the appearance of the place, owing to the provision of private apartments and even complete houses for individual monks. The work was chiefly of timber, and within this century much of it has been destroyed."

The work which was evidently addition to the stone buildings was, Mr. Micklethwaite believes, thought by most to be later than the Suppression in date, as indeed some of it was; but a good deal was older. There would be enough chambers to give his own apartment to every monk, for they were in the later years of the Abbey only about thirty in number.

It is significant that by some of these alterations the light was taken away from the older monks' parlour, from which it may be inferred that by that time the use of the parlour as the ante-room to the cloister, beyond which strangers who had business with any of the monks might not go, was no longer cared for, as

> "the common privacy of the cloister had given place to the individual privacy of each monk in his chamber or study."

Mr. Feasey gives us particulars of the subsequent history of the church.

In January, 1539-40, the Abbey was surrendered by Abbot Boston, who was made the first Dean, it being a cathedral until 1550. The revenue at that time was about 80,000*l.* of our money.

In 1556 it was refounded by Queen Mary, John de Feckenham being installed as abbot with thirteen monks. He restored the shrine of the Confessor, with the cornice and curious wooden top, which it still possesses. Three years later came the final Dissolution.

> "Although the early years of the sixteenth century saw the completion of the west front and central door, the two towers remained at about one half of their present height, without a gable to the front, until the time when the western façade was completed under the superintendence of Sir Christopher Wren, as may be seen in Hollar's views. Early in the eighteenth century Wren made drawings for the completion of the towers. His offer was accepted, and the work was brought to a conclusion about 1740."

In regard to the latter, Mr. Blomfield in his "History of the Renaissance in England," says that Hawksmoor succeeded Wren as Surveyor to the Abbey in 1723, so that probably no more than the successful general outlines of the towers is to be ascribed to Wren, and the grotesque detail must be due to the pupil. We could wish, however, that Wren's design for the central spire on the lantern at the crossing, which he began, had been given, as it is somewhat a rare print; also it would have been interesting to have had the question of the responsibility for the cutting back of the old masonry of the exterior of the church into curious semi-Gothic detail cleared up. It is part of the partial treatment of the book that Cottingham, to whose zeal Sir G. Scott pays a tribute, receives no mention, though his publication of Henry VII.'s Chapel is one of the most laborious, and, according to his light, thorough of architectural books. Blore, who is responsible for the pierced parapet of the Abbey, is also ignored, and while there is a reference to Sir G. Scott's "fostering care" we do not think he would have liked it to be said that he *rebuilt* the chapter house. In regard to the latter, Mr. Waterhouse, in an Academy lecture on the Abbey, drew attention to the scrupulous care of his restoration in this instance, as when he sacrificed his own design on the discovery of evidence of the old in the course of the work. As to the careful and artistic work of Mr. Pearson, it is referred to barely at all, and then also as rebuilding. We shall have to wait for his life, probably, to give us details, such as Scott's autobiography gives us, of his interesting and important work. The recovery by him of such a feature as the shaft respond of the flying buttresses at the east end, a feature common in France, is one well known point of his valuable work.

We have left ourselves no space in which to deal adequately with Mr. Bell's section on the monuments. It must suffice to say that a fine collection of the earlier monuments are given, one or two Elizabethan ones appearing more or less by chance, for, as we have already said, the scope of this section is too limited. Mr. Bell has drawn on Sir G. Scott and Burges for his clear and interesting notes on the varied monuments, commencing with the shrine of Edward the Confessor and ending with the tomb of Sir Francis Vere.

## NOTES.

Hellenic Society.

AT the meeting of the Hellenic Society on Thursday, the 25th ult, Professor Gardner read a very interesting paper on the subject of scenic painting in the Greek Theatre. Without entering into the arguments on the vexed question as to whether the principal actors in the Greek drama acted their parts on a stage or in the orchestra, he said that he should assume the theory that the raised stage had a real existence and was the place for the actors, and that there was a painted scene in the rear of the stage. References to scene-painting and scene-painters in Greek literature left no doubt that there was such an art, but it must not be supposed that it had any relation to the realistic representation of a scenic background, such as we are accustomed to see in the modern theatre. There was no evidence that the Greeks had any such feeling for the beauty or sentiment of natural scenery as exists in our own day. In art, at all events, the human interest was everything to them. In vase-paintings there was never any such thing as an attempt at the actual representation of a landscape or other surroundings of the figures; there were only symbolical indications; a column indicated a temple, a ragged line indicated a rocky ground, a series of waved lines was a symbol of the sea, and a single branch or spray of conventional foliage was taken to indicate a grove. The actual work of the scene-painter in the Greek theatre would probably be, in the first place, the representation of the architectural background. The back of the scene was always a building, with three doors by which the actors entered. Part of the business of the scene-painter would be to paint the columns and other details in a wooden erection into the semblance of a complete architectural screen. In addition to this, the *periakti*, or turning screens at each extremity of the stage, would probably be painted with symbols indicating the nature of the locality, such as we see on vases, and which would be accepted by the audience as sufficient indications of locality. A tower painted on the face of the *periaktos* might indicate a town, and if the action were changed to the seaside, a turn of the *periaktos* would reveal a dolphin or some other symbol of the sea as an indication of the change of scene. Further than this he did not believe that Greek scene-painting ever went.

### Romsey Abbey.

It is rather with regret than surprise that one hears that repairs are seriously needed to keep the grand Norman church of Romsey Abbey in a state of security. The most pressing matter is said to be the repair of the roofs of the South Chancel aisle and the South Chantrey, which were inefficiently restored two or three centuries ago, and are now in a very bad state. Nothing in the way of "restoration" in the usual sense of the word is contemplated—only such work as is necessary to keep the building in repair; but the construction of the new roof will enable the triforium arches on the south side of the chancel to be opened; and if it is possible to provide funds subsequently for repairing the roofs of the north and south aisles, this will facilitate also the opening of the triforinm arcading in the nave. The work is under the superintendence of Mr. Lewis Karslake, architect.

### York Minster.

The announcement that a sum of fifty thousand pounds is required for repair and restoration to York Minster, and among other things that the carved finials, pinnacles, and crockets which must be restored are "in number and delicacy overwhelming," sounds rather alarming, even though the work is to be under the conservative care of Mr. Bodley. If pinnacles and finials are in a dangerous state, and liable to come down, of course they must be renewed. But if there are cases where they are merely weatherworn and the carving wholly or partially obliterated, surely it would be better for the present to leave them as they are. The worn work is of more value than a new imitation.

### The Plasterers' Strike.

As will be seen from our report in another column, the meeting of the representatives of the Master Builders' Association and the National Association of Operative Plasterers, which took place on Tuesday last, has resulted in the adoption of an agreement on both sides which appears in itself to be satisfactory, if only the Plasterers' Association will abide by it. Their action in the past does not, unfortunately, lead one to have much faith in their promises for the future; and it may be observed that in undertaking to discontinue the boycotting and blacklisting of builders' firms against whom they had complaints, the plasterers refused to admit the accuracy of the allegations on the subject, the evidence for which is in fact absolutely irrefutable.

### Architectural Education for Women.

It is announced that at the Paris Ecole des Beaux-Arts it is intended to open, but not till next year, three special ateliers for women—for painting, sculpture, and architecture respectively. Up to the present time only one lady pupil has entered her name as an intending student in architecture, but it is expected that the opening of the new atelier will soon attract others.

### Railway Stations.

As we are now nearing the time of year when what is called the travelling public is moving about on the railways, it is desirable again to draw attention to the need of better indications at railway stations of the different offices, platforms, &c. Every office and platform should be indicated by large bold letters. If this were done the porters would be saved much time and trouble and travellers many inconveniences. On the Great Northern Railway the telegraph offices are now indicated clearly by large letters, and there is also much improvement in the way in which the names of the stations are shown. But, speaking generally, those in authority over English railways are singularly wanting in appreciation of the need of indications at railway stations, where the name of the station is often nearly lost amid a crowd of advertisements of a much more prominent character.

### India-rubber in Electric Cables.

A Paper by Mr. Terry in last week's *Electrican* calls attention to the decay of vulcanised rubber when used for insulating electric light mains. About ten years ago it was practically universally used, and electricians had very little misgiving about its enduring qualities. The age test, however, has told severely against its use in copper mains. The numerous failures of cables insulated with vulcanised rubber must be attributed to the deterioration of the rubber itself. Chemists have shown that the purer the india-rubber the longer its life. In addition, if the vulcanising process has been rapidly done, there is a large percentage of free sulphur in the product, which, in the presence of copper, accelerates the decay. Engineers usually talk as if the tinning of the copper wire were done in order to prevent the wire being eaten away by chemical or electrolytic actions. Manufacturers, on the other hand, recognise it as useful in protecting the rubber from the action of the copper, and thus increasing its life. Samples of decayed rubber taken from electric light mains often show traces of salts of copper, and there is no doubt that this has hastened the decay. The exact chemical action that takes place is obscure but whenever copper is present decay has begun. The symptoms of decay are familiar to all who have to do with electric light or bell wires. The rubber becomes hard and brittle and loses its elasticity. In the final stage of the oxidation it can even be ground into a powder with a pestle and mortar. Of course there are other agencies besides copper which accelerate its decay—heat, grease, light and air, and the sulphuric acid formed by the action of the latter on the free sulphur in the rubber. No wonder that many engineers prefer cables insulated with such chemically inert substances as asphaltum or paper.

### The Grafton Gallery.

The exhibition at the Grafton Gallery, held under the auspices of *L'Art Nouveau*, consists mainly of glass by Mr. Louis C. Tiffany and bronzes by M. Meunier. The Tiffany exhibition includes some very interesting specimens of stained glass; one in imitation or emulation of a Chartres window of the twelfth century, is noteworthy for its rich jewelled effect. Some of the windows exhibited are, however, far too pictorial in style. The collection of coloured and irridescent glass ware is a very fine one, and well worth attention; among objects of special interest to architects may be mentioned the electric hanging lamp for a library table, in metal and leaded glass (in one of the small rooms or lobbies opening out of the large gallery). The case of jewellery designed for *L'Art Nouveau* M. E. Colonna, in the centre of the large room, is clever but unfortunately too clever—the French artists do not seem to be able, in this class of art, to get rid of the element of *chic* which so vulgarises many things made in Paris, and the forms look as if eccentricity, rather than beauty and simplicity, was the aim of the designer. The most important element in the exhibition is to be found in the collection of bronze sculpture of figures in rustic or artisan life, by M. Meunier, who may be said to be a kind of Millet translated into bronze. The figures, mostly to a small scale, are characterised by great truthfulness and force in the delineation of workers of different orders, in the dresses and attitudes proper to their craft. There is little beauty in Meunier's work, as beauty is ordinarily understood, but there is sincerity and power of modelling and expression which give it a high interest. In our opinion the artistic value of this class of realistic work is over-estimated at present; there is a kind of run on peasant and artisan subjects just now—a re-action in art—which will not be permanent, and which by some artists is taken up as a mere fashion; but there can be no doubt, at all events, of M. Meunier's sincerity, which shows itself throughout his work.

### The Knightsbridge Exhibition.

The Exhibition of the "International Society of Sculptors, Painters, and Gravers" (there is nothing like a high-sounding title) at the Knightsbridge Gallery may be characterised as a collection of large sketches and studies for pictures (some of them painted in dirt rather than in colour), relieved on the one hand by a few works of really fine character, and on the other hand by absurdities and caricatures for which the only appropriate criticism is the insertion of a "!!!" in the margin of one's catalogue. Among the principal redeeming points are some of the portraits. Mr. R. Brough's "Miss Ogston" (47), somewhat tame in colour, has a fine spirit and movement about it, and Mr. Lavery's "A Lady in Pink" (90), though very sketchy (we fancy a finished painting would not be admitted), has real distinction in style and expression. There is character and originality in Mr. Alexander Mann's "Portrait of a Lady" (104) leaning back in her chair with a fashion-plate magazine in her hand; character too in Mr. Guthrie's "Mrs. Edward Martin" (98). Mr. E. A. Walton's life-size sketch, "The Sun-dial" (57), has the makings of a fine picture, both in colour and design. Among landscapes, a very clever one with considerable originality of style is "Calma Crepuscolare" (227) by an Italian artist, Signor Fragiacomo (*quasi* "Fra Giacomo": it looks like a coined name). The best of the other landscapes are among the smaller ones, such as Mr. Padgett's "Evening in Holland" (185), Herr Zügel's "Sunlight" (207*a*), which justifies its title; a good architectural picture of the Cá d'Oro, by Mr. W. P. Whyte, and an interior sketch on a large scale by Mr. H. Wilson, in his usual style. There is also a landscape by Mr. H. W. B. Davis, who looks out of place in such a collection, nor is this a work of his best. Among the small collection of sculpture are works bearing good names, but not realising much—in fact, like the pictures, they seem mostly sketches or studies; M. Dillen's nude kneeling figure, "La Mélancolie," is an exception. A special room entitled "the white room," is set apart for the hanging, in the middle of an expanse of blank wall of a few scrawly etchings by Mr. Whistler (the President of the Society), too precious to be mixed with the profaner works.

Drawings of the Riviera.

A COLLECTION of water-colour drawings "Illustrating a Season on the Riviera," by Mr. Arthur Burrington, is on view at the Gallery of the Fine Art Society. These are mostly free and slight sketches aiming at giving impressions of light and colour. Some of these are very bright and effective; among the best are "Lemon Gatherers" (14), "Under the Olives" (6), and "Spring" (22). There are some clever studies, too, of the fashionable crowd of Monte Carlo—"Café de Paris" and "On the Terrace" for instance (17 and 18), and a higher note is touched in "Daydreams—an Idyll" (49), where a young girl stands on the balustraded terrace, her back turned to the spectator, amid a brightly-lit mass of vegetation with the blue of the calm sea for a background. The largest work in the collection, "It Rains" (33) is an interior of a cottage with a figure at the window, in quite a different manner from those already mentioned; an interesting work somewhat recalling the feeling of Israels in a similar class of subject. A very interesting drawing also is that entitled "École Communale" (64), a clever and characteristic study of a file of peasant children entering the school.

A Repoussé Silver Exhibition.

AT the Fine Art Society's Gallery there is also a small collection of works in beaten and repoussé silver, by Mr. Gilbert Marks, with a preface to the catalogue by Mr. Spielmann. These prefaces seem to be inserted to tell the spectators what to think of the works, visitors being supposed to be unable to form their own conclusions. As we are not among those who are ready to submit to this kind of guidance, we may say that both artist and preface-writer have failed to appreciate the real requirements of decorative silver work as applied to objects for use. Mr. Marks's treatment of repoussé work is bold and free, and shows the hand of an accomplished craftsman, but his use of flower forms is far too realistic, and too ragged in line. This is especially noticeable in the treatment, for instance, of the feet or supports in the large bowl, No. 49, which are formed of twisted naturalistic stalks and leaves, bent round and resting on the bend formed by twisting them back; anything weaker in the way of a structural support could not be imagined. This is handiwork, but it is not *design*, which is quite a different matter. The supports in No. 51 are a little better, but still very deficient in structural and conventional quality. The small dessert stands (23, 24, 25) are in much better artistic style, but they are not among the most important exhibits. The wrought steel box inlaid with silver (43) is a good piece of work. But in general the collection shows a want of feeling for the element of design, and is far too imitative in the character of the ornamental work.

The Crystal Palace.

THE Crystal Palace prospectus for the summer season includes the promise of a new picturesque attraction, the electric light illumination of the fountains, which ought to have a fine effect. The work has been put into the hands of Mr. F. W. Darlington, electrical engineer, of Philadelphia, who carried out the instalment for the electric illumination of the fountains in Prospect Park, Brooklyn, U.S.A. It is also announced that arrangements have been made for the illumination of the terraces on the garden front of the Palace. The usual fine firework displays of Thursday evenings will, of course, be continued. There are various other attractions which it does not come within our province to notice; but we may call the attention of our numerous readers who are interested in music to the performance of Mendelssohn's "Elijah" on a great scale, on the Handel orchestra, which is announced for June 24. This oratorio seems to be generally selected for these *interim* performances on the Handel orchestra, on account we presume of its general popularity, which renders it the best "draw" in a financial sense. We may suggest, however, that when the opportunity again comes round, it would be a very interesting and probably not an unsuccessful experiment, to try one of Bach's two greatest works, the B minor Mass or the "Passion," on the same scale.

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MEMORIAL TO FAMOUS WELSHMEN.—On the 23rd ult. Mrs. Herbert Roberts unveiled a memorial erected in the village of Llansaunan to immortalise the work and memory of five famous Welshmen, natives of the parish—viz., Tudor Aled Vaughan, 1470, a Franciscan monk of poetical renown; William Salesbury, born 1515, the translator of the New Testament into the Welsh language; Henry Rees, born 1797, the most eloquent preacher in the Welsh Calvinistic Methodist denomination; William Rees, his brother, politician and litterateur; and Edward Roberts, born 1819, a Methodist minister and writer of Welsh poetry. The memorial, which takes the form of a bronze figure of a little girl, attired in Welsh costume, seated at the foot of a granite column, and in the act of weaving a garland, is the design and work of Mr. W. Goscombe John, A.R.A.

## THE ROYAL INSTITUTE OF BRITISH ARCHITECTS:

### THE PLANNING AND CONSTRUCTION OF BOARD SCHOOLS.

A MEETING of the Royal Institute of British Architects was held on Monday at No. 9, Conduit-street, Regent-street, Professor Geo. Aitchison, R.A., in the chair. The meeting was made special for the suspension of regulations under By-laws 3 and 7, so as to allow of the nomination as a Fellow of Mr. George Frederick Bodley, A.R.A., Royal Gold Medallist elect. The suspension of the by-laws was unanimously agreed to.

Mr. W. J. Locke, Secretary, announced, with regret, the decease of Mr. Charles Bell, elected Associate 1870, Fellow 1880.

Mr. T. J. Bailey, Architect to the London School Board, then read a paper entitled, "Planning and Construction of Board Schools."

Dealing first with the public elementary school, the author dwelt upon the need for careful selection of the site. An ideal site would be one of about two acres, rectangular, with the longest side as a street frontage, and having a western aspect streetwards. There should be proper provision of light and air, immunity from noise of traffic for class-rooms, an open playground space of at least 30 superficial feet for each child, and of such a shape as to be available for games such as football for the boys, tennis, &c., for the girls. In London and crowded districts, where the ideal 30-ft. minimum cannot be realised, the playground question is usually best solved by providing on the ground level for boys and infants, and putting a flat over the whole top of the building to form a playground for the girls. Where sufficiently large, playgrounds should have a covered space, 50 ft. or 60 ft. by 18 ft., with sides enclosed, open in front to the sun. Various desirable accessories to playgrounds, the most suitable paving, walls, and railings, gates, the schoolkeeper's lodge, &c., were duly detailed by the author.

Next, treating of the buildings, the author described the three-story school, as being the most usual type. The infants are on the ground floor, the girls on the first floor, the boys above. The maximum size or accommodation of a group should not exceed 1,548—in departments of boys 516, girls 516, infants 516—and if further accommodation is required, it should be provided by a separate mixed department. The hall, considered by the Board indispensable to every department, is a very good size at 54 ft. by 30 ft.; the class-rooms, ten in number to each department, graduate from sixty to forty in accommodation. If possible the main line of class-rooms should face the playgrounds rather than a noisy road, and draw their light from the east, as that aspect suns up the rooms in the early morning and does not disturb them for the day. The hall, facing west, provides a good reservoir of sun-lighted air to help the class-rooms, and is a cheerful place to march the classes into for recreative or collective purposes. Architecturally, this elevation, being the more broken up (comprising the main lighting of the hall, the staircases, cloak, and teachers' room and blocks, and gable ends of wings), is more desirable for a street front than the long unbroken line of class-rooms. Two staircases for each senior department are required, and two entrances for the infants on the ground floor. The author then described in detail the plan of the building, the dimensions of the various rooms and staircases, the fittest materials for facing walls and for floors and staircases, the requisite fittings, and the lavatory and sanitary arrangements.

Touching warming and ventilation, the author glanced at the efforts towards improvement in these matters during the last twenty years. He commended as very good the system of low-pressure hot-water pipes round the walls and just above the floor, where the desks are placed, and a few ventilating radiators bringing in warm, fresh air; but, even with this system, an open fire in the room is needed, the brick flue simply connecting with the outer air not being sufficient for extraction. The author had tried trunks from the ceiling line of each room gathered into groups, with a single outlet equal to the combined area of the group, and with a coil of hot pipes in the same to produce an upcast. This was effectual as far as ventilation was concerned, but could not be recommended for schools of more than one story in height; in three-story buildings it had the effect of conveying the sound from the rooms below to those above, and disturbing the classes. The greatest care should be taken to get continued purity of air, and with as little trouble as possible. The system known as the "Plenum" effected this in the only satisfactory way; it introduced fresh filtered air above the heads of the occupants of the room, warm in winter and cool in summer, diffused it over the area, and extracted it at the floor level on the same side as the inlet, carrying away with it all the unpleasant odours of damp and evil-smelling garments. This system has the further advantage that where closed and even double windows are necessary to exclude noise, there is always a quiet side from which the supply of air can be drawn, and the closed and double windows improve the working. The cost is not appreciably more than an ordinary hot-water installation, but the builder's work involved in the formation of ducts, flues, &c., is a rather costly item.

In a section on furniture and fittings, the author dealt with the pattern of desks, and their arrangement in the various departments, the lighting, the seating accommodation, platforms, cupboards, and the adjuncts found essential for educational and recreative purposes. Interesting reference was made to an order issued by the Board to each of their schools, requiring a plan of the departments to be prepared by the scholars under direction of the teacher, measured and drawn to a scale of 4 ft. to the inch, the furniture delineated, and the walls coloured in, and submitted to the architect for approval before being framed and hung up in the school. Some two or three hundred of these plans had been submitted to the author, and he had been much surprised and pleased at the high quality of the work. Few had been returned for revision, and some would have been no discredit to an architect's office.

The higher grade schools, of which there are forty-four in operation under the London School Board, are equipped with rooms for science teaching in addition to those for art and manual work. They comprise chemical and physical laboratories, with balance room and small dark room for experiments in photography, and a store for chemicals; also a demonstration and lecture room. The buildings, fittings, and general arrangements of the Cassland-road School, Hackney—a typical example of the higher grade school—were shown in a series of detail drawings exhibited by the lecturer.

A third division of the paper was devoted to buildings for special instruction, comprising centres for domestic economy (cookery, laundry work, and housewifery), manual training in wood, manual training in metal-work, swimming. The combination of subjects in the domestic economy curriculum has led to the requirement of a building in each case capable of giving proper facilities for the teaching. A typical building, planned after consultation with the committee in charge of these subjects and the lady superintendent, consisted of a class-room on the ground floor, 22 ft. by 18 ft., seated for forty girls, a kitchen, sitting-room, scullery, and bedroom, with entrance-lobby and staircase leading to the laundry and cookery class-rooms on the upper floor, the object being to provide instruction in general housework, as well as cookery and laundry work. Details were given of the requirements of the Manual Training Centre for wood and metal work. With the sanction of the Education Department the Board have decided to establish three swimming baths in connexion with the schools at Marlborough-street, Southwark, Hugh Myddelton, Finsbury, and Lyham-road, Brixton. Particulars were given of the proposed bath at Lyham-road. The building will be separate from the school, and have a distinct and separate entrance, with superintendent's office, &c. The swimming pool will be 50 ft. by 20 ft., 2 ft. 9 in. deep at one end, and 5 ft. 6 in. at the other, lined with white glazed bricks, and having dressing-boxes, spray baths, water closets, &c., and washing and drying-room for towels and bathing dresses. The water will be warmed by the injection of steam round the sides close to the bottom of the bath, the pipes being in chases and cased for protection.

The mixing of children mentally weak with those of normal intellect being productive of undesirable effects on both, it has been found necessary to provide accommodation for these in specially planned buildings. There are thirty-nine centres in actual work in London, with 1,597 children on the rolls (October 31, 1898), and about thirty-five more are either in course of building or immediately contemplated. The unit for class-room is less than that for the ordinary school, more individual attention being required. The class-rooms are all on the ground floor, are 20 ft. square, and seated for twenty children. A hall corridor about 20 ft. wide, well warmed, and made as cheerful as possible, is provided for exercise, drill, &c. A good lavatory and baths are provided. Boys and girls are frequently taught in mixed classes, but have separate playgrounds and offices. Schools for the deaf are also provided on the centre system, and are much on the same plan as those for the mentally defective. The class-rooms are smaller, 18 ft. square, and seated for ten. Seats should be arranged in a circle, and the rooms should have a strong high or top light so that the lips of the children can be watched and studied, they being taught to read what is said by the lip movement. The Board have seventeen centres in operation, with 513 children on the rolls (October 31, 1898), and seven in course of provision. Particulars were given by the author of a scheme for the establishment by the School Board of a home for the boarding and instruction of deaf children who had to be taught on the sign system. The schools will be built on the cottage home principle, the number in each home not to exceed ten, and the training will be largely agricultural or horticultural. In most divisions of the London district, school accommodation has to be provided for a few blind children. These number about 150, distributed over eight centres, and it is generally sufficient to provide two small class-rooms at each centre, with separate entrances, cloak-rooms, and lavatories, the classes being mixed. Separate play-yards and closets are necessary.

Under the head of buildings for the training of teachers the author described a scheme of buildings for this purpose which might be considered as very complete, and as embodying all that is likely to be required in the future. On the ground floor are provided four class-rooms for forty-two and thirty-six, two of each, seated with single desks, a central hall, 50 ft. 6 in. by 33 ft. 6 in., with staircases, &c., at each end. On the first floor are four class-rooms and a properly equipped gymnasium over the hall; on the upper floor an art room over the gymnasium, the remainder of the floor being devoted to chemical and physical laboratories, lecture-room, balance and dark rooms. A basement is provided for the engineering apparatus, and also a kitchen for the preparation of luncheons. The site of the particular buildings dealt with was large enough to give space for lawn tennis on the girls' side and for football on the boys'.

The buildings for industrial and truant schools, which next came under consideration, must be of an essentially different character from other buildings of the Board, as they are boarding establishments. Descriptions were given of a building recently erected for this purpose in connexion with the Shaftesbury Training Ship, and also of the Upton House Truant School, the only building as yet erected specially for the purpose. The Board are negotiating for a large site of some fifteen acres in the neighbourhood of London, for the purpose of erecting two establishments—an industrial school for about 120 boys, and a truant school for a like number. The two institutions will be entirely separate as far as their occupation and management are concerned, but will probably be under the control of one superintendent and body of managers. Details of the proposed plan and general arrangements of the buildings were given by the author.

For the purposes of the administrative work of the Board, London is divided into eleven divisions, necessitating a corresponding number of office buildings. The offices for the East Lambeth Division, now erecting in the Peckham-road, were selected for description as a typical block. On the ground floor is the entrance hall, a large room 57 ft. by 22 ft., for the visitors to perform their clerical work; a room for the assistant superintendent, and an office for the check clerk, also the lavatories, water closets, &c.; on the first floor a committee-room, used also by the superintendent, and a clerk's office; on the second floor the correspondents' and clerks' offices, and caretaker above.

In a few general remarks with which the paper closed, the subject of cost was dealt with. The Princess May School, Kingsland was cited as a typical case, and as tenders were received only so lately as March of the present year, it may be considered as up to date. The building is to be of three stories, to accommodate 1,548 children on a site of about 1¼ acre. The cost per head is estimated to be 13*l.* 18s. 4d. This includes building the whole of the brickwork in cement, also the provision of glazed bricks to staircases, corridors, and dadoes of class-rooms and halls, but does not include furniture. The cost of enclosing the whole site with walls and railings, tar-paving, drainage, and provision for deep foundations below a normal depth of 6 ft. is about 5,000*l.* more. The total cost will be some 750*l.* within the limit allowed by the Education Department. There was a suggestion a few years back that unnecessary expenditure was incurred on architectural adornment, and the committee dealing with this branch of the work ordered two or three schools to be built of stock bricks and slate roofs, with no architectural features about them. It was found, however, that the difference of cost between bare utilitarianism and buildings designed in some sort of style and regard for materials and colour was rather less than 5 per cent.

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Mr. Locke read the following letter by the Chairman of the London School Board:—

"SIR,—I much regret that I cannot attend the meeting on May 29, as I am going abroad. Mr. Bailey's paper is of great interest to architects and educationalists, and deserves to be widely read and translated into foreign languages, as it is sure to attract the attention of foreign educationalists. Mr. Bailey speaks with authority. The building operations of the London School Board are on such a large scale; the problems which have to be solved are so varied; they have been so carefully considered by a number of experts, that Mr. Bailey's admirable review of this branch of the School Board's work cannot fail to meet with the full recognition due to the care with which it has been written.—Your obedient servant,

REAY."

The Hon. E. Lyulph Stanley (Vice-Chairman of the London School Board) said that to build a public elementary school was a matter which could not be approached simply by architectural skill and knowledge, because the conditions were very special. The architect had to follow the policy of the particular School Board or other managers of schools who employed him. An architect, thoroughly to know what a school ought to be, should be familiar with what had to be done in a school. Although Mr. Bailey had laid down a great many propositions as to what was best and most desirable, at the same time, in some things, his idea of what was best must have been limited by the parsimony of his employers. For instance, in describing what a class-room should be, he mentioned that he would put glazed bricks as high as the dado, and then above that he would have the wall of a special type of brick. Now, a provincial School Board, say Liverpool or Birmingham, would probably demand that the walls should be thoroughly finished with plaster, not left in the rough brick; therefore he did not think, because Mr. Bailey, working for very economical, not to say parsimonious, employers, had indicated certain roughness and want of finish in the building, that that really indicated the type of building an architect free to advise his employer would consider was the proper way of finishing his building. He agreed with Mr. Bailey that the furthest scholars ought not to be more than 20 ft. or 22 ft. from the windows, getting their light from the left; but Mr. Bailey had not mentioned in how many of these matters the School Board for London had had to carry these educational points almost by force against the Education Department. Only quite recently the Board had been invited to make their furthest row of seats some 24 ft. from the light. With regard to the use of halls in dealing with the discipline and education of children, that was a school-manager's question, not an architect's. There was not the slightest doubt that, if a room was to be used for one purpose, it had better be constructed for that purpose; they should not attempt to make it answer some other purpose. In the interest, however, of supposed economy the Department sometimes suggested that they should put a class in the hall. It would be apparent to architects how bad it was to have a class in a room some 50 ft. by 30 ft., which was used as a passage for children going to and from the various class-rooms. Apart from that, it put a great strain upon the voice of the teacher. Architects, in considering a school plan, should concentrate their attention first and foremost upon the arrangement of the class-rooms. There were many disputed questions in school planning. Mr. Bailey spoke about the stepping of the floors, but experts were not at all agreed as to whether the floors of the class-rooms should be stepped or not, and whether the platform from which the teacher delivered instruction should not be raised and the floor flat. On the Continent, where people were supposed to have paid a great deal more attention to school planning than in England, the rule was against stepping a floor. These things could not be treated as questions absolutely decided ; but such questions as the size of a class-room and the cubic content depended very much upon the rapidity with which the air could be changed. There was not the slightest doubt that for the facility of a class seeing the black-board, and for the diminution of the strain upon the teacher's voice, and for lighting the room quite to the back from the windows, it was not desirable to make the class-room a bit larger than was absolutely necessary for the health of the children. Teaching was much more pleasantly conducted in a moderate-sized room than in a large one ; but they must have air. Mr. Bailey, he thought, had not fully brought out the importance of varying the size of the class-rooms. The work of teaching in the more advanced classes made smaller class-rooms necessary for the higher divisions, in order to lessen the strain on the teacher. There had been days when the Education Department recognised in its Code a class of eighty, and in those days an economical School Board built class-rooms for eighty. One result of planning schools in that way in the earlier days was that, now that people had a higher idea of what was due to the teaching of children, a certain amount of space was wasted. Fifty children, for instance, were put into a class-room originally planned for sixty, with the result that ten places had to be written off and were unavailable. But coming back to his former proposition : it was policy that determined plan, and it was not the architect who determined the policy ; it was the Education Department, or the particular Board who employed him, and the public opinion of the country. Still, if architects made themselves familiar with the requirements of school planning, they could make recommendations to the Board when they were called in, and their influence might do something to educate the Board who employed them.

Mr. C. J. Dawson (head-master of the Aldenham-street School, St. Pancras) said that in the building he was constantly engaged in there was one large room that accommodated over eighty scholars, according to the dimensions laid down in the Code, and it was only separated from another room by a sliding partition ; the other room accommodating sixty ; so that it was practically a large room for 140, separated by a sliding partition. Two other rooms at each end of the building were also separated by slight walls and partly sliding partitions, and those accommodated rather over forty each. If they were taken together they were very inconvenient and too large for a teacher properly to manage, and if they were taken separately the classes were smaller than the Board and the Education Department required to be placed under the control of a single teacher. The question of ventilating and warming was a combined question, because if scientfic principles could be thoroughly applied, there should be a system possible by which the warming should help the ventilation and the ventilation assist the warming, in one way, by supplying cool air in the summer time and warmer air in the winter, If the system referred to by Mr. Bailey fulfilled all that was claimed for it, it ought to be put into operation in every school where it was possible, and, at all events, in every new school, unless the cost was so large as to be utterly prohibitive. But in many schools he was acquainted with the ventilation was an entire failure by the system provided. He thought Mr. Stanley had given the main points with regard to the size of the rooms, the arrangement of the light—which should come from the left-hand side—that no one should be seated too far from the light, and that there should be no dark corners. That was a very important point, both for the sake of the teacher and the scholar, and on the ground of discipline. In his own school there were corners where the light from the windows did not reach at all, and the children could not see properly there, so that a part of the room was wasted, which could have been utilised if the light had been better distributed. With regard to the size of the rooms, Mr. Stanley had called attention to a very important point, namely, that the rooms should not be larger than was absolutely necessary for the health of the children and to permit of sufficient air space. That was an important consideration also from the point of view of the teacher's voice. Nothing had been said about the acoustic properties of rooms where teaching had to go on. Sometimes the rooms in a school were not at all well adapted for sound. He did not understand the principles of construction which would make the sound more effective, but before he came under the London School Board he had had to manage the whole of a school in a large room, over 60 ft. by 30 ft., and fully 20 ft. high. Several classes were taught in that one large room, and the echoes were so confusing that it was a very great strain upon the teachers' voices, and yet they had a difficulty in making themselves heard distinctly by the scholars. The time of those large rooms seemed to have passed, and the class-room system was now generally adopted in the newer schools. This matter of acoustics certainly affected the question referred to by Mr. Stanley as to classes being held in school halls. In such cases the voice of the teacher was carried round and up by the celling, and was lost to the scholars, and raising the voice very often made matters worse. It was very difficult to pitch the voice so as not to produce confusing echoes in a room of that sort, and the fact that the class only occupied one-fourth of the room made it worse. If the room were full it would be less difficult to make the voice heard all over it than if only a small portion of it were occupied and the rest empty.

Mr. E. W. Mountford proposed a vote of thanks to Mr. Bailey for his very useful paper. They heard of these hundreds of schools being built in the last few years, and of the large number that were coming on, and for Mr. Bailey's own welfare it seemed advisable that some of the work might be given to other architects. What had interested him most was the reference to the warming and ventilation of the buildings. Only five or six years ago some plans of his had to go before the late Mr. Ewan Christian, acting on behalf of the Charity Commissioners, and he, with the later buildings of the Board before his eyes, absolutely refused to allow any kind of mechanical ventilation to be put into the building. Mr. Christian said he had recently examined, at the request of the Board, some of the London schools, and had come to the conclusion that there was nothing in the way of ventilation to equal windows. Windows that went up to the ceiling and opened at the top provided absolutely the best ventilation that could be got. Acting on his command, he (the speaker) had to cut out his system of ventilation, and he had been more or less abused for several years past in consequence. The "Plenum" system, which Mr. Bailey seemed to favour, was probably the best system ; but he should like to hear his opinion of that system in, say, ten years time. Only quite recently several members of the Institute Council were taking over a large building in Birmingham which had recently been fitted up with this system, and he had been struck with the considerable accumulation of very black dust in the ducts through which the warmed air was forced into the various wards. Now, that dust represented simply the thicker and heavier particles which the fans had not been able to force into the wards, and it seemed to him an absolute certainty that a great deal of dust had been forced into the wards and swallowed by the patients. In a new building there was not much objection to that, possibly, but as time went on and the soot accumulated, and more and more was forced into the lungs of the patients, it would become a very big question whether the "Plenum" system would not be taken out of those buildings and something of a different nature put in. It was said of the "Plenum" system that it was equally available in summer for forcing in cool air. That, he thought, was a great mistake. People did not mind having air forced into a room so long as that air was very warm, but when they began to force in cold air the inevitable result would be that the occupants of the room would block up the openings.

Mr. R. Phené Spiers seconded the vote of thanks. He had built two of the first Board schools, and he could see now that they were built entirely wrong, but they were built according to the policy of the Board at that time.

The vote of thanks having been agreed to,

Mr. Bailey, in responding, said he was glad his paper was considered a useful one. He had tried to make it as comprehensive as he could, as he thought it right that the Institute should be acquainted with the details of the extensive work the School Board were carrying out.

The Chairman said that it might be safely considered that if children were put into rough, uncultivated, unattractive places they could not be expected to gain that admiration for beauty of form and colour which was so necessary to human happiness, and also for that which so largely affected the bulk of the people, viz., progress in trade. He was of opinion that the walls of their schools should be covered with some beautiful tiles or enamelled bricks, that the best art that England could supply should be constantly before the children when their attention was not engaged in their lessons, and that everything should be as simple as possible, but with a certain amount of grace, so that their faculties might be cultivated to admire the beauties of Nature which they saw around them. He had had some small experience in that kind of thing, and he found that even those students who were specially devoted to form and colour had a remarkably small observation for the objects of Nature by which they were surrounded. —the simple shells, the simple flowers, the simple leaves. If that was the case with people who were trained to study, how much more so was it with those whose artistic faculties were left dormant, and were surrounded with quasi-ugliness ? He hoped the gentlemen more particularly interested in the work of the Board would give a thought to the subject he had mentioned.

The meeting then terminated.

## THE SURVEYORS' INSTITUTION :

### ANNUAL MEETING.

THE annual general meeting of the Surveyors' Institution was held on Monday afternoon in the new premises, 12, Great George-street. Westminster, Mr. Robert Vigers, President, in the chair.

The first business was the reading of the Scrutineers' report on the election of Council for 1899-1900. Mr. T. M. Rickman has been elected President. The new Vice-Presidents are :—Mr. A. Vernon, High Wycombe, and Mr. H. Drew, Exeter ; and the new members of Council are Messrs. Leslie R. Vigers, Thomas Blashill, and, as Professional Associate of Council, A. Norman Garrard.

The Secretary, Mr. Julian C. Rogers, then read the thirty-first annual report of the Council. We take the following extracts from the report :—

The total number of all classes on the roll on May 1, 1899, is shown in the following table, which also gives the numbers at the corresponding date in May, 1898 :—

| | May, 1899. | May, 1898. |
|---|---|---|
| Honorary members ...... | 16 | 17 |
| Fellows .................... | 1,887 | 1,835 |
| Professional Associates | 686 | 615 |
| Associates .................. | 84 | 85 |
| Students ..................... | 308 | 272 |
| Colonial Fellows ......... | 12 | 12 |
| Total ................. | 2,993 | 2,836 |

The difference in the number of Fellows is due to the election, under the dispensing power, of fifty-six candidates for that class, and the transfer of thirty Professional Associates who have passed the Qualifying Fellowship Examination, deducting those who have died or ceased to be members. The increase in the class of Professional Associates is accounted for by 116 elections, as against thirty transfers and fifteen losses by death and cessor of membership. The number of students was increased by thirty-six, allowing for those whose studentship expired by effluxion of time, or who, having passed the examination in Division II., became Professional Associates.

The Council have to record, with deep regret, the death of their late President, Mr. Christopher Oakley, who occupied for many years a leading position in the profession and who rendered signal services to the Institution ; of Mr. Thomas Scarth, an eminent land agent and surveyor in the north of England, who served on the Council for some years; of Mr. W. C. Little, of Stag's Holt, a well-known authority on the economics of agriculture; of Mr. Bovill Smith, Mr. George Beaumont, and Mr. George Brown, of Barnstaple, who were among the oldest and most respected members, and of Sir John Fowler, the distinguished engineer, who had been an Associate of the Institution from its earliest days. . . .

The "Institution" Prize of the value of fifteen guineas was gained by a candidate in the "Building" Sub-Division of Division II., who obtained 860 marks out of a possible 1,000. The "Special" Prize of the value of ten guineas was awarded to a candidate in the "Building" Sub-Division, who obtained 788 marks out of 1,000. The "Crawter" Prize, for the best work in the subject of "Valuations" in the Division IV. Examination, was awarded to a candidate in the "Land Agency" Sub-Division, who obtained full marks in the subject. The "Penfold" Gold Medal was awarded to the candidate who obtained the highest marks in Division IV., viz: 855 out of a maximum of 1,050. The "Penfold" Silver Medal was gained by a "Building" candidate in Division III., who also won the "Driver" Prize of the value of 15*l.*, with a total of 1,044 out of 1,200 possible marks. The "Preliminary" Prize was awarded to the candidate heading the list in the Preliminary Examination, with an aggregate of 492 out of 500 marks. The "Daniel Watney" Forestry Prize has not been awarded this year, there being no candidate whose work was of sufficient merit to justify its award. . . .

Again, for the tenth year in succession, the Council have to thank the Right Hon. the Earl of Jersey for placing a large portion of his park at Osterley at the disposal of the Institution for the purposes of the "Surveying and Levelling" and "Timber Measuring" "Outdoor Examinations," and for the hospitality which, on the days of those examinations, he extended to examiners and candidates alike. They desire also to express their obligations to Mr. W. D. Little, his lordship's agent, for his kind and considerate arrangements. . . .

There has been a large increase in the Scottish committee since the date of the last report. It now numbers eighty-three members, thirty-seven having been elected under the dispensing power, on the condition that, after Christmas, 1898, no members should be elected in Scotland (subject to the special provisions of the by-laws) without previously passing the qualifying examination, the nature and scope of which has been agreed to. It is hoped that the result will be as satisfactory as regards the professional status of members in Scotland as it has proved to be in England. . .

The Council cannot allow the retirement of Mr. R. G. Clutton and Mr. Edward Smyth from their body to pass without an expression of their deep regret at the severance of their long and honourable connexion with the governing body of the Institution—the one on grounds of health and the other by reason of advancing years. To Mr. Clutton and the great firm which he represents, the Institution owes a great debt of gratitude. Mr. Smyth, who has been a representative of the class of Professional Associates for thirteen years, has been a most devoted friend of the Institution, and has rendered it services in that capacity, and as one of the honorary examiners, the value of which it would be difficult to exaggerate.

The Institution is at last in occupation of its new and permanent home, after many vexatious delays, some of them due to the present disturbed condition of the labour market. The rehousing of the Institution has engaged the anxious and almost unremitting attention of the Council for the last five years. Early in 1894, on the failure of the promoters of the Westminster Improvement Bill to carry out the scheme under which they had agreed to allot to the Institution an advantageous site on the north side of Great George-street, it was referred to the Building Committee to consider, and report on the terms for acquiring a sufficient area of the surrounding property for the extension of the Institution premises on the existing site. It is not necessary to follow the course of the rather difficult and complicated negotiations which ensued; it is sufficient to state that as a final result it was decided to acquire three additional houses, viz., 13, Great George-street, and 3 and 4, Little George-street, which, with the site of the then existing premises, afforded a building area of 6,700 square feet. For this area the Ecclesiastical Commissioners finally agreed to a ground rent of 1,000*l.* per annum, on a lease for 999 years, in place of the 1,070*l.* which the property was previously yielding, the Institution undertaking to put up a new and substantial building as security for this rent. . . .

With the close of this session the thirty-first volume of the *Transactions* of the Institution is completed. It may be of some interest to mention that this series of thirty-one volumes is made up of 400 parts comprising 250 papers with the discussions upon them, and thirty-one annual reports of the Council, the whole amounting to some 15,200 pages of matter. . . . The last volume deals with subjects so diverse as, "The London Building Act," "The Management and Valuation of Brickfields," "The Working of the Light Railways Act," "The Valuation and Rating of Tithe Rent-charge," "Railway Rates," and "The Recent Proposals to enable Working Men to Purchase their Dwellings by Means of Loans from Local Authorities."

The last issue of the *Professional Notes* contains a Scottish supplement, intended as the vehicle for the publication of professional information of special interest to the members north of the Tweed, and the Council confidently count upon the co-operation of the Scottish members in making this feature of the *Notes* worthy of the volume of which it will in future form a feature. Since the issue of the last Council Report a revised index to the eight completed volumes of the *Professional Notes* has been complied with a view of facilitating reference to their contents.

The Junior Meetings have been fairly well attended, but the Council would like to see a larger number of the younger members taking an interest in these meetings, which should have excellent results in developing their powers of thought and expression.

Particulars of applicants' qualifications have been furnished to upwards of one hundred employers, during the year, and it is known that in the majority of cases engagements have resulted. It is, however, impossible to give precise statistics, as in many instances no notification is sent to the secretary of the result of the introduction.

Something more than a bare allusion to the second country meeting, held this year at Bristol, on April 26 and 27, will be looked for in this report. It was attended by about 140 members, most of whom were present at the meetings in the reception room of the Council House, and dined together at the Grand Hotel in the evening. . . . . The Council are happy to learn that the visit to Bristol was regarded by those who took part in it as an unqualified success, and as likely to be conducive to a better knowledge and appreciation of each other by the town and country members of the Institution. . . . .

On the motion of Mr. Swain, seconded by Mr. Stower, it was agreed that the report and balance-sheet be received and adopted.

On the motion of Mr. T. A. Dickson, seconded by Mr. Pilditch, a vote of thanks was accorded to the auditors.

Mr. Harston then moved a vote of thanks to the President, Vice-Presidents, and other members of the Council for the able manner in which they had administered the affairs of the Institution during the past year.

Mr. H. Chatfeild Clarke seconded the motion, which was agreed to.

The Chairman acknowledged the vote of thanks, remarking that the work of the Institution was increasing, and it required the constant attention of the Council and their friends Mr. J. W. Penfold, hon. secretary, and Mr. Julian C. Rogers, secretary. The Institution was fortunate in having had the services of those two gentlemen for so many years.

On the motion of Mr. Warner, seconded by Mr. T. Jones, the thanks of the Institution were accorded to Mr. Penfold, Mr. Rogers, and the members of the staff.

Mr. Penfold and Mr. Rogers having suitably replied, a vote of thanks was, on the motion of Mr. R. Perry, seconded by Mr. C. J. Mann, passed to the scrutineers.

Prizes were then presented by the Chairman as follows:—The Institution Prize to Mr. H. A. A. Gate, of London; the Special Prize to Mr. A. G. Bradshaw, of Lancaster; the Penfold Silver Medal and the Driver Prize to Mr. G. Freeman, Wimbledon; the Penfold Gold Medal to Mr. S. A. Smith, Haverstock Hill, N.W. (Mr. Smith gained last year the Penfold Silver Medal and the Driver Prize); the Crawter Prize to Mr. F. J. Bowden, Barnstaple; and the Students' Prize to Mr. A. W. Leat.

On the motion of Mr. E. W. Rushworth, seconded by Mr. H. H. Collins, a vote of thanks was passed to the Chairman.

The Chairman replied. He then introduced the new President, Mr. Rickman, to the meeting, and invested him with the gold chain of office.

Mr. Rickman then took the chair, and expressed the pleasure it gave him to stand before them as their President.

Mr. Vigers said he had omitted to tell the meeting that he hoped shortly to make a start in connexion with a benevolent fund for the Institution. What was proposed to be done would be brought before the members shortly.

The meeting shortly afterwards concluded.

Hotel, Weymouth.—The new Royal Hotel at Weymouth, which was opened recently, has been built on the site of the old Royal. The new building contains over a hundred rooms, the electric light being installed throughout. Messrs. Creaton & Co. were the builders, and the architect was Mr. C. Orlando Law, of London.

## THE DISPUTE IN THE BUILDING TRADE:

### A SETTLEMENT.

A Conference was held on Tuesday morning, at the Salisbury Hotel, Fleet-street, between representatives of the Master Builders' Association and the National Association of Operative Plasterers, which resulted in the practical settlement of all points in dispute between the parties, and the dislocation of trade which has existed since February is now at an end. The representatives of the Master Builders who attended were Mr. Alderman Holdsworth, President of the Association; Mr. Benjamin Greenwood, London; Mr. J. W. Sugden, President of the National Master Plasterers' Association, Bradford; Mr. G. Nicholls, Leicester; Mr. J. Higson, Salford; and Mr. C. W. Green, of Liverpool. On behalf of the Operative Plasterers there were present: Mr. Mark Jones, President; Mr. M. Deller, General Secretary; Mr. D. Hennessey, London; Mr. H. Duckett, Birmingham; Mr. G. Jackson, Manchester; and Mr. A. McLeod, Newcastle-on-Tyne. The delegates chose Mr. E. T. Cook (Editor of the *Daily News*) as Chairman of the Conference. From the first there was an evident determination on both sides to arrive at a solution of the differences which had disturbed the trade.

After considerable but considerate discussion, the following terms of settlement were arrived at and signed:—

*Non-Union Foremen.*—With regard to Clause 1 (*a*) and (*b*) of the employers' "Manifesto," which alleges:—

The persistent attempt to coerce foremen of plasterers, of superintendents of plasterers' work into the membership of the National Association of Operative Plasterers; also:

The withdrawal of all members from the building firms employing such foremen or superintendents.

It is understood that the vote of the Plasterers' Association in London, in February, against this practice settles this point.

*Apprentices.*—With regard to Clause (2) which deals with the limitation of apprentices, it is agreed that, as this question is peculiarly complicated, different practices prevailing in different districts, both as to the extent to which apprentices are employed, and as to the ages at which they begin their apprenticeship, the question shall be referred to a special joint committee of both sides to draw up working rules to govern the matter. This Conference is of opinion that the difficulty with regard to the proportion of apprentices could best be solved by a provision that every apprentice should be legally bound.

*Boycotting and Blacklisting.*—With regard to Clause 3 (*a*) and (*b*), which charges the Plasterers' Association with:—

(*a*) The practice of boycotting certain building firms and employers of plasterers, in spite of the fact that such firms adhere to the rules agreed between the Master Builders' Associations and the National Association of Plasters.

(*b*) And the practice of printing and circulating amongst the members of the National Association of Operative Plasterers a list of such firms for whom they are forbidden, under penalty, to work.

It is understood that, while not admitting the accuracy of these allegations, the Plasterers' Association give an undertaking that no such boycotting or blacklisting shall take place in future where the firms adhere to the rules mutually agreed upon, the employers, on the other hand, giving a definite undertaking that such rules mutually agreed upon shall be strictly enforced in all parts of their contracts.

*Demarcation of Work.*—With reference to Clause 5 (*a*) and (*b*), which alleges:

(*a*) The refusal to accept the decision of the employer as to which workmen shall do certain work, in cases where plasterers dispute with other trades as to their right to do such work.

(*b*) Practice of withdrawing all their members when such work may not be placed in the plasterers' hands.

It is agreed that for the purpose of the demarcation of work, joint committees shall be established in the different districts equally representative of the employers and the mechanics, whose representation shall be equally divided amongst the different branches of the trade in question. These committees shall, as far and as soon as is possible, draw up schedules of the work which it is recognised belong to certain branches of the trade. To such committees shall be immediately referred all points of dispute as to demarcation, and the decision of the majority in each case shall be accepted as binding on both sides. Should they fail, however, to decide, then the matter shall be referred for settlement to similarly constituted joint committee representative of the National Association of Master Builders and the other societies affected, whose decision shall be final, provided that the employers' representatives are bonâ fide employers of plasterers direct. Pending such reference to the local committees no strike or lock-out shall take place, but the decision of the employer shall be provisionally accepted as to who shall do the work.

Provided that preference shall be given to that branch of the trade which, in practice, has done the work before in that district, and provided no preference be given on account of the payment of lower wages.

*Non-Unionists and Disputes.*—With regard to Clauses 4 and 6, which speak of

The refusal to work on buildings where some of the workmen employed may not belong to a trades union,

And of the objection to submit all trade disputes to discussion at a conference between employers and employed with a view to arrive at an amicable settlement prior to any strike or withdrawal of workmen,

It is agreed that, in the event of a dispute arising on any job or works, the District Officials of the National Association of Operative Plasterers shall send written notice to the Local Association of Master Builders, who shall inform them whether the said builder is a member of that body. If so, a strike shall not be sanctioned by the N.A.O.P. until six clear working days have expired from the receipt of such notice, during which time the matter shall be considered by the employers and the representatives of the workmen with a view to an amicable settlement. It is understood that the men the Operative Plasterers object to work with are defaulters, and other men who have been shown to the employers to have made themselves specially objectionable to the Union men.

*Foreign "Free Labour."*—It is agreed that where the employers are able to secure British plasterers to meet their requirements they will dispense with the services of the Continental plasterers engaged during the present dispute as their contracts may expire. The employers will not require members of the N.A.O.P. to work on the same buildings with such plasterers. The members of the N.A.O.P. shall raise no difficulties in fixing work prepared by the Continental plasterers.

Signed by Wm. Holdsworth, President; Benjamin J. Greenwood; C. W. Green; George Nicholls; James Higson; J. W. Sugden; H. G. Hassal, Secretary (on behalf of the National Association of Master Builders of Great Britain and Ireland); Mark Jones, President; D. Hennessey; A. McLeod; George Jackson; Henry Duckett; M. Deller, General Secretary N.A.O.P. (on behalf of the National Association of Operative Plasterers). (In witness) E. T. Cook (Editor of the *Daily News*), Chairman of the Conference; Clement Edwards, of the *Daily News*.

### GENERAL RULES.

The general terms of settlement having been agreed to, the representatives of each side retired to consider a suggested code of rules, submitted as embodying the general terms. This, however, the plasterers' delegates declared they were unable to accept, and the Chairman of the Conference was asked to draw up a code. This he did, and it was agreed to and signed as follows:—

1. The Plasterers' Association will not take any steps to control managing foremen of plasterers, or superintendents of plasterers' work, into the membership of the N.A.O.P.

2. (Apprentice—rules left for special joint committee to settle in accordance with the general agreement arrived at by the Conference.)

3. No boycotting or blacklisting shall take place by the N.A.O.P. in future where the firms adhere to the rules mutually agreed upon. The employers agree that such rules shall be strictly enforced in all parts of their contracts.

4. For the purpose of the demarcation of work joint committees shall be established in the different districts, equally representative of the employers and the mechanics, whose representation shall be equally divided amongst the different branches of the trade in question. These committees shall, as far and as soon as is possible, draw up schedules of the work which it is recognised belong to certain branches of the trade. To such committees shall be immediately referred all points of dispute as to demarcation, and the decision of the majority in each case shall be accepted as binding on both sides. Should they fail, however, to decide, then the matter shall be referred for settlement to a similarly constituted joint committee, representative of the National Association of Master Builders and the other Societies affected, whose decision shall be final, provided that the employers' representatives are bona-fide employers of plasterers direct. Pending such reference to the local committees, no strike or lock-out shall take place, but the decision of the employer shall be provisionally accepted as to who shall do the work, provided that preference shall be given to that branch of the trade which, in practice, has done the work before in that district, and provided that no preference be given on account of the payment of lower wages.

5. In the event of a dispute arising on any job or works the district officials of the N.A.O.P. shall send written notice to the Local Association of Master Builders, who shall inform them whether the said builder is a member of that body. If so, a strike shall not be sanctioned by the N.A.O.P. until six clear working days have expired from the receipt of such notice, during which time the matter shall be considered by the employers and the representatives of the workmen with a view to an amicable settlement. Failing a local settlement, reference shall immediately be made to a Central Joint Committee of the two Associations, and until five days have expired from the date of this reference, no strike or lock-out shall be sanctioned either by the N.A.O.P. or by the National Association of Master Builders. With regard to the alleged refusal of members of the N.A.O.P. to work with workmen who may not belong to a trade union, it is understood that the men the operative plasterers object to work with are defaulters and other men who have been shown to the employers to have made themselves specially objectionable to the union men.

6. These Rules shall be construed together, and in the light of each other.

The rules were signed as before.

Clause 2, as to apprentices, was left over to a committee to settle. This committee, consisting of three a side, sat in a separate room for an hour, but were unable to arrive at a definite settlement. The full Conference thereupon resumed its sitting, and after some discussion the chairman urged the following as a possible solution:—

> No employer shall engage any additional apprentices to the plastering trade whilst the number of his apprentices shall exceed one-fourth of the number of journeymen plasterers then employed by him. All apprentices shall be legally bound.

The proposal was unanimously agreed to.

It was understood that the National Association of Operative Plasterers will have to submit the terms of settlement to their members for approval before work can be resumed. This vote will be taken next week, so that in all probability the men will be back at work early in the following week.

## THE ARCHITECTURAL ASSOCIATION DISCUSSION SECTION.

THE thirteenth, and closing, meeting of the present session was held at 56, Great Marlborough-street, W., on the 26th ult., Mr. H. J. Leaning, Chairman of the section, presiding.

A paper was read by Mr. W. B. Hopkins on "Bacterial Methods of Sewage Purification, with special Reference to the Exeter Septic Tank."

Dealing with the question of the purity of the effluent from the treatment of sewage, Dr. Frankland some twenty-five years ago laid it down that there were three processes—filtration, irrigation, and chemical precipitation, all having as their object to free sewage from organic matter, either in *suspension* or (harder to deal with) in *solution*; and now science shows that bacteria have a great part to do in the oxidisation or the rendering innocuous to health of organic matter in sewage, and the results arrived at thus far by experts seem to show that by the action of two classes of organisms—firstly, aerobic, those that work in the presence of light and air; anaerobic, those which need to be kept from both light and air; and, secondly, organisms which attack organic matter in solution. Sewage can be purified, and a "filtrate" obtained finally free from all harm, bright and clear, and the engineer has to create conditions favourable to the growth of such organisms, adding no chemicals and keeping the temperature above freezing point.

Mr. Hopkins then described in detail the working of the septic tank at Exeter as laid down by Mr. Donald Cameron, the City Engineer. The plant consists of a large covered-in tank sufficient to take the sewage of one day, and for this suburb of Exeter (St. Leonard's) was about 64 ft. by 18 ft. wide and average 7 ft. 6 in. deep. Here the sewage passed slowly through and the effete matter was acted upon by the bacteria, so that practically no solid matter remained beyond a thick scum of floating material highly favourable to microbes. The sewage then passes through a slotted pipe at the further end of the tank and discharges on to one of five filter beds (about 80 square yards in area and 5 ft. deep, filled in with broken clinkers and coke) used in rotation; where, acted upon by aerobic microbes the effluent is rendered quite innocuous, and the final filtrate as discharged into the river Exe is considered highly satisfactory.

A similar plant has been laid down in Yeovil, in Somerset, and though it deals with the sewage from manufactories and breweries, a filtrate has been obtained by this process which has been pronounced to be satisfactory.

To architects, in conclusion, it meant that by means of an enclosed and sealed cesspool, and small filter beds, and some simple automatic apparatus connected with the same, the disposal of sewage to isolated houses or mansions in the country was rendered practicable, innocuous, and comparatively inexpensive.

A discussion ensued in which most of the members present joined. Mr. Max Clarke stated he had used a similar tank many years ago, which still worked with admirable results, and Mr. George Smith called attention to the lecture by Dr. Rideal before the Society of Arts as being, perhaps, the most advanced treatise on this important subject. Mr. Sydney Beale, Mr. Brodie, Mr. Taylor, and the Chairman also took part in the discussion.

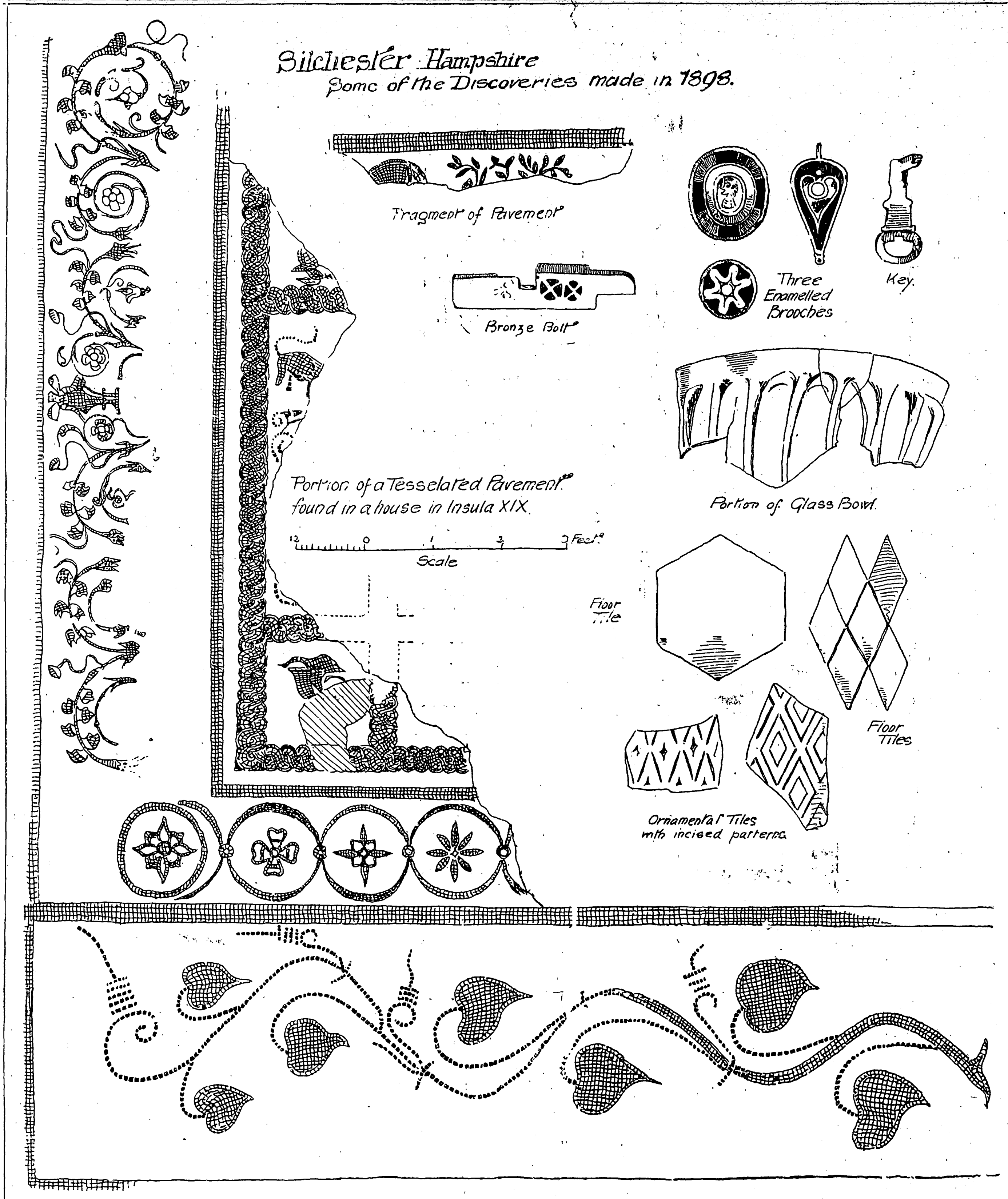
The meeting closed with a hearty vote of thanks to Mr. Hopkins; and also to Mr. H. J. Leaning and Mr. C. H. Strange, the retiring Chairman and Secretary respectively, for the successful discharge of the duties laid upon them during the session now ended.

## *ARCHITECTURAL SOCIETIES.*

GLASGOW INSTITUTE OF ARCHITECTS.—A general meeting of this Institute was held on the 25th ult. in the rooms, Pitt-street, Mr. David Barclay, President, in the chair. The Chairman gave a summary of the business transacted by the council during the past quarter. The Corporation's Committee on Building Regulations had acceded to the suggestion of the Institute that a conference should be held between that committee and the representatives of the Institute while the clauses of the proposed new Bill were being considered, and before they had been passed by the Corporation. A committee of the Institute had had a meeting with the Corporation Committee, who considered it desirable that they should be favoured with the views of the Institute upon the existing building regulations and any alterations, amendments, or conditions which the Institute might suggest, especially as to the question of the height of buildings. As to the new matters which the Corporation might propose to deal with in the Bill, their Committee had promised to show these in draft to the Institute. The Secretary reported that the Royal Institute had decided to support the principle of Lord Russell's Bill on Secret Commissions, now before Parliament, and had assured him of their hearty co-operation and their sympathy with the objects of the Bill, and that the action they had taken in this matter generally was very similar to that which had been taken by the Council of the Glasgow Institute. It was also reported that the Royal Institute had agreed to their annual dinner in 1901 being held in Glasgow early in October of that year before the close of the exhibition, and it was resolved that a local committee be formed to make suitable arrangements for the occasion. The Institute agreed to take charge of the examinations for this district of the Royal Institute, which will be held in Glasgow during June, provided a sufficient number of candidates come forward for examination.

## *COMPETITIONS.*

NEW WHOLESALE MARKET, LEICESTER.—On October 25 last the Council authorised the Market Committee to invite architects practising in Leicester to prepare designs in competition, and offered premiums of 100*l*., 50*l*., and 25*l*. for the three best designs. In accordance with the conditions of competition the Committee appointed Messrs. Leeming & Leeming to act as assessors. The awards have been made as follows:—First premium (100*l*.), Mr. Walter Brand, A.R.I.B.A., 16, Bishop-street; second premium (50*l*.), Mr. A. H. Hind, A.R.I.B.A., Greyfriars; third premium (25*l*.), Messrs. Blackwell & Thomson, Halford-chambers. The author of the design which has been awarded the first premium estimates the cost as follows:—Markets, 24,087*l*.; cold storage, 6,417*l*.; baths extension, 1,329*l*.; total, 31,833*l*., which estimate Messrs. Leeming & Leeming state they have gone carefully into, with practically the same results as the competitor. On Tuesday last week the Markets Committee recommended the Council to authorise them to appoint Mr. Brand to act as architect, and this was adopted.



## EXCAVATIONS AT SILCHESTER.

DURING the past twelvemonth the excavations on the site of the Roman city of Silchester, near Reading, have been continued, and the result is now to be seen in an interesting exhibition which is being held in the rooms of the Society of Antiquaries at Burlington House. It remains open until June 10.

The portion of the site investigated was in the south-west angle of the city, numbered on the plan as *Insulæ* xix. and xx. *Insula* xx., near the outer wall, and close to the south of the west gate, contained nothing of any great architectural importance, but a curious detached hypocaust was discovered similar to those discovered in 1897. The chief object of interest in *Insula* xix. was a large house of early date with fine hypocausts. Remains of an earlier house were found at a lower level, and to this earlier building belongs the fine piece of pavement which we are able to illustrate by the kind permission of the Society of Antiquaries. Its date has been placed as early as A.D. 80, and is the earliest pavement hitherto found. Two peculiarities may be noticed—the ground work of the pavement is of white tesseræ. and the braid ornament, generally so prominent a feature, here takes a secondary place. The outer black border was continued to the wall in each case. The central panel, of which only a fragment remains, was subdivided by braid ornament, and the panels had representations of foliage and animals. The broad ornamental border that surrounded this panel varied. On one side was a series of circles with centre conventional ornaments, and a boldly treated wavy representation of convolvulus leaves and tendrils in black tesseræ. On the other three sides were very beautiful borders of finer design and workmanship, of distinctly superior character to anything hitherto found in England, and approaching in detail more to the patterns already found at Pompeii. The colours used are black, white, red, and various grey tints, amongst the latter being many tesseræ composed of Purbeck marble. There is the usual pottery, some stamped with the makers' names, but nothing that calls for special notice. Among the smaller objects of interest are several bronze fibulæ and other ornaments, and three enamelled brooches, which we illustrate. The oval brooch has red and black enamel in the border, and a curious paste intaglio; it is about $1\frac{1}{8}$ in. broad and $1\frac{1}{4}$ in. long. The circular brooch has a groundwork of dark blue enamel. This also occurs in the outer part of the pear-shaped example, the inner part being red and the small central circle yellow.

There are also several portions of very beautiful glass bowls of a pale blue colour.

Beyond the pavement already noticed there is nothing of much architectural interest, but among some smaller objects found are specimens of floor and ornamental tiles.

The excavations are still being carried on at Silchester, making the tenth season, and funds are much needed for the carrying out of the work in the same efficient manner as hitherto.

## THE ARCHITECTURAL ASSOCIATION:

### ANNUAL DINNER.

THE fifty-second annual dinner of the Architectural Association was held on Wednesday evening last at the Holborn Restaurant. The chair was taken by Mr. G. H. Fellowes Prynne, the President, and among those present were: Venerable Archdeacon Sinclair, Sir Edward Clarke, Q.C., M.P., Sir Henry H. Howorth, M.P., and Messrs. C. A. Adams, R. S. Balfour, R. Blomfield, T. Blashill, A. Bolton, F. Bond, L. Butler, G. B. Carvill, W. E. Davis, F. R. Farrow, A. S. Flower, B. F. Fletcher, H. L. Florence, F. T. W. Goldsmith, Edwin T. Hall, H. T. Hare, A. H. Hart, E. Swinfen Harris, F. G. F. Hooper, W. J. Locke, F. W. Macey, P. J. Marvin, E. W. Mountford, Beresford Pite, W. A. Pite, F. W. Pomeroy, Dr. G. V. Poore, H. W. Pratt, E. A. Fellowes Prynne, J. C. Preston, W. E. Riley, E. Howley Sim, John Slater, W. H. Seth-Smith, H. H. Statham, C. H. Strange, R. H. Weymouth, A. W. Weedon, and W. White.

The Chairman proposed the toast of the Queen and Royal Family, which was duly honoured, and he then gave in one toast "The Church," and "The Houses of Parliament." The Church, he said, had in all ages been closely allied with architecture, and had had an incalculable influence upon their art, while that art in turn had exercised the greatest possible influence upon the Church and upon religion. Referring to the recent controversy in regard to the decoration of St. Paul's, he said he felt that the Dean and those interested in the work had the highest and noblest motives, and that the artist who had undertaken the decorations deserved all praise for the wonderful interest and industry which he had thrown into the work. But as architects they could not consider this matter only from the church point of view. They looked upon St. Paul's Cathedral as a national monument of architecture, designed and created by one of the most able architects England had ever produced, and therefore they felt that they as architects were directly interested in preserving this great work of a past generation. Sir William Richmond, in his letter to the *Times* the other day, adopted a very haughty tone, ignored the architect's profession altogether, and at the same time accused them of unprofessional conduct in the way in which they had raised this question. They desired to be in every way courteous to Sir William Richmond, but they could not look on and see this noble monument being utterly ruined, and the main lines of the building completely destroyed, without protesting. Sir William Richmond looked upon St. Paul's Cathedral as "a magnificent skeleton," to which he was able to give life by his colour and decoration. They could not agree with that. They looked upon the cathedral as a noble form already designed. No powder and paint were needed to improve it, and they must have the architectural lines kept intact. If any architect wished to experiment upon the walls of a building, the walls of this great national monument were not the right walls for such an experiment. Proceeding to deal with the Houses of Parliament, he remarked how little was done by the Legislature to encourage architecture and the building of great historical monuments which would tell to future ages the kind of people we were. How poorly the money expended in our great, rich England on architecture compared with that spent by a little nation like Belgium! It was a shame that a rich nation like ours should cut down the cost of its great public buildings, as had again and again been done. It was utterly unfair to condemn solely the architect for destroying the plan of the Law Courts, when they remember that he had been compelled to cut the cost down by three-quarters of a million. How could they expect that plans treated in this way after they were made would be satisfactory? Let the legislature think of architecture not merely as a thing to spend so much money upon, but as a thing that wrote the history of the nation in stone for all future ages, and let them create monuments more worthy of the country; monuments which, like those of Greece and Rome, would never be effaced.

Archdeacon Sinclair, in responding on behalf of the Church, said that part of his duty was to inspect the fabric of the churches, and he was struck by the very common fault of the absence of ventilation. Too much trust was placed for this purpose in doors and windows, and the result naturally was that large congregations grew heavy and stupid. He would like to see every church with a row of handsome ventilators breaking the sky-line of the roof. In another church he found the doors were so narrow and beautiful that it was impossible to get a coffin into them, so that they saw that practical knowledge was sometimes wanting even to the artistic and eminent architect. There were certain practical considerations that those who used churches might suggest to those who built them. But he admitted that the Church owed a great deal to the architects. The restoration of St. Saviour's, Southwark, reflected the highest credit on the architectural skill of the present day, and also the magnificent work that had been done at St. Bartholomew's, Smithfield. St. Philip's, Stepney, was a church of noble proportions and beautiful style, and showed what could be done when funds were liberally provided. Architects to-day were very conservative, but he could look back to the fifties, and could remember the ruthless way in which things were swept away because they were Renaissance or Elizabethan, and not in harmony with the original Gothic intention of the church. Thus history has been swept away all over the country under a purist Gothic impulse on the part of eminent members of the architectural profession. So they must remember when they gave their advice that the advice of their predecessors had not been always the wisest that could be given. As to the decoration of St. Paul's, the decoration committee welcomed the frankest and freest criticism and advice. He did not set up, and they did not set up, to be eminently qualified to judge on this question. The idea of the Dean had been to place himself in the hands of one recommended as a skilled expert in the question of decoration. He thought the committee was at present too weak to bear the strain of so great a work. They ought to have some architects versed in Palladian work and able to separate Palladian ideas from Gothic ideas, and also in full sympathy with Sir Christopher Wren. He also thought that they ought to have the assistance of the President of the Royal Academy, and perhaps the President of the Beaux-Arts in France, and possibly someone corresponding in Germany. In a matter of such great importance they ought to have the most consummate and able advice it was possible to get. Coming to the history of the question, he would remind them that Sir Christopher Wren did consider the place incomplete when he had finished the last stone, and he sent for four artists from Italy to do the mosaics, but he did not receive the sympathy of the committee who were raising the funds, and the artists had to be sent back again. To the day of his death Wren considered that the cathedral was incomplete. Not much was done until about twenty-six years ago, when the decoration committee was formed. The committee were long divided in opinion, and Mr. Burges, the architect, recommended a scheme which would have cost 450,000*l.*, and which would have covered the whole space with marble except where gilding and mosaics were intended. The scheme would have frightened the present generation even more than the scheme of to-day. At last the committee began with the reredos. He really hoped future generations would remove part of that reredos. It was originally intended only to have the middle piece, with light golden grilles, which would show the beautiful apse, which was now concealed. Then he hoped that future generations would remove the coloured glass windows, which, however suitable to a Gothic building, had made the chancel of St. Paul's simply a dark vault, in which none of the details could be distinguished. After the reredos had been put up the eminent architect who had been responsible recommended the Dean to take the advice of Sir William Richmond as to the mosaics. Sir William Richmond had been most self-denying, and had given up all other work for most moderate remuneration. It was true, as had been announced in the papers, that the committee had determined to remove the stencil-work. Sir Christopher Wren's own design included curtain work festooned with ropes, and stout cherubs holding up the ropes. But, of course, they were not bound to carry out the style of ornament of that day. Sir William Richmond had written agreeing with the decisions of the committee, and he believed that the result of this discussion would be satisfactory to the artistic and instructed minds of this country.

Sir Henry Howorth, M.P., responded for the Houses of Parliament, and with regard to the suggestion that Parliament did little for architecture, he pointed out that when nations were making history they were rarely artistic. When Nero performed the great public service of burning down Rome, it was Greek artists who were called in to rebuild the city. Our country had been more fortunate than Rome. We had a great series of buildings going back right to our earliest history, that for many of their qualities could not be matched. When we were masters of two-thirds of France our architects went there and not only taught the art but created some of the finest of the buildings of that country.

Mr. H. H. Statham then proposed the toast of "The Royal Academy and the Royal Institute of British Architects." The Royal Academy holds an annual exhibition where every year they might hear people saying: "Very poor Academy; nothing worth looking at," but they kept on going all the same. One of the rules of the Academy was that "no mere transcripts of objects of natural history" were admitted, and he had sometimes wondered how many works might be kept out on that ground. It was rather curious, and characteristic of modern times, that wherever there was an old-established exhibition there was a rival which professed to go further. In Paris, ten years ago, there was a split in the Salon and a new one was founded, which professed to be the artistic and poetic Salon *par excellence*, leaving the other to the popular mind. The New Gallery took the same place in relation to the Academy. Yet he did not believe there had been any year in which they could not find enough good pictures in the Old Salon or the Academy to crush their rivals. The difficulty was the large amount of mediocre work admitted. Architects made the very reasonable complaint against the Academy that it acted practically as if "art" meant "pictures." They spoke of architecture as the mother of the arts, but the mother of the arts was put in a hole. Decorative art was spoken of, but it had very little representation in the Academy. They had a right to expect better things, and that the Academy should give larger space to architectural design, and decorative work, and teach the public that art was art, and not merely painting of pictures. There was one thing about the Academy which was not sufficiently recognised. It could not create genius, but it could promote artistic education and uphold the standard of technique. Violent things had been said about the Academy for refusing to elect certain great artists, men who were said to be greater geniuses than most of the Academicians. Rossetti was one of those of whom this was said, but Rossetti himself admitted that he did not, and could not, draw the figure correctly, and did not care. In that case the Academy was right in excluding him. It might be said his pictures, though not well drawn, were worth more to the intellect than some Academic pictures that were well drawn. But that was beside the point; the Academy could decide upon technique, it could not decide whether a man was a genius. And now they came to the point of the connexion between the Academy and the Institute of Architects. The Institute had been assailed by people who said that they represented the art of architecture, and that the Institute did not. In the first place, the Institute was on a different plane from the art of painting and sculpture. It dealt with architecture as a profession. There was a great difference between giving a man two or three thousand pounds to paint a picture and giving him the spending of half a million on a building. For the latter he must be a practical man. The Institute could not make a genius any more than the Academy. But the Institute could insure that the standard of technical education had been kept up. That was what the Institute had been diligently trying to do lately, and it was the one thing it could be certain of. It could not say to one man, "You are an architectural genius," and to another, "You are not;" but it could take one man's work and say, "You are thoroughly educated as an architect," and to another, "You are not." He coupled the toast with the name of Mr. Aston Webb, whom he congratulated on his admission to the Royal Academy, feeling sure that he would work for getting architecture better representation in that body; and also with the name of Mr. H. L. Florence.

The toast having been duly honoured,

Mr. Aston Webb, A.R.A., responded on behalf of the Academy, and at the same time referred to the fact that ladies were now admitted to the Institute of Architects, as a proof that the Institute was prepared to move forward with the times.

Mr. Florence also responded, and said that they looked to the younger members of the profession for the conduct of the Institute in the future. Those younger members had a quality not inherent in ancient and well established institutions, they had enthusiasm, and that enthusiasm would be of the greatest value to the Institute if they would join it. Many of them if they lived long enough might become Royal Academicians, but in the meantime there was something within their reach; by mutual education and by offering themselves for examination they might all become members of the Royal Institute of British Architects.

Sir Edward Clarke, M.P., then gave the toast of the evening, "The Architectural Association," coupled with the name of the President. The Architectural Association, he understood, was an educational body connected with the great art to which most of those present had devoted their lives. It was a body which, after living for rather more than fifty years, was now in the full stream of success, and had attained a position of great influence and authority in the architectural world. It had its classes, its lectures, all the organisations which helped in the promotion of a great profession. He spoke of their great art because architecture was, after all, an art—one of the greatest, and one the study of which was, he thought, more difficult, more full of complex problems, making more demands upon the capacities of the men who devoted themselves to it than any other art he knew. It was an art, that no one could deny; but at the same time it was an applied art, with a scientific side to it, and he had always felt that among the many occupations to which a man could give his life there was none that combined a greater degree of enjoyment of artistic life with the responsibility of scientific study. The great art of architecture was limited and controlled by considerations which did not affect what he might call the more mental arts, by questions of expenditure upon the production of its works. It was limited and controlled by questions of convenience on the part of persons who were going to use those works when produced. A painter would never think of drawing half a tree instead of a whole one because it would save him paint and canvas, and he never heard of a sculptor who made the arm of his figure half the length it ought to be in order to save the expense of marble. But architects unfortunately applied their art to what he might call the ordinary and minor interests of life, and they were limited and controlled severely by matters which had no relation to art at all. The committee that presided over the erection of one of those architectural triumphs which they had hoped to make was often a serious difficulty, because architecture was one of those matters, as they had had evidence that evening, upon which every one was competent to speak with authority. Then they were limited by questions of finance. It was not only the matter of expense in the work that had to be done. But unfortunately the best possible house that they could design was interfered with and spoilt by the man who was going, not to look at the house, but to live inside it. He might consider, for instance, that a serious modification ought to be made in the matter of a bath-room. The limitations of expenditure in production, and of the desires of the persons who were going to inhabit the productions when made, were serious limitations. It was remarkable that, with all these difficulties, architecture had been so successful. This was the wealthiest country that had ever had to deal with the administration of public affairs and the housing of public officials, and it had had to erect great masses of architecture. As to the way in which that had been done, they had already been reminded of the miserable history of the Law Courts, which, he thought, might be supplemented by the treatment accorded to Sir Gilbert Scott's design for the Foreign Office. Considerations of economy or taste in high but uninstructed places had interfered with the designs of our architects, and, considering the circumstances, he thought they had done remarkably well. Architecture was really the only art he knew in which the sense of beauty was brought to bear as an essential element and consideration in that which was really the application of the constructive arts to the ordinary necessities of life. Dwellings must be built for men, and they took various forms according to the progress of our civilisation, and these dwellings must be built, not with reference to artistic perfection, but to the interests and desires of those who dwelt in them. The trials and difficulties of the architect's life must be very great. The course of study he had to go through was more complex and difficult than that required for any other art. It involved business capacities as well as artistic powers, capacities which were disregarded and scorned in the more abstract forms of art. What architecture had been to the world it was almost impossible to realise. It had been an education to the world in the love and knowledge of beauty to a greater extent than any of the more abstract arts of painting and sculpture. A piece of sculpture or painting was produced, passed through two or three galleries, and then was carried off to a rich man's house, and was seen no more except by a few of his friends. But architecture, whether in the form of a great public institution or of a private house, was perfect in its design and characteristics, was a pleasure and delight to all who passed by, an education in art to every eye that saw it, and a pattern in artistic virtue to every one who came after and studied it. He passed on to speak on the enormous effect on the world of architecture as applied to religious buildings. In every creed, under every sky, whatever the character of the religion might be, the worshippers who went within the walls of the temple found inspiration in its architecture. The finest examples of architecture to be found in the world of their class were those Indian temples the magnificence of which showed that the architect had been allowed, with almost illimitable resources, completely to work out his plans. But no one who had been into some of the great cathedrals of Europe could doubt for a moment the effect of the architecture upon the worshippers. No one had stood at the door of that wonderful dream of white marble which stood in Milan without being deeply inspired by religious sentiment at the sight of that magnificent triumph of ecclesiastical art devoted to the service of God. Any one who had sat in absolute silence and contemplation in the great cathedral of St. Mark's in Venice, with its wonderful colours of mosaic and marble, must have felt what architecture had been through the centuries gone by, and would still be, if it was true to its mission, in the centuries to come, one of the greatest and noblest teachers, and one of the highest inspirations it was possible for man to have. In conclusion, he coupled the toast with the name of their President, whom, he was glad to know, they had elected to that office a second time. He knew Mr. Fellowes Prynne as one of the most conscientious, sympathetic, instructed, and artistic of those who had devoted themselves to the work that Association desired to promote.

The President, in responding to the toast, said that the Architectural Association was practically the only really systematic society for the education of architects. It was *the* Association that had endeavoured in the past, and would endeavour in the future, to uphold education in architecture. Not only students were members, as they had only 200 students in a membership of 1,300. The others were men who had passed through its ranks and remained in the Association; and, as they knew, Mr. Aston Webb, their past president, and many others who had been presidents and vice-presidents and officers in the Association still remained among its members. Older members of the profession had joined simply to support the educational advantages the Association offered, not for themselves, but to help others. During the past session some most interesting papers had been read. In the one on the "Housing of the Poor" they anticipated something rather dull; but, instead of that, they were extremely interested. He asked the students to keep up their enthusiasm, and not to let it slacken as the session went on. Enthusiasm was the life of their work.

Mr. Beresford Pite then gave the health of "The Guests," coupled with the names of Mr. J. C. Preston, Master of the Carpenters' Company, Alderman Hind, Master of the Plumbers' Company, and Mr. Reginald Blomfield. He expressed the gratitude of architects to the Carpenters' and Plumbers' Companies for having taken in hand the education of the crafts with which they were connected. It was well that an occasion like that was provided for bringing architectural students in contact with the criticism of the outside world. Nothing would further the interests of architecture more than practical criticism like that which had been given them by the Archdeacon of London and Sir Henry Howorth. It was exceedingly difficult, struggling with the business problems of life and the technical questions which claimed their attention, to live in that ideal atmosphere necessary for the production of a great work of art. Such sympathetic criticism as was elicited by the Cathedral at Milan, or St. Mark's at Venice, was criticism that took stock of the whole work of an age. Each of these buildings was the production of an era, the concentration of the art of a world. How was the student, amid the cares of dealing with the builder and the County Council, to live in that atmosphere which only the most transcendental philosophy could provide him with? They had an illustration of what might be the effect in the works of Ruskin. Ruskin set himself to analyse the charms which he felt at Venice, and the result was wholly disastrous to English architecture. The result of "The Stones of Venice" was the erection of the Oxford Museum which evoked a chorus of admiration, but which had now become a mere laughing stock. They had to read Ruskin carefully before they could even understand the motive underlying such a building, yet it was built in this nineteenth century by a nineteenth century architect. It was exotic, an illustration of the application of Venetian philosophy to the English life of to-day.

Alderman Hind, in responding, said that in past years architects had often been caused much trouble by the carelessness and ignorance of the workmen in the plumbing trades. He was glad to believe that now to a large extent they got good work and a knowledge on the part of the workmen of the requirements of the times.

Mr. Reginald Blomfield also responded, and said that the Association was the best of the educational bodies dealing with architecture, and had pursued its work without any great help from outside sources for over fifty years. He hoped that it would add to its services by leading young architects to go in for a plain, simple, masculine style of work.

Mr. F. T. W. Goldsmith then proposed the health of the lecturers and instructors, and the committee and officers of the Association, Mr. H. A. Satchell and Mr. E. Howley Sim responding. The last toast was that of the President-elect proposed by Mr. W. H. Seth Smith.

## APPLICATIONS UNDER THE LONDON BUILDING ACT, 1894.

AT the meeting of the Building Act Committee of the London County Council held on May 15, being the day before the Council adjourned for the Whitsuntide recess, the proceedings were governed by the clause in the order of reference which empowers the Committee at certain seasons to act on behalf of the Council in relation to matters included in the order of reference. The following applications under the London Building Act, 1894, were considered. Those applications to which consent has been given are granted on certain conditions.*

### *Lines of Frontage.*

*Chelsea.*—Buildings upon plots 1 to 4, Cheyne-walk, Chelsea, to abut upon Beaufort-street (Messrs. Lethaby & Troup for the Town and Gown Association, Limited, Edinburgh).—Consent.

*Hampstead.*—The retention of bay windows in front of Nos. 79 and 81, Greencroft Gardens, Hampstead (Mr. W. H. Cove).—Consent.

*Hampstead.*—A porch at the side of a building in course of erection on the north side of Frognal-lane, Hampstead, to abut upon Chesterford Gardens (Mr. E. Michael).—Consent.

*Islington, North.*—A one-story shop on a portion of the forecourt of No. 121, Stroud Green-road, Islington (Mr. F. L. Pither for Mrs. Blankley).—Consent.

*Kensington, South.*—A tile-covered wooden hood over the entrance to No. 64, Holland Park-avenue, Kensington (Mr H. E. Rossiter for Mr. F. P. Wilson).—Consent.

*Lewisham.*—Bay windows to seven houses on the west side and seven houses on the east side of Broadfield-road, and also to six houses on the west side of Well-meadow-road, St. Germain's Estate,

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* Names of applicants are given in brackets. Buildings are new erections unless otherwise stated.

Hither Green, Lewisham (Mr. G. F. Logsdail for Mr. A. Cameron Corbett, M.P.).—Consent.

*Norwood.*—A one-story entrance lobby to the "King's Head" public-house, No. 82, High-street, West Norwood (Messrs. Witherington & Hogwood for the New Phœnix Brewery Company, Limited). —Consent.

*Norwood.*—A building on the site of No. 202, Knight's Hill-road, West Norwood (Mr. C. F. Thwaite).—Consent.

*Westminster.*—A two-story oriel window at the "Old Red Lion" public-house, No. 48, Parliament-street, Westminster, to abut upon Derby-street (Messrs. Gardiner & Theobald for Mrs. Smith).—Consent.

*Brixton.*—Re-building of Christ Church, Brixton-road, Brixton, at the corner of Chapel-street (Mr. Beresford Pite for the vicar and churchwardens).—Refused.

*Clapham.*—A one-story shop on part of the forecourt of No. 103, Clapham Park-road, Clapham (Mr. J. M. Cable for Mr. T. F. Roper).—Refused.

*Greenwich.*—A one-story building upon the yard at the rear of No. 238, Woolwich-road, Greenwich, to abut upon Dupree-road (Messrs. J. Davey & Co. for Mr. H. Panter).—Refused.

*Marylebone, West.*—A one-story addition upon the yard on the east side of "The Yorkshire Stingo" public-house, No. 183, Marylebone-road, St. Marylebone (Mr. W. Pywell for Mr. S. Brown).—Refused.

*St. Pancras, West.*—A building on the north side of Hawley-crescent, St. Pancras, at the corner of Kentish Town-road (Messrs. W. Bradford & Sons for the Camden Brewery Company, Limited).—Refused.

*Westminster.*—Three iron and glass shelters at the entrances to Wellington Chambers, York-street, Westminster (Mr. G. Simpson for Mr. C. V. Houssart).—Refused.

*Woolwich.*—A one-story addition in front of the "Barrack Tavern" public-house, Woolwich Common, Woolwich (Messrs. Dear & Winder for Mr. T. Bond).—Refused.

### *Width of Way.*

*Paddington, South.*—A fives-court at the rear of Nos. 10 and 11, Orme-square, Bayswater, at less than the prescribed distance from the centre of St. Petersburgh-place (Messrs. C. Saunders & Son for Mr. H. Wilkinson).—Consent.

*Southwark, West.*—A building on part of the yard in front of No. 17, Bankside, Southwark, adjoining Southwark Bridge (Messrs. Fowler & Hall for Messrs. Beck & Pollitzer).—Consent.

*Whitechapel.*—A warehouse on the west side of Tenter-street West, Whitechapel (Messrs. Dunk and Bousfield for Mr. S. Moses).—Consent.

*Camberwell, North.*—A two-story factory on the north side of Bullace-row, Camberwell-road, Camberwell (Mr. E. J. Strevens for Mr. Wolsey).—Refused.

*St. George, Hanover-square.*—A projecting oriel window to abut upon Grafton-street, and a porch to abut upon Hay Hill, to a proposed building upon the site of Nos. 1 and 2, Grafton-street, St. George, Hanover-square, at the corner of Hay Hill (Messrs. Boehmer & Gibbs).—Refused.

*Southwark, West.*—A building on the north side of Old Barge-house-street, Blackfriars (Mr. W. C. Jones for the Thames Bank Iron Company).—Refused.

### *Space at Rear.*

*Deptford.*—A building on a portion of the open space at the rear of the "New Cross Inn" public-house, No. 323, New Cross-road, at the corner of Clifton Hill, Deptford (Messrs. Eedle & Meyers for Mr. W. G. Wrigglesworth).—Consent.

### *Deviation from Certified Plans.*

*Strand.*—Certain deviations from the plans certified by the District Surveyor, under Section 43 of the London Building Act, 1894, so far as relates to the proposed rebuilding of the "Golden Lion" public-house, No. 25, King-street, St. James, Westminster (Messrs. F. J. Eedle & Meyers for Messrs. Ferris & Co.).—Consent.

*St. George, Hanover-square.*—That Messrs. Bird & Walters be informed, with respect to their communication, purporting to be an application under Section 43 of the London Building Act, 1894, for sanction to deviations from the plans certified by the District Surveyor, so far as relates to proposed alterations to the "Coach and Horses" public-house, No. 5, Hill-street, Berkeley-square, St. George, Hanover-square, that having regard to the fact that it is not proposed to erect a building but to alter an existing one, the matter is one which, the Council is advised, cannot be the subject of an application under Section 43, and that the Council has accordingly neither considered their communication as an application nor given any decision thereon.—Agreed.

### *Lines of Frontage and Width of Way.*

*Hoxton.*—A building on the west side of City-road, Hoxton, between Baldwin-street and Brunswick-yard (Messrs. M. W. King & Son for the Trustees of the Alexandra Trust).—Consent.

*Lewisham.*—A one-story shop upon the forecourt of No. 4, The Chestnuts, Bell Green, Lower Sydenham (Messrs. A. Black & Son for Mrs. W. Banham). —Consent.

*Marylebone, East.*—That the application of Messrs. Leggatt, Rubinstein, & Co. for an extension of the period within which the erection of an iron and glass shelter at Queen's Hall, Langham-place, St. Marylebone, at the corner of Ridinghouse-street, was required to be commenced, be granted, upon condition that the shelter referred to be commenced within twelve months from November 15, 1898.—Agreed.

*Marylebone, West.*—One-story addition in front of the coach-house at No. 14, Montagu-square, St. Marylebone, to abut upon Gloucester-mews, West (Mr F. W. Foster for Mr. H. S. Willis).—Consent.

### *Line of Frontage and Deviation from Certified Plans.*

*Camberwell, North.*—A porch at the entrance to a building on the site of Nos. 45 and 47, Albany-road, Camberwell, and certain deviations from the plans certified by the District Surveyor under Section 43 of the London Building Act, 1894, so far as relates to the erection of such building (Mr. A. J. Perriam for the North Camberwell Radical Club and Institute).—Consent.

### *Lines of Frontage, Width of Way, and Space at Rear.*

*Wandsworth.*—That the Council, in the exercise of its powers under Sections 13 and 22 of the London Building Act, 1894, do not consent to the frontage and position of three blocks of proposed residential flats, two of such blocks on the south side of Oldridge-road, and one block on the east side of Lochinvar-street, Balham, at the corner of Holly-grove, with the forecourt boundary at less than the prescribed distance from the centre of the latter street, and that the Council, under Section 41 of the 1894 Building Act, do not allow or sanction the erection of such blocks of flats with open spaces at the rear and portions to extend above the diagonal line as directed by the Act to be drawn (Mr. H. F. Williams for Mr. G. Treeves).—Agreed.

*Islington, North.*—That the Council, in the exercise of its powers under Sections 13 and 22 of the London Building Act, 1894, do not consent to the position and frontage of twenty-two four-story houses, with shops on the ground floor, and of one-story shops in front of two houses on the north-east side of Archway-road, Holloway, with the flanks of two of the proposed four-story houses to abut upon a footpath leading from Archway-road to Hornsey-lane, and the flanks of one other four-story house and of one of the one-story shops to abut upon a footpath leading to Alpha-villas; and that the Council, under Section 41 of that Act, do not allow the erection of eight of such houses without an open space at the rear (Mr. C. J. Bentley for Mr. J. C. Hill).—Agreed.

### *Lines of Frontage and Construction.*

*Rotherhithe.* — A steel gangway across Shad Thames, Rotherhithe, to connect Bengal Wharf with a warehouse on the opposite side of that street, and also of two wood and iron lookums at the fourth-floor level of such warehouse, overhanging St. Saviour's Dock (Messrs. Garbutt & Co., Limited).—Consent.

*Islington, East.*—Advertisement boards on top of the open wooden fence and party fence walls, inclosing the forecourt of Nos. 4, 5, 6, 7, 8, 9, and 10, Kingsland-green, Dalston (Mr. J. Webster for Messrs. J. Gliksten & Son).—Refused.

### *Buildings for the Supply of Electricity.*

*Hammersmith.*—That the Council do not approve of the plans submitted with the application of Mr. H. Mair on behalf of the Vestry of Hammersmith, for the construction of an addition to the Vestry's electric generating station and works, Fulham Palace-road, Hammersmith, and that the Council also do not authorise the erection of such addition. —Agreed.

### *Formation of Streets.*

*Finsbury, Central.*—That an order be issued to Messrs. Vigers & Co., sanctioning the formation or laying out of a new street for carriage traffic to lead out of Alexandra Park-road, Muswell Hill, Clerkenwell (detached), (for the London and Middlesex Freehold Estates Company, Limited). That the name Curzon-road be approved for the new street.—Agreed.

### *Working-class Dwellings.*

*Islington, North.*—That the Council do make an order as follows—Whereas Mr. Alfred Tosh . . . under the provisions of Section 42 of the London Building Act, 1894, delivered, on behalf of Mr. D. Devant, at the County Hall, plans of four blocks of intended dwelling-houses to be inhabited by persons of the working class, and proposed to be erected, not abutting upon a street, on a site at the rear of houses on the east side of St. John's-road, Upper Holloway, Islington . . . Now the Council does by this order disapprove of, and refuse to sanction, the said plans.—Agreed.

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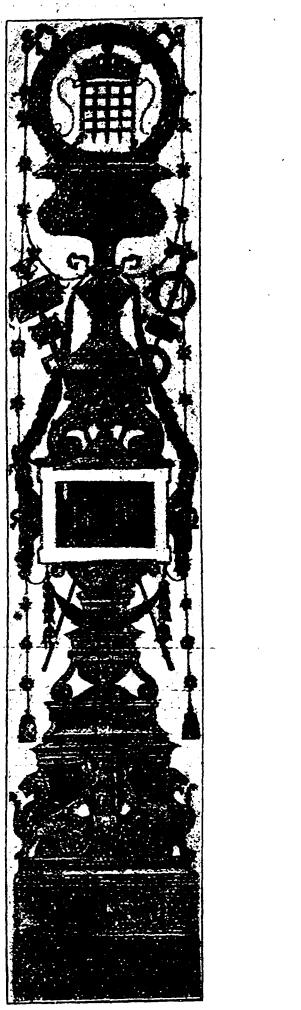
ALTAR TABLE, ST. ANDREW'S CHURCH, LINCOLN. —An altar table of oak has just been placed in St. Andrew's Church, Lincoln. The work was carried out by Mr. S. C. Basker, the carving having been executed by Mr. A. J. Tuttell. The architect was Mr. Pratt, of Nottingham.



*Arabesque Decoration, Princes Restaurant.— By Mr. H. C. Brewer.*

## ARABESQUE DECORATION.

THIS small illustration represents one of the arabesque panels painted by Mr. H. C. Brewer at the Princes Restaurant. As we are giving in our plates of this week Mr. Brewer's decorations for a theatre, we add this as another specimen of his work.

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# Illustrations.

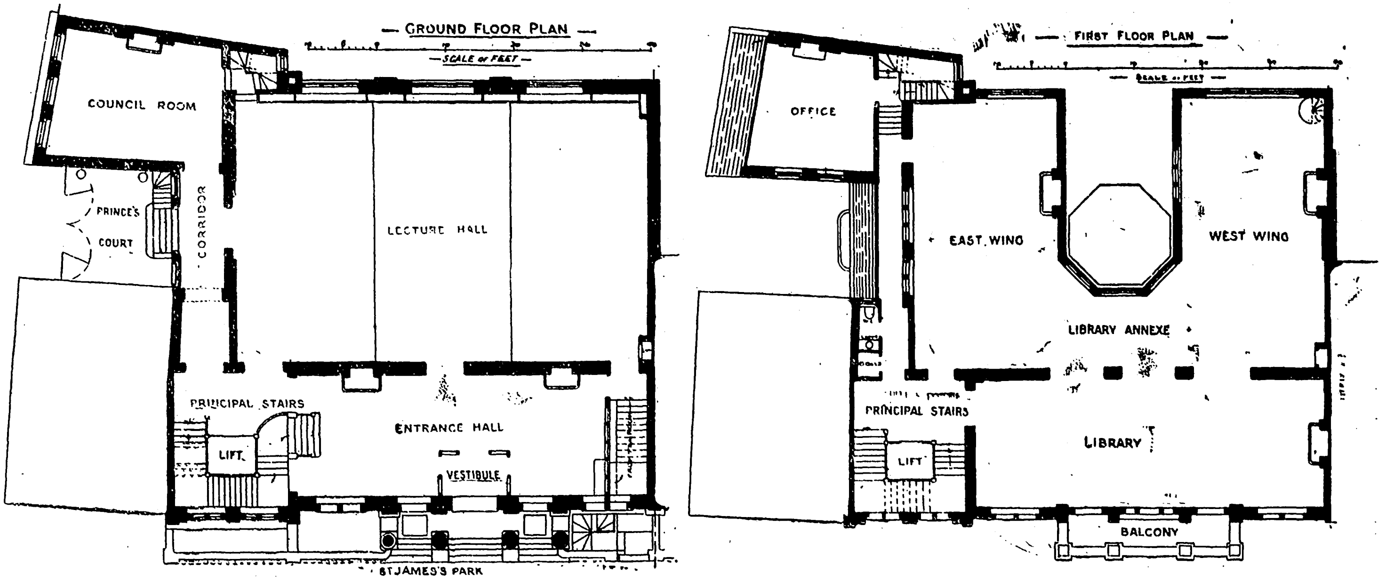
## DECORATIONS OF THE NEW PALACE THEATRE, PLYMOUTH.

ALTHOUGH these interesting examples of modern theatre decoration were quite recently executed, they are now no more, the new Palace Theatre at Plymouth, designed by Messrs. Wimperis and Arber, in which they were painted, having been destroyed by fire in December last. As the designs represent a very meritorious effort to give special point and interest to the decorations of a theatre, in connexion with the associations of the locality, we are glad to have an opportunity of preserving a record of them in our illustration pages.

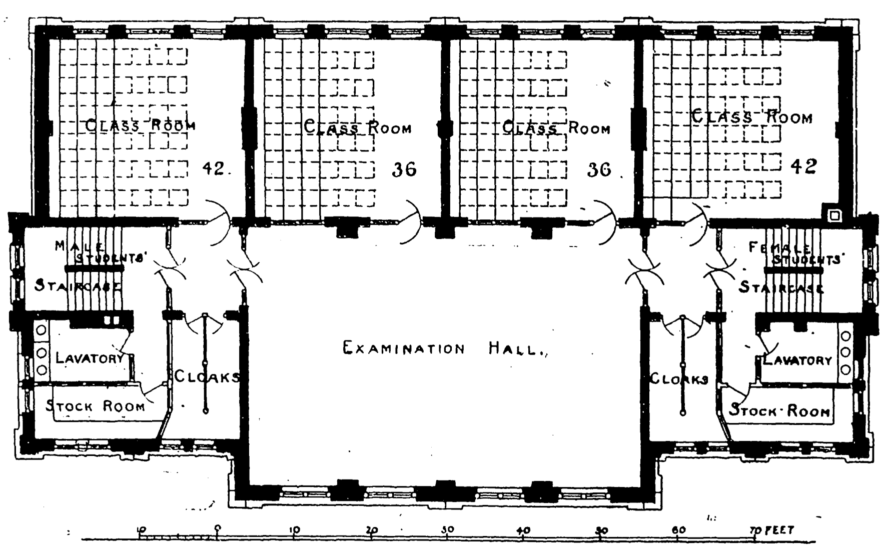
The artist is Mr. H. C. Brewer, the son of Mr. H. W. Brewer, whose architectural drawings and conceptions are so well known to our readers. The following is Mr. Brewer's description of the work :—

"These decorations were carried out to attract a local audience, whose interest was mainly connected with the British Navy. The four larger panels in the dome represent the chief battles of the Navy. Facing the audience was 'The Destruction of the Spanish Armada;' on either side of it 'Lord Howe's Victory of the First of June' and 'The Battle of Trafalgar;' and 'Blake's Victory over Van Tromp' filled the fourth panel. The smaller panels represented '*The Great Harry*,' first great battleship of the Navy; '*The Victory*,' most famous ship of the Navy; '*The Majestic*,' one of the latest ironclads; and '*The Sancta Maria*,' the ship in which Columbus discovered America.

The frieze above the proscenium arch repre-



*Institution of Mechanical Engineers. Plans.*



*Finsbury Pupil Teachers' Centre. Plan.*

sents Queen Elizabeth knighting Drake, surrounded by the chief military and literary men of the period. Two Elizabethan ships filled the panels at either end of the frieze. These panels were carefully studied from an antiquarian point of view. They were executed on canvas prepared with an absorbent ground of zinc white, and were painted with a medium composed of copal, spirit, and wax. This medium gave them an absolutely smooth surface on which the dust could not settle, and which was capable of being repeatedly washed. The canvas was fixed on a surface of white lead mixed with varnish, which protected it from any injurious effect of the plaster. It had to be fixed immediately the plaster was set.

The effect of the dome was greatly added to by the absence of the usual centre chandelier, the light being obtained by a row of electric lights placed on the ledge of the cornice, thus brilliantly lighting the dome without the source of light being visible."

## THE INSTITUTION OF MECHANICAL ENGINEERS.

THE house has been about two years in building. The façade, as illustrated, overlooks St. James's Park, towards the Horse Guards' Parade, the Foreign Office, and new Admiralty Buildings. Brown Portland stone and Midland red pressed brick facings are used on the front. The foundations stand in running water, about 22 ft. below the pavement, and some trouble was experienced in laying them; the concrete walls are 7 ft. thick, and the basement floor is laid "table-top" fashion on the top, like an inverted tank, circulation of the water throughout being provided for with terra-cotta pipes laid in the concrete walls.

The interior is treated generally with Hungarian oak and fibrous plaster enriched ceilings. The special features of the building are the lecture hall, with its ceiling hung clear of the walls for acoustic purposes, and the false floor which can be arranged in tiers for lectures or in one level. The tea-room, for which a basement floor is utilised, is treated with light and rich-coloured marbles, Mexican oynx-cippolino, antique Sienna and white statuary. The library, shown in the illustration, has light oak bookcases of Elizabethan style. The "plenum" system is adopted for the ventilation of the principal rooms. The building is lit by electricity, the same agent being used for working lifts, clocks, ventilation fans, and power for working exhibition models.

Messrs. Lawrance & Sons, of Wharf-road, City-road, N., were the contractors; Mr. William Winteringham being the clerk of works; Messrs. Patteson, of Manchester, were the marble contractors; and Messrs. Hardman & Powell, of Birmingham and London, the firm carrying out the ornamental iron and metal finishings generally. The fibrous plaster ceilings are by Mr. Gilbert Seale, of Camberwell, and Messrs. Jackson & Sons, of Rathbone-place. Mr. Middleton, of Westminster, carried out the electric installation under Mr. Edward de Segundo, consulting electrical expert. The lifts are by the Otis Elevator Company, of London.

The architect is Mr. Basil Slade.

## FINSBURY PUPIL TEACHERS' CENTRE.

THE Finsbury Pupil Teachers' Centre, to be erected in the Offord-road, Islington, N., will provide accommodation for 312 students, including eight class-rooms, central examination hall, gymnasium with dressing-rooms, drawing class-room, modelling room, chemical and physical laboratories with dark room and chemical stores, lecture room, teachers' private rooms, lavatories, stock and cloak rooms.

The walls will be faced externally with red bricks and buff terra-cotta dressings, and roofed with deep strawberry-coloured Broseley tiles.

The architect is Mr. T. J. Bailey, Architect to the School Board for London.

## AN OLD FOLKS' HOME, HITCHIN, HERTS.

THIS building has been erected by Mr. F. W. Phillips, of Hitchin, for the accommodation of certain widows and old men. It contains eight sets of rooms arranged on two floors. The living-rooms have each a cupboard scullery, fitted with shelves and racks, and ventilated by its own window; and over the ceilings of these sculleries end light and ventilation is obtained for the corridors.

A washhouse, water-closets, and coal-sheds are provided in the drying-ground and garden at the back of the site, approached by a length of covered way.

The walling is of brick, faced with roughcast from the ground-floor sills upwards. Below these is a red brick plinth, built hollow. The projecting gable ends are finished with lime plastering, arranged in panels filled with scratched patterns, as seen in old cottages in the neighbourhood. The builders were Messrs. Matthew Foster & Co., of Hitchin, and the architect Mr. Walter Millard. The drawing is by Mr. F. L. Griggs.

## NEW POST-OFFICE, BROADWAY, WORCESTERSHIRE.

AN endeavour has been made to keep this post-office, which is now being built in the main street of Broadway, as quiet and unobtrusive as possible and in harmony with the rest of the buildings in this unique country village. No attempt has been made to impart an official character to it, or to emphasise its purpose in any way.

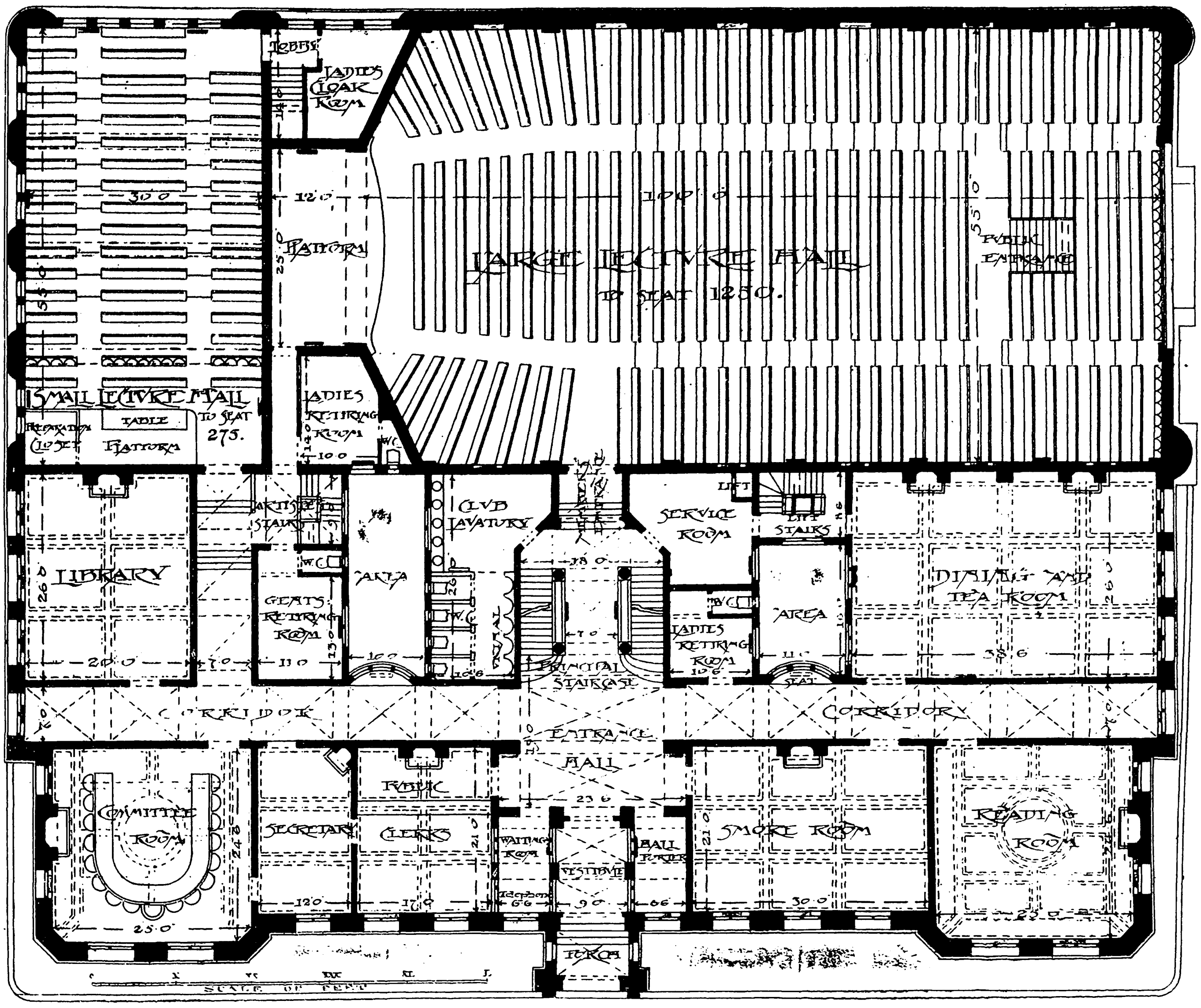
The architects are Messrs. E. Guy Dawber & Whitwell, of London, and the builders, Messrs. Espley & Co., of Evesham.

The drawing is exhibited at the Royal Academy.

## COMPETITION DESIGN FOR ROYAL INSTITUTION, LIVERPOOL.

THE Liverpool Royal Institution is the home of a number of learned societies, in which they hold various meetings and classes, and in addition the new scheme will include club accommodation for the various members.

The most important feature of this competition was to provide for a large lecture hall, to seat 1,250, by only pulling down part of the existing premises, and leaving the remainder intact for present purposes. The plan shows the arrangement of the ground floor proposed in this design. On the first floor are five meeting rooms for various scientific societies, arranged *en suite* for receptions, and two lecture rooms and a music room for practice,



*Design for Liverpool Royal Institution. Plan.*

detached by an annexe; art galleries and museum being arranged on the second floor, which also contains caretaker's quarters. The cloak-rooms and entrance to large lecture hall are arranged under part of the lecture hall, and are approached from Seel-street. Entrances are also provided from the Institute itself, and from Parr-street for artistes, &c., on musical occasions. An emergency exit is arranged into Back Colquit-street.

In the basement is an examination hall and six class-rooms, well lighted by taking advantage of the fall of the ground.

The requirements issued by the Committee were extremely vague, and consequently the plans submitted varied to a considerable extent.

The author of this design, which obtained the second premium in the competition, is Mr. R. W. Bedingfield, of Leicester.

◆

## BOOKS RECEIVED.

ANIMALS IN MOTION: An electro-photographic investigation of consecutive phases of animal progressive movements. By Eadweard Muybridge (Chapman & Hall.)

TRANSACTIONS OF THE SOCIETY OF ENGINEERS FOR 1898. Edited by G. A. Pryce Cuxson, Secretary. (E. & F. N. Spon.)

AUTHORITY AND ARCHÆOLOGY, SACRED AND PROFANE. Essays on the Relation of Monuments to Biblical and Classical Literature. Edited by David G. Hogarth. (John Murray.)

◆

NEW CHAPEL, NETHERFIELD, NOTTINGHAMSHIRE.—The jubilee year of the Notts Baptist Preachers' Association was signalised on the 22nd ult. by the laying of a memorial stone and six foundation stones in connexion with the new chapel which is being erected at Netherfield at a cost of 1,200*l.* Accommodation is being provided for about 400 worshippers. The length of the structure is 55 ft. and the width 41 ft. Mr. W. H. Higginbottom, of Nottingham, is the architect, and Mr. J. Lewin, of Netherfield, the builder.

## The Student's Column.

### ARCHITECTURAL HYGIENE.

XX.—VENTILATION AND HEATING SCHEMES.

*a. Cottages.*
*b. Houses.*
*c. Churches.*
*d. Schools (class-rooms).*
*e. Hall (open timbered roof).*
*f. Large Hall (with flat ceiling).*
*g. Hospitals.*
*h. Theatres.*
*j. Picture Galleries.*
*k. A Chapel with gallery round three sides.*
*l. A Billiard-room.*

(*a*) COTTAGES.

IT is notorious that people who live an open air life are content to live in very stuffy rooms. The ordinary cottager is well known to have these views, and even if architects provide air bricks or tubes, they are immediately blocked up. This is really very natural because small rooms are specially difficult to ventilate without draught, and, of course, expense would prevent any scheme of ventilation other than a natural one being employed. The open fireplace then is, as a rule, the sole agent, but occasionally a ventilating fireplace of the Galton pattern (as already described and illustrated) is employed, or if not, then a Teale fireplace with economiser grate, may be used, as less draughts are likely to occur with these.

The upper rooms may be kept at an equable temperature, by the use of ventilating fanlights over the internal doors; the chimney acting as an extract.

(*b*) HOUSES.

So much depends upon the size of the house and the money which the owner can afford to expend on ventilation that it is difficult to lay down more than general rules.

Firstly, as to the *Hall and Staircase.*—An improperly warmed and ventilated staircase is the cause of draughts and chill.

The best way to effect this is by means of hot-water coils placed so that the incoming air from the front door may be warmed, and so that the large amount of air in a hall and staircase may not be at a much lower temperature than the air of the rooms themselves. Fresh warmed air can be introduced over this coil. By properly heating this portion of the house, all the rooms abutting thereon are rendered more habitable, especially in cold weather, as the warmed air enters them and finds an exit in their fireplaces.

Again, when sitting-room doors are opened a cold blast of air does not penetrate and cause colds and coughs. The great secret of a warmed and ventilated house lies in thoroughly attending to the hall and staircase, and no system will be found complete until this is taken in hand. An exit for foul air should be provided wherever possible into an air flue in the upper part of house, or by means of a lantern light fitted with extract coil. In this case, it is best to create an up current and thus prevent a down draught by placing a coil of water pipes as a lining to the lantern.

The air in the hall and living rooms should be as nearly as possible of the same temperature, if draughts are to be prevented, and to keep the air of the house pure and sweet both will intermingle with advantage. If warmed air is introduced into the hall, and fanlights are arranged above the doors of the rooms, a continual stream of warmed fresh air is supplied to the house.

As regards *kitchen, scullery, and offices,* and rooms containing sanitary fittings, and cellars, however, we should have another object in view, and that is to disconnect these as much as possible from the living portion.

We have endeavoured to show this in our article on "planning."

As to the kitchen, if possible, cross ventilation should be provided, so that the fumes may be dispersed as soon as possible, and a cross ventilating corridor should always be so planned that kitchen smells may be prevented from entering the living part of the house.

As to the lavatories and water-closets an ideal arrangement is that which obtains in hospitals. This is, however, rarely done, and it is doubtful if it is always necessary. The usual way is to place the lavatory, which may also form a cloak-room, so as to be entered from the hall, and this in itself forms a disconnecting lobby; it should be provided, if possible, with two windows, so that "through" or "cross" ventilation may be obtained, and therefore effective disconnexion of the water-closet from the main portion of the house. In order to ventilate the water-closet itself, louvres, or a grating, may be placed in the lower part of the door connecting it with the lavatory, so that air may be allowed to enter from the lobby and escape through the water-closet window.

*Cellars* should be cut off from the living portion of the house by cross ventilating lobbies. This is necessary in order that the damp, cold air may not be drawn into the house, and that the dust from coal-cellars and underground passages, the fumes from water-closets, and decaying matter from dust-bins and refuse may not be drawn up by the warm house air.

*Bedrooms.*—Every bedroom should, of course, have a fireplace, and the inlet to the flue should always be kept open, so that a current of air may always be travelling up the flue.

The old form of grate, with a register which can be shut down should be avoided, as ignorant people seem very fond of shutting this, in which case the bedroom becomes a mere box without outlet. A bedroom in which the register is pulled down is almost certain to produce a headache by the morning.

People who desire to be healthy have their windows open an inch or so all the year round; but if this is objected to, a ventilating grating over the doorway should be provided, so that the fresh air admitted to the hall, after being warmed by the radiator, can pass through the bedrooms and so up the fireplaces.

### (*c*) CHURCHES.

In this class of building 500 ft. per hour per person may be taken as a standard. The motive power for the extract may be produced either by a shaft in the tower, which may be heated by a coke furnace or gas, or by a fan worked by a gas engine. The inlet of fresh air may be introduced at different points over hot-water radiators, or by air which passes through a chamber filled with hot water pipes and delivered to various points in the church. Hot-water piping, either raised above the floor on the outside walls or in channels below the floor when placed in aisles, are also used. Extracts can be taken into the roof at various points, and either led into the tower shaft, or aided by gas or a hot-water or steam coil to find its exit in an extract ventilator.

In lofty churches with clearstories the windows may be in two thicknesses of glass, and very often a hot water flow and return can be carried round at the clearstory level, which will warm the air at this cold part and prevent the down draught, which is so objectionable.

### (*d*) SCHOOLS.

This type of building is one of the most important as one of the most difficult to ventilate.

Important, because if properly ventilated, it prevents the spread of infectious diseases and increases the working power of the students and teachers, and keeps them in better health and spirits.

Difficult, because of the number and different sizes of the class-rooms, the number of students in each, the varying length of time for which each is used. The various positions of the different class-rooms must be also taken into account, as, for instance, a room with a southern temperature requires less heat than one exposed to a north-east aspect.

The system, therefore, that appeals to us is one in which each room can be independently kept at a required temperature. The idiosyncrasies of masters has also to be taken into account; these should only be allowed play within a certain limit.

The Education Department requires fresh-air inlets equal to 2½ square inches per scholar, and outlets equal to 2 square inches per scholar, in addition to the fireplace chimney.

In Mr. Robins's work on "Technical School and College Building," a careful survey is made of the ventilation arrangements of recent schools.

The three methods are:—

1. Supply from one large heating chamber.
2. Supply from separate heating chambers.
3. Supply from cased coils in the rooms.

Whichever system is adopted, a separate heating surface giving radiation to each room should be adopted.

An example of a school recently erected is given as an illustration of heating from one chamber by means of hot-water pipes and radiators, and an extract flue heated by carrying up the iron smoke pipe from the boiler in a brick flue, which thus is heated to act as an exhaust for the vitiated air of the class-room, which is led into it by brick ducts.

In this case (figs. 248 and 249) the class-rooms are warmed by means of one ventilating radiator fixed in each class-room over a 2-in. cast-iron circulating pipe as shown in the drawing. Fresh air is admitted to these radiators by two 9 in. by 6 in. cast-iron galvanised fresh-air inlet gratings, with regulating gratings at the back of each radiator, so that after being warmed it enters the room. Each radiator is fixed above the circulating main and fitted with regulating valve and unions, so that each class-room can be regulated or shut off as required by the master in charge, with the exception of the circulating-pipe at the skirting level. The passages are warmed in a similar way. The heating apparatus is worked from a boiler fixed in the basement where shown on plan. As to the ventilation, it was considered necessary to change the air of the class-rooms three times an hour. The up-cast flue-pipe from the boiler acts as the extracting power. This is enclosed in a brick air-trunk 2 ft. 6 in. square, and the vitiated air from the class-rooms is introduced into this space round the flue-pipe, and the up-current is started by the heated surface of the flue-pipe. The exit of foul air from the class-rooms is led by means of a cast-iron extraction-grating at the high-level and of different sectional areas to each class, because of its length from the up-cast flue. The foul air descends by brick flues in the corner of each room into a brick channel formed into the floor of the passage, 2 ft. 6 in. by 2 ft. in the clear. This vitiated air-channel is connected with the up-cast flue as shown.

In the summer, when the heating apparatus will not be working, an open-fire coke stove placed next to the boiler in the basement and with flue taken into the cast-iron flue pipe, is kept going, so that the vitiated air trunk is always heated and the attraction formed in the ventilating flues winter and summer.

As to the practical working, one of the end class-rooms is taken, as being the most difficult to heat:—

*Heating.*

Cubic contents of class-room 24 ft. × 17 ft. × 12 ft. = 4,896 cubic feet.

Change air three times per hour = 4,896 × 3 = 14,688 cubic feet.

1 heat unit will raise 55 cubic feet one degree $\frac{14,688}{55} = 267$ heat units.

*Glass Surface.*

Two windows about 5 ft. × 3 ft. 11 in. = say, 39 square feet.

1 square foot of glass requires $\frac{92}{100}$ heat units $= 39 \times \frac{92}{100} = 36$.

*Wall Surface* (outside only).

| | |
|---|---|
| One side wall 24 ft. × 12 ft. = | 288 square feet. |
| One end wall 17 ft. × 12 ft. = | 204 „ |
| | 453 |

1 square foot of wall surface requires $\frac{3}{10}$ heat unit.

$$\therefore 453 \times \frac{3}{10} = \frac{136}{439}$$

∴ 439 heat units required per degree difference 60 deg. internally when at 32 deg. externally = difference = 28 deg.

∴ 439 × 28 = 12,292 heat units.

1 ft. super of hot water surface gives off 175 heat units.

∴ 12,292 ÷ 175 = 70 ft. super. of hot-water surface required.

| | |
|---|---|
| One radiator | = 50 ft. super. |
| 42 ft. of 2 in. pipe | = 21 ft. super. |
| Total feet super of hot-water surface in room | 71 ft. super. |

*Ventilation.*—Cubic contents 4,896 × 3 times per hour = 14,688.

Velocity of extract = 6 ft. per second = 21,600 ft. per hour; 14,688 ÷ 21,600 = ·68 square feet outlet required (·68 of square foot = 108 square inches).

Class-room nearest to the shaft has outlet 12 in. × 9 in.

Class-room furthest from the shaft has outlet 18 in. × 12 in.

Amount of air per hour for each pupil $= \frac{14,688}{30} = 489$ cubic feet.

Thirty pupils would be the limit that should be allowed in the room, as a rule not more than twenty to twenty-five should be present.

Messrs. Rosser & Russell, of London, were the engineers who carried out this scheme.

### (*e*) A LARGE HALL.

Fig. 250 is an example of a large hall for public meetings, &c. It is 83 ft. long by 42 ft. wide, and is covered with an open-timber roof, the tie-beam of which is 20 ft. from the floor (fig. 251).

The heating was effected by a boiler of sufficient size in the basement. From this boiler a 3 in. flow and return main was carried to serve the hall and staircases, as shown on the plans. It is carried round the hall at the floor level. The hall itself is warmed with powerful hot-water ventilating radiators, each 46 in. long, 8¾ in. wide, and 37 in. high, fitted with connexions to the flow and return pipe, so as to be entirely under control. The ventilation is effected by means of 18 in. by 12 in. fresh-air inlets placed behind the ventilating radiators. External air bricks and internal hit-and-miss regulating gratings being supplied for each, the extract being by a powerful exhaust ventilator fitted at the ridge level.

The following are the calculations:—

*Heating.*

Cubic contents 83 ft. × 42 ft. × 30 ft. = 104,580 cubic feet.

Change air once per hour.

1 heat unit will raise 55 cubic feet 1 deg.

| | Heat Units. |
|---|---|
| ∴ 104,580 ÷ 55 =… | 1,902 |

| *Glass.* | sq. ft. |
|---|---|
| Ten windows 4 ft. 6 in. wide and 8 ft. high ..................... | 360 |
| Two windows 14 ft. wide and 14 ft. high ........................ | 392 |
| | 752 |

1 square foot of glass requires $\frac{92}{100}$ heat units.

$$752 \times \frac{92}{100} = \ldots \quad 692$$

*Wall Surface and Roof.*

| | |
|---|---|
| Sides 83 × 50 × 2 = | 8,300 |
| Ends 42 × 30 × 2 = | 2,500 |
| | 10,820 |
| Deduct glass | 752 |
| | 10,068 |

1 square foot requires $\frac{3}{10}$ heat units.

$$10,068 \times \frac{3}{10} = \ldots \quad 3,018$$

5,612

5,612 heat units required per each degree of internal and external difference: 55 deg. internally when 30 deg. externally = 25 deg. difference.

5,612 × 25 = 140,300

1 ft. super H.W. surface gives off 175 heat units.

140,300 ÷ 175 = 800 sq. ft. heating surface.

188 ft. run 3 in. pipe = 165 ft. sup.

6 radiators at 106 ft. = 636

801 sq. ft. of heating surface.

*Ventilation:*

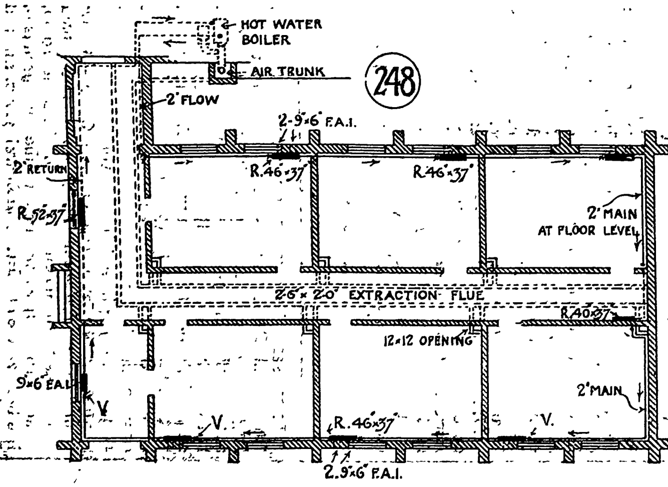
Cubic contents, 104,580.

Velocity of extract 6 ft. per second = 21,600 per hour.

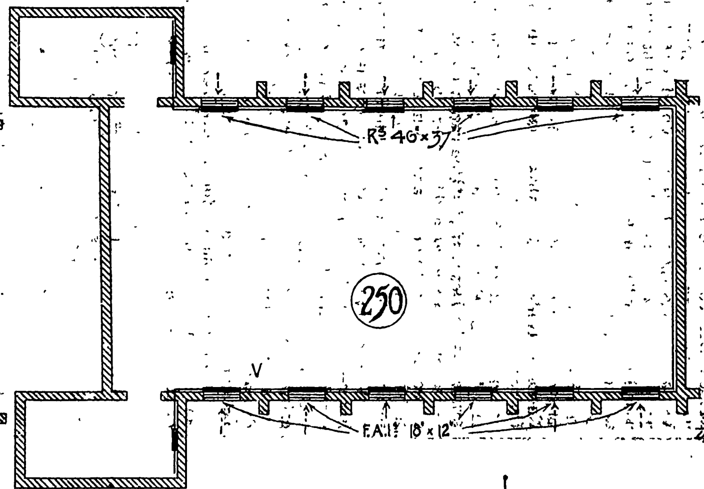
104,580 ÷ 21,600 = 5 sq. ft.

One extract ventilator 32 in. diameter (extract) = 5·5 sq. ft.

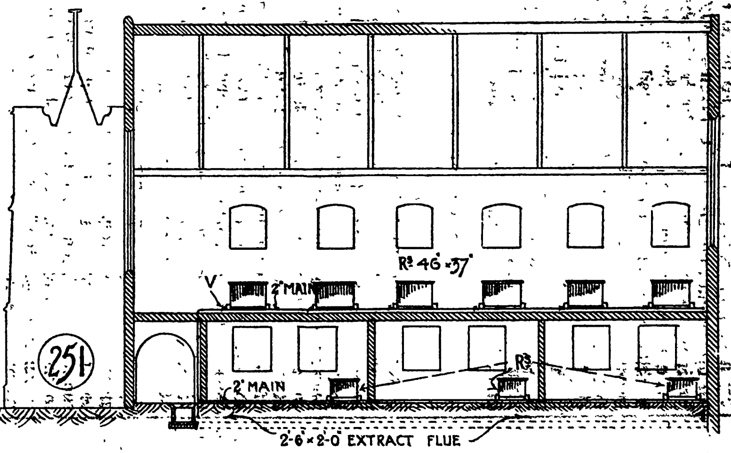
Six 18 in. × 12 in. at ⅔ of area = 6 sq. ft (inlet).



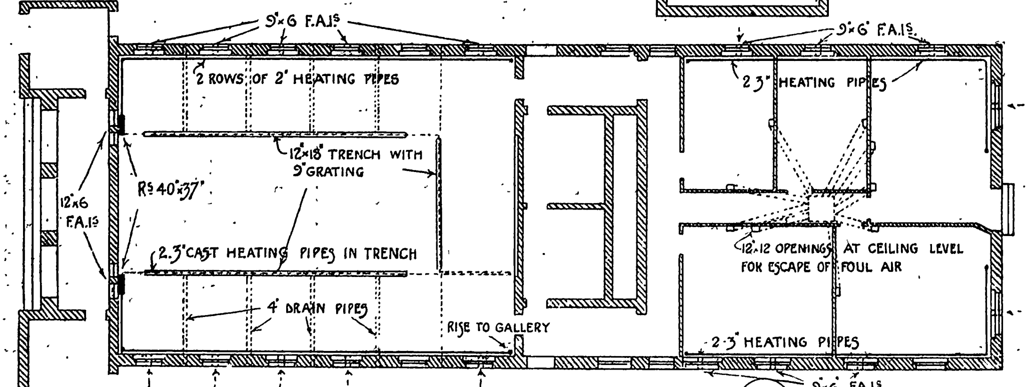
248
HOT WATER BOILER
AIR TRUNK
2" FLOW
2" RETURN
R.52×37
2-9×6 F.A.I.
R.46×37
R.46×37
2" MAIN AT FLOOR LEVEL
2'6×2'0 EXTRACTION FLUE
R.40×37
12×12 OPENING
2" MAIN
9×6 F.A.I.
V.
R.46×37
V.
2.9×6 F.A.I.



250
Rs 46×37
V
F.A.Is 18×12

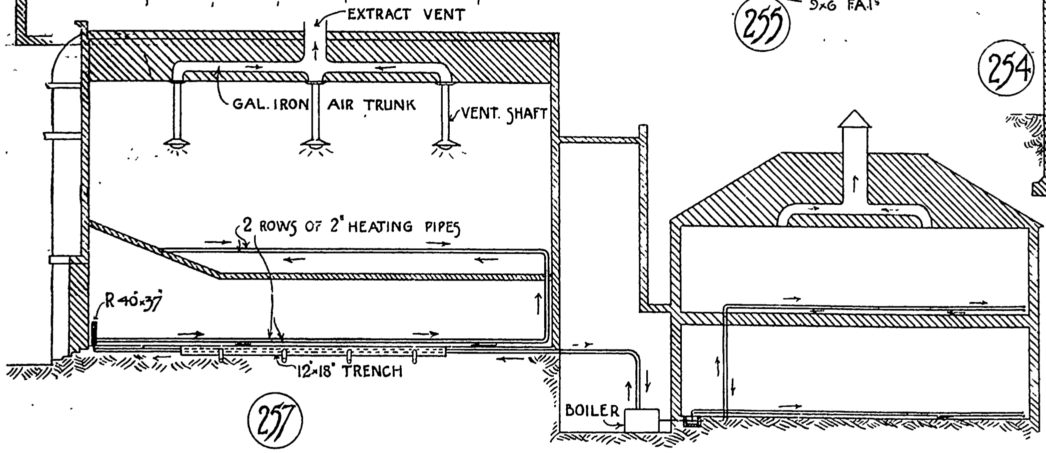


251
Rs 46×37
V
2" MAIN
R
2" MAIN
2-6×2-0 EXTRACT FLUE

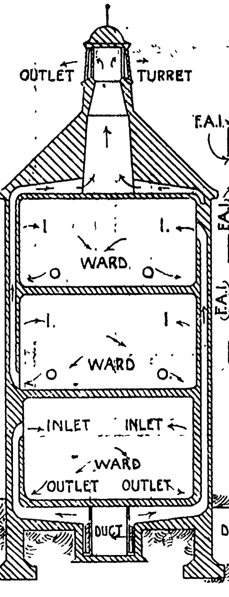


9×6 F.A.Is
9×6 F.A.Is
2 ROWS OF 2" HEATING PIPES
2 3" HEATING PIPES
12×18 TRENCH WITH 9 GRATING
Rs 40×37
12×6 F.A.Is
2.3" CAST HEATING PIPES IN TRENCH
12.12 OPENINGS AT CEILING LEVEL FOR ESCAPE OF FOUL AIR
4" DRAIN PIPES
RISE TO GALLERY
2-3" HEATING PIPES
9×6 F.A.Is

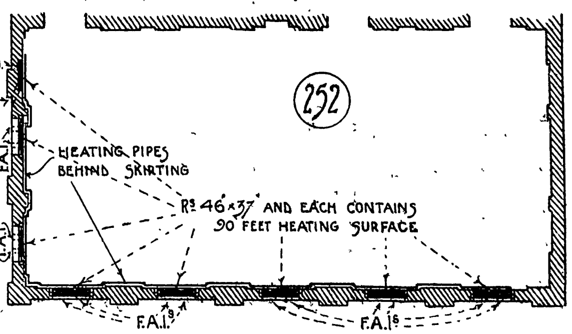
255



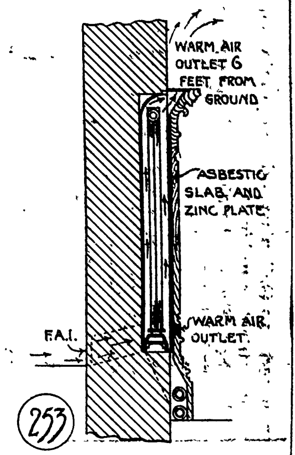
EXTRACT VENT
GAL. IRON AIR TRUNK
VENT. SHAFT
2 ROWS OF 2" HEATING PIPES
R 40×37
12×18 TRENCH
257
BOILER



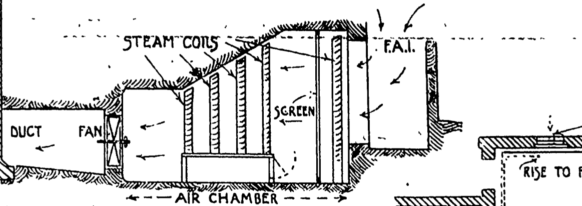
OUTLET
TURRET
I
I.
WARD.
O
O
I.
I
WARD
O
O
INLET
INLET
WARD
OUTLET
OUTLET
DUCT
254



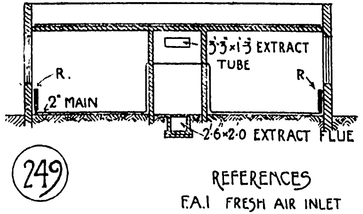
252
F.A.I.
F.A.I.
F.A.I.
HEATING PIPES BEHIND SKIRTING
Rs 46×37 AND EACH CONTAINS 90 FEET HEATING SURFACE
F.A.Is
F.A.Is



WARM AIR OUTLET 6 FEET FROM GROUND
ASBESTIC SLAB AND ZINC PLATE
WARM AIR OUTLET
F.A.I.
253



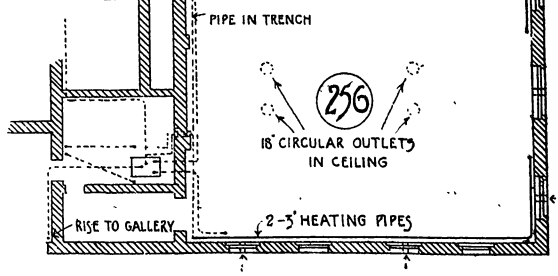
STEAM COILS
F.A.I.
SCREEN
DUCT
FAN
AIR CHAMBER



3.3×1.3 EXTRACT TUBE
R.
R.
2" MAIN
2.6×2.0 EXTRACT FLUE
249

REFERENCES
F.A.I. FRESH AIR INLET
O. OUTLET
R. RADIATOR
V. VALVE

9×6 F.A.Is



RISE TO FLOOR ABOVE
2-3" CAST HEATING PIPES
PIPE IN TRENCH
256
18 CIRCULAR OUTLETS IN CEILING
RISE TO GALLERY
2-3" HEATING PIPES

*Illustrations to Student's Column.*

### (*f*) HALL (WITH FLAT PLASTER CEILING).
*(Figs. 252 and 253.)*

This was a case in which the hall had been built for some time without being heated in any way; in consequence, air had to be admitted cold, and the consequence was that this descended on to the heads of the defenceless occupants to such an extent that at last they determined to adopt a proper scheme.

Ventilating radiators were placed in recesses under the windows and behind the oak panelling. Fresh air was admitted to these radiators by inlet gratings and, after being warmed, was admitted into the hall at a height of 6 ft. By this means the down draught from the big windows was prevented. The panelling in front of the radiators was lined with sheet-iron and asbestic so as to prevent the woodwork being affected by the heat. The extraction of vitiated air was provided for by means of the three sun-burners which had ventilating tubes taken to the outer air and up which a strong current was thus always passing. Fig 252 shows the plan and fig. 253 a detail of the radiators enclosed in the panelling.

### (*g*) HOSPITALS.

The subject of hospital ventilation is such a large one, and the various types of hospital so many, that we can hardly do more than touch upon it here. At least 3,000 cubic feet per head per hour is quite the minimum amount of air which should be allowed, and the inlets and outlets may be provided in any of the ways already referred to. During the last few years mechanical means have been employed for the purpose of securing ventilation. One of the largest and most complete installations on the "plenum" principle is that carried out at the Birmingham General Hospital (Mr. Henman, F.R.I.B.A., architect), in which no fireplaces are used, the air being forced in by fans, cleansed, and brought to a proper hygrostatic condition by filtering through moistened screens, warmed when required by means of steam coils, and propelled through the wards into extract flues, whence it passes into the open through flapped and louvred openings, constructed so that the varying movements of the outer atmosphere can exert no influence upon the outflow.

The illustration (fig. 254), from a drawing kindly supplied by Mr. Wm. Henman, shows the application of the system, which the following remarks will make clear. The air is sucked in from windows in the basement (carefully selected so as to be out of the way of contaminated air) by a fan, passing first through a screen of strained cocoanut fibre, kept automatically wetted every quarter of an hour. The air is then carried through a series of horizontal steam-pipes, heated to the required temperature, then through the fan and into the basement tunnels. These tunnels (or "ducts" as they are called) start in sectional area 11 ft. by 8 ft., and only in a few cases are they so little as 3 ft. in width at the extreme ends in a few branch ducts. From these ducts are taken the vertical ducts to the rooms above. At the mouth of each of these vertical ducts is a *separate* steam radiator to give extra warmth if required for different departments, in excess of that supplied by the main collection of steam coils.

In the *large wards*, the air is admitted at the window boards behind a vertical glass screen, 18 in. high, in order to screen off direct draught and direct the air upwards; it is extracted near the floor in order to ensure circulation. However, it is only in the large wards, and there only partially for constructive reasons, that the air is admitted in front of the windows, elsewhere it is through openings at a height of about two-thirds of the respective rooms. The foul air is not "extracted" at all, it is simply forced out by the continuous forcing in of fresh air, the outlets being near the floor level.

The movement of the air being well under control, the wards can be kept perfectly fresh during the whole of the twenty-four hours; whereas in cases where natural systems are adopted, the wards may, perhaps, be kept fairly fresh during the day, but become particularly offensive at night. The ventilation of the hospital is divided into eight separate systems, worked by eight fans, but in case of the breakdown of a fan, two systems can be coupled and worked by one fan.

In smaller buildings, such as cottage hospitals, &c., the method of ventilation in military hospitals may be adopted. The room may be warmed by a Galton's ventilating grate, which forms an outlet and inlet.

Further, Sherringham's ventilators are provided as inlets; one square inch being allowed for each 60 cubic ft.

An additional outlet, consisting of 12 square inches to each man, is carried from the ceiling level to 6 ft. above the roof.

### (*h*) THEATRES.

The ventilation of theatres requires, as a rule, the advice of an expert. It is essential that all draughts should be carefully avoided, and for this reason the "plenum" method seems desirable, the air being admitted into a basement chamber, passed over hot-water and steam pipes, screened and moistened by means of sprays of water, and so introduced by numerous openings as to thoroughly reach every part of the house. The use of electricity has facilitated matters by decreasing the amount of air which was formerly necessary to supply the old gas burners.

The Vienna Opera House is generally quoted as a perfect example. In this case the "plenum" and "vacuum" methods are employed, there being two fans, one for propulsion and the other for exhaust. The air is admitted through the floor and risers of seats.

The Metropolitan Opera House, New York, is ventilated on the "plenum" system only. During the day the building is highly heated so that the walls may be thoroughly warmed. Before the performance begins the temperature is lowered to the required point, and as the performance progresses and the heat from the audience is felt, the temperature is gradually lowered.

The older theatres in London are many of them most inefficiently ventilated, and it is high time that efficient ventilation is insisted upon before licences are granted. All public buildings have to be provided with a proper water supply, which is properly filtered by the companies before being delivered, and it is difficult to understand why a sufficient supply of pure fresh air, warmed to the proper temperature should not also be provided.

### (*j*) PICTURE GALLERIES OR SCHOOLS OF ART.

In cases of this sort in which a large amount of glass in a skylight or lantern occurs in the top part of the room; difficulty is often experienced because of the down draught which comes from the cold surface of the glass.

Powerful gas lights with ventilating tubes may be taken through the roof to induce an upcurrent, and inlet ventilators may be introduced 6 ft. from the floor in the four corners of the room.

### (*k*) A CHAPEL WITH GALLERIES.

This is given as the fixed seats required a somewhat different arrangement. The chapel itself is warmed by means of two rows of 2 in. pipe each side, and two rows of 3 in. pipes in a prepared trench, covered with cast-iron floor grating. Radiators are fixed near the entrance doors, so that the incoming air may be warmed. In order to prevent a down draught from the large amount of cold air in the upper part of hall, the gallery is heated by two rows of 2 in. pipes on each side of gallery. As to the ventilation, fresh air is admitted behind the radiators on ground floor, and into the trenches in the central part of chapel by means of air channels formed of glazed drain pipes which lead in an upward direction in the channel mentioned above. The extraction of foul air is effected by means of three gas sun-burners suspended from the roof with ventilating shafts leading into a galvanised iron vitiated air-trunk, taken into a central galvanised iron box on the top of which an extract ventilator is fixed, communicating with the outer air. Figs. 255, 256 show the ground floor and basement plans respectively and fig. 257 shows a section throughout.

### (*l*) A BILLIARD-ROOM.

A billiard-room is very often difficult to ventilate because of the large amount of glass in the lantern which is necessary for lighting the table, and the enormous quantity of gas which is necessary for lighting. The first thing which should be done wherever possible is to substitute electricity for gas; this will simplify matters considerably. In order to prevent a down-draught from the cold air round the glass a "lay-light" or horizontal glass ceiling may be placed below the lantern, and the space thus formed warmed by a coil of hot-water pipes, so as to cause an up current, which can be taken through an ordinary extract ventilator. Fresh air should, of course, be made to enter by means of ventilating radiators from, if possible, the four corners of the room. If hot-water heating is not desired, a ventilating grate may be used, the lay light made air tight, several Sherringham inlets placed in the walls, and the extract obtained by a special foul-air flue in the chimney-breast, with possibly a "pilot light" or gas jet to accelerate the current.

## *OBITUARY.*

**Rosa Bonheur.**—This great painter, whose talents have raised her to the highest position among contemporary artists, and such as no other lady artist has hitherto attained, died on Thursday May 25, in the seventy-seventh year of her age, at the country retreat which she had latterly inhabited at By, near Fontainebleau. She is the last member of a remarkable family who were entirely devoted to art. Her father, Raymond Bonheur, a distinguished painter, quitted Bordeaux in 1829 to establish himself in Paris; his four children, Rosa, Auguste, Isidore, and Juliette (who became Madame Peyrol) all became artists in turn, and the son of Madame Peyrol is also an animal sculptor of recognised talent. Raymond Bonheur gave every encouragement and care to the artistic training of his eldest daughter, and at the age of eighteen she exhibited her first picture in the Salon of 1840. In 1848 she obtained the "Première Médaille" for her work entitled "Labourage Nivernais," now in the Luxembourg. Among her subsequently exhibited works were "Animaux dans un Pâturage," "Le Cheval à Vendre," "Chevaux Sortant de l'Abreuvoir," "Chevaux dans un Prairie," "Vaches au Pâturage," "La Rencontre," "Le Labourage," "Un Troupeau Cheminant," "Etude d'Etalons," "Etude de Chien Courant," &c. In 1853 she obained a great success with the well-known "Marché aux Chevaux" ("The Horse Fair"), now in the National Gallery. In 1855 she sent to the Universal Exhibition her "Fenaison au Auvergne," and subsequently exhibited "Moutons au bord de la Mer," "Un Berger Béarnais," "Bourriquaires Aragonais," "Des Cerfs," "Une razzia en Ecosse," "Chevreuils au Repos," and "Berger Ecossais." The collective exhibition of these works at the Universal Exhibition of 1867 brought her to the height of a reputation which was as high in foreign countries as in her own; so much so that in the war of 1870 her cottage at By was scrupulously respected and spared by the invading army. Her brilliant success even overcame the violent prejudices then existing against the conferring of official honours on women; in 1869 the Empress Eugénie herself decorated Rosa Bonheur with the cross of the Legion of Honour; a short time afterwards she was elected a member of the Institute of Antwerp, and in 1894 was created an "Officier" in the Legion of Honour—the only French woman who has ever received such a distinction. After this she abstained for a good many years from exhibiting at the Salon, but sent one work to the Salon of the present year; and when it was proposed to present her with the "Medaille d'Honneur" of the year, she declined it, in a letter of great dignity and charm, on account of the comparative unimportance of her work. She was in fact right—the picture was not, for her, an important one, and the proposal to award the medal was probably intended rather as a recognition of her genius than of the special picture in question; but this does not detract from the fine feeling she displayed in declining the honour. At the time of her rather sudden death she was still working hard at her art, in her peaceful retreat at By, among her much-loved animals, and venerated by all who knew her for her dignity of character and her inexhaustible charity and benevolence.

**Mr. Abraham Graham.**—The death has just occurred, at the age of sixty-six years, of Mr. Abraham Graham, of Bankfield House, Huddersfield. The deceased was head of the firm of contractors, Messrs. Abraham Graham & Sons, whose business is now carried on at Longroyd Bridge.

## *GENERAL BUILDING NEWS.*

**Proposed Extension of the Municipal Buildings, Dorchester.**—It is proposed to enlarge the municipal buildings at Dorchester by the addition of buildings adjoining the present market-house. The additions will be used for municipal and technical instruction purposes. An inquiry has just been held by Mr. Percy Boulnois into an application of the Town Council for permission to borrow 1,900*l*. in order to carry out the scheme. Mr. G. J. Hunt is the Borough Surveyor.

**Addition to Norwich Liberal Club.**—A new billiard-room has been added to the Norwich Liberal Club rooms on the Walk. The new room, which is situated at the rear of the club premises, has been erected by Mr. John Downing, Mr. Edward Boardman being the architect.

Church, Walton, Liverpool.—On the 25th ult. the memorial stone was laid of the new church of St. Luke the Evangelist, Walton-on-the-Hill. When completed the church will provide 564 sittings. The building will be of red brick. The architect is Mr. J. Francis Doyle, and the contract is being carried out by the firm of Mr. Samuel Webster.

St. Columba's Church, Bradford.—The foundation stone of the new church of St. Columba, Bradford, has just been laid. Messrs. T. H. & F. Healey, architects, of Bradford, have prepared the plans for the new church. It will consist of nave and chancel, of one height throughout, and of north and south aisles, with north and south quasi-transepts. There will be a chancel aisle or chapel on the north side, and organ chamber and vestries on the south side. Advantage will be taken of the fall of the ground to place choir vestries and parish rooms at the east end of the church, which will be above the ground, the east gable rising to a height of about 60 ft. above the street level. Entrance to the church will be gained by a porch to the west end, and there will also be an entrance at the north transept. A bell turret, which will serve at its basement as an entrance to the parish-rooms, will be the only feature of the church taking the place of the usual tower. The windows generally will be of Early English lancet type, but in the chapel and transepts a rather earlier form of traceried window will be used. The nave will comprise six bays and the chancel three. The columns and arches of the nave arcade will be fairly elevated, and the clear-story above will have coupled lancet windows. The north arcade of the chancel will be subdivided into trefoil-headed arches, and the blank portion above will be left for statuary. The building will be erected both internally and externally of stone from Ringby Quarries, near Halifax. The sittings will provide accommodation for about 700 worshippers. Mr. William Farnish is executing the mason's work, but the distribution of the other contracts has not yet been decided upon.—*Bradford Observer.*

Primitive Methodist Chapel, Loddon, Norfolk.—The memorial stone has just been laid at Loddon of a Primitive Methodist chapel. The building is designed to seat about 200 persons, and will cost close upon 1,000*l*. It is being erected by Messrs. Chaston & Grimson, of Loddon, from plans by Messrs. Kerridge & Sons, of Wisbech.

Presbyterian Church, Ashington. — The memorial stone of the new Presbyterian church at Ashington has just been laid. The new church, which has been designed by Mr. C. S. Errington, of Newcastle, in the Early English style, will consist of nave and transepts, and is being built of local bricks and Commondale terra-cotta dressings. The seating accommodation will be for 300, and in the hall adjoining there are seats for 150 and vestry accommodation. The building is to be lighted by gas, and heated by apparatus supplied by Messrs. Emley & Sons, of Newcastle.

Restoration of Anwick Church, Lincoln.—The Chancellor has decreed a faculty for the restoration in three stages of St. Edith's Church, Anwick, Sleaford. The first instalment of the work will be the extension of the chancel to its original length and the raising of the roof to its original height. The contract of Mr. Frank Pattinson, of Ruskington, has been accepted for this portion of the work, which will be proceeded with at once. Plans for the restoration have been prepared by Messrs. Brewill & Baily, Nottingham and Newark.

New Church, Hetton, Durham. — Two foundation stones were laid on the 24th ult. in connexion with the building of a new church at Hetton-le-Hole. Mr. Piper, of Newcastle, is the architect, and Mr. William Sparrow, of Hetton, the contractor, for the building.

Wesleyan Chapel, Rothwell, Northamptonshire.—The foundation stones have just been laid of the new Wesleyan Chapel at Rothwell. Messrs. Gotch & Saunders, of Kettering, were the architects, and the contract was placed in the hands of Mr. F. Barlow, J.P. The new chapel will have a frontage of Weldon stone.

Wesleyan Methodist Church, Sileby, Leicestershire.—The memorial stones were laid recently of a new Wesleyan Sunday-school at Sileby. The building, which is being erected by Mr. Sleath, of Rothley, from plans by Mr. A. E. Sawday, of Leicester, is designed to seat 400 persons, the material used for the exterior work being chiefly local bricks.

New Chapel, East Harptree, Somersetshire.—A new chapel at East Harptree was opened on Whit-Monday. The building comprises a chapel, with seating accommodation for 200, a vestry, four class-rooms, and a caretaker's house, with the necessary outbuildings. The whole has been built of local stone, with freestone dressings, from the designs of Mr. Bird, of Radstock, the builder having been Mr. J. Flower, of West Harptree.

Restoration of Parish Church, Rackenford, North Devon.—At Rackenford the restored parish church has just been re-opened. Mr. A. Blomfield Jackson was the architect; a new roof has been given to the church, the old carved oak ceiling cleansed of whitewash, the sanctuary enlarged, a chancel formed, the whole church repaved and wood-blocked, the seating modernised, and some oak choir seats, pulpit, and reading-desk placed in the chancel.

Roman Catholic Church, Bocking, Essex.—The new Roman Catholic Church at Bocking has just been opened. The church forms part of a Franciscan conventual establishment, the nave being reserved for the use of the sisters, and the transept for the general public. The latter portion is 25 ft. by 20 ft., and the nave is 40 ft. long and 20 ft. wide, and the stalls for the sisters are of oak. The altar and reredos are not yet completed, but they will be of Hopton Wood stone and Lancashire marble, with the front of glass mosaic. The flooring of the church is of wood blocks, the ceiling is of a different colour in the various parts, that of the transept being terra-cotta, over the chancel the ceiling is blue, while in the nave it is green. Attached to the chapel are the usual convent premises. The architect is Mr. J. F. Bentley, Adelphi, and the builders are Messrs. A. Brown & Son, Braintree.

Church and Schools, Creswell, Nottingham.—On the 23rd ult., the memorial stone of a new church at Creswell was laid, and new schools in connexion with the church were opened. The church is being built by Messrs. Bowman & Sons, of Stamford, from the designs of Mr. Louis Ambler, of London, and will consist of nave, chancel, organ-chamber, and two small aisles, the material used being brick and stone. It will provide accommodation for 350 persons. The schools have been built by Mr. Simkins, of Bolsover, from the designs of Messrs. Brewill & Bailey, of Nottingham, and accommodate 450 children.

St. Oswald's Church, Preesall, Lancashire.—The newly-erected Church of St. Oswald, at Preesall, was consecrated recently. The church, which is in the Gothic style, will seat 230 worshippers; its cost is 2,800*l*. Messrs. Cox & Greg, of Fleetwood, were the contractors for the stonework, Mr. J. Kirkbride for the joinery, Woods & Jackson for the painting, and the whole edifice has been erected from the designs of Messrs. Austin & Paley, architects, of Lancaster.

Church, Denaby Main.—The foundation-stone has just been laid of a new church at Denaby Main. The church is to be built of local stone, with a pitch pine roof, covered with red tiles. The nave will measure 81 ft. by 40 ft., and there will also be vestries, chancel, baptistry, sacristy, and organ chamber. The new church is to accommodate about 500 persons, and the estimated cost is 3,500*l*. When this is completed it is intended to erect a new vicarage, which will cost a further sum of 1,500*l*. The joint architects are Messrs. Fowler (Durham) & Smethurst (Denaby), and the contract for the building has been let to Messrs. B. Wortley & Sons, Doncaster.

Church of the Sacred Heart, Omagh, Ireland.—On the 28th ult. the new Church of the Sacred Heart, Omagh, was dedicated. This church, of which the foundation-stone was laid in June, 1893, stands on a site on the summit of the Hill of Omagh. It was designed by the late Mr. William Hague, architect. The church, which is Gothic in style, oblong in form owing to the exigencies of the site, consists of sanctuary, chancel, nave, and aisles. The chancel arch which connects the nave with the sanctuary is supported on lofty pedestals rising to a height of 46 ft., and has a span of 36 ft., with height from the spring of the arch to the apex of 20 ft. The nave is connected with the side aisles by nine arches on each side, supported on ten pillars of polished granite, with capitals of Portland stone. There are two bays in the sanctuary with side altars. The aisles are lighted with two-light lancet windows, divided by mullions. The window over the High Altar is of five lights. It is filled with stained glass, the work of Messrs. Mayer & Co., of Munich. The towers are at the western angles of the church, and the gable which they limit contains a large rose window. The smaller tower is of similar design to that at the south-western angle. Both towers terminate in open traceried parapet, with pinnacles at the corners, from which spring the spires. At the angles of the tower rest flying buttresses. The length of the church is 170 ft., and the width 66 ft. The flooring of the sanctuary is in mosaic of decorative design, and the passages are tiled, and the entire church seated in keeping with the other fittings. A communion rail and gates enclose the sanctuary. Brass gas standards are fitted throughout the church. The cost has been about 20,000*l*. Mr. Joseph Colhoun, of Londonderry, was the contractor.—*Freeman's Journal.*

SS. Mary and John Schools, Oxford.—The Bishop of the Diocese opened recently the addition which has just been completed to the Cowley SS. Mary and John Schools, and which will give increased accommodation for both boys and girls. A site having a frontage of 112 ft. and a depth of 240 ft. was secured, extending from Essex-street to Hertford-street. The buildings will be sufficient for 170 boys and 170 girls, bringing the total number up to 680. The new building is in keeping with the other part, and is of red brick, with casement windows, and the rooms are on the ground and first floors; four of them are 25 ft. square, making the number of these six, and sixty children can be taught in each; two other rooms capable of holding seventy and ninety children respectively have been added to the two others of the same capacity, and there are also two new teachers' rooms, two cloak-rooms, and the necessary offices. The buildings have been erected by Mr. S. Hutchins, from the plans of Messrs. Bucknall & Comper, Westminster, at a total cost of 5,400*l*.

Baptist Sunday School, Acton.—A new Sunday school and lecture-hall has been erected at the rear of the Baptist Church in Church-road, Acton. The architect was Mr. E. Monson, of Acton.

Church Schools, Darfield. — Foundation-stones of a new church school at Darfield were laid on the 18th ult. The new school will consist of three class-rooms, the largest to be 105 ft. by 22 ft. Mr. A. B. Linford, of Wombwell, is the architect.

Carnegie House, Montrose Asylum.—The Carnegie House for private patients in connexion with the Montrose Royal Lunatic Asylum has just been opened. The entire length of the building from end to end is 225 ft., and the distance from back to front is 125 ft. It is constructed of Brechin stone, and consists of a centre block and wings, which may be represented by the letter E. The central portion comprises on the ground floor a hall or common central apartment, 52 ft. by 22 ft., while on the first floor there is the dining-hall. On the ground floor a corridor, 8 ft. in width, extends from the central hall to the west (or ladies') entrance, and a similar corridor extends to the gentlemen's entrance at the east end of the house. At the west end of the building, on the ladies' side, there are two drawing-rooms. At the opposite end of the House two parlours of similar dimensions to the drawing-rooms, and also a billiard-room, have been provided for the use of the gentlemen patients. Between the drawing-rooms and the entrance hall on the one side and the parlours on the other there are several private parlours. The ground floors of the wings are occupied by single bedrooms, and all the necessary lavatory and bathroom accommodation as well as cloak-rooms. At the two ends of the north wings there are isolated suites of two small rooms, with porch entrances to each. For the use of the matron rooms have been provided at the west side near the ladies' entrance. The heating chamber, vegetable sculleries, coal cellars, and other necessary equipments are located on the ground floor behind the central block. The dining-hall is situated immediately over the central entrance. The timber roof is divided into twelve panels, decorated with paintings, the subject being the signs of the zodiac. Immediately behind the dining-hall on the first floor there is the kitchen department, servants' and attendants' halls, &c. On either side of the dining-hall and in both wings there are fifteen single bedrooms of various sizes and two dormitories, access to these appartments being obtained by separate staircases and corridors, 8 ft. wide, over the ground floor corridors. On the second floor, over the central block, single bedrooms and dormitories have been provided for the attendants and servants, the third story being also occupied by servants' bedrooms. The electrical fittings have been supplied by Messrs. Singer, Frome, Somerset. The architect of the house was Mr. William Kelly, Aberdeen, and the work was carried out by the following contractors:—Mason, Mr. Alexander Crockett, Brechin; carpenter, Mr. John Raitt, Montrose; slaters, Messrs John Lindsay & Son, Montrose; plumber, Mr. James L. Warden, Montrose; glaziers and decorators, Messrs. James Garvie & Sons, Aberdeen; outside painting and inside varnishing, Messrs. Clark & Son, Montrose; plasterers, Messrs. Scott & Sellar, Aberdeen. The decorative work and chimney pieces were made by Messrs. Garvie, Aberdeen. The engineering works in connexion with Carnegie House, as well as the other engineering works in course of execution at the asylum, have been designed and supervised by Mr. T. Young, consulting engineer, Glasgow.

Addition to Cottage Hospital, Beckenham.—Princess Henry of Battenberg opened the extension to the Cottage Hospital at Beckenham on the 18th ult. The new wing has been made to harmonise with the older portion of the building, to which it is connected by a corridor. On the ground floor is a men's ward, 35 ft. by 22 ft., capable of accommodating eight beds, with bath-rooms and lavatories adjoining. On ascending the staircase a ward for women is reached, the dimensions and arrangements being similar to those of the one below. Messrs. Syme & Duncan, builders, of Beckenham, have carried out the contract, the architect being Mr. William G. Bartleet.

Mechanics' Institute, Haltwhistle, Northumberland.—The foundation-stone has just been laid of the Haltwhistle Mechanics' Institute. The plans, prepared by Messrs. Oliver & Dodgshun, architects, Carlisle, were accepted after a competition among a limited number of architects. The Institute comprises a three-story building, faced with white stone. This building contains the committee-rooms, reading, billiard, and smoke rooms, with an entrance hall and grand staircase. Advantage has been taken of the level of the ground to place the recreation rooms in the basement, where provision will be made for gymnastics, &c., while the billiard and smoke rooms are located in the upper story. Behind this will be provided the large hall of one story, 70 ft. by 37 ft., affording sitting accommodation for over 400 persons.

Business Premises, Perth. — A four-story building comprising shops, offices, and dwelling-houses has just been completed at the corner of

South-street and Scott-street. The building was designed by Mr. David Smart, of Perth, under whose superintendence it was erected by the following contractors:—Masons, Messrs. Robert Brand & Son; joiners, Messrs. Leith & Lumsden; slater, Mr. James Buchan; plumber, Mr. James MacLeish; and plasterers, Messrs. John MacKay & Son, all of Perth.

WORKHOUSE FOR GREENWICH.—Workhouse buildings are being erected for the Greenwich Union Guardians at Grove Park. Mr. Thomas Dinwiddy, of Greenwich, is the architect, and Mr. Rowbotham, of Birmingham, is the contractor, his tender amounting to 175,020*l.* The site, of irregular form, has an area of 9½ acres, with a frontage of about 600 ft. to Marvel's-lane. At the entrance are placed the lodge and visiting departments, with receiving wards, clothes and furniture stores, &c., to the left and right. The administrative block is centrally placed, and is connected with the nine pavilions and the chapel by open arched corridors. It contains offices and committee room and residences for master and officials in the front portion, and a central store with gallery, clothes stores, linen-room, mess-rooms, central dining halls for aged and able-bodied inmates, divided for the two sexes, kitchen, scullery, larders, bread-room, &c. There is dormitory and day-room accommodation for 262 aged males in three pavilions, for 178 aged females in two, for 200 able-bodied males in two, and 100 able-bodied females in a further pavilion. There is also on the female side a block with accommodation for twelve married couples. Two small isolation wards are provided in a remote corner. Provision for fire escape to the upper floor of each pavilion is obtained by external cast-iron balconies and staircases. Sites are reserved for future provision to the extent of three further pavilions, in connexion with which the dining halls in the administrative block have been planned to allow of extension at any future time without disturbance of the first buildings. There is also open space reserved for additional staff. The chapel, to seat 400, is situated in the rear of the administrative block, centrally placed between the different classes and sexes. In a block next the able-bodied pavilions are provided the laundry departments, with engine and boiler houses, bakery, &c. Flour stores are placed in the water tower, which is surmounted by a 20,000 gallon tank. Establishment and labour shops, with hand corn mills and a stoneyard, are planned near the able-bodied quarter, and smaller shops are provided for the aged inmates. A mortuary and small stable accommodation complete the scheme. The buildings are being faced with red pressed bricks from the Tunbridge Wells district, with a spare use of Portland stone, and are to be covered with Welsh rag slating. Internally glazed facings are to be used to the dining halls, kitchen, larders, stores, &c., and throughout the laundry block.

NEW COTTAGE HOSPITAL, CARSHALTON.—On the 24th ult. a new Cottage Hospital was opened by Lord Rosebery. The hospital owed its origin to a legacy of 300*l.* by the late Mr. Thomas Morgan, of that village, if his trustees were satisfied that a scheme for the erection of it could be carried out within twelve months from the time of his death. A committee was formed and funds promised, and a freehold site was given by Mr. J. D. Hayton, architect, of Carshalton. The hospital has been erected by Mr. S. J. Evans, builder, of Carshalton, from a design by Mr. W. W. Gale, Surveyor to the Urban District Council, at a cost of 1,100*l.*; and the furniture and fittings have cost another 300*l.* On the ground floor at each end of the building are two wards, one for male patients, and the other for females, each containing a couple of beds; and in addition there is in the female ward a cot to be used for children, if required. There is also an emergency ward with accommodation for one bed. This room is also available for operations. A lavatory is fitted up in each of the wards, which are paved with wood block floors. On the ground floor also is provided the matron's room, and kitchen, scullery, and the usual offices. On the first floor are four bedrooms, one for the matron, one for the nurse, and servants, and a spare bedroom. There is also a bathroom, with hot and cold water services, and a large linen cupboard. Electric bells have been fitted to each room.

A NEW THEATRE FOR HOLLOWAY.—A new theatre is to be erected at Holloway, to be called the Marlborough. It will be close to the Nag's Head, and within a few minutes' walk of Finsbury Park station. The plans have been prepared by Mr. Frank Matcham.

NORFOLK COUNTY ASYLUM.—Extensive alterations and additions are about to be made at the Norfolk County Asylum, Thorpe, near Norwich. The proposed works comprise wards for 140 additional patients, new blocks for attendants and nurses, alterations to administrative offices, new workshops, electric installation, &c. Mr. A. J. Wood, London, has been appointed architect for the work.

VICTORIA PIER AND PAVILION, COLWYN BAY.—The first pile for the new pier was driven on the 29th ult. The work is being carried out from the designs of Messrs. Mangnall and Littlewoods, Manchester; the Widnes Foundry Company being the contractors for the first section, including the pavilion, which has to be completed by the end of this year. The Royal Assent was given to the Board of Trade order on August 2, 1898, and an agreement has been entered into for granting a lease of the foreshore by the Colwyn Bay District Council. The pier promenade leading to the pavilion will be 40 ft. wide, this being as wide as any modern pier recently erected, and constructed with iron piles placed at intervals, securely braced together, supporting steel rivetted girders of spans that are considered strong without any extravagant use of metal, based on experience gained in the construction of two piers and pavilions recently erected at Morecambe. The pavilion is situate 50 yards away from the entrance to the pier on the right hand side; it will have a dome and campanile towers treated in the Renaissance style, and it is calculated to hold about 1,500 persons. On three sides of the pavilion will be a gallery; with tiers of seats in front and a promenade behind, two external balconies for promenade purposes are accessible by doors from the gallery. Cloak-rooms, lavatories, and shops are provided. On passing through the turnstile there is a crush hall leading to the body of the hall; a staircase leads to the gallery above from the hall. Refreshment bars are provided. The seating of the body of the hall is sub-divided into reserved and ordinary seats. The stage has been specially designed for high-class dramatic, variety, and orchestral performances on an extensive scale, and will be fully equipped with all the modern appliances for these several performances. All possible precautions have been taken that the audience may be able to disperse rapidly in case of a panic, sufficient exits being provided to empty the building in two or three minutes. It is intended next year to complete the second section, which will comprise the continuation of the pier to 350 yards in length and 30 ft. in width, the extremity being widened out for open-air music and other entertainments. Shops and shelters will be provided at each side, with a handsome band kiosk in the centre, provision being made round three sides of the pier head for embarking and landing boats. Shelter kiosks will be placed at intervals along the pier.

POLICE-COURT AND BUILDINGS FOR DARLASTON. The Staffordshire County Council recently acquired a site near to the Darlaston Town Hall on which it has been decided to erect police-court and police buildings, &c. Plans have been prepared by Mr. Joynson, and building operations will soon be commenced.

### *SANITARY AND ENGINEERING NEWS.*

NEW BRIDGE, GLASGOW. — The opening of Glasgow's new bridge took place on Wednesday last week. The new bridge crosses the Clyde at the foot of Jamaica-street. The former bridge on the same site was erected in 1835, from designs by Telford. The reason for reconstruction was the weakening of the foundations caused by the dredging operations of the Clyde Trust. The engineers of the new bridge were Messrs. Blyth & Westland, Edinburgh; the contractors, Messrs. Morrison & Mason, Glasgow.

NEW DOCKS FOR THE PORT OF LONDON.—We hear that the firm of Sir John Jackson, Limited, have contracted to execute the works, as planned and designed by Sir Benjamin Baker and Mr. P. W. Meik, for the construction of new deep-water docks at Dagenham, Essex, at an estimated cost of about two millions sterling. It is expected that the docks, where various labour-saving appliances are to be used for loading and unloading cargoes, will be completed three years hence.

PROPOSED REFUSE DESTRUCTOR FOR LIVERSEDGE, YORKS.—An inquiry was held at Liversedge on the 26th ult. by Colonel Coke, on behalf of the Local Government Board, upon an application of the District Council for powers to borrow money wherewith to provide a refuse destructor. Mr. F. Leslie Watson, A.M.Inst.C.E., submitted plans of the destructor works on behalf of the Horsfall Furnace Syndicate.

PROPOSED BRIDGE, COXGREEN.—At a meeting of the Chester-le-Street Rural District Council the Joint Committee's of the Chester-le-Street and Houghton-le-Spring Rural District Councils' recommendations that these two Councils subscribe to the cost of the above bridge were unanimously approved, provided satisfactory public financial support is given to the scheme, and that the County Council of Durham be again interviewed as to their contributing to this much-needed public improvement. Great interest is being taken in the neighbourhood of Washington, Usworth, Coxgreen, and Penshaw, regarding the necessity for the erection of this footbridge, which crosses the River Wear from Coxgreen to Washington Staiths. The only means of access at present is by means of ferry-boats, which are stopped in times of flood and after ten o'clock at night. The proposed structure will be a steel arched bridge of 150 ft. span, having stone abutments founded on rock, the underside of the bridge being 30 ft. above high-water mark. The plans have been prepared by Messrs. D. Balfour & Son, of Newcastle and London.

DRAINAGE SCHEME, DORCHESTER. — On the 25th ult. Mr. H. Percy Boulnois held an inquiry at the Town Hall, Dorchester, on behalf of the Local Government Board, into an application of the Town Council for permission to borrow 16,000*l.* for purposes of sewerage and sewage disposal. Mr. G. J. Hunt, Borough Engineer, described in detail the nature of the proposed works.

### *STAINED GLASS AND DECORATION.*

WINDOW, BUSBRIDGE CHURCH, NEAR GODALMING.—A memorial window which has been placed at the west end of this church was unveiled on the 20th ult. The window is from a design by the late Sir E. Burne-Jones.

MEMORIAL WINDOW IN THE GUILDHALL, YORK. —A stained glass window in memory of Sir Joseph Terry was unveiled in the Guildhall, York, on the 27th ult. The window was designed and executed by Messrs. Shrigley & Hunt, of London and Lancaster.

DECORATION AND REPAIR OF ST. JAMES' CHURCH, HAMPSTEAD-ROAD.—This church has just been reopened after thorough internal decoration and repair. The Sanctuary floor has been raised and laid with wooden blocks; the walls have been panelled with carved oak, a baldachino erected over the altar, with paintings of two censing angels above. Outside the church a wrought-iron structure of artistic design has been erected. The whole work was carried out by Messrs. Percy Bacon & Bros., of London.

WINDOW, STRADBROKE CHURCH, SUFFOLK.—A stained glass window has been placed in the south side of Stradbroke Church, in memory of Mr. T. B. C. West. The window was supplied by Messrs. Clayton & Bell, of London.

### *FOREIGN.*

FRANCE.—The new Opéra Comique house is already to be considerably altered to remedy the small size of the stage and the insufficient storage for scenery.——A monument to M. Faure is to be erected at Père Lachaise, from the design of M. Saint-Marceaux, consisting of a portrait statue with some symbolical accessories. Another sculptor, M. Peynol, has been commissioned to design a monument to Français, the late landscape painter.——The municipality of Paris has set apart a considerable sum for various new school buildings in Paris, and for the erection also of a new municipal library.——The Municipality of Lille are about to devote a sum of 35,000,000 francs to the execution of certain works of architecture and road construction.——M. Loviot, who exhibited the drawings for “La Grande Salle des Fêtes” to be formed in Galerie des Machines, noticed in our review of “Architecture at the Paris Salon,” has received the medal of honour in the architectural section. In the section of painting the medal has been awarded to M. Tattegrain, for his large picture of the evacuation of St. Quentin; and in that of sculpture to M. Dubois, for his “Pardon.” ——The death is announced, at the age of seventy six, of M. Vacquer, assistant curator of the Carnavalet Museum, and the author of some important works on archæological subjects, and who was concerned in some of the most important excavations carried on in Paris during the last thirty years. He was associated with the late M. Berty in all the work of the latter in connexion with the topography of “Vieux Paris.”

### *MISCELLANEOUS.*

PROFESSIONAL AND BUSINESS ANNOUNCEMENTS. The offices of the Tribunal of Appeal under the London Building Act have now been removed from the temporary premises in Savoy Hill to the new building of the Surveyors' Institution, and all communications should be addressed “To the Clerk to the Tribunal of Appeal, London Building Act (1894), 13, Great George-street, Westminster, S.W.”——The Coalbrookdale Co. have removed their London showrooms from the Victoria Embankment to large premises at 141, Queen Victoria-street, E.C., with a goods entrance at 231, Upper Thames-street.

INSURANCE IN THE BUILDING TRADE, YORKSHIRE.—A meeting was held at the Bradford Building Trades and Stone Exchange on the 25th ult. to consider a proposal for the establishment of an insurance society against accidents, to comprise all the building trades in Yorkshire. It was reported that Leeds had not replied to the Bradford circular on the subject, but that a sympathetic reply had been received from Halifax. It was decided to form a society to cover the risks incurred from accident by the members of the Bradford Stone Exchange, and members of the directorate intimated their willingness to guarantee a fund sufficient for the purpose of inaugurating the scheme.

THE LIGHT RAILWAYS ACT, 1896.—Several applications are before the Light Railways Commissioners in respect of light railways in various parts of the kingdom. The projects comprise lines (by the Finchley Urban District Council) along the Great North-road, through East Finchley and Whetstone, to Barnet; by the Hornsey Urban District Council, along the Archway and Great North-roads; by the Finance, Mines, and Industries Association, from Bishop's Waltham, through Swanmore, Droxford and Soberton, to the Meon Valley railway of the L. & S. W. line; by Power and Traction, Limited, from the Great Eastern line at Oakington to Cottenham, passing through Westwick; by the Escrick and Riccall Rural District Councils, in the Derwent Valley; by certain "promoters," from Whitchurch to Vernhams Dean, Hants, through Bourne, Stoke, Hurstbourne Tarrant, and Upton, in the Bourne Valley; and by the Nuneaton and District Light Railway Company, in the Urban Districts of Nuneaton and Chilvers Coton, and Atherstone, co. Warwick.

Properties for Sale —(1) The Sterborough Castle Estate, near East Grinstead and Lingfield, comprising about 400 acres, and a mansion, together with the remains of Sterborough, or Prinkham, Castle, originally built by Reginald de Cobham, 1342, who fought at Creçy and Poictiers, a grandson of Reginald de Cobham, who married the daughter and heir of William de Hever, of Hever Castle. The castle, which was garrisoned in the Civil War by the Parliament forces, and dismantled in 1648-9, appears in an old drawing as having a round tower at each angle, with a draw-bridge, and inner quadrangle, covering, together with the moat, an area of one and a half acre. The property passed through various hands, including Lord Cobham, who founded the college at Lingfield, and whose daughter married Humphrey, Duke of Gloucester; Ralph Nevill, Earl of Westmoreland; Sir Thomas Richardson, Chief Justice of the Queen's Bench (*obiit* 1634); and John Tonge, who about seventy years ago purchased it from Alderman Smith's executors, and built the new house. (2) "The Olde House," Dogpole (Duckpol), Shrewsbury, an Elizabethan oak-timbered house, which we believe is that which is depicted (as L-shaped on plan, and with a forecourt, opposite St. Mary's-turnstile) in the wood-cut in Owen and Blakeway's "History of Shrewsbury," vol. i., 1825, from a drawing by J. Buckler, and known as the house of Master Thomas Jones, the lawyer; being the house occupied by Prince Rupert after the first siege of Worcester, and by Prince Charles and the Duke of York in 1642, when Charles I. went to Shrewsbury after he had raised his standard at Nottingham on August 22. (3) Chalfont Park, Buckinghamshire, lying on the right-hand side of the high road from Uxbridge to Amersham, nearly 1,000 acres in extent, with a beautifully timbered park of 250 acres on hilly ground, and woodlands, watered by the Misbourne. There is a dower house, known as Chalfont Lodge, on the estate. The mansion house was designed by Chute for General Churchill.

Jerry-Building in Leeds.—The Building Clauses Committee of the Leeds Corporation, at a meeting on the 26th ult. passed a resolution requiring that in future all mortar used for buildings shall consist of not less than one part of lime to two parts of good engine ashes, or clean river sand. This resolution was the outcome of a report presented by Mr. Fairley (city analyst) showing that many samples recently analysed fell far below this standard. As a result of the action of the committee, the building inspectors of the Corporation will, of course, have power to take samples of any mortar being used for building purposes, and have them submitted for analysis.

Excavations at Canterbury Cathedral.—Excavations conducted by Mr. St. John Hope on behalf of the Society of Antiquaries have been in progress during the past few days in the garden adjoining the residence of the Bishop of Dover, in the Precincts of Canterbury Cathedral. Five Early English corbels were found beneath the site of the old monastery dining-hall, similar to those recently found during excavations for the Archiepiscopal Palace. The discoveries go to prove that the whole of the buildings on this side of the cloisters were entirely rebuilt in the second quarter of the thirteenth century.

Lincoln Master Builders' Association.—The inaugural dinner of the Lincoln Master Builders' Association was held at the Spread Eagle Hotel, Lincoln, on the 25th ult. The President for the year (Mr. W. H. Close) occupied the chair, and Mr. E. V. Lansdown was in the vice chair. The loyal toasts having been proposed, Mr. J. M. Harrison, submitted "The Mayor and Corporation." Mr. Wm. Watkins, an ex-Mayor of Lincoln, responded. The Chairman then submitted the toast of "The Lincoln Master Builders' Association" (branch of the National Association of the Master Builders of Great Britain), and having traced the history of the local Association, he said he thought there was never a better understanding between the building trades of the city than at the present time. They were able to settle the differences between the operatives and themselves a year ago, and were able by a certain amount of tact and forbearance, and a display of conciliation, to come to terms. With regard to the unfortunate dispute between the Master Builders' Association and the plasterers, there was in sight a means of settlement which would be agreeable to all parties concerned. Mr. S. Horton proposed "The Architects," and Mr. Watkins, Mr. Cooper, and Mr. Dunn acknowledged the toast. Other toasts followed.

Hall of Records, New York.—The architect's plans and specifications for the magnificent new Hall of Records for New York have been issued, says the *Liverpool Mercury*. They require $2,000,000 to be spent on the external building proper, and $2,500,000 additional to complete the interior. The estimate for sculpture is $85,000, and for mosaic work is $10,000. No wood whatever will be used, the interior being entirely of coloured marble and the window frames of copper. The Mayor, the Board of Comptrollers, and the city engineers are in favour of adopting the architect's recommendations.

Archæological Discovery in Leeds.—A discovery that has been made within the last few days in connexion with the laying of new cables for the conveyance of electric light from the generating station of the Leeds Corporation in Aire-street, Leeds, to the centre of the city, is likely to cause some interest among local archæologists. The work that is in progress is the laying of eleven fresh cables into Wellington-street, on the latest and most approved principles. In excavating to the proper level the workmen came across a splendidly-preserved stone arched vault in Aire-street. Its area was 20 ft. long, 12 ft. wide, and 10 ft. high to the crown of the arch. Subsequent excavations showed that it was one of a series of five beautifully preserved arches of similar dimensions, the walls between the arches being about four and a half feet thick and in splendid preservation. A still more startling discovery was made after the vaults had been bared, for it was found that, in addition to having communication with each other, there was in the one farthest from Wellington-street an entrance to a subterranean passage. This had evidently been blocked up years ago, and only theories can be formed as to the object with which it was built, and with regard to its objective point. —*Yorkshire Post.*

The British Fire Prevention Committee.—At the testing-houses of this Committee an important series of investigations is again in hand. Among the tests is one with a floor of steel joists and concrete filling, the concrete being of the aggregate lately allowed by the London County Council. Another floor under investigation is a solid timber floor, and a third is a floor by the Columbian Fire-proofing Company, U.S.A., which is to be subjected to very high temperatures. Various forms of doors of wood, armoured wood, and iron will be under investigation, also silicate partitions and ceilings by Messrs. Anderson and Messrs. Broadbent, some patented partitions and plasters, some plain electro-glazed windows by the Luxfer Prism Syndicate, and lastly, some of the non-flammable materials. A set of ordinary partitions have also been recently tested. Owing to the numerous applications to visit the station, the Executive have asked us to remind would-be visitors that the attendance is still strictly limited to the members, by rotation, and a few special guests.

Business Premises, Jewin-street, City.—A block of business premises at the corner of Jewin-street and Well-street has just been completed. The site was included in the Cripplegate fire area. The building, which is lighted by electricity and consists of six floors, was erected by Messrs. Killby & Gayford, the architects having been Messrs. Ford, Son, & Burrows.

## *CAPITAL AND LABOUR.*

The Norwich Building Trade.—One section of the building trade of Norwich has been satisfied. The labourers have accepted the terms offered by the employers, and have also adopted a resolution in which the courtesy with which the negotiations has been conducted is acknowledged.

Wolverhampton Plumbers' Dispute.—There has been an amicable settlement arrived at between the plumbers and the master builders, of whom the latter were called upon to accept the demands of the men for an ½d. advance per hour, viz., 8½d. to 9d. Early in the month the employees served the masters with a notice which should have expired on the 19th ult., but were extended, to meet the masters' wishes, a fortnight. On Tuesday night a conference took place at the Victoria Hotel, Wolverhampton, between representatives of the Master Builders' Association, the master plumbers, and the operative plumbers, with the result that a settlement was arrived at, and a formal agreement signed. The question of an advance was deferred for the present year, if not *sine die*. The men demanded the adoption of a code of working rules, and their proposals were practically accepted *en bloc*, the rules being the same as have been in force between the master plumbers and men.

The Strike of Wakefield Joiners. — The Wakefield joiners and carpenters who are at present on strike, owing to the masters refusing to accede to their demands to sign a code of working rules, have decided to approach the employers with a view of coming to an amicable settlement, and to each they have sent a circular asking the following question :—"Providing the clause relating to piece-work is expunged from the rules, are you prepared to sign them; if not, are you in favour of the dispute being submitted to the Wakefield Board of Conciliation, and to abide by their decision?"

Yorkshire Building Trade.—So far as the Yorkshire lock-out of all building trades is concerned, matters remain much as they have been, the latest phase being the resolution of the Scarborough employers to lock out their men, the season trade having now practically finished. There is nothing really fresh to record in regard to the strike of the London Order of Bricklayers in Leeds. The local branch of this organisation has resolved upon a half-crown levy for the support of the men locked out or on strike. The men received their first strike pay, amounting to 15s. each, on Saturday last.

## *LEGAL.*

### THE WORKMEN'S COMPENSATION ACT.

In the City of London Court on the 26th ult. Mr. Pitt Lewis, Q.C. (Deputy Judge), disposed of the first case which had come before the Court under the Workmen's Compensation Act, 1898. Fred Martin, Plaistow, labourer, sued the London and India Docks Joint Committee to recover compensation for personal injuries which he had suffered while in their service. Mr. Giveen was counsel for the plaintiff, and Mr. George Wallace for the defendants. The defendants not only denied their liability to compensate the plaintiff for the accident which had happened to him while he was working for them, but disputed the basis on which he was to be paid, even if he was entitled to recover. The applicant was working as a labourer in a warehouse belonging to the defendants situated close to Houndsditch. While working close to a skylight near the roof, the plant on which he was standing gave way, and he was thrown to the ground. His jaw was fractured, and he sustained other injuries. Oddly enough he had only been in the service of the Dock Committee for a day and a half, and after the accident they forwarded him 7s. 3d. as his wages. The first section of the statute, said the counsel for the plaintiff, entitled the man to recover damages for injuries received by accident "arising out of and in the course of the employment." Section 7 stipulated that liability only existed when injuries had been sustained "in or about a railway, factory, mine, quarry, or engineering work," or "in or about any building which exceeded 30 ft. in height, and is either being constructed or repaired by means of a scaffolding, or being demolished, or on which machinery, driven by steam, water, or other mechanical power, is being used for the purpose of construction, repairing, or demolition thereof." One of the sub-sections stated that "factory" had the same meaning as in the Factory and Workshop Acts, 1878 to 1891, and also included "any dock, wharf, quay, warehouse, machinery, or plant to which any provision of the Factory Acts is applied by the Factory and Workshop Act, 1895, and every laundry worked by steam, water, or other mechanical power." As to the basis on which the plaintiff's damages were to be assessed, it was contended on his behalf that, as he earned 7s. 3d. in a day and a half, it must be presumed that if he had gone on working he would have earned 26s. to 30s. per week. That was the claim which he was now putting forth. He was at work in raising materials by means of a pulley, and, therefore, was engaged in the exercise of "mechanical power." The defendants' case was that no liability could attach to them at all. The Act of Parliament made them liable for accidents happening in any "dock, wharf, quay, or warehouse." That meant that the warehouse must be one which adjoined or was contiguous to some wharf, dock, or quay. It could not be argued that employers were responsible under the Workmen's Act for any accident that happened in any class of warehouse. The warehouse where the plaintiff met with his injuries was situate a mile away from the defendant's docks. That being so, it could not be suggested that the warehouse was in any sense a part of the docks, quay, or wharf. It did not follow that the plaintiff would have earned 26s. or 30s. per week. He was a casual hand, and was only entitled to have his damages measured according to what his average weekly wages would have been. In delivering a considered judgment, the Deputy Judge said the case was like solving a conundrum, arising, as it did, out of that extraordinary tangle of legislation called the Workmen's Compensation Act. The statute seemed to have been drawn by a person who had strayed into the land of topsy-turveydom. The man who drew the Workmen's Compensation Act did not know what he meant, and did not repeat it. The draughtsman had left the Judges to guess what was meant. He (the Deputy Judge) was willing to do that, but he was afraid that it was only a guess he could make in solving the problem. His decision must be unfavourable to the plaintiff, for he was bound to hold that he could not recover. He could not hold that the warehouse in which the accident happened was one that came within the purview of the Act under which the proceedings had been brought. No doubt the case was an important one to employers and workmen alike, and probably both sides had organisations which would take up the matter. He would be sorry if it rested where it was, because the points in question were important. Even the Court of Appeal shrank from deciding almost anything under the Workmen's Compensation Act; and really there was no wonder at it. It was, indeed, a wonderful piece of legislation, and he was very sorry to have to construe the various sections which had been submitted. Execution would be stayed with a view to an appeal.—*City Press.*

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## MEETINGS.

### SATURDAY, JUNE 3.

*Association of Municipal and County Engineers.*—Yorkshire District Meeting, Sheffield.

*Edinburgh Architectural Association*—Annual excursion. Visit to Arbroath Abbey, &c.

*Northern Architectural Association.*—Visit to Chester-le-Street and Lumley.

### MONDAY, JUNE 5.

*Society of Engineers.*—Mr. R. G. Allanson-Winn on "Foreshore Protection, with special reference to the Case System of Groyning." 7.30 p.m.

### TUESDAY, JUNE 6.

*Glasgow Architectural Association.*—Annual Business Meeting.

### WEDNESDAY, JUNE 7.

*Institution of Civil Engineers.*—Engineering Conference, to be opened with an address by Mr. W. H. Preece, President. 10.15 a.m.

*Royal Archæological Institute.*—(1) The Worshipful Chancellor Ferguson, F.S.A., on "Consistory Courts and Consistory Places;" (2) Mr. Albert Hartshorne, F.S.A., on "Samuel Daniel and Anne Clifford, Countess of Pembroke, Dorset, and Montgomery." 4 p.m.

*British Archæological Association.*—(1) Mrs. Collier on "Some Mediæval Châteaux and Dwellings in France"; (2) Mr. Arthur Oliver on "Symbolism." 8 p.m.

*Builders' Foremen and Clerks of Works' Institution.*—Ordinary meeting of the members. 8 p.m.

*Institute of Sanitary Engineers (Incorporated).*—Meeting of the Election Committee at 2.30 p.m.; and the General Purposes Committee at 3.30 p.m.

### THURSDAY, JUNE 8.

*Institution of Civil Engineers.*—Engineering Conference (continued).

*Society of Antiquaries.*—8.30 p.m.

*Royal Architectural Museum and Westminster School of Art (Tufton-street, S.W.).*—Annual general meeting. Sir Wyke Bayliss on "The Bogey in the Studio—an Address to Art Students on the Questions of the Day." 4 p.m.

### FRIDAY, JUNE 9.

*Institution of Civil Engineers.*—Engineering Conference (concluded).

*Institution of Junior Engineers.*—Visit to the Bankside Works of the City of London Electric Lighting Company. 6.30 p.m.

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## RECENT PATENTS:

### ACCEPTED SPECIFICATIONS.

### *Open to Opposition until July 25.*

[1898] 4,328, McLarty, Apparatus for Cutting Stone or similar material. 10,874, Smith, Tube Joints. 11,076, Baivy, Telephone Installations. 11,170, Taylor and Others, Manufacture of Artificial Stone Slabs by Hydraulic Pressure. 11,201-2, Thompson and Others, and 16,120, Harrison, Prepayment Attachments for Gas and other Meters. 11,525, Wade and Electric Motive Power Company; 15,443, Veritys & Steele, and 15,785, Scott, Davis, & Wright, Electrical Switches. 11,696, Holt, Speed, Distance, and Gradient Indicators. 11,862, Beldams, Street or Road Gulleys. 12,044, Brown & Crossley, Door-attachments. 12,089, Bridge & Trainer, Models for the Teaching of Drawing. 13,376, Smethurst & Greig, Securing Fencing-wires to Standards. 13,460, von Pittler, Lathes. 14,698, Rayboulds, Composite Circular Saws. 14,841, Campbell, Circular-saw Guards. 15,060, Stanfield & Martin, Lathe Chucks, Drill-holders, &c. 15,132, Richard, View-finders. 15,411, Pertwee & Baxter, Spanners. 15,544, Hodgson, Grinding-pans for Materials to be Granulated. 15,656, Tschurl & Petraschek, Preservation of Wood. 15,664, Herbert, Casements. 15,665, Shaw, Unions for Joining and Coupling Pipes. 15,670, Tonks & Burn, Window-sash Fasteners. 15,762, Jowett, Gulleys and Sinks. 15,987, Hipkins, Scales and Balances. 16,016, Stephens, Window Ventilators. 16,096, Pickup, Waste Water Closet Pan. 16,157, Berger, Means for Moving Revolving Tool Carriers, &c., in a Direction at Right Angles to their Axes of Revolution. 16,870, Kerr, Brush-holder for use by Painters when Working with the Aid of a Pole. 18,368, Lygo, Attachment of Brushes, &c., to their Handles or Sticks. 19,862, Barth, Collapsible Ladders. 22,448, Keiths, Coal-saving Grate. 25,683, Green, Traps and Ventilators for Drains. [1899] 341, Rowland, Combined Heating, Cooking, and Ventilating Stove or Fireplace. 379, Proctor & Butterfield, Nail Extractors. 2,726, Flower & Gambrell, Electrical Measuring Instruments. 3,233, Belknap & Sundh, Conduits for Electrical Cables. 5,989, Patriarche, Lifting Dogs, &c. 6,030, Freundlich, Shaft Furnaces and Kilns. 6,978, Cope, Apparatus for Propelling, Purifying, Moistening, or Disinfecting Currents of Air, &c., for Ventilating and Other Purposes. 7,058, Griffiths & Hawker, Tipping Waggon. 7,574, De Léry & Armington, Gas Burners. 7,607, Lewis, Composition for use in Collecting or Saving Waste Gold Leaf. 7,789, Sackett Wall Board Company, Saturation of Plaster, Cement, &c., with Water. 7,877, Demuth, Generation of Acetylene. 7,917, Robinson, Connexions for Water-closets, Sinks, &c. 7,955, Tulloch & Harris, Stone-cutters' Mauls. 7,965, W. A. Baker & Co. & Summerfield, Stair Treads, Floor Coverings, &c. 8,114, Davis and Others, Application of Paint, Lacquer, and other Coatings. 8,135, Coe, Package Roll for Holding and Applying Metallic Leaf. 8,136, Lavigne, Automatic Manufacturing Company, Turret Lathes. 8,145, Seagrave, Adjustable Ladder Bases. 8,167, Biheller, Globes or Shades for Gas Lights.

### ABSTRACTS OF PATENTED INVENTIONS.

2,169.—GAS COOKING AND HEATING STOVES, COMBINED: *E. W. Beech & A. G. Melhuish.*—The novelty lies in the combination of a gas-cooking stove with a gas-fire, or argand burner, or other means for warming the room, which is independent of the cooking burners; on the door of the oven is fitted a gas-fire, supplied with gas through a union in a hinge of the door, and having a flue which communicates with a chamber at the stove's top, wherein is a water-heating coil connected with the boiler that may be heated also by turning the oven-burner flames against the water-tubes; the oven door is so hung that it may be opened from either side by means of a rocking-lever pivotted at its middle and having eyes that fit over pins at the lever's ends, when one of the two side-handles is turned to raise the connecting rod the eye above is lifted from its pin and the door can be opened about the other pin as a hinge, short pins resting in shallow sockets serving as the lower hinges; the stove has taps for hot and cold water, and its boiler can be adapted to effect the circulation of water through a hot-water cistern.

2,182.—COVERINGS FOR ROOFS AND WALLS: *P. Lehmann.*—Jute linen fabric is steeped in linseed oil boiled with silver litharge (a fused crystalline lead oxide obtained as a by-product in separating silver from lead), or a board composed of leather parings is steeped in a varnish of caoutchouc melted in boiling linseed oil; the dried fabrics are coated with whitening, silver litharge, washed earth colour and linseed oil varnish mixed together, powdered on either side with sand and ground sandstone, and then oil-painted on the outer side.

2,202.—COVERINGS FOR WALLS, &c.: *G. Stephens.*—On the colour prints, produced in tones and shades, are superposed transparent or opaque colours in oil, water, or other medium, by rollers, blocks, or other means, or by hand, in such a manner that the original prints are visible, wholly or partially, through the colours laid over them.

2,217.—SELF-CLOSING AND SHOCK-PREVENTING VALVES AND COCKS: *E. Segalli.*—The pressing down of the button causes the main valve to leave its seating, whereupon water flows through the tap. The descending valve forces down a flexible diaphragm, which rests within a bottom chamber, wherein the pressure conquers the resistance of a coiled spring above the diaphragm, and so opens a valve for the passage of water from the bottom chamber to that above the diaphragm. Upon release of the button the upper valve is closed by the spring, and the inner valve falls to its seating, but does not altogether close until the water which originally passed from the bottom chamber has returned through a notch made in the seating and the space between the spindle and the valve casing.

2,272.—BRUSH HANDLES, AND THEIR ATTACHMENT: *J. W. Buckley.*—For fastening handles to brush-heads, &c., is used a screw-eye, having a curved and pivotted loop, that may be used for hanging the brush, or be turned down to lie against the stock.

2,302.—DOORS FOR BUILDINGS: *W. A. McKay.*—Sliding doors are hung upon and between sectors having, preferably, a radius equal to the height of the door; one sector is pivotted on a bar attached to the door, whilst a bar, pivotted below, prevents the door from resting half-way; for hanging the doors sectors may be employed, together with ordinary rollers.

2,309.—APPARATUS FOR GENERATING ACETYLENE GAS: *G. Jacobi.*—The inventor's object is to maintain a constant supply of water to the carbide, and so to generate acetylene gas at an even rate; through a pipe fitted with a cock liquefied carbonic acid passes from a cylinder into a water reservoir, and, in passing, forces water through another pipe, also provided with a cock, to a funnel shaped distributor placed over a carbide container; the two pipes are connected by a branch which admits carbonic acid to the stream of water for distributing it over the carbide; the gas passes from the generator through a cylinder partly filled with glass wool, and thence through condensing pipes into a holder which has a pressure gauge; the funnel distributor is hinged, so that it can be turned aside whilst the generator is being charged

2,331.—BRICKS, BUILDING-BLOCKS, AND SLABS: *T. H. R. Guttridge.*—These are composed of ashes, clinkers, and the refuse from dust-destructors, ground and mixed with cement, oxide of iron, and water containing soluble glass, together with, it may be, sand or ground beach shingle; the bricks can be glazed, and roughened-glass facing-plates may be fixed on to them by means of soluble glass and Portland cement.

2,531.—GLAZING FOR ROOFS, &c: *W. Curbstone.*—The upper portion of the web of an iron or steel astragal, or glazing-bar is shouldered or enlarged that it may support the sheathing and wings of the lead or other soft metal; beneath the bar a dovetailed or similar projection or rib is made for engagement with a recessed wooden bar, or for supporting sheet-metal drainage channels for the water of condensation; channels may be made in the lead for asbestos or other packing.

2,553.—ANTI-FOULING PAINTS: *G. Warner & C. F. W. Perry.*—These are made of an admixture of oxide of iron, red lead, copper oxychloride, gums, white arsenic, shellac, boiled linseed-oil, naphtha, turpentine, and resin.

2,567.—A SOLDER FOR ALUMINIUM: *G. Hammond.*—The solder is composed of a tin alloy, 100 parts, silver, 20 parts, zinc, 10 parts, and aluminium, $\frac{1}{10}$ to 6 parts; iodine, or an iodide of tin or mercury alone, or mercury mixed with a hydrocarbon such as vaseline, constitutes the flux.

2,578.—WATER-WASTE PREVENTERS AND CLOSET-DISINFECTING APPARATUS: *W. A. La Fave.*—The disinfecting apparatus, placed between the basin and the flushing tank, contains an annular chamber which holds a soluble disinfectant passed in, through an opening, in the form of pellets, and into which a portion of the flushing water is turned by means of a lip, the water dissolves some of the pellets and joins the main stream through perforations below, since the water percolates slowly through the disinfectant it enters the basin as an after-flush.

2,623.—DISINFECTING DISCHARGE FOR WATER CLOSETS: *F. Carman.*—In order to deliver a quantity of disinfectant after each flush the material is put inside a part of the tank, to whose other part is fitted a pipe that leads to the basin, and has a valve which is normally held open by a lever of tubular shape, and engaging with a head upon the valve stem. When the closet is flushed the ball valve opens, and its lever—provided with a slotted link and gear—lifts the lower lever so that its contents pass into the chamber, whereof the valve is thereupon closed. As the water-level in the tank rises the lever falls to open the valve and allow the contents of the chamber to flow as an after-flush.

2,733.—CRANES AND DERRICKS: *W. E. Hutchinson & A. E. Newton.*—To facilitate the swivelling of the jib and load in one direction, by inclining the post out of the vertical position, the crane-post is secured to its footstep by means of a universal joint.

2,754. DOVETAILING MACHINERY: *R. Carlyle & R. D. Shannon.*—The invention applies to a machine which has a rotating conical cutter that cuts the dovetail in both boards at one operation; the boards are clamped, at right angles to one another, upon a table or frame adapted to slide in two rectangular directions, bevel gearing rotates, on a vertical axis, the inverted conical cutting tool, the boards are fed against the tool, then pulled back, and then pushed forward a step for the next dovetail to be cut in them, by means of a wheel having a single tooth that gears into a rack fixed upon the frame, a cam effecting the necessary advance of the boards to the cutting-tool, and the table being locked by a pin moved by a cam-groove whilst the cutting is being done.

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## PRICES CURRENT OF MATERIALS:

### WOOD.*

Per Petersburg standard hundred.

| | £ | s. | d. | £ | s. | d. |
|---|---|---|---|---|---|---|
| White Sea: first yellow deals | 17 | 0 | 0 | 18 | 0 | 0 |
| Second do. | 13 | 5 | 0 | 14 | 15 | 0 |
| Third do. | 10 | 15 | 0 | 11 | 15 | 0 |
| Battens, 40s., 30s., and 15s. less respectively. | | | | | | |
| Petersburg: first yellow deals | 11 | 15 | 0 | 14 | 5 | 0 |
| Second do. | 10 | 15 | 0 | 12 | 5 | 0 |
| Battens, 30s. and 20s. less respectively. | | | | | | |
| Petersburg, white deals | 9 | 15 | 0 | 11 | 15 | 0 |
| Do. white battens | 7 | 10 | 0 | 9 | 0 | 0 |
| Riga, white deals | 8 | 5 | 0 | 9 | 5 | 0 |
| Swedish mixed yellow deals | 13 | 5 | 0 | 16 | 15 | 0 |
| Third do. | 12 | 5 | 0 | 14 | 5 | 0 |
| Fourth do. | 10 | 15 | 0 | 11 | 15 | 0 |
| Fifth do. | 9 | 15 | 0 | 10 | 15 | 0 |
| Battens, 30s., 20s., and 10s. ess respectively. | | | | | | |
| Whitewood, 10 to 20 per cent. less. | | | | | | |
| Finnish unsorted yellow deals | 9 | 15 | 0 | 10 | 5 | 0 |
| Battens, 10s. and 5s. less respectively. | | | | | | |
| Whitewood, 5 to 10 per cent. less. | | | | | | |
| Norwegian second yellow battens | 7 | 10 | 0 | 8 | 10 | 0 |
| Third do. | 7 | 0 | 0 | 8 | 0 | 0 |
| Fourth do. | 6 | 10 | 0 | 7 | 10 | 0 |
| Whitewood, 10s. less. | | | | | | |
| Danzig, Crown Deck deals, per 40 ft. 3 in. | 0 | 15 | 0 | 1 | 5 | 0 |
| Brack | 0 | 12 | 0 | 1 | 0 | 0 |
| St. Lawrence Pine deals, &c., per P.S.H.:— | | | | | | |
| 1st, Bright and Dry, regular sizes | 19 | 0 | 0 | 25 | 10 | 0 |
| ,, ,, oddments | 12 | 0 | 0 | 18 | 15 | 0 |
| 2nd ,, regular sizes | 14 | 0 | 0 | 17 | 5 | 0 |
| ,, ,, oddments | 9 | 10 | 0 | 13 | 0 | 0 |
| 3rd ,, regular sizes | 9 | 5 | 0 | 10 | 5 | 0 |
| ,, ,, oddments | 7 | 0 | 0 | 8 | 10 | 0 |
| 4th ,, regular sizes | 6 | 5 | 0 | 7 | 5 | 0 |
| ,, ,, oddments | 5 | 15 | 0 | 6 | 15 | 0 |
| St. Lawrence Spruce deals, &c. | | | | | | |
| First, regular sizes | 8 | 5 | 0 | 10 | 5 | 0 |
| Second ,, | 7 | 5 | 0 | 8 | 5 | 0 |
| Third ,, | 7 | 0 | 0 | 7 | 15 | 0 |
| Fourth ,, | 5 | 15 | 0 | 6 | 15 | 0 |
| Oddments and battens at 20s., 10s., 7s. 6d., and 5s. less respectively. | | | | | | |
| New Brunswick Spruce deals, &c. | 7 | 0 | 0 | 7 | 15 | 0 |
| Oddments, battens, and fourths | 6 | 5 | 0 | 7 | 5 | 0 |
| United States pitch pine planks and boards | 8 | 15 | 0 | 12 | 5 | 0 |
| Prepared Boards, per square | | | | | | |
| 1¼ by 6½ and 7 in. 1st yellow | | 11 | 9 | | 15 | 0 |
| ,, ,, 2nd ,, | | 10 | 3 | | 12 | 0 |
| 1 by 6½ and 7 in. 1st ,, | | 8 | 9 | | 11 | 0 |
| ,, ,, ,, white | | 8 | 3 | | 9 | 0 |
| ,, ,, 2nd yellow | | 8 | 3 | | 10 | 0 |
| ,, ,, ,, white | | 6 | 9 | | 7 | 6 |
| ⅞ by 6½ & 7 in. 1st & 2nd yellow | | 7 | 6 | | 8 | 3 |
| ,, ,, white | | 7 | 0 | | 7 | 9 |
| ¾ by 6½ and 7 in. 1st yellow and white (grooved, tongued, and beaded) | | 6 | 6 | | 9 | 0 |
| ¾ by 6½ and 7 in. 2nd yellow and white (ditto) | | 5 | 6 | | 7 | 9 |
| ⅝ by 6½ and 7 in. 1st yellow and white (ditto) | | 5 | 6 | | 6 | 3 |
| ⅝ by 6½ and 7 in. 2nd yellow and white (ditto) | | 5 | 0 | | 5 | 9 |
| Narrower widths at 10 per cent. less. | | | | | | |
| 3rd quality at 15 per cent. less than 2nd. | | | | | | |
| Danzig and Memel Fir Timber— per load | | | | | | |
| Best middling | 2 | 7 | 6 | 3 | 7 | 6 |
| Good middling and Second | 1 | 17 | 6 | 3 | 2 | 6 |
| Common middling | 1 | 7 | 6 | 2 | 7 | 6 |
| Undersized | 1 | 7 | 6 | 1 | 12 | 6 |
| Swedish and Norwegian Balks | 1 | 2 | 6 | 1 | 12 | 6 |
| Baltic Oak Timber— | | | | | | |
| Danzig and Stettin—Large | 3 | 15 | 0 | 4 | 5 | 0 |
| Small | 2 | 5 | 0 | 2 | 10 | 0 |
| Quebec Timber per load | | | | | | |
| Yellow Pine | 4 | 17 | 6 | 6 | 10 | 0 |
| Oak | 4 | 5 | 0 | 6 | 5 | 0 |
| Elm | 4 | 5 | 0 | 5 | 5 | 0 |
| Ash | 3 | 10 | 0 | 4 | 15 | 0 |
| Birch | 3 | 15 | 0 | 5 | 15 | 0 |
| New Brunswick, &c., Birch | 2 | 10 | 0 | 3 | 5 | 0 |
| American Pitch Pine Timber | 2 | 16 | 0 | 3 | 5 | 0 |
| Wainscot, per log, 18 cubic ft.— | | | | | | |
| Crown (Eng. & Dutch) } nominal | 4 | 5 | 0 | 6 | 0 | 0 |
| Brack } nominal | 3 | 10 | 0 | 4 | 10 | 0 |
| Lathwood, per cubic fathom— | | | | | | |
| Petersburg | 4 | 0 | 0 | 6 | 10 | 0 |
| Riga and Danzig | 4 | 10 | 0 | 5 | 10 | 0 |
| Norway Poles, per ft. run | 0 | 0 | 1 | 0 | 0 | 1½ |
| Oak Staves, per mille full size pipe | | | | | | |
| Memel, Crown | 210 | 0 | 0 | 220 | 0 | 0 |
| Brack | 180 | 0 | 0 | 190 | 0 | 0 |
| Danzig | 165 | 0 | 0 | 175 | 0 | 0 |
| Bosnia, single Barrel (nominal) | 28 | 0 | 0 | 30 | 0 | 0 |
| United States, Pipe | 35 | 0 | 0 | 42 | 10 | 0 |
| Hogshead, extra heavy and double extra | 27 | 10 | 0 | 32 | 10 | 0 |
| Indian Teake per load | 11 | 10 | 0 | 16 | 10 | 0 |
| British Guiana Greenheart | 0 | 0 | 0 | 8 | 0 | 0 |
| Mahogany, per foot superficial— | | | | | | |
| Honduras, cargo average | 0 | 0 | 4½ | 0 | 0 | 6 |
| Nicaragua, do. | 0 | 0 | 4¾ | 0 | 0 | 5¼ |
| Tabasco, do. | 0 | 0 | 4 | 0 | 0 | 6½ |
| Mexican, do. | 0 | 0 | 3¼ | 0 | 0 | 4 |

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* The prices for wood are shipping prices. Ten per cent., approximately, should be added in order to arrive at the current trade prices.

| | £ | s. | d. | £ | s. | d. |
|---|---|---|---|---|---|---|
| Panama, do. | 0 | 0 | 3 | 0 | 0 | 4 |
| African, do. | 0 | 0 | 3½ | 0 | 0 | 5 |
| Cuba, do. | 0 | 0 | 5½ | 0 | 0 | 7½ |
| St. Domingo, do. | 0 | 0 | 5 | 0 | 0 | 7 |
| Do. Curls (good to prime) | 0 | 0 | 9 | 0 | 1 | 3 |
| Walnut, American (logs) | 0 | 2 | 0 | 0 | 4 | 6 |
| Do. do. (planks and boards) | 0 | 2 | 0 | 0 | 7 | 6 |
| Italian, per foot superficial | 0 | 0 | 3 | 0 | 0 | 7½ |
| Black Sea, per ton | 6 | 0 | 0 | 12 | 0 | 0 |
| Satin Walnut (logs) per foot cube | 0 | 1 | 0 | 0 | 1 | 3 |
| „ „ (planks and boards) | 0 | 2 | 0 | 0 | 2 | 9 |
| Sequoia (Californian redwood), per foot cube | 0 | 1 | 9 | 0 | 2 | 0 |
| Whitewood, American (logs) | 0 | 1 | 3 | 0 | 1 | 6 |
| „ „ (planks and boards) | 0 | 1 | 6 | 0 | 2 | 9 |
| Quartered oak „ „ „ | 0 | 2 | 3 | 0 | 4 | 0 |
| Kauri pine (logs) | 0 | 1 | 9 | 0 | 2 | 0 |
| „ „ (planks) | 0 | 2 | 3 | 0 | 2 | 9 |
| Jarrah (planks) | 0 | 2 | 3 | 0 | 2 | 6 |
| Lancewood spars each, fresh and large | 0 | 7 | 0 | 0 | 10 | 0 |
| Lancewood spars, ordinary to fair | 0 | 4 | 0 | 0 | 6 | 0 |
| Degame spars | 0 | 8 | 0 | 0 | 12 | 6 |

### METALS.

| | £ | s. | d. | £ | s. | d. |
|---|---|---|---|---|---|---|
| IRON—Pig, in Scotland ton | 3 | 4 | 7½ | 0 | 0 | 0 |
| Bar, Welsh, in London | 6 | 0 | 0 | 6 | 5 | 0 |
| Do. do. at works in Wales | 5 | 15 | 0 | 5 | 17 | 6 |
| Do. Staffordshire, in London | 6 | 5 | 0 | 7 | 10 | 0 |
| COPPER—British cake and ingot | 80 | 0 | 0 | 80 | 10 | 0 |
| Best selected | 80 | 10 | 0 | 81 | 0 | 0 |
| Sheets, strong | 82 | 10 | 0 | 84 | 10 | 0 |
| Chili bars | 76 | 5 | 0 | 0 | 0 | 0 |
| YELLOW METAL lb. | 7d. | | | 7½d. | | |
| LEAD—Pig | | | | | | |
| Spanish ton | 14 | 5 | 0 | 0 | 0 | 0 |
| English Com. Brands | 14 | 10 | 0 | 0 | 0 | 0 |
| Sheet, English, 6 lbs. per sq. ft. and upwards | 15 | 10 | 0 | 0 | 0 | 0 |
| Pipe | 16 | 0 | 0 | 0 | 0 | 0 |
| ZINC—English sheet ton | 31 | 0 | 0 | 0 | 0 | 0 |
| Vieille Montagne | 31 | 10 | 0 | 0 | 0 | 0 |
| Spelter | 28 | 10 | 0 | 28 | 12 | 6 |
| TIN—Straits | 118 | 2 | 6 | 0 | 0 | 0 |
| Australian | 118 | 5 | 0 | 118 | 15 | 0 |
| English Ingots | 120 | 10 | 0 | 121 | 10 | 0 |
| Banca | 114 | 0 | 0 | 0 | 0 | 0 |
| Billiton | 113 | 0 | 0 | 0 | 0 | 0 |

### OILS.

| | £ | s. | d. | £ | s. | d. |
|---|---|---|---|---|---|---|
| Linseed ton | 19 | 17 | 6 | 0 | 0 | 0 |
| Cocoanut, Cochin | 29 | 5 | 0 | 0 | 0 | 0 |
| Do. Ceylon | 25 | 15 | 0 | 0 | 0 | 0 |
| Palm, Lagos | 24 | 0 | 0 | 0 | 0 | 0 |
| Rapeseed, English, pale | 22 | 15 | 0 | 0 | 0 | 0 |
| Do. Brown | 21 | 5 | 0 | 0 | 0 | 0 |
| Cottonseed ref. | 16 | 5 | 0 | 17 | 0 | 0 |
| Oleine | 17 | 0 | 0 | 19 | 0 | 0 |
| Lubricating U.S. | 0 | 5 | 6 | 0 | 7 | 6 |
| Do. Black | 0 | 5 | 0 | 0 | 6 | 0 |
| TAR—Stockholm barrel | 1 | 6 | 6 | 0 | 0 | 0 |
| Archangel | 1 | 0 | 0 | 0 | 0 | 0 |
| Turpentine | 33 | 15 | 0 | 0 | 0 | 0 |

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## SOME RECENT SALES OF PROPERTY:

### ESTATE EXCHANGE REPORT.

| | |
|---|---|
| May 16.—By E. H. HENRY. | |
| Wandsworth.—60, Devereux-rd., u.t. 91½ yrs., g.r. 10*l.* | £535 |
| By PIGGOTT & SON. | |
| Hammersmith.—27, The Grove, u.t. 48 yrs., g.r. 6*l.*, e.r. 50*l.* | 420 |
| By F. S. PRIEST. | |
| Harlesden.—25, Connaught-rd., u.t. 78 yrs., g.r. 9*l.*, e.r. 45*l.* | 500 |
| By RUSHWORTH & STEVENS. | |
| Stratford.—96, Chapel-st., and 1 to 6, Spray's-bdgs., f. | 1,240 |
| Walworth.—16, 17, and 18, Sondes-st., u.t. 7½ yrs., g.r. 10*l.* | 156 |
| Pimlico.—33 to 39 (odd), Chapter-st., also l.g.r. 33*l.*, u.t. 3 yrs., g.r. 55*l.* | 170 |
| By PHILIP STOCK. | |
| Clerkenwell.—3 and 4, St. John's-lane, area 2,250 ft., f. | 2,400 |
| Herne Hill.—57, Railton-rd., u.t. 69 yrs., g.r. 8*l.*, r. 40*l.* | 300 |
| By E. FERGUSSON TAYLOR. | |
| New Barnet, Herts.—Station-rd., West Barnet Lodge, and ¾ acre, f. | 3,260 |
| Gloucester-rd., Jesmond Cottage, f., r. 50*l.* | 590 |
| By W. N. WILLOUGHBY. | |
| Streatham.—41 and 43, Knolly's-rd., u.t. 87 yrs., g.r. 20*l.*, r. 120*l.* | 980 |
| By WOODS & SNELLING. | |
| Holloway.—31 to 45 (odd), Brand-st., f. | 1,030 |
| Old Kent-rd.—19 to 31 (odd), Green Hundred-rd., f. | 745 |
| Brockley.—184 to 194 (even), Adelaide-rd., u.t. 62 yrs., g.r. 39*l.* 10s., r. 230*l.* | 2,150 |
| Sydenham.—Burghill-rd., Burgoyne and East Dean, u.t. 89 yrs., g.r. 14*l.*, r. 70*l.* | 695 |
| By BEADEL, WOOD, & Co. | |
| Blackheath.—Westcombe Hill, Combe Farm, 2 a., f. | 4,100 |
| Horn-lane, a block of building land, 6 a., f. | 3,000 |
| Woolwich-rd., an enclosure of building land, 26 a., f. | 10,500 |
| Station Villas, f.g.r. 29*l.*, reversion in 71 yrs. | 760 |
| Westcombe Hill, f.g.r. 8*l.* 10s., reversion in 71 yrs. | 250 |
| Bridge-ter., f.g.r.'s 79*l.* 16s., reversion in 72 yrs. | 1,925 |
| Horn-lane, f.g.r. 9*l.* and two peppercorn ground-rents, reversions in 72 and 87 yrs. | 325 |
| Bridge-ter., f.g.r.'s, 23*l.* 2s., reversion in 72 yrs. | 610 |
| Aldeburgh-st., f.g.r.'s 110*l.* 4s., reversion in 72 yrs. | 3,050 |
| Edith-ter., f.g.r.'s, 64*l.*, reversion in 82 yrs. | 1,730 |
| The Pavement, f.g.r.'s 72*l.*, and a peppercorn, reversion in 77 yrs. | 2,120 |
| Belle Vue-ter., f.g.r. 9*l.* 9s., reversion in 85 yrs. | 260 |
| Belle Vue-ter., f.g.r. 13*l.*, reversion in 82 yrs. | 355 |
| By FLEURET, SONS, & ADAMS (at Masons' Hall Tavern). | |
| City of London.—Aldersgate-st., "The Red Lion" p.-h., u.t. 37½ yrs., r. 125*l.*, with goodwill | 21,000 |
| St. John's Wood.—Loudoun-rd., "The Alexandra Hotel," u.t. 58½ yrs., r. 8*l.*, with goodwill | £9,510 |
| By HASLAM & SON (at Reading). | |
| Southcot, Berks.—A freehold meadow and osier ground, 14 a. 0 r. 33 p. | 650 |
| By H. A. WOOFF (at Christchurch). | |
| Christchurch, Hants.—Wick Dairy Farm, 69 a. 3 r. 6 p., f. | 3,050 |
| Enclosures of building land, 2 a. 2 r. 11 p., f. | 630 |
| Enclosures of land, 7 a. 2 r. 26 p., f. | 740 |
| May 17.—By REGINALD L. CANEY. | |
| Hackney.—23 and 25, Teesdale-st., u.t. 31 yrs., g.r. 3*l.* | 380 |
| Bedford.—27 and 29, Castle-lane, f., r. 25*l.* | 400 |
| By C. RAWLEY CROSS & Co. | |
| Kensington.—14, Fielding-rd., u.t. 73 yrs., g.r. 12*l.*, e r. 45*l.* | 300 |
| Shepherd's Bush.—38 and 40, Bloemfontein-av., u.t. 80¾ yrs., g.r. 10*l.* | 625 |
| By FOSTER & CRANFIELD. | |
| Gravesend.—70, Windmill-st., f., e.r. 60*l.* | 590 |
| Hackney.—254, Richmond-rd., u.t. 46 yrs., g.r. 4*l.*, r. 33*l.* | 345 |
| Kentish Town.—25 and 29, Quadrant-grove, u.t. 51 yrs., g.r. 16*l.*, r. 68*l.* | 585 |
| By HAROLD GRIFFIN. | |
| Battersea.—2, 4, and 6, Totteridge-rd., u.t. 79 yrs., g.r. 15*l.* | 650 |
| 35, Harroway-rd., u.t. 79 yrs., g.r. 5*l.* | 215 |
| 23, Urswick-rd., u.t. 79 yrs., g.r. 5*l.* | 225 |
| Worcester Pk., Surrey.—1, 2, and 3, St. Martin's-pl., f. | 480 |
| By PROTHEROE & MORRIS. | |
| Epping, Essex.—Hartland-rd., a block of building land, f. | 240 |
| By E. W. RICHARDSON & SON. | |
| Regent-st.—5, 7, 15, 17, 19, and 21, Foubert's-pl., f., r. 413*l* | 8,110 |
| By ROGERS, CHAPMAN, & THOMAS. | |
| South Kensington.—31, Courtfield-gardens, u.t. 74 yrs., g.r. 35*l.* | 1,810 |
| By R. TIDEY & SON. | |
| De Beauvoir Town.—18, Southgate-rd., u.t. 27 yrs., g.r. 5*l.* 5s., r. 50*l.* | 360 |
| 147, Southgate-rd., u.t. 28 yrs., g.r. 6*l.*, e.r. 48*l.* | 425 |
| Wood Green.—5, Caxton-rd., u.t. 76 yrs., g.r. 4*l.*, r. 26*l.* | 270 |
| Tottenham.—404, West Green-rd., u.t. 78 yrs., g.r. 7*l.* 10s., r. 45*l.* | 450 |
| By J. W. WEST & Co. | |
| Leytonstone.—Mayville-rd., f., g.r. 30*l.* 10s., reversion in 98 yrs. | 805 |
| By BELTON & SONS (at Horse Shoe Hotel). | |
| Greenwich.—King George-st., "The Woodman" p.-h., a freehold rental of 63*l.*, reversion in 20 yrs. | 1,260 |
| Haggerston.—Mayfield-rd., "The Crown" p.-h., an improved rental of 30*l.* for 37 yrs. | 870 |
| By LOUND & HOWITT (at Horse Shoe Hotel). | |
| Richmond, Surrey.—Red Lion-st., "The Red Lion" p.-h., and 1 and 2, Ormond-passage, u.t. 21 yrs., r. 495*l.*, with goodwill | 2,650 |
| By TOOTH & TOOTH (at Oxenham's). | |
| Paddington.—2 and 8, Delamere-st., u.t. 49 yrs., g.r. 14*l.* 14s., r. 110*l.* | 950 |
| 18 and 20, Marlborough-st., u.t. 446 yrs., g.r. 14*l.*, r. 76*l.* | 720 |
| Kilburn.—28, 38, and 40, Cambridge-av., u.t. 59½ yrs., g.r. 15*l.*, r. 160*l.* | 1,520 |
| Oxford-st.—142 and 144, Wardour-st., u.t. 14½ yrs., g.r. 250*l.*, r. 837*l.* 16s. | 3,000 |
| By CHADWICK & SONS (on the premises). | |
| Hyde Pk.—18, Hyde Park-sq., and 15, Hyde Park-sq.-mews, u.t. 35¾ yrs., g.r. 49*l.* 7s., e.r. 285*l.* | 2,300 |
| By Messrs. SPELMANS (at Norwich). | |
| Norwich—1, Albany-rd., u.t. 60 yrs., g.r. 1*l.*, r. 16*l.* | 200 |
| 32 to 54 (even), Gladstone-st., f. (in lots) | 1,854 |
| By WYATT & SON (at Chichester). | |
| Woodmancot, Sussex.—A copyhold cottage, r. 8*l.* | 130 |
| By NOCK & JOSELAND (at Wolverhampton). | |
| Bilbrook, Staffs.—Two enclosures, 13 a. 1 r. 17 p., f. | 630 |
| Enclosure of building land, 7 a. 1 r., f. | 405 |
| A freehold cottage and 15 a. 0 r. 3 p. | 450 |
| May 18.—By FAREBROTHER, ELLIS & Co. | |
| St. John's Wood.—72, Boundary-rd., u.t. 38½ yrs., g.r. 10*l.* | 1,000 |
| By HEAPS, SON, & REEVE. | |
| Battersea.—173 to 179 (odd), Lavender-rd., u.t. 25 yrs., g.r. 10*l.* | 420 |
| 27 and 28, Simpson-st., u.t. 57 yrs., g.r. 10*l.* 10s. | 465 |
| By C. C. & T. MOORE. | |
| Mile End.—49 and 51, Mile End-rd., u.t. 245 yrs., g.r. nil | 2,750 |
| Bow.—16, Addington-rd., u.t. 47½ yrs., g.r. 5*l.*, e.r. 45*l.* | 390 |
| Dulwich.—76, Melbourne-grove, u.t. 76 yrs., g r. 6*l.* 10s., r. 30*l.* | 300 |
| St. Luke's.—40, New Charles-st., u.t. 43 yrs., g.r. 5*l.*, r. 30*l.* | 320 |
| Clerkenwell.—31, Sekforde-st., u.t. 14 yrs., g.r. 4*l.* 4s., r. 40*l.* | 210 |
| By G. TROLLOPE & SONS. | |
| Bayswater.—4, James-st., u.t. 39½ yrs., g.r. 9*l.* | 590 |
| By WRIFORD & DIXONS. | |
| Shepherd's Bush.—143, Askew-rd., u.t. 67 yrs., g.r. 12*l.*, r. 60*l.* | 600 |
| Kentish Town.—38, Leighton-grove, u.t. 42 yrs., g.r. 6*l.* 6s., e.r. 40*l.* | 180 |
| By NEWBON, EDWARDS, & SHEPHARD. | |
| King's Cross.—146 and 146A, King's Cross-rd., f., r. 150*l.* | 2,500 |
| Hackney.—136, Mare-st., f., r. 154*l.* | 2,500 |
| Islington.—144, 145, and 146, Upper-st., f., r. 189*l.* | 4,500 |
| 43, 45, and 47, Queensbury-st., reversions in 11 and 17 yrs., g.r. 11*l.* 5s. | 240 |
| Dalston.—76 and 78, Queen's-rd., u.t. 26 yrs., g.r. 12*l.* 10s., r. 50*l.* | 400 |
| Highbury.—71, Sotheby-rd., u.t. 80½ yrs., g.r. 10*l.* 10s., e.r. 65*l.* | 595 |
| 17, Aberdeen-road., u.t. 60 yrs., g.r. 9*l.*, r. 45*l.* | 470 |
| Hornsey Rise.—56, Ashley-rd., u.t. 76 yrs., g.r. 6*l.* 10s., r. 50*l.* | 485 |
| Canonbury.—11, Spencer-st., u.t. 18 yrs., g.r. 6*l.*, e.r. 46*l.* | 320 |
| Tottenham.—342, 344, and 346, West Green-rd., u.t. 69½ yrs., g.r. 15*l.* 15s., r. 72*l.* | 645 |
| New Southgate.—11 and 15 to 19, Lee-street., u.t. 82½ yrs., g.r. 24*l.* | 515 |
| Haverstock Hill.—No. 37, u.t. 34 yrs., g.r. 11*l.*, r. 80*l.* | £725 |
| By STIMSON & SONS. | |
| Hyde Park.—46, Connaught-sq., and 75, Frederick Mews, u.t. 20 yrs., g.r. 17*l.*, r. 216*l.* | 1,400 |
| 60, Oxford-ter. and 4, Devonport-mews, u.t. 33 yrs., g.r. 14*l.*, e.r. 150*l.* | 1,000 |
| Bayswater.—97, Ledbury-rd., u.t. 47½ yrs., g.r. 9*l.*, r. 50*l.* | 415 |
| 88 and 90, Talbot-rd., u.t. 47½ yrs., g.r. 21*l.* | 965 |
| 9 and 11, Burlington-mews West, u.t. 60 yrs., g.r. 8*l.* 8s. | 335 |
| Westbourne Pk.—204, Kensal Pk., u.t. 67 yrs., g.r. 8*l.* | 205 |
| Fulham.—41 and 43, Waterford rd., u.t. 57¼ yrs., g.r. 6*l.* 10s. | 550 |
| Brixton.—362, Brixton-rd., u.t. 16 yrs., g.r. 10*l.*, r. 60*l.* | 340 |
| Norwood.—7, St. Aubyn's-rd., u.t. 60 yrs., g.r. 8*l.*, r. 40*l.* | 310 |
| By S. & G. KINGSTON (at Holbeach). | |
| Whaplode, Lincs.—The Bridge Farm, 42 a. 3 r. 35 p., f. | 2,400 |
| By ELLIOTT, ELLIS, & Co. (at Plymouth). | |
| Harford, Devon.—Meads Farm, 24 a. 0 r. 22 p., f. | 1,220 |
| By DYER, SON, & HILTON (at Bromley). | |
| Eltham, Kent.—Grove Park-rd., two freehold building plots | 234 |
| By WINCH & SONS (at Maidstone). | |
| Marden, Kent.—Gravel Pit Farm, 107 a. 2 r. 13 p., f. | 4,000 |
| Enclosures of meadow, 17 a. 1 r. 27 p., f. | 610 |
| Horlands Wood, 10 a. 3 r. 17 p., f. | 220 |
| By T. WALKER & SONS. | |
| Tollerton, Yorks.—Various enclosures of land, 94 a. 1 r. 25 p., f. | 3,325 |
| Alne, Yorks.—Enclosures of land, 21 a. 1 r. 27 p., f. | 920 |
| By THOMAS MARTIN (at Exeter). | |
| Exeter, Devon.—4, Richmond-grove, f. | 300 |
| 96, Fore-st., f., e.r. 60*l.* | 500 |
| May 19.—By COOPER & GOULDING. | |
| Stoke Newington.—29, Mildmay Pk., f., e.r. 55*l.* | 925 |
| By Messrs. CRAWTER. | |
| Balham.—20, Byrne-rd., u.t. 75½ yrs., g.r. 7*l.* 10s., r. 34*l.* | 295 |
| Cheshunt.—Prospect-pl., Folkvang, f., r. 40*l.* | 520 |
| By ROBINS, GORE, & MERCER. | |
| Homerton.—Daubeney-rd., two plots of building land, f. | 125 |
| By E. & S. SMITH. | |
| Muswell Hill.—Sydney-rd., two plots of building land, f. | 260 |
| By EDWARD WOOD. | |
| Deptford.—27 to 33 (odd), Baildon-st., u.t. 27 yrs., g.r. 18*l.* | 250 |
| Anerley.—4, Weighton-rd., u.t. 66 yrs., g.r. 15*l.*, e.r. 50*l.* | 255 |
| Herne Hill.—129, Railton-rd., u.t. 69 yrs., g.r. 9*l.*, r. 42*l.* | 280 |
| Leyton.—1, Thornton-rd., u.t. 97 yrs., g.r. 4*l.* 10s., r. 24*l.* | 225 |
| By THOMAS WRIGHT. | |
| Beckenham, Kent.—4 to 14 (even), Kelsey Pk.-rd., and 7, 8, and 9, Stanmore-ter., f. | 5,350 |
| 86, High-st., u.t. 51½ yrs., g.r. 26*l.*, r. 51*l.* | 240 |
| Chelsea.—6, 23, 24, 26, and 41 to 45, Slaidburn-st., u.t. 55 yrs., g.r. 43*l.* 5s. | 1,530 |
| 36, Slaidburn-st., u.t. 55 yrs., g.r. 1s. | 200 |
| By G. B. SMALLPIECE (at Woking). | |
| Woking, Surrey.—Mount Hermon-rd., a plot of building land, f. | 180 |
| York-rd., two plots of building land, f. | 245 |
| By CHURTON, ELPHICK, & Co (at Chirk). | |
| Weston Rhyn, Salop.—Weston Farm, 38 a. 2 r. 15 p., f. | 1,900 |
| Enclosures of land, 9 a. 3 r. 38 p., f. | 1,110 |
| Cae Meddyg Cottages and 2 r. 8 p., f. | 270 |
| Weston Cottage and 9 a. 1 r. 6 p., f. | 900 |
| Wern-y-Groes House and 14 a. 2 r. 22 p., f. | 880 |
| The "Plough Inn" and 1 a. 1 r. 35 p., f. | 1,600 |
| Glendrid Cottages and 2 r. 1 p., f. | 520 |
| Chirk, Denbigh.—Croggen Iddon Farm, 206 a. 1 r. 38 p., f. | 3,400 |
| May 20.—By C. M. STANFORD (at Clacton-on-Sea). | |
| Little Clacton, Essex.—Swain's Farm, 75 a. 2 r. 32 p., f. | 2,200 |
| Enclosures of land, 20 a. 3 r. 6 p., f. | 500 |
| By MOORE, GARRARD & SON (at Framlingham). | |
| Wilby, Suffolk.—The Lane Farm, 44 a. 1 r. 4 p., f. | 450 |
| May 23.—By CHANCELLOR & SONS. | |
| Bagshot, Surrey.—Lightwater-rd., Belle Vue and 7 a., f. | 2,200 |
| By RUTLEY, SON, & VINE. | |
| Islington.—249 and 251, Liverpool-rd., f., r. 80*l.* | 1,210 |
| Haverstock Hill.—46, 47, and 48, Maitland Park-rd., u.t. 53 yrs., g.r. 12*l.*, r. 118*l.* | 1,345 |
| By WYATT & SON (at Havant). | |
| Havant, Hants.—50, West-st., f. | 500 |
| 2, 3, 4, and 5, Staunton-rd., f. | 565 |
| By THORNBORROW & Co. (at Penrith). | |
| Penrith, Cumberland.—The Stoneybeck Estate, 79 a. 0 r. 12 p., f. | 2,325 |
| May 24.—By ALDRIDGE, DOUGLAS, & Co. | |
| Croydon.—Penn-rd., Conishead, f., r. 75*l.* | 1,250 |
| By BAXTER, PAYNE, & LEPPER. | |
| Bromley, Kent.—Elmfield-rd., Oakdene, f., r. 70*l.* | 1,000 |
| Eltham, Kent.—18, West Chislehurst Pk., u.t. 86 yrs., g.r. 10*l.*, r. 55*l.* | 385 |
| Sutton, Surrey.—Sherwood Park-rd., a plot of building land, f. | 210 |
| By BROWETT & TAYLOR. | |
| Banstead, Surrey.—Reigate-rd., The Gables and 1½ a., f. | 1,100 |
| Finsbury Pk.—44, Osborne-rd., u.t. 79 yrs., g.r. 7*l.*, e.r. 40*l.* | 430 |
| Islington.—11, Canonbury-rd., u.t. 19½ yrs., g.r. 6*l.*, r. 40*l.* | 220 |
| Beckenham.—23, Clock House-rd., u.t. 90 yrs., g.r. 7*l.*, r. 34*l.* | 330 |
| By CURTIS & SHARP. | |
| Barking.—18, 20, and 22, Broadway, f. | 1,235 |
| 32, Broadway, f., r. 35*l.* | 1,000 |
| 5, 6, and 7, Back-lane, f. | 315 |
| 1, Tanner-st., f., r. 50*l.* | 1,150 |
| Mover's-la., two parcels of land, 6 a., f. | 780 |
| Plaistow.—19 and 27, Stock-st., u.t. 67 yrs., g.r. 8*l.* | 310 |
| 2, 4, 6, and 8, Maud-rd., u.t. 70 yrs., g.r. 16*l.* | 540 |
| 90 and 92, Chesterton-rd., u.t. 83 yrs., g.r. 9*l.* | 300 |

# COMPETITIONS, CONTRACTS, AND PUBLIC APPOINTMENTS.

## CONTRACTS.

| Nature of Work or Materials. | By whom Required. | Forms of Tender, &c. Supplied by | Tenders to be delivered. |
|---|---|---|---|
| *Infirmary Wards, &c. at Workhouse | Tendring Union, Essex | F. Whitmore, Chelmsford | June 6 |
| Eighteen Houses, Argoed, Mon. | ...... | N. T. Price, Archt. 32, High-st. Argoed | do. |
| Chimney Stack | Buxton U.D.C. | F. Cartwright, Surv. 22, High-st. Sheffield | do. |
| Two Houses, Glendale-rd. Wooler | W. & L. Atkinson | W. R. Hindmarsh, jun. Archt. Alnwick | do. |
| Laundry Buildings, Stoney Royd | Halifax Corp. | E. R. S. Escott, C.E. Town Hall | do. |
| Four Houses, Bellevue-road, Sandal, Yorks | ...... | W. Wynn, C.E. 10, Livingstone-st. Leeds | do. |
| Road Works, Cranworth-street | Bootle Corp. | Boro Engr. Town Hall | do. |
| Water Supply | Plympton St. Mary R.D.C. | F. A. Clark, Surv. Old Town-st. Plymouth | do. |
| Additions to Steading, Fisherford, N.B. | .. | J. Duncan & Son, Archt. Turriff | do. |
| Steel Girders (715 tons) | G. W. Ry. Co. | G. K. Mills, Paddington Station, W. | do. |
| Sewers, Netherby-road | Leith Corp. | Burgh Surv. Town Hall | do. |
| Granite Road Metal (3,100 tons) | Enfield U.D.C. | R. Collins, Surv. Court House, Enfield | June 7 |
| Concrete Sea Wall | Saltcoats (N.B.) Comrs. | J. & H. V. Eaglesham, Engr. Ayr | do. |
| Filter Tanks, Larkhall, N.B. | ...... | Leslie & Reid, C.E. 72A, George-st. Edinburgh | do. |
| Dwellings, St. James's-road | Glasgow Corp. | City Engr. 64, Cochrane-st. Glasgow | do. |
| Business Premises, Broad-street, Somerton | E. W. Valentine | Bowring & Hawkins, Archt. Post Office-chambers, Glastonbury | do. |
| Technical Instruction Buildings | Rugby U.D.C. | D. C. Macdonald, C.E. Rugby | do. |
| Houses and Bakery, Strand-road, Derry | Carruthers & M'Bride | D. Conroy, Archt. 2 Bishop-st. Londonderry | do. |
| Shop and House, Dracup-road, Gt. Horton | ...... | S. Spencer, Archt. 344, Gt. Horton-road, Bradford | do. |
| Waterworks | Crawley Water Co. | C. O. Blaber, C.E. 64, Ship-st. Brighton | do. |
| Paving, &c. Fitzhamon Embankment | Cardiff Corp. | W. Harpur, C.E. Town Hall | do. |
| Sewers, near Docks, Port Talbot | ...... | F. B. Smith, C.E. Port Talbot | do. |
| Water Supply, Pinxton, Derby | Blackwell R.D.C. | H. Walker, C.E. Newcastle-chmbrs. Nottingham | do. |
| Offices and Stores at Gasworks, Quakers' Yard, Glam. |  | G. Davies, Gasworks, Treharris, Glam. | do. |
| *Making-up and Paving Road | Fulham Vestry | C. Botterill, Town Hall, Walham Green, S.W. | do. |
| Nine Houses, Aberaman | Victoria Building Club | J. L. Smith, Archt. 20, Commercial-st. Aberdare | June 8 |
| Club House, Penarth | Glamorganshire Golf Club | J. W. Rodger, Surv. 14, High-st. Cardiff | do. |
| Tar Paving Works | Southampton Corp. | W. B. G. Bennett, Boro Engr. Municipal-bldgs. | do. |
| Club Premises, Dyson-road, Halifax | ...... | Medley Hall, Archt. 29, North-gate, Halifax | do. |
| Sewer, Hurstpierpoint | Cuckfield R.D.C. | H. E. Cripps, Holly Cottage, Sidney-road, Hayward's Heath | do. |
| *Portland Cement | Brighton Corp. | F. J. C. May, Town Hall | June 9 |
| Schools, Percy Main | Tynemouth Sch. Bd. | F. R. N. Haswell, Archt. Tyne-st. North Shields | do. |
| Rectory, Portrush, Ireland | ...... | H. Seaver, Archt. 128, Royal-avenue, Belfast | do. |
| Additions to National Schools, Brownhill, Dewsbury | ...... | Holtom & Fox, Archt. Westgate, Dewsbury | do. |
| Library, Cheltenham-rd. | Bristol Corp. | W. V. Gough, Archt. 24, Bridge-st. Bristol | do. |
| *Coastguard Buildings | Admiralty | Offices, 21, Northumberland-avenue, W.C. | do. |
| *P. O. Balham | Commrs. H.M. Works | J. Wager, Offices, Storey's Gate, S.W. | do. |
| Thirty Houses | Cwmaman Building Club | L. Smith, 20, Commercial-st. Aberdare | June 10 |
| Street Works (22 streets) | Kettering U.D.C. | T. R. Smith, Surv. Market Hill, Kettering | do. |
| Farm Buildings, &c. Packington | Ashby-de-la-Zouch U.D.C. | J. B. Everard, C.E. 6, Millstone-lane, Leicester | do. |
| Forming Goulbourne-st. Keighley | – | Barber, Hopkinson & Co. Archt. Keighley | do. |
| Granite Road Metal | Ely U.D.C. | W. McKelvie, Surv. Ely | do. |
| New Streets, off Victoria-rd. Elland | ...... | C. F. L. Horsfall & Son, Archt. Lord-st Chmbrs. Halifax | do. |
| Walls, &c. at Workhouse | Cardiff Union | E. Seward, Archt. Queen's-chambers, Cardiff | do. |
| Villa, Sunnyside, nr. Montrose | Montrose Royal Asylum | J. Sim, Archt. 160, High-st. Montrose | do. |
| *Renewal and Repairs to Gymnasium Apparatus | L.C.C. | Parks' Dept 9, Spring-gardens, S.W. | June 12 |
| *Sand, Ballast, Stone, Drain Pipes, Wood Blocks, &c. | St Martin's-in-the-Fields Vestry | G. Green, Town Hall, Charing Cross-rd. W.C. | do. |
| Re-building Cock Inn, Shaw | Newbury Brewery Co. | J. H. Money, Archt. Newbury | do. |
| Concrete Dam, Llyn Bran, Denbigh | Asylum Visitors | J. T. Wood, C.E. 3, Cook-st. Liverpool | do. |
| Police Cottages, &c. Hartley-row | Hants C.C. | W. J. Taylor, Cnty. Surv. The Castle, Winchester | do. |
| Water Supply, Blackwood, Lanark | ...... | Warren d Stuart, C.E. 115, Wellington-st. Glasgow | do. |
| Boundary Walls, St. Paul's-road, Seacombe | Wallasey U.D.C. | W. H. Travers, Surv. Public Offices, Egremont | do. |
| Two Houses, &c. Brunswick-street, Whitby | T. Parratt | R. Lennard & Son, Archt. Cliff st. Whitby | do. |
| Cattle Shed, &c. Field House Farm Awre, Gloucester | Trustees | T. Cadle, Lynwood, Denmark-rd. Gloucester | do. |
| Hotel, Cadoxton, Wales | E. E. Bevan | J. C. Rees, Archt. Neath | do. |
| Destructor Buildings | Barry U.D.C. | J. C. Pardoe, C.E. Holton-rd. Barry | do. |
| Sewers | Market Harborough U.D.C. | J. B. Everard, C.E. 6, Millstone-ln. Leicester | June 13 |
| Widening Line and Erecting Stations, Bolton | L. & Y. Ry. Co. | C. W. Bayley, Hunt's Bank, Manchester | do. |
| Lodge, nr. Hospital | Kidderminster T.C. | A. Coomber, Boro. Surv. Town Hall | do. |
| *Pitching and Private Street Works | Cnty. Boro. West Ham | Lewis Angell, Town Hall, Stratford, E. | do. |
| *Brick and Concrete Sewer | Lewisham B. of W. | Surv. Dept. Town Hall, Catford, S.E. | do. |
| *Kerbing, Tar Paving, &c. | do. | do. | do. |
| *Painting, Whitewashing, &c. | Chelsea Guardians | W. Miller, 250, King's-rd. Chelsea | do. |
| *Granite Spalls and Broken Granite | Hackney Vestry | J. Lovegrove, Vestry Hall | June 14 |
| *Granite Curb and Cubes | Greenwich B. of W. | Offices, 141, Greenwich-rd. S.E. | do. |
| *Builder's Work connected with Water Tower | West Ham Union | Clerk at Workhouse, Leytonstone | do. |
| Sewers | Ryton-on-Tyne U.D.C. | J. P. Dalton, Engr. Council Offices | do. |

## CONTRACTS—*Continued.*

| Nature of Work or Materials. | By whom Required. | Forms of Tender, &c. Supplied by | Tenders to be delivered. |
|---|---|---|---|
| Chimney Stack and Buildings, Edleston-rd. Crewe | ...... | Hopkinson & Talbot, Engr 29, Princess-st. Manchester | June 14 |
| Excavation Works | Shotley Bridge, &c. Gas Co. | Newbigging & Son, Engr 5, Norfolk-st. Manchester | do. |
| Earthenware Pipe Sewers (Contract No. 3) | Hurst U.D.C. | E. Garside, C.E. Town Hall Chmbrs. Ashton-under-Lyne | do. |
| Timber Quay and Shed, St. Andrew's Dock, Hull | N. E. Ry. Co. | T. M. Newell, Engr. Dock Office, Hull | do. |
| Schools, Victoria-rd. Lurgan, Ireland | ...... | Young & Mackenzie, Archt. Donegall-square East, Belfast | do. |
| Cast Iron Water Mains | Winsford U.D.C. | H. Hulse, Surv. Market-place, Winsford | June 15 |
| Burgh Buildings | Clydebank Burgh Commrs. | J. Miller, Archt. 223, West George-st. Glasgow | do. |
| *Re-drainage, Reservoirs, &c. | Kent County Asylums Com. | W. J. Jennings, 4, St Margaret st. Canterbury | do. |
| Additions to Kent County Asylum Chartham | Visitors | W. J. Jennings, Archt. 4, St. Margaret-st. Canterbury | June 16 |
| Shops, &c. Victoria-rd. Sowerby Bridge, Yorks. | W. P. Ecliss | A. C. Williams, Archt. 29, Southgate, Halifax | do. |
| Electric Lighting Works | Dudley Corp. | Wilson & Story, 66, Victoria-st. S.W. | June 17 |
| *Fifty-three Cottages and Five Blocks of Tenements | Tunbridge Wells Corp. | Borough Surveyor | June 19 |
| *Sewering and Making-up Roads | do. | do. | do. |
| Hospital, Spring Vale | Ardrossan, &c. Joint Hospital Com. | Fryers & Penman, Archt. Largs, N.B. | do. |
| Road Works | Wolverhampton Corp. | J. W. Bradley, C.E. Town Hall | do. |
| *Widening Bridge | County of Southampton | W. J. Taylor, The Castle, Winchester | do. |
| *Institute, Swimming Baths, Laundry, &c. | Beckenham U.D.C. | Council Offices | do. |
| *Fog Signal House, Dwellings, &c. | Trinity House Corp. | E. G. Verity, 31, Golden-sq. W. | do. |
| *Infirmary and Cottages | St. Marylebone Gdns. | A. Saxon Snell, 22, Southampton-bldgs. W.C. | do. |
| *Alterations, &c. to Cottage | Wimbledon U.D.C. | C. H. Cooper, Broadway, Wimbledon | do. |
| *Providing and Laying Urinals | Tottenham U.D.C. | P. E. Murphy, 712, High-rd. Tottenham | June 20 |
| *Work in Erection of Hospital, also Heating, &c. Apparatus | Sheffield Corp. | Flockton, Gibbs, & Flockton, 15, St. James-row, Sheffield | do. |
| Schools | Sheerness Sch. Bd. | L. Grant, Archt. Sittingbourne | do. |
| Drainage Works | Dover T.C. | H. E. Stilgoe, C.E. Town Hall | do. |
| *Alterations at Schools | Penarth Sch. Bd. | Seddon & Carter, Bank-bldgs. St. Mary-st. Cardiff | do. |
| *Painting, &c. at Infirmary | Paddington Gdns. | E. Howley Sim, 8, Craigs-ct. Charing Cross, W.C. | June 21 |
| *Cottage Home Buildings and Additions to School | Isle of Thanet Union | L. Grant, High-st. Sittingbourne | do. |
| *Hospital | Basingstoke U.D.C. | J. Gibson, 3, New-st. Basingstoke | do. |
| Sewerage Works, Coulsdon | Croydon R.D.C. | R. M. Chart, Surv. Union Bank-chambers, Croydon | do. |
| *Granite Setts, &c. Stoneware Pipes, Gullies, and Gratings | Grays Thurrock U.D.C. | A. C. James, High-st. Grays | June 22 |
| Coastguard Station, Lawrence Cove, co. Cork | Office of Public Works, Dublin | Carpenter in charge, Queen's College, Cork | do. |
| Three New Roads, Ashley Grange Estate, Cheriton, Kent | ...... | Marler & Co. Surv. 95A, Gloucester-rd. S. Kensi'gt'n | June 26 |
| Farm Buildings, Hill End, St. Albans | Herts C.C. | G. T. Hine, Archt. 35, Parliament-st. S.W. | June 27 |
| *Farm Buildings, Hospital, Cottages, &c. | Herts C.C. | G. T. Hine, 35, Parliament-st. S.W. | do. |
| *Alterations and Additions to Library | Brighton Corp. | F. J. C. May, Town Hall, Brighton | July 27 |
| *Church and Schools, Worthing | ...... | J. Wills, Victoria-chamb'rs, Derby | No date |
| *Four Pairs Semi-detached Houses, &c. | ...... | C. M. Shiner, 3, Bond-ct. Walbrook, E.C. | do. |
| *Schools, Thornton Heath | Croydon Sch. Bd. | H. Carter Pegg, 6, Sudbury-rd. Thornton Heath | do. |
| *Three Cottages, Willesden | ...... | T. F. Shaw, 60, Nicoll-rd. Harlesden, N.W. | do. |
| *Painting | War Dept. | R. E. Office, Colchester | do. |
| *Painting, Sandhurst | do. | ,, North Aldershot | do. |
| Sixteen Villas, Crouch End, N. | ...... | Macer & Co. 39, Cheapside, E.C. | do. |
| Three Houses, Newark-st. Bradford | ...... | F. Moore, Archt. 40, Sunbridge-rd. Bradford | do. |
| Brewery, Market Drayton | J. Wright & Son | T. Tindal, Archt. Longton, Staffs | do. |
| Two Houses, Summerland Hill Estate, Exeter | ...... | J. A. Lucas, Archt. Guildhall-chambers, Exeter | do. |
| Alterations to "British Volunteer" Hotel, Cardiff | Ind, Coope, & Co. | Veall & Sant, Archt Cardiff | do. |
| Five Shops, Ormesby-rd. Middlesbrough | ...... | T. M. Bulmer, Atlas Works, Middlesbrough | do. |
| Eight Cottages, Deepcar, Sheffield | E. Ogden | J. D. Townend, Surv. 21, Fargate, Sheffield | do. |
| Church, Thornaby-on-Tees | ...... | Hicks & Charlewood, Archt. 67, Westgate-rd. Newcastle | do. |
| Villa, King-st. Duffield | ...... | Sands & Walker, Archt. Angel-row, Nottingham | do. |
| Alterations to Premises, Wade-st. Leeds | ...... | J. E. Preston, Archt. Chapel-Allerton, Leeds | do. |
| Three Villas, Wiverton-rd. Nottingh'm | ...... | Collyer & Slater, Archt. 8, Bridlesmith-gate, Nottingham | do. |
| Cottage Residence, Walton-on-Thames | ...... | G. L. Crickmay, Archt. 13, Victoria-st. S.W. | do. |
| Alterations to "Theatre Royal" Crook, co. Durham | L. M. Snowdon | J. W. Wardle, Archt. 25, King-st. South Shields | do. |
| Business Premises, High Wycombe, Bucks | McIlroy Bros. | T. Thurlow, Archt. High Wycombe | do. |

## PUBLIC APPOINTMENTS.

| Nature of Appointment. | By whom Advertised. | Salary. | Application to be in. |
|---|---|---|---|
| *Temporary Engineer's Assistant | Llandudno U.D.C. | 2l. 2s. per week | June 10 |
| *Officer to Superintend Repairs | Walthamstow Sch. Bd. | 150l. per annum | do. |
| Assistant Engineer | Cardiff Corp. | 150l. per annum | June 12 |
| Road Surveyor | Tewkesbury R.D.C. | 120l. per annum | June 16 |
| Clerk of Works, Carlton | Barnsley R.D.C. | 2l. 10s. per week | do. |
| *Clerks of Works (2) | Beckenham U.D.C. | 4l. 4s. & 3l. 13s. 6d. per week | June 19 |

*Those marked with an asterisk (*) are advertised in this Number. Competitions, p. —. Contracts, pp.* iv. vi. vii. viii. x. & xx. *Public Appointments, pp.* xviii. & xx.

---

By E. W. RICHARDSON & SON.

|  |  |
|---|---|
| Kingsland.—36, 38, and 40, Boleyn-rd., f. | £960 |
| Wood Green.—Eldon-rd., f.g.r. 18l. 18s., reversion in 98 yrs. | 460 |
| Muswell Hill.—Coppett's-rd., six plots of building land; f. | 330 |
| Finchley.—5, 6, and 7, Brownlow-rd., u.t. 81 yrs., g.r. 15l. | 405 |
| New Southgate.—1a, Palace-ter., f. | 240 |

By J. S. RICHARDSON.

|  |  |
|---|---|
| Walthamstow.—85, 87, 89, and 91, St. Andrew's-rd., u.t. 78 yrs., g.r. 26l. | 370 |
| 1 and 2, Hope Villas, u.t. 83 yrs., g.r. 11l. | £280 |

By C. C. & T. MOORE.

|  |  |
|---|---|
| Poplar.—Naval-row, "The Prince of Wales" p.-h., f., r. 100l. | 3,200 |
| St. George's East.—Grove-st., "The Jolly Sailors" b.-h., f., r. 38l. | 1,000 |
| Christian-st., "The Black Horse" b.-h., f., e.r. 50l. | 900 |
| Berner-st., f.g.r. 63l., reversion in 20 yrs. | 3,050 |
| Providence-st., &c., f.g.r. 78l. 15s., reversion in 20 yrs. | 3,600 |
| 140, Cable-st., f., r. 40l. | 365 |
| Grove-st., a freehold factory | £2,750 |
| 44 to 70 (even) and 64½, Grove-st., f. (in lots) | 5,390 |
| 83, 87 to 97 (odd), Grove-st., f. (in lots) | 2,480 |

*Contractions used in these lists.*—F.g.r. for freehold ground-rent; l.g.r. for leasehold ground-rent; i.g.r. for improved ground-rent; g.r. for ground-rent; r. for rent; f. for freehold; c. for copyhold; l. for leasehold; e.r. for estimated rental; u.t. for unexpired term; p.a. for per annum; yrs. for years; st. for street; rd. for road; sq. for square; pl. for place; ter. for terrace; cres. for crescent; yd. for yard, &c.

## TO CORRESPONDENTS.

C.—W. S.—(Amounts should have een stated). S. R. (Too late; next week).

NOTE.—The responsibility of signed articles, letters, and papers read at public meetings, rests, of course, with the authors.

*We cannot undertake to return rejected communications.*

Letters or communications (beyond mere news items) which have been duplicated for other journals are NOT DESIRED.

We are compelled to decline pointing out books and giving addresses.

Any commission to a contributor to write an article is given subject to the approval of the article, when written, by the Editor, who retains the right to reject it if unsatisfactory. The receipt by the author of a proof of an article in type does not necessarily imply its acceptance.

All communications regarding literary and artistic matters should be addressed to THE EDITOR; those relating to advertisements and other exclusively business matters should be addressed to THE PUBLISHER, and *not* to the Editor

## TENDERS.

[Communications for insertion under this heading should be addressed to "The Editor," and must reach us *not later than* 10 *a.m. on Thursdays*. N.B.—We cannot publish Tenders unless authenticated by the name and address of the sender; and we cannot publish announcements of Tenders accepted unless the amount of the Tender is given, nor any list in which the lowest Tender is under £100, unless in some exceptional cases and for special reasons.]

* Denotes *accepted*. † Denotes *provisionally accepted*.

ABERDEEN.—For the erection of schools, Mile End, for the School Board. Mr. A. H. L. Mackinnon, architect, 245, Union-street, Aberdeen. Quantities by architect:—

| | | | |
|---|---|---|---|
| *Masonry.*—James Gauld* | £5,965 | 0 | 0 |
| *Carpentry.*—Alex. Hall* | 3,229 | 0 | 0 |
| *Slating.*—Adam & Co.* | 169 | 15 | 0 |
| *Plumbing.*—J. F. Anderson* | 610 | 0 | 0 |
| *Painting.*—Mason & Son* | 445 | 17 | 9 |
| *Plastering.*—Stephen & Gibb* | 968 | 0 | 0 |
| *Ironwork.*—George Bisset* | 299 | 13 | 0 |
| *Steelwork.*—George Bisset* | 406 | 17 | 11 |
| | £12,024 | 3 | 8 |

[All of Aberdeen.]

BARRY (Glam.).—For additions to school, Clive-road (mixed department), for the School Board. Mr. G. A. Birkenhead, architect, St. Mary-street, Cardiff. Quantities by the architect:—

| | | | |
|---|---|---|---|
| James & Son | £3,480 0 0 | Jones Bros., Barry Dock* | £2,894 0 9 |
| D. Davies | 3,345 0 0 | Richards & Evans | 2,840 0 0 |
| A. Richards | 3,130 0 0 | Thos. Davies | 2,700 0 0 |
| G. Rutter | 3,116 1 4 | W. Britton | 2,692 0 0 |
| T. Evans | 3,080 4 0 | Architect's Estimate | 3,104 0 0 |
| Price & Sons | 3,058 0 0 | | |
| F. Couzens | 2,998 0 0 | | |
| J. Pront | 2,975 0 0 | | |

BECKENHAM.—For erecting St Michael's Church, Birkbeck, Beckenham, Kent. Mr. A. H. Hoole, architect, Charing Cross, W.C. Quantities by Mr. J. H. Thomas, Acton, W. Section 1, chancel vestries and chapel; section 2, two bays of nave:—

| | Section 1. | Section 2. |
|---|---|---|
| General Builders, Ltd. | £4,766 | £1,726 |
| Stephens, Bastow, & Co., Ltd. | 4,199 | 1,797 |
| Bunning & Sons | 4,149 | 1,800 |
| P. J. Kick | 4,018 | 1,815 |
| F. W. Green* | 3,548 | 1,503 |

BOURNEMOUTH.—For the erection of certain sections of the New Boscombe Hospital. Mr. G. A. Bligh Livesay, architect. Quantities by Messrs. Jenning & Goater:—

| | | | |
|---|---|---|---|
| George & Harding | £10,338 0 0 | Jenkins & Sons | £9,179 0 0 |
| Kingerlee | 9,902 19 4 | Miller & Sons* | 8,940 0 0 |
| Bastow & Co. | 9,716 0 0 | | |
| Hoare & Sons | 9,661 0 0 | | |

* Accepted with operation block omitted.

BROMLEY (Kent).—For additions to "Glascoed." Mr. W. A. Williams, architect, 48, Cornhill, E.C.:—

Duthoit* £142

CARDIFF.—For the erection of shops and offices in James-street, Bute Docks, for Messrs. Rose & Co., engineers. Mr. Edgar G. C. Down, architect, Queen-street, Cardiff:—

| | | | |
|---|---|---|---|
| T. Small | £2,618 0 0 | G. Griffiths | £2,474 0 0 |
| Knox & Wells | 2,550 0 0 | J. Allen | 2,439 18 9 |
| Shepton & Sons | 2,534 10 0 | Rees & Thomas | 2,399 0 0 |
| Jones Bros. | 2,515 0 0 | Thomas & Co. | 2,367 0 0 |
| Symonds & Co. | 2,515 0 0 | Evans Bros. | 2,332 0 0 |
| Lattey & Co. | 2,487 0 0 | Turner & Sons* | 2,298 0 0 |
| Cox & Bardo | 2,483 0 0 | Blacker Bros. | 2,292 13 8 |

CARDIFF.—For making new roads and laying drains, near Whitchurch-road. Mr. E. H. Bruton, architect, 15, Queen-street, Cardiff:—

| | | | |
|---|---|---|---|
| J. Ince | £438 13 4 | Jones Bros. | £380 0 0 |
| F. Ashley | 430 8 6 | E. H. Page | 376 14 11 |
| W. Marsh | 412 0 0 | Lattey & Co., Cardiff* | 366 5 2 |
| James Allen | 405 0 0 | | |
| Barnes. Chaplin, & Co. | 390 0 0 | | |

CHELMSFORD.—For the erection of a house, Rainsford End, for Mr. A. Miller. Mr. C. Pertwee, architect, Bank Chambers, Chelmsford:—

| | | | |
|---|---|---|---|
| Ernest West | £573 | W. Drewry | £467 |
| F. Weight | 495 | Gowers, Chelmsford* | 460 |

CHESTER.—For the erection of public baths, Union-street, for the Corporation. Messrs. Douglas & Minshull, architects, Abbey-square, Chester. Quantities by the architects:—

| | | | |
|---|---|---|---|
| Hughes & Stirling | £12,230 | John Mayers | £11,654 |
| Woods & Son | 12,170 | Jones & Son | 11,600 |
| Parker Bros. | 11,947 | W. W. Freeman, Chester* | 11,600 |
| Hamilton & Son | 11,880 | | |

CORK.—For additions to Myrtle Hill House, Cork. Mr. Arthur Hill, architect, Cork:—

| | | | |
|---|---|---|---|
| T. A. O'Connell | £1,577 | D. Hegarty | £1,300 |
| E. & P. O'Flynn | 1,412 | Delany & Co. | 1,100 |
| S. Hill | 1,350 | | |

EASTBOURNE.—For addition to "The Crown" public-house, for Messrs. Page & Overton, Limited. Mr. A. Broad, architect, 22, George-street, Croydon. Quantities by the architect:—

| | | | |
|---|---|---|---|
| J. Holland | £425 0 | Wood & Son | £323 0 |
| J. Peerless | 358 0 | G. Gausden | 309 0 |
| Peerless-Dennis & Co. | 357 0 | M. Hookham* | 297 15 |

HAMPTON.—For the execution of works at drill hall, for the Trustees of the Parochial Charities. Mr. F. G. Hughes, surveyor, Hampton-on-Thames:—

| | | | |
|---|---|---|---|
| Redgrove & Hopley | £115 0 0 | J. Wright | £109 0 |
| W. Evans | 112 11 3 | J. Tagg, Hampton Hill* | 108 10 |
| H. March | 109 18 0 | W. Highmore‡ | 46 0 |

‡ Since withdrawn.

HANDSWORTH (Staffs.).—For the erection of new Fire Brigade station, &c., for the Urban District Council. Mr. E. Kenworthy, Surveyor to the Council:—

George Webb, Handsworth* £2,026

HERNE BAY.—For erecting eleven villa residences in Albany-drive. Mr. J. Huxtable, architect, 6, Clarence-road, Sea-street, Herne Bay:—

| | | | |
|---|---|---|---|
| Marchant & Hirst | £5,520 | West & Piggott | £4,685 |
| C. W. Welby | 4,997 | | |

KINGSTON-ON-THAMES.—For erecting a female infirmary and new mortuary at the workhouse, Kingston-on-Thames. Mr. W. B. Hope, architect and surveyor:—

| | | | |
|---|---|---|---|
| Whitehead & Co., Limited | £30,680 | 0 | 0 |
| Gough and Co. | 29,156 | 0 | 0 |
| B. E. Nightingale | 28,755 | 0 | 0 |
| Turtle & Appleton | 27,350 | 0 | 0 |
| C. J. Saunders | 27,000 | 0 | 0 |
| Goddard & Sons | 26,070 | 0 | 0 |
| Martin Wells & Co. | 25,866 | 0 | 0 |
| Pattinson & Sons | 25,863 | 0 | 0 |
| Stephens, Bastow, & Co., Limited | 25,798 | 0 | 0 |
| Merredew & Wort | 24,900 | 0 | 0 |
| Shelbourne & Co. | 23,950 | 14 | 7 |

LONDON.—For rebuilding nine houses with shops and workshops, Sidney-street, Whitechapel, E., for Mr. Charles Martin. Mr. E. H. Abbott, architect, 6, Warwick-court, Holborn, W.C. Quantities by Mr. A. Johnson, Imperial-buildings, Ludgate-circus, E.C.:—

| | | | |
|---|---|---|---|
| A. Fordham | £6,990 | Balaam Bros. | £5,700 |
| S. Salt | 6,938 | A. E. Symes | 5,686 |
| Wells & Son | 6,517 | Thos. Grant | 5,500 |
| Wall & Co. | 5,811 | R. & E. Evans | 5,498 |

LONDON.—For work required to be executed at Woodberry Down Chapel, Seven Sisters'-road, N. Messrs. W. Bradbear & Co., architects and surveyors, Canonbury Station, N.:—

| | General Estimate. | External Pointing. | Total. |
|---|---|---|---|
| Crowe | £1,304 0 | £495 0 0 | £1,799 0 0 |
| Pearse | 970 0 | 130 0 0 | 1,100 0 0 |
| Campbell, Smith, & Co. | 684 0 | 379 0 0 | 1,063 0 0 |
| Richards | 691 0 | 356 0 0 | 1,047 0 0 |
| Simpson & Cove | 762 0 | 267 0 0 | 1,029 0 0 |
| Wilson | 660 10 | 300 0 0 | 960 10 0 |
| Stapleton | 705 0 | 237 0 0 | 942 0 0 |
| Buckeridge | 649 0 | 246 0 0 | 895 0 0 |
| Groves | 517 0 | 319 0 0 | 836 0 0 |
| Holliday & Greenwood | 565 0 | 260 0 0 | 825 0 0 |
| Britton | 650 0 | 160 0 0 | 810 0 0 |
| Bradford | 548 0 | 240 0 0 | 788 0 0 |
| Kelsey | 363 14 | 302 5 6 | 665 19 6 |
| Woolaston | 549 12 | — | — |
| Stewart | 494 0 | 54 15 0 | 548 15 0 |
| Dudley | 305 0 | 125 0 0 | 430 0 0 |

LONDON.—For new billiard-room at the "Adam and Eve," Peckham. Mr. J. Warne, architect, Peckham:—

| | | | |
|---|---|---|---|
| Simpson & Cove | £875 | Coates | £776 |
| Tyreman | 857 | Eames | 760 |
| Hammond | 777 | | |

LONDON.—For the erection of premises in Johnson's-court, Fleet-street, for Mr. R. S. Cartwright:—

| | | | |
|---|---|---|---|
| J. Marsland | £9,965 | Rider & Son | £9,810 |
| Howell J. Williams | 9,876 | Turtle & Appleton | 9,164 |
| Hornsey | 9,875 | Newton & Sons | 9,071 |
| Dove Bros. | 9,845 | Burman & Sons | 8,965 |

LONDON.—For additions to "Springcroft," Hornsey-lane, N. Mr. Alfred Conder, architect, Palace Chambers, 9, Bridge-street, Westminster:—

| | | | |
|---|---|---|---|
| E. Toms | £1,142 | Akers & Co.* | £911 |
| Grover & Son | 1,096 | | |

LONDON.—For erecting boundary railings and walls, together with the corrugated iron shelters, &c., at the Market-road public garden and recreation ground, for the Islington Vestry. Mr. J. Patten Barber, Chief Surveyor:—

Weibking & Sons* £758

[Lowest tender of five.

LONDON.—For alterations and shop front, at 153, Hoxton-street, N., for Mr. P. Cohen:—

| | | | |
|---|---|---|---|
| W. Irwin | £405 | Whity Bros. | £460 |
| A. & T. Wilson | 483 | Weibking & Sons* | 375 |
| T. Wilmot | 480 | | |

LONDON.—For pulling down and erecting small new factory at 78, Grange-street, N., for Mr. John Salmon. Messrs. Geo. Pearce & Sons, surveyors, 22, Hyde-road, N.:—

Weibking & Sons* £400

LONDONDERRY.—For alterations to premises, for Messrs. Geo. Austin & Co., Ferryquay-st. and Diamond, Londonderry. Messrs. Forman & Aston, architects, Castle-street, Londonderry:—

| | | | |
|---|---|---|---|
| Young & Dickson | £2,498 | McKee & Son, Dungannon* | £2,000 |
| J. & W. Stewart | 2,375 | | |
| Robert Colhoun | 2,200 | | |

LONDONDERRY.—For additions to Ebrington Factory, for Messrs. Young & Rochester. Mr. D. Conroy, architect, 2, Bishop-street, Londonderry. Quantities by Mr. J. Ferguson, Londonderry:—

| | | | |
|---|---|---|---|
| D. McCaffrey | £2,600 12 | R. Colhoun, Strand-road, Londonderry* | £2,300 |
| McKee & Sons | 2,350 0 | | |

OXFORD.—For proposed additions to St. John's College, Oxford. Mr. E. P. Warren, architect, Westminster, S.W. Quantities by Mr. J. B. Lofting, Westminster, S.W.:—

| | | | |
|---|---|---|---|
| Thompson & Co. | £7,330 | Simpson & Co. | £6,117 |
| Stephens, Bastow, & Co., Limited | 6,698 | Holloway Bros. | 6,098 |
| Parnell & Sons | 6,456 | Sim & Co. | 5,977 |
| | | Bensfield & Loxley | 5,910 |

REDHILL.—For erecting stabling, &c., Hooley Park Estate, for Messrs. Rickett, Smith, & Co., Limited. Mr. A. Broad, architect, 22, George-street, Croydon. Quantities by the architect:—

| | | | |
|---|---|---|---|
| Smith & Sons | £1,108 | Bagaley & Sons | £947 |
| E. J. Saunders | 1,047 | Buckland & Waters | 942 |
| T. Bushby | 1,015 | W. F. Wilkinson | 930 |
| D. W. Barker | 1,014 | Akers & Co. | 929 |
| J. J. Carrick | 995 | Nightingale & Sons* | 859 |
| Pearson & Co. | 980 | | |

RUABON.—For the erection of school and residence, Johnstown, for the Ruabon (U.D.) School Board. Messrs. J. Morison & Son, architects, King-street, Wrexham. Quantities by the architects:—

| | | | |
|---|---|---|---|
| J. Gethin | £3,913 0 | Jenkins & Jones, Johnstown, nr. Ruabon* | £3,795 0 |
| Davies Bros. | 3,884 15 | | |
| J. T. Jones | 3,862 0 | | |

ST. MARY CRAY.—For erecting four cottages in the High-street. Mr. W. A. Williams, architect, 48, Cornhill, E.C.:—

J. Lonsdale* £920

SOLIHULL.—For the erection of infirmary and tramp wards, for the Union Guardians. Mr. W. H. Ward, architect, Paradise-street, Birmingham. Quantities by Mr. W. H. Elsmore, 9, Carteret-street, Westminster:—

| | | | |
|---|---|---|---|
| William Hopkins | £13,400 | R. Merton Hughes | £11,821 |
| Whittall & Son | 13,379 | Giles & Son | 11,790 |
| Richard Fenwick | 12,600 | J. Atkinson | 11,750 |
| H. J. Briley | 12,500 | Willcock & Co. | 11,680 |
| Whitehouse & Sons | 12,387 | W. Robinson | 11,150 |
| Bragg Bros. | 11,950 | T. & W. Thompson, Solihull* | 10,700 |
| Smith & Pitts | 11,943 | | |

SOOTHILL (Yorks).—For the erection of six houses, off Broom-street, for Mr. Allan Blackburn, architect, Talbot-street, Batley:—

| | | |
|---|---|---|
| *Masonry.* — T. Mortimer, Carlinghow, Batley* | £664 | 0 |
| *Joinery.*—G. Elliott, Hanging Heaton, Dewsbury* | 240 | 0 |
| *Plastering.*—S. Crawshaw, Field-lane, Batley* | 73 | 0 |
| *Plumbing.* — T. Elliott, Station-road, Batley* | 56 | 10 |
| *Slating.*—W. H. Thompson, Bradford-road, Batley* | 66 | 10 |

SOUTHEND-ON-SEA.—For proposed house, Victoria-avenue, Southend-on-Sea, for Mr. S. Parrish. Messrs. Thompson & Greenhalgh, architects, Southend-on-Sea:—

| | | | |
|---|---|---|---|
| A. E. Symes | £1,520 | Shelbourne & Co. | £1,422 |
| F. Dupont | 1,490 | F. E. Woodhams | 1,392 |
| Stewart & Co. | 1,485 | Davis & Leaney* | 1,328 |

SOUTH SHIELDS.—For alterations to business premises, for Messrs. Redmayne & Walker, Ocean-road, South Shields. Mr. Henry Grieves, architect, Albany Chambers, South Shields:—

| | | | |
|---|---|---|---|
| W. J. Robertson | £263 | 7 | 1 |
| A. Ross | 255 | 0 | 0 |
| S. Sheriff | 220 | 0 | 0 |
| M. Hall, jun., South Shields* | 210 | 0 | 0 |
| *Marble Work.* | | | |
| J. Angove, Newcastle* | 74 | 10 | 0 |
| *Tilers' Work.* | | | |
| Walker & Son, Newcastle* | 47 | 18 | 6 |

## LONDON SCHOOL BOARD TENDERS.

AT the last meeting of the London School Board, the Works Committee submitted the following lists of tenders. Mr. T. J. Bailey is the Board's architect:—

*The work at the following Schools will be executed between June 3, 1899, and July 1, 1899:—*

*Exterior Painting.*

BATH-STREET:—

| | | | |
|---|---|---|---|
| W. Bunce | £550 0 0 | McCormick & Sons | £247 0 0 |
| F. Britton | 307 17 7 | Johnson & Co. | 190 0 0 |
| Lawrance & Sons | 269 0 0 | Bristow & Eatwell* | 151 0 0 |
| L. H. & R. Roberts | 260 0 0 | | |
| Wagstaff & Sons | 259 0 0 | | |

[See also next page.

BRITISH-STREET :—

| | | |
|---|---|---|
| W. Hornett | £160 | 0 |
| J. T. Roby | 145 | 5 |
| J. Kybett | 142 | 0 |
| Unsigned | £138 | 5 |
| E. Triggs | 136 | 0 |
| G. Wales* | 129 | 0 |

GLOUCESTER-ROAD :—

| | |
|---|---|
| C. Gurling | £405 |
| H. Line | 331 |
| Garrett & Son | 328 |
| J. & C. Bowyer | 322 |
| W. Hammond | £300 |
| G. Kemp | 290 |
| Holliday & Greenwood | 239 |
| Morgan & Co.* | 213 |

HANBURY-STREET :—

| | | |
|---|---|---|
| Wall & Co. | £62 | 10 |
| Collis Willmott | 60 | 0 |
| G. Barker | 56 | 0 |
| J. Haydon | £50 | 5 |
| A. W. Derby* | 49 | 0 |

LONDON FIELDS :—

| | | | |
|---|---|---|---|
| F. Britton | £324 | 4 | 4 |
| Lawrance & Sons | 259 | 0 | 0 |
| Barrett & Power | 177 | 0 | 0 |
| W. Shurmur | 169 | 0 | 0 |
| Collis Willmott | £160 | 0 | 0 |
| G. Wales | 152 | 12 | 6 |
| Silk & Son | 149 | 0 | 0 |
| J. Haydon* | 125 | 8 | 6 |

LUCAS-STREET :—

| | | | |
|---|---|---|---|
| Martin, Wells, & Co. | £221 | 10 | 0 |
| S. Musgrove | 168 | 15 | 0 |
| W. Banks | 149 | 15 | 6 |
| White & Co. | £145 | 0 | 0 |
| E. Proctor | 135 | 0 | 0 |
| C. G. Jones | 127 | 0 | 0 |
| C. S. Jones* | 110 | 0 | 0 |

MALMESBURY-ROAD :—

| | |
|---|---|
| A. E. Symes | £215 |
| J. T. Robey | 152 |
| Unsigned | 133 |
| A. W. Derby | £125 |
| S. H. Corfield* | 109 |

MANCHESTER-STREET :—

| | | |
|---|---|---|
| Willmott & Sons | £279 | 0 |
| R. S. Buckeridge | 240 | 0 |
| T. Cruwys | 212 | 10 |
| Stevens Bros. | 168 | 0 |
| W. Hornett | 155 | 0 |
| W. Brown | £152 | 3 |
| Spencer, Santo, & Co., Ltd. | 152 | 0 |
| T. Nicholson | 140 | 0 |
| W. Chappell* | 140 | 0 |

PLOUGH-ROAD :—

| | | | |
|---|---|---|---|
| C. Gurling | £227 | 0 | 0 |
| R. S. Ronald | 191 | 0 | 0 |
| Bulled & Co. | 170 | 0 | 0 |
| Johnson & Co., Ltd. | 165 | 0 | 0 |
| Gregory & Co. | 153 | 16 | 0 |
| Parsons & Co. | £148 | 10 | 0 |
| O. Craske | 140 | 0 | 0 |
| Heinemann & Co. | 131 | 14 | 0 |
| F. Chidley | 130 | 0 | 0 |
| E. B. Tucker* | 128 | 9 | 6 |

POCOCK-STREET :—

| | |
|---|---|
| T. L. Green | £197 |
| Somerford & Son | 161 |
| Edwards & Medway | 160 |
| Lathey Bros. | 156 |
| B. E. Nightingale | 154 |
| Holliday & Greenwood | £153 |
| E. Triggs | 143 |
| E. Flood | 136 |
| Maxwell Bros., Ltd.* | 122 |

PORTMAN-PLACE :—

| | |
|---|---|
| A. E. Symes | £180 |
| J. T. Robey | 188 |
| A. W. Derby | 135 |
| J. Kybett | £127 |
| S. H. Corfield | 109 |
| G. Barker* | 103 |

POWIS-STREET :—

| | | | |
|---|---|---|---|
| Martin, Wells, & Co. | £191 | 15 | 0 |
| Thomas & Edge | 132 | 0 | 0 |
| W. Banks | 124 | 19 | 6 |
| C. Foreman | £124 | 0 | 0 |
| J. H. Hodgin | 124 | 0 | 0 |
| E. Proctor* | 80 | 0 | 0 |

RUBY-STREET :—

| | |
|---|---|
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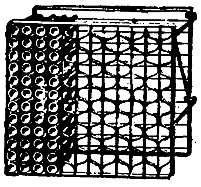

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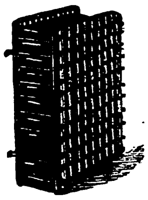

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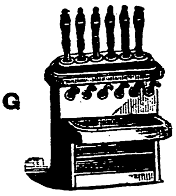

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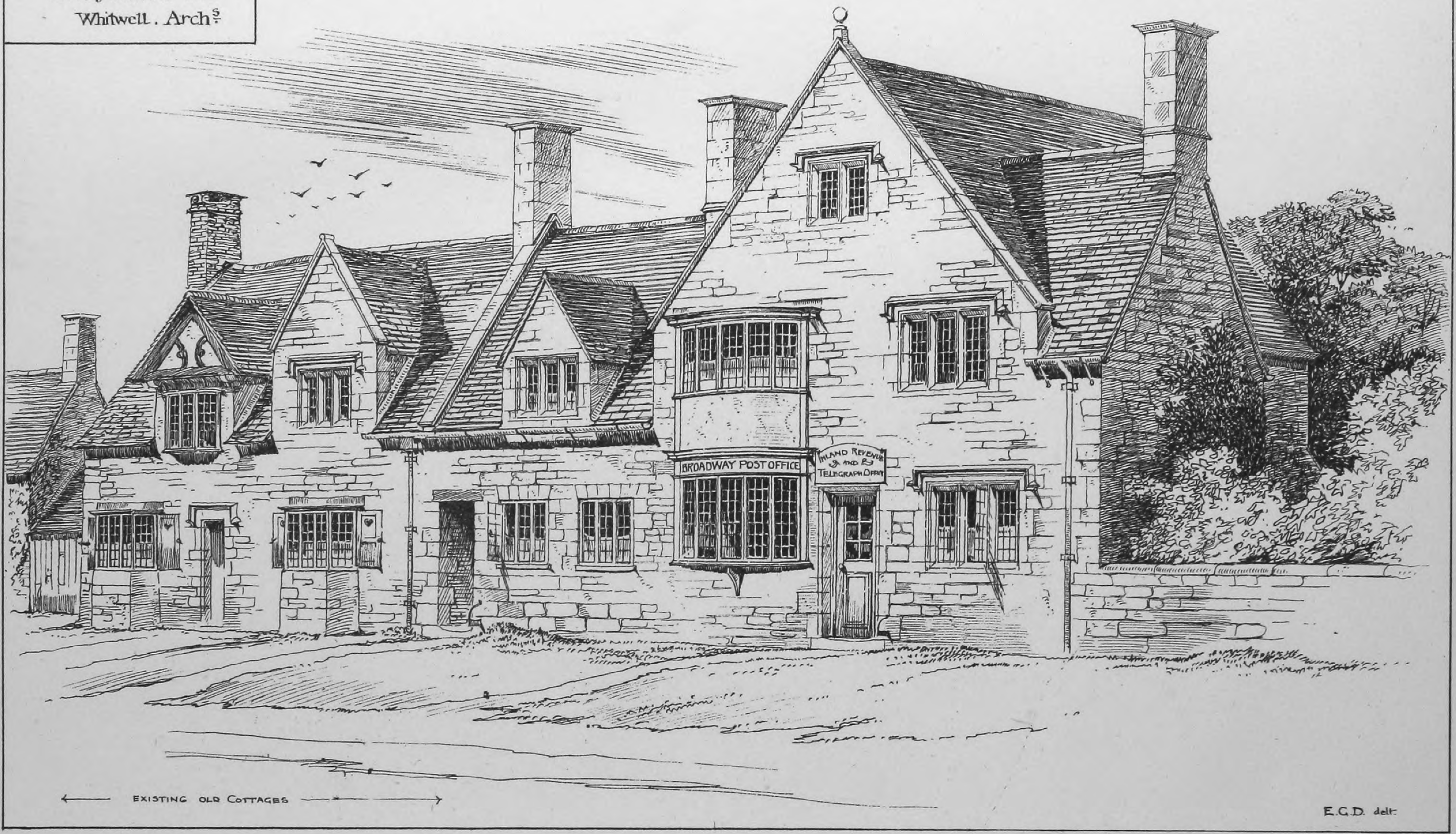
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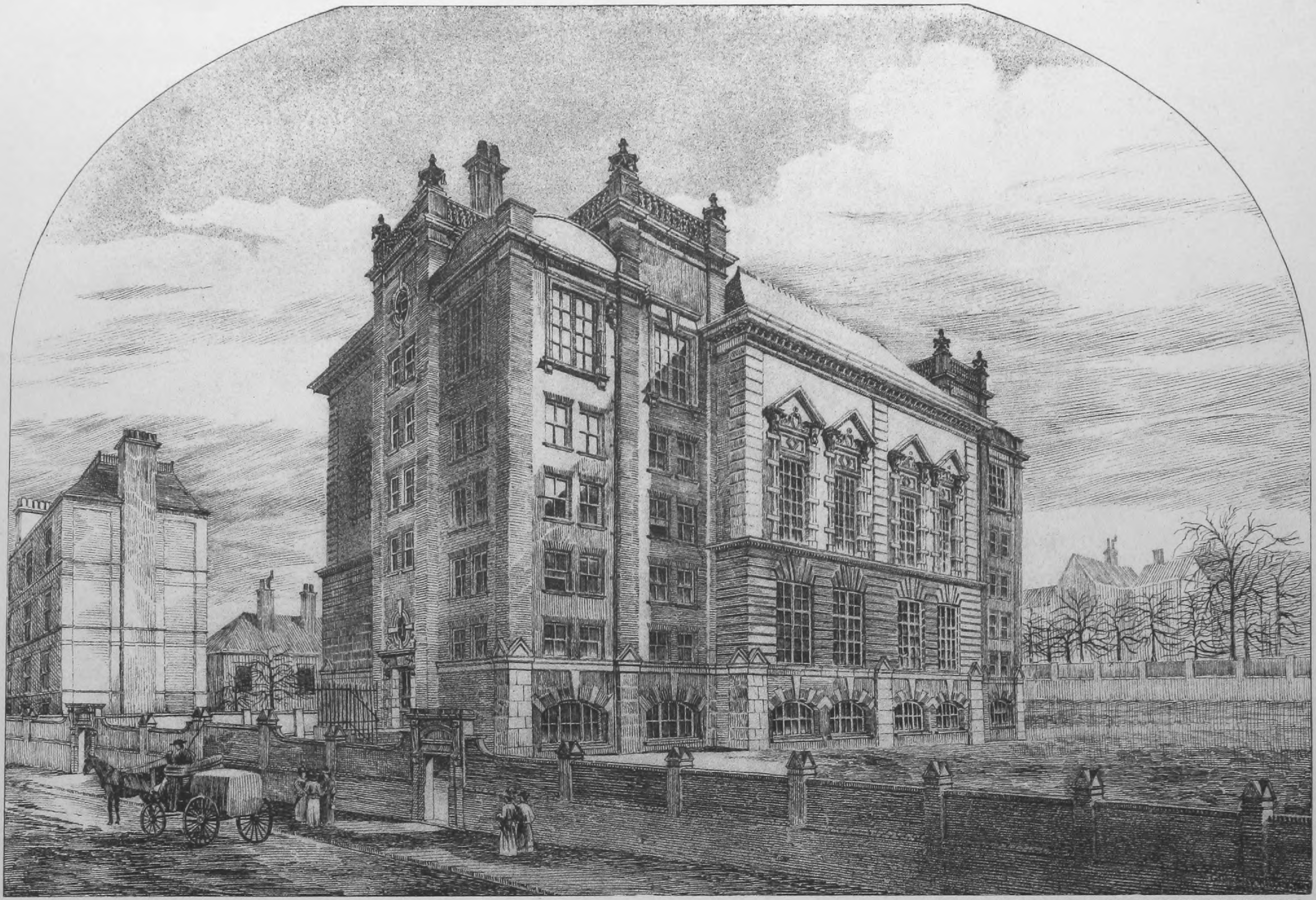

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SCHOOL BOARD FOR LONDON: FINSBURY PUPIL TEACHERS' CENTRE, OFFORD ROAD, N.—Mr T. J. Bailey, F.R.I.B.A., Architect

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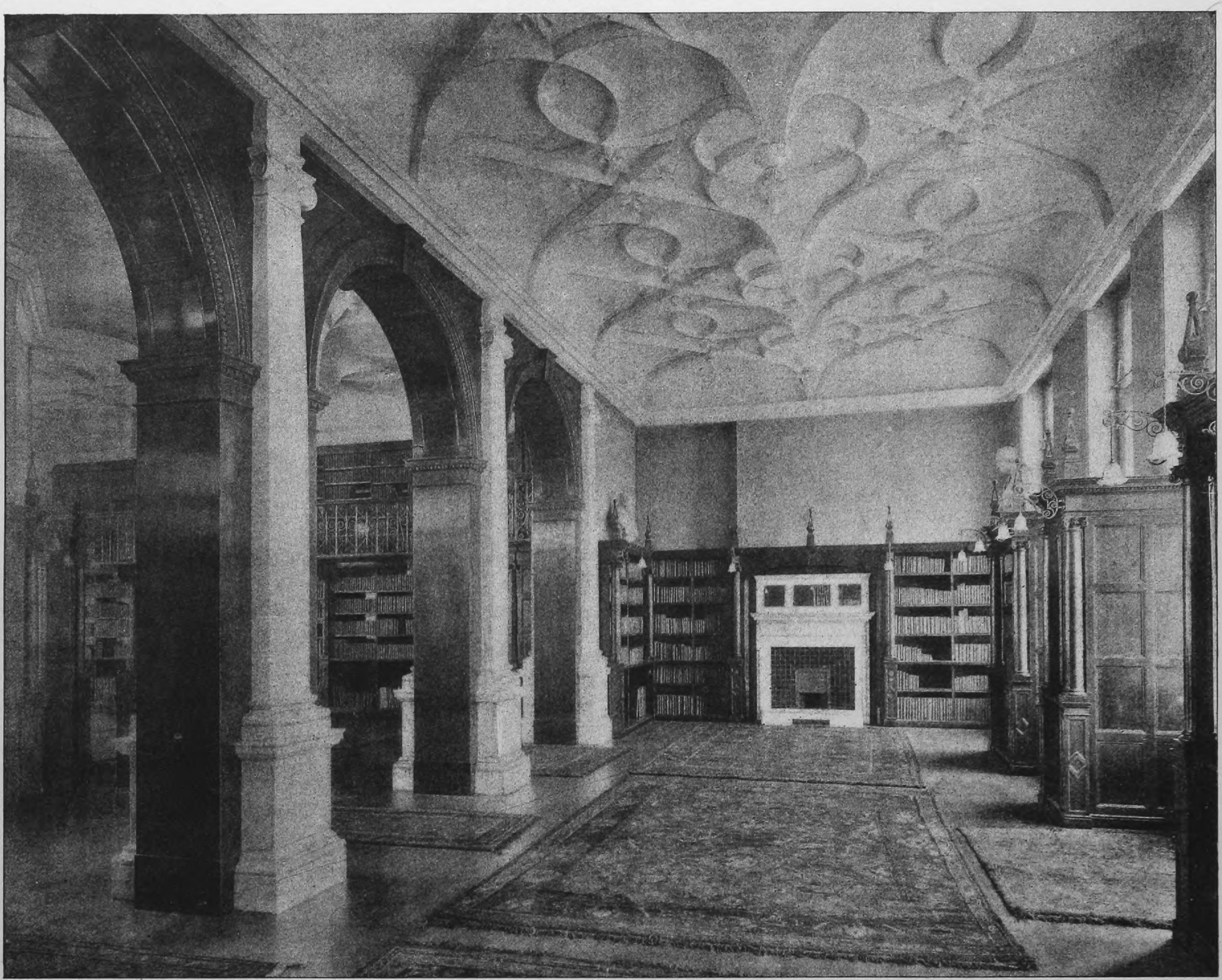

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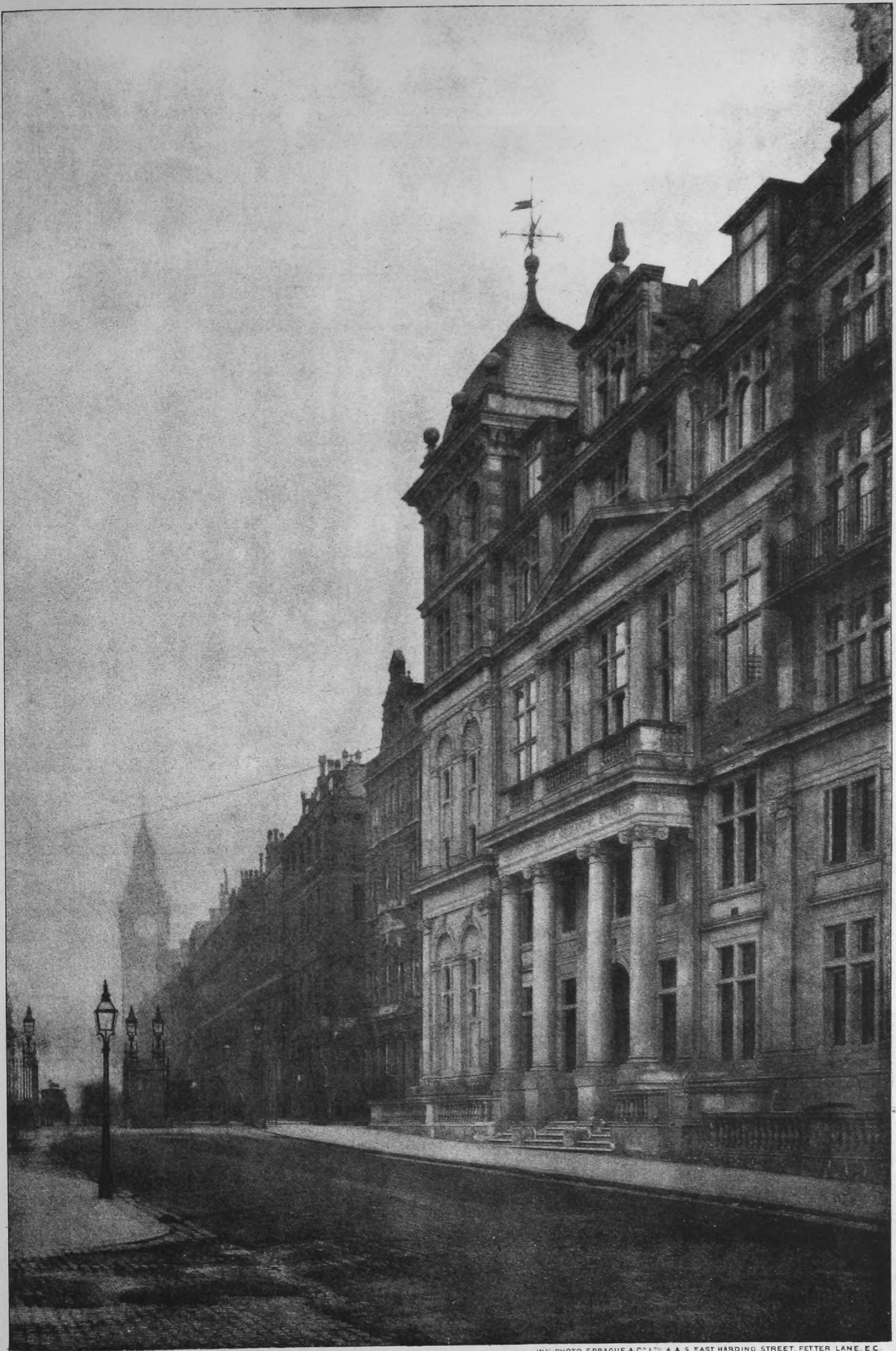
INSTITUTION OF MECHANICAL ENGINEERS: THE LIBRARY.—MR. BASIL SLADE, ARCHITECT.



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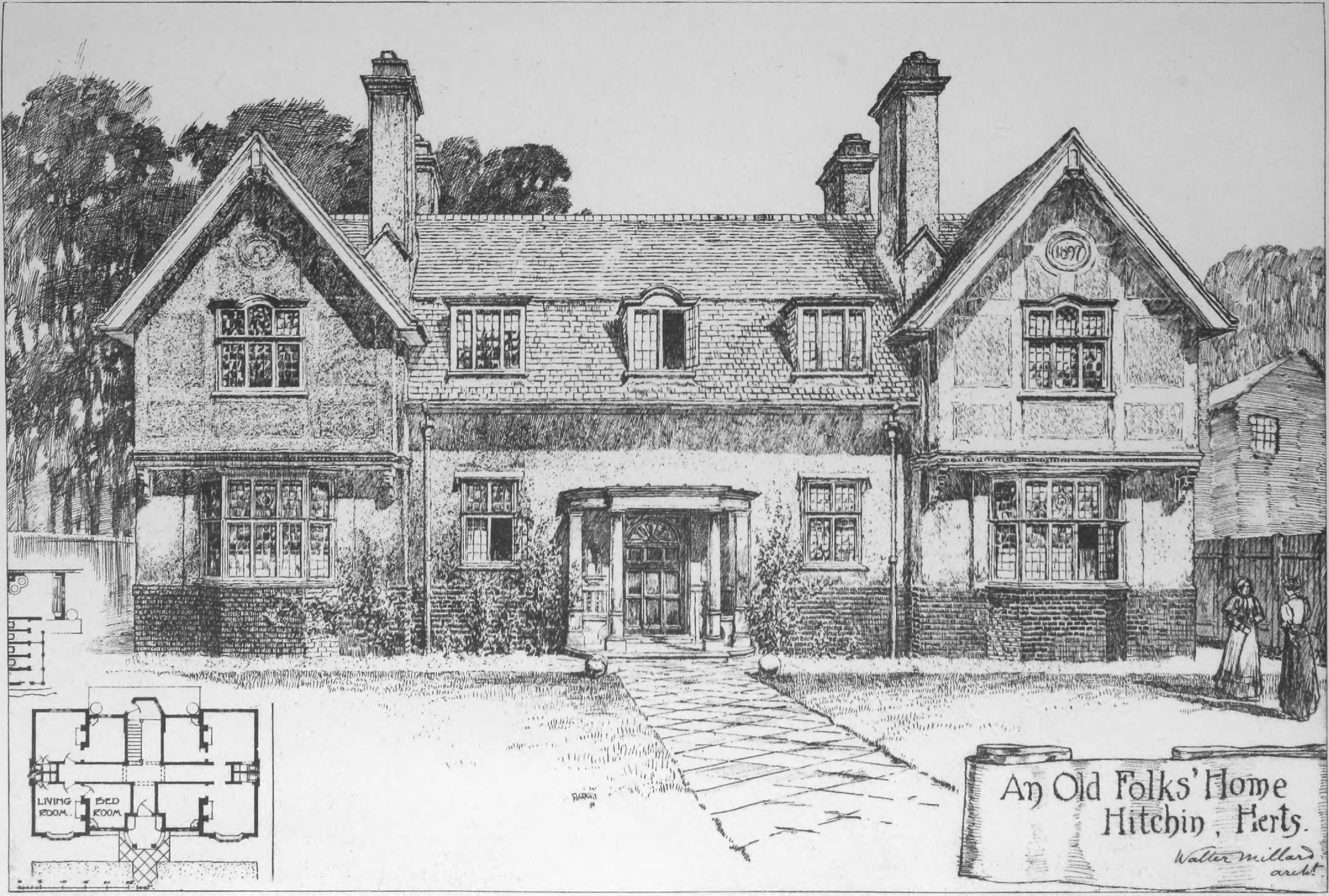
1897
LIVING ROOM.
BED ROOM.

An Old Folks' Home
Hitchin, Herts.

Walter Millard
archt.

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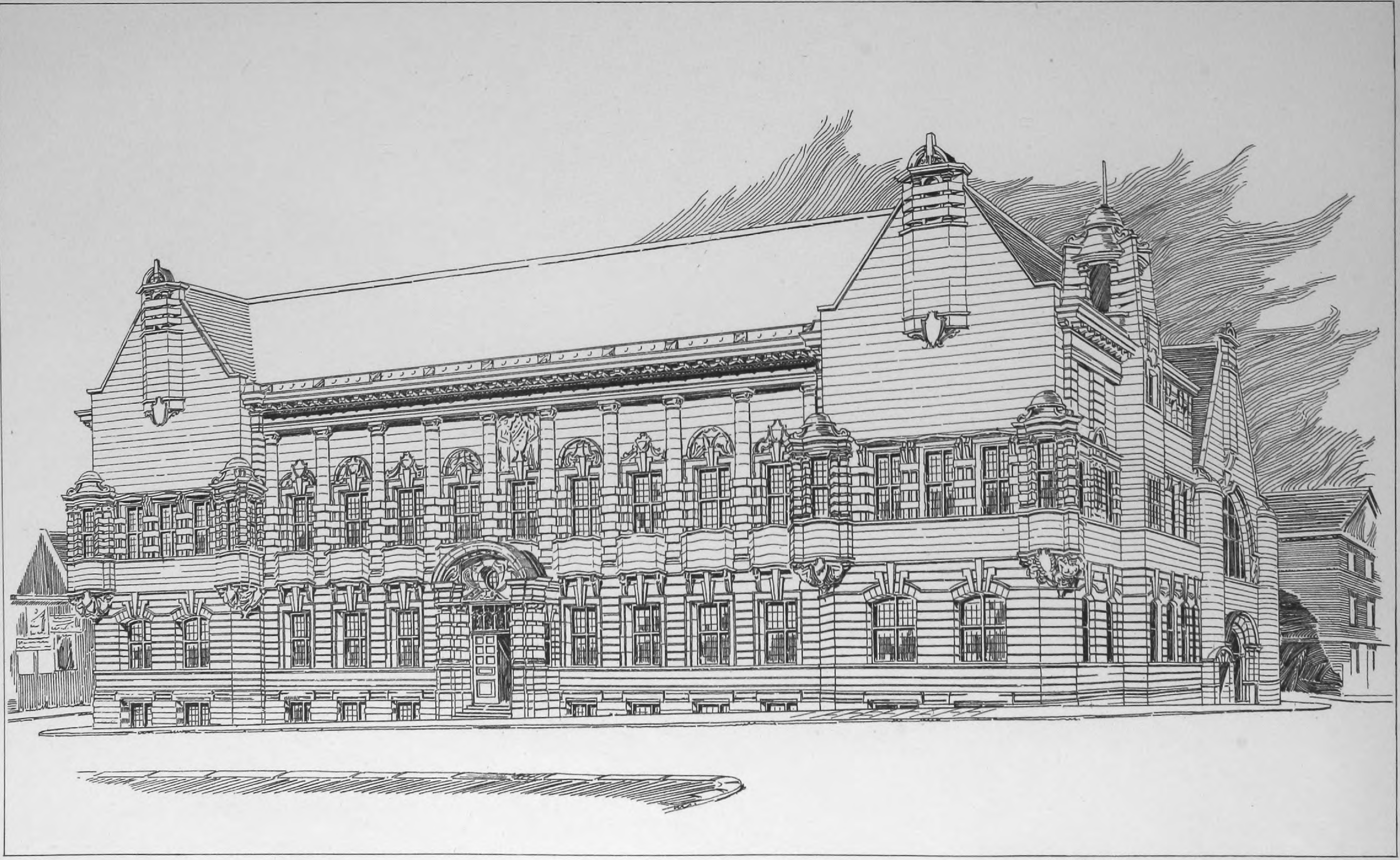

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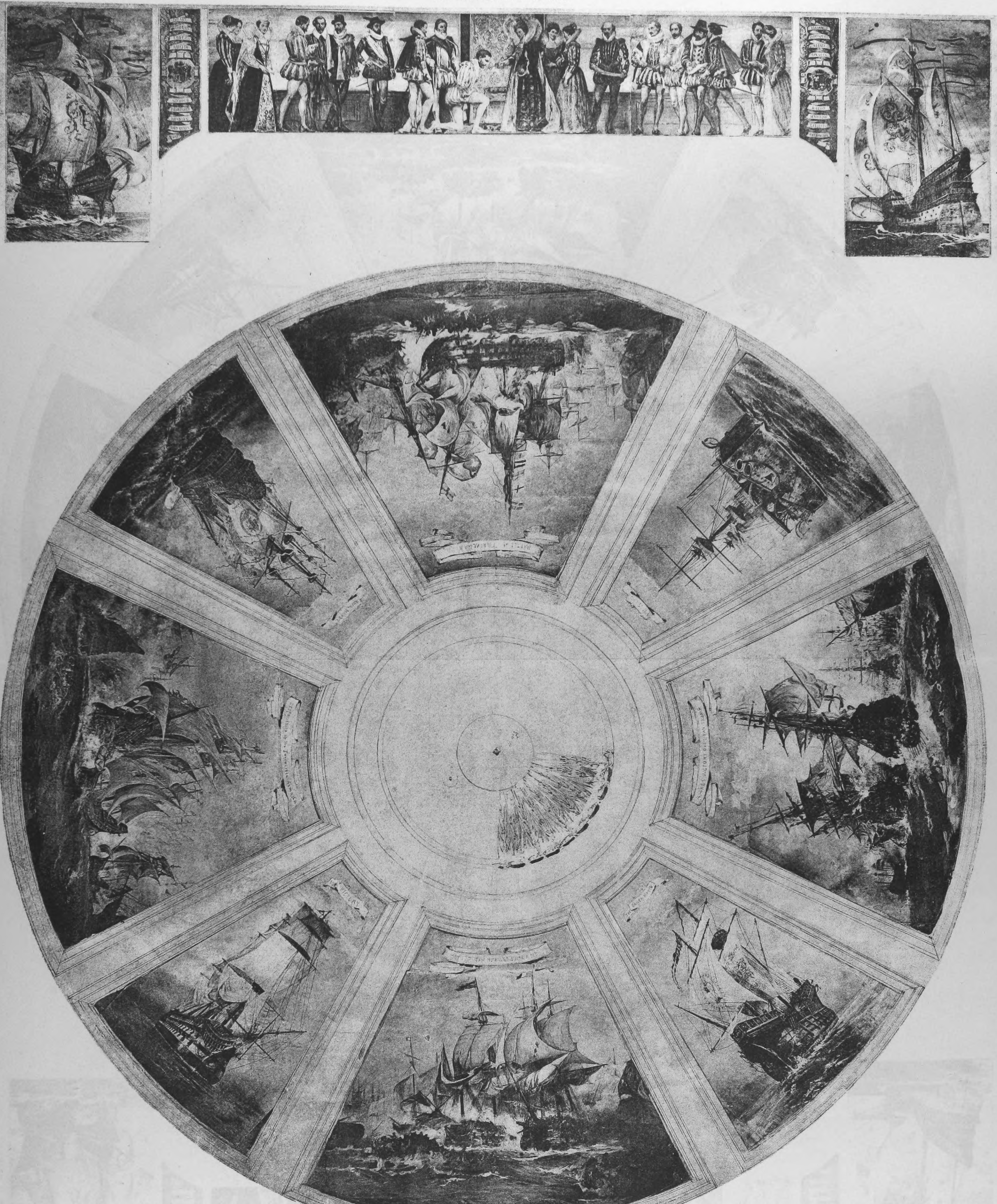
SECOND PREMIATED DESIGN FOR ROYAL INSTITUTION, LIVERPOOL.—BY MR. R. W. BEDINGFIELD, A.R.I.B.A



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DECORATION OF CEILING AND PROSCENIUM, NEW PALACE THEATRE, PLYMOUTH.—By Mr H. C. Brewer.

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# The Builder.

VOL. LXXVI. No. 2940. JUNE 10, 1899.

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## *Bow Church Restoration.*

> "And Frenche she spake ful fayre and fetisly,
> After the scole of Stratforde atte Bowe,
> For Frenche of Paris was to hire unknowe."
> CHAUCER'S "Canterbury Tales."

ON Monday next, the 12th instant, the ancient Parish Church of Bow is to be reopened for public worship by the Bishop of London. Our readers may remember that in 1896 this church had to be closed on account of its dangerous condition, and that a proposal was then made that it should be demolished.

The origin and date of erection of the existing church is a matter of dispute, but credence is most generally given to the account recorded by Newcourt. In the year 1311 Bishop Baldock granted the inhabitants of Stratford and Old Ford a licence to build a chapel in the King's highway, on account of the distance of their abodes from their parish church at Stepney, and the impassability of the roads during the winter floods. Judging, however, from the architecture of the church, it appears certain that no part of the existing building is of earlier date than the latter end [illegible] the fifteenth century (1480-1490), and although there is a complete absence of documentary evidence as to the building of a new church at this date, there is very little doubt that the chapel which existed on the site from 1311, or a few years later, to about the year 1480 was then replaced by a new structure, of which the chancel, the lower part of the tower, the lower portions of the aisles, and possibly the roof of the nave still remain. The nave, which consists of a stone arcading (now covered with plaster and paint), with plain octagonal shafts, is evidently of a still later date. Probably both the nave and the north aisle were built in the middle of the sixteenth century, and the south aisle has been entirely rebuilt during the present century.

Sir Walter Besant, in his historical work entitled "London," writes:—"He, for instance, who walks along the broad highway of Whitechapel and Mile End, if he continues his walk, presently arrives at a most interesting and venerable church. It is quite small, with a low tower; it stands in the middle of the road and has a long, narrow churchyard, cigar-shaped, before and behind it. This is the Church of St. Mary, or Bow Church. It was formerly the church of a nunnery founded at Stratford-le-Bow by William the Conqueror; it was augmented by Stephen, enriched by Henry II. and Richard I., and lasted till the Dissolution." It is evident in this account that the history of a nunnery which existed at Stratford, or at Barking, upon the Essex side of the River Lea, has been confounded with that of the church of Stratford Bow which is situated upon the Middlesex side.

Lysons, in his "Environs of London," gives several illustrations of Bow Church and its neighbourhood, and in the copy in the Guildhall Library several additional drawings, some of them coloured, are inserted. One very badly executed drawing shows the church as it existed in 1754, while others represent the church in 1826, and as it appeared "before the alteration in 1794," and at other periods. The illustration of "Bow Church in 1800," from a painting of that date, shows also the ancient Market House, said to have been erected in the reign of Henry II. and not more than six to eight yards from the east end of the church. It was in a room over this market that the school founded by Sir John Jolls (or Jolles), about the year 1613 found accommodation. The ruined remains of the old mart existed until about 1835, when the site was utilised as a burial ground. Other illustrations represent the old font, which may still be seen in the church; the armorial bearings of some of the families formerly resident in the neighbourhood; and the burning at the stake of thirteen persons in this parish in 1556 for what was then deemed heresy. This latter event is now believed to have occurred in Stratford, and not in Stratford Bow.

In 1883 Sir Arthur Blomfield prepared a design for rebuilding the whole of the church except the fifteenth century tower and the modern organ chamber. In this design increased accommodation and new vestries were provided, but owing to lack of funds the scheme was eventually abandoned. About the year 1887 a modern gallery, which partly concealed the west window, was removed, and the high-backed pews were cut down, but no serious attempt was made to deal with the structural defects until in October, 1896, a portion of the chancel roof subsided, and it became necessary to close the church.

A Restoration Committee was then formed, and ultimately the joint efforts of the Committee for the Survey of the Memorials of Greater London, the National Trust for Places of Historic Interest or Natural Beauty, the Society for the Protection of Ancient Buildings, the Bishop of Stepney and other gentlemen resulted in the collection of sufficient funds to commence the much-needed repairs. In carrying out the present restoration every effort has been made to repair well and substantially without making any marked alteration in the appearance of the edifice.

The name by which the church was formerly known, viz., "The Chapel of St. Mary, Stratford atte Bowe," was probably derived from the proximity of the church to the bridge "arched like unto a bowe," which was built by Matilda, Queen of Henry I., over or near the straight-ford across the River Lea. The church remained a chapel-of-ease to Stepney until 1719, when it was consecrated as the parish church. John Stow, in his "Survey of London" in 1598, records that "there was an ancient custom for the inhabitants of this town of Stratford-at-Bow to go in procession to the Church of St. Peter, Westminster, all through the City of London, at Whitsuntide, in token of some dependence of this town upon that church. This they got themselves released of, in the days of Henry the Eighth."

Erected in the great main road* leading

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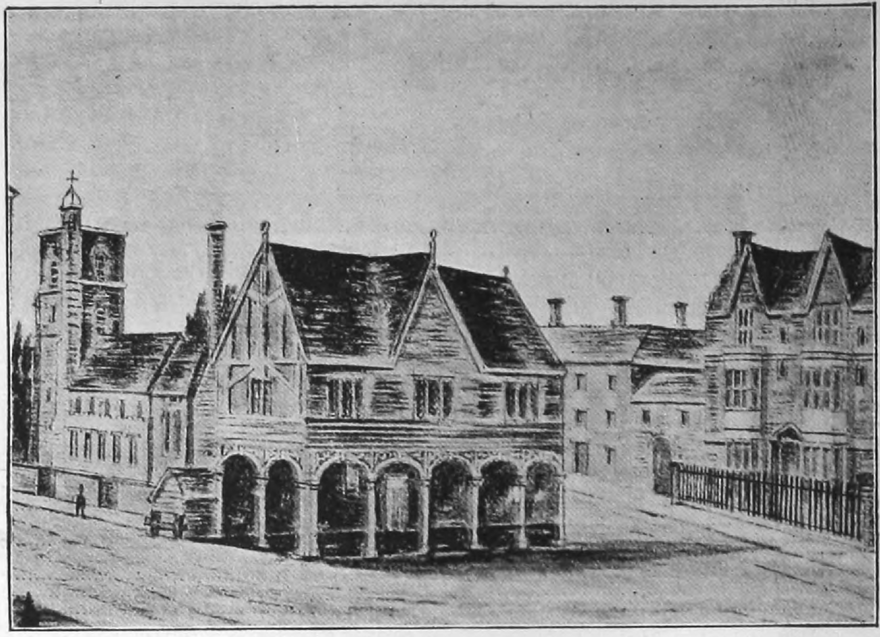
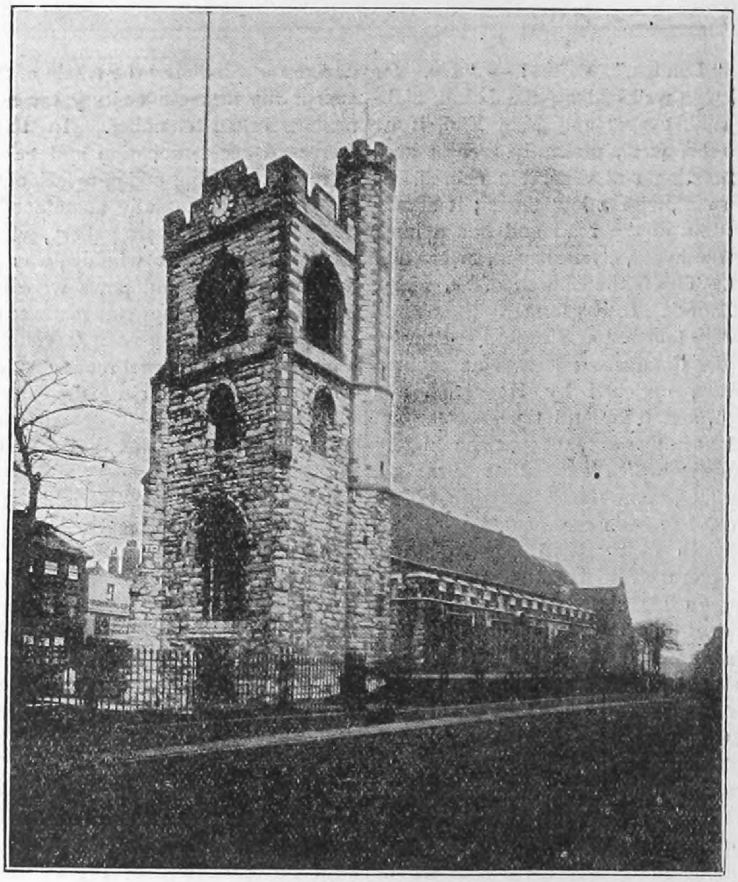
* Until the present century the road on the south side only of the church appears to have been used for vehicular traffic. An old oil painting now in possession of Mr. O. C. Hills of Bow shows the road on the north side stopped by a wooden barred gate.



*Bow Church and Market House in 1800 (from an Old Painting).*



*Bow Church in 1899.*

from London to Romford, Colchester, and Harwich, this church has always been a notable object, and has attracted the attention of several historians and artists. Incredible as it must appear to the visitor of to-day, the parish of Bow was, within the memory of living residents, a rural village, with wealthy families living in the neighbourhood and residing in spacious houses surrounded by meadow land and cornfields. The *Mirror*, as recently as 1825, remarked that "there are few places in the vicinity of London which are more interesting from the evident marks of antiquity that are displayed in and about them than the village of Bow, or, as it is commonly termed, Stratford Bow, in the county of Middlesex.

"The village itself seems originally to have derived its importance first from an ancient ford near one of the Roman highways, and, secondly, from a bridge of one arch over the River Lea, built by Henry I., probably at the instance of Matilda, who, as it is stated, in attempting to pass the ford "got well washed in the stream" (*vide* Leland). The church itself is not of great architectural interest, although the west window and doorway in the tower are well worthy of notice; but it may be said to represent a correct specimen of second-rate ecclesiastical architecture of the fifteenth century period. The chancel gable, with its tiled roof, took the place of a flat roof in 1755. The upper portion of the tower, which the eye at once detects as work of recent date, was added shortly after the year 1829, when a portion of the upper part of the tower as it then existed fell down during the night. About 1840 the flat plaster ceiling of the nave and the window curtains were removed, and the old oak roof was exposed.

The opinion has been expressed that the spread of the walls is due entirely to the removal at the latter date of the ceiling joists, which it is thought acted as effective ties; but the architects do not hold this view, as in their opinion the defect is of far longer standing.

The restoration works, which have just been completed, may be summarised as follows:—

*The Chancel.*—The gable roof of 1755 has been practically renewed and the brick gable rebuilt, but the old timbers are left, although they now do no work. The fifteenth century roof, as seen from the interior, remains unaltered. The walls have been rejointed with tiles and flints, and a little new Portland stone inserted.

*The Nave.*—Practically a new roof has been provided, although some of the old timbers have been re-used. Double oak windows have also been added to lessen the nuisance created by the clamour of the heavy traffic which passes within a few feet of the church windows.

*The North Aisle.*—A new doorway to the modern vestry has been formed, and the wall has been repaired in the same way as the chancel.

*New Work.*—The old red brick vestry has been extended to embrace a choir vestry and entrance lobby.

The tower is now the only part of the church remaining to be repaired. Some 3,700*l.* have already been spent on the restoration, about 1,000*l.* of which have still to be collected, while another 1,000*l.* are required for the tower. It is earnestly hoped that this sum of 2,000*l.* will be publicly subscribed, as otherwise the most interesting portion of the building must be allowed to become a ruin.

The restoration has been carried out by the local architects, Messrs. Walter A. Hills & Son.

For the present the historic little edifice has been snatched from the destroying hand of the Vandal; and the new century upon its advent will find the same old landmark, whose weather-beaten form has for so many ages stood conspicuous in the great highway, still occupying its accustomed place. Its present aspect is indicated in the accompanying illustration.

## ARCHITECTURE AT THE ROYAL ACADEMY.—III.

### DOMESTIC ARCHITECTURE.

THERE is a pretty good proportion of domestic architecture in the Architectural Room at the Royal Academy, though there is no design for any mansion of the largest class. We may divide the exhibits, however, into the larger country houses which aim at a certain degree of dignity, and those smaller ones in which the general aim (at present at all events) is to be picturesque and piquant.

Among the larger houses we first come on two by Mr. Leonard Stokes, "Cold Ash, near Newbury" (1,616) and "No. 2, West

Drive, Streatham Park" (1,622), though no one at first glance would suppose they were by the same architect, so totally different is their character and treatment. "Cold Ash" seems to owe something to suggestions from the modern American type ot country house, in which there is a kind of affectation of simplicity, a cottage character given to a house on a large scale; a verandah on bare poles, with a thick battered retaining wall under it. The author sets a good example in giving both a plan and a compass, which, however, unfortunately shows that both kitchen and dining-room have an aspect towards the west—bad for both cook and diners on hot summer evenings. The Streatham Park house, with a plan but no compass, is one of the substantial square order, with large rooms, and is a much more satisfactory work in style than the other; it gets great dignity from its very boldly projecting cornice, and there is an original and effective architectural treatment of the chimneys, which are combined into one great stack in the middle of the roofs, or, more properly, two stacks which are architecturally connected by a special "treatment." It is surprising that one does not see more attempts made in modern houses to do something with the chimneys, instead of leaving them so many excrescences sticking up all over the design, as in Mr. Prentice's "Cavenham Hall, Suffolk" (1,624, 1,634, 1,684), where they quite spoil the house, which is in itself a nice quiet type of archæological work, though there is nothing either in the plan or the design to justify the hanging of three different views of it, a favour obviously due to the author's picturesque and effective pen-drawing; for the architectural room is much more an exhibition of architectural drawing than of architecture. The plan of the house is too rambling and uncertain in method for our liking (though such rambling plan is popular at present). We observe that, as in several other house plans in the room, the kitchen window is on the wrong side of the cooking-range—or the cooking-range on the wrong side of the window, whichever way you like to put it; the cooking-range ought to have a left-hand light; it is surprising how few architects seem to be aware of this. The materials appear to be brick walls with large spaces of roughcast or other whited surface, as far as one can gather from the drawings. The effect of the square forecourt with the circular drive would be good.

Mr. Wornum's "Las Fraguas, Santander, Spain" (1,630) shows no plan, and is merely a view of a house with ordinary English detail, about which the only element of surprise would be to meet with it in Spain. Mr. Mackenzie's slight sketch of "The new clock tower, Fyvie Castle" (1,657) shows a pleasant bit of modern Scotch Jacobean; and from this we pass on to Mr. Leiper's "Staircase and Gallery, Kelly House" (1,745), a coloured sectional drawing showing a solidly wainscotted gallery with some stained windows well put in, and an equally solid wood staircase with an arcade carried on rather massive polished columns; from the colouring this seems to be of wood, but if so, it is distinctly a wooden imitation of stone architecture. However, this is a type of drawing one is glad to see in the architectural room, and of which there ought to be more, in place of so many mere pictures. Mr. John S. Lee's "Design for a Garden by a River" (1,751), a palatial Italian garden, is another geometrical drawing, on a small scale but with a good deal of interest, showing a circular *bassin* with balustraded staircases winding up on each side to a terrace; the square pavilions at each end of the terrace, placed cant-wise, so that the balustrade runs up to their angles, have a piquant effect, but are not quite in keeping with the severely Classic mode of the remainder of the composition. It is an easy step from this geometrical drawing of a classic garden to Mr. Vigers's perspective drawing of an English house and garden (1,818), where the garden, backed by a landscape, is really the principal object of the drawing; the house occupies a small portion in the middle distance of the picture —a plain red-brick house with a red-tiled roof and an octagon bay at one angle. The garden is shown and coloured with great delicacy and minuteness, in a partially birds-eye view from a high standpoint; next the house a terrace with coloured *parterres* and clipped trees, with a brick sunk fence giving on a wide square lawn, ending in a deeper brick *revêtement* wall with flying steps on arches leading down into the field in the foreground. Flanking the grass-plat on the left is the kitchen garden, amid massive box hedges, in the corresponding position on the right the flower garden. This is a very delicate and highly-finished drawing, and worth careful examination. Mr. Ferguson's "Garden House, Fairlawn, Kent" (1,822) is interesting as a specimen of the old-fashioned pompous Classic stone conservatory with an order, shown in an effective drawing. Mr. Pryce's "Ifield Wood, Sussex—enlargement of an old farm-house" (1,840) and Mr. Bedford's "Dalguise Harrogate" (1,841) both make picturesque views of house and garden; the latter is a mere picture, without a plan. Then we come to a drawing of a very different kind in Mr. Belcher's large and severe elevation of "House at Pangbourne—Garden Front" (1 854), a coloured geometrical drawing on rather a larger scale than was necessary to show the detail, of which in fact there is not very much, except in the pavement of the terrace, which is carefully shown on the plan of the front. This, again, is just the sort of drawing we like to see in the architectural room, though we should have thought the semi-octagon bays, on which the centre pediment seems to rest, would have been none the worse for a little more dignified treatment than is afforded by the mere thin coping which is its only finish; but that excessive plainness also is a taste of the day, and is no doubt more wholesome than the excess of ornament from which it is a reaction.

Among the smaller class of country houses and houses of the cottage type, if of more than cottage size, we find a general character prevalent—that of a certain rural simplicity, an absence of anything like architectural pretension, which is perhaps a little too conscious—it is the note of the day. Messrs. Niven & Wigglesworth's "Hillington, Walton-on-Thames" (1,611), with its three equally-spaced circular bays exactly alike, is somewhat an exception, a little more symmetrical and formal than most; there is no plan, and therefore we cannot form any idea of the relation of these bays to the interior arrangement. Nor is there any plan of Messrs. Brewill & Baily's "Apsley Heath" (1,612), which in fact is about as destitute of interest as a drawing can be. Mr. Reynolds's "Design for a Country House" (1,631) looks at first sight more like a country church, the windows of the "gallery" suggesting a side aisle; the large mass of the chimney, a plain unadorned erection of battered walling, contradicts the church idea; and there is a plan—a rather crude one, where again we see the kitchen window and fireplace wrongly arranged. It is a picturesque bit of drawing, however, and as such is probably hung. The plans of "Sunnyside, Holmwood" (1,633), by Mr. W. T. Barlow, are given; neither plan nor design have any marked character. Then we have two sets of stables; Mr. W. A. Pite's "Stables," Highcombe Edge, Hindhead" (1,652), a couple of little line elevations with a good deal of character, and Mr. Horsley's "New Stables, Whitley Hall" (1,656), a building exactly like an old sixteenth century farm house of ⊓ plan, pleasing enough, but a little too like "an antick" (antique), as Edie Ochiltree phrased it. A plan is given here; none is appended to Mr. C. J. Blomfield's house near Abingdon, another bit of antique in a different manner. Mr. Arnold Mitchell's "Small house at Rickmansworth" (1,724) is an antique of yet another type, the half-timber gable cottage; it probably looks more attractive in the admirable drawing than in reality. At last, in Mr. Voysey's "House at Windermere" (1,725) we come on something with original character; it is in that whitey-green combination which Mr. Voysey has invented; here also are three semi-circular bays, treated with a distinctive character; the middle one, representing the hall, differentiated from the other two by being glazed all the way up, while the others are divided into two stories. We suspect that these houses of Mr. Voysey's also owe something in effect to the drawing; but at all events there is character here which is not obtained merely by imitation of old work. Mr. Marriott, in "Proposed House at Limpsfield" (1,780), plans and elevation on grey paper with the upper part of the elevation whited to represent plaster (a rather cheap means of getting effect in a drawing), has produced a pleasing and simple design of cottage type, and has the merit of giving his plans the same importance as the elevation; unfortunately the plan is not altogether happy, for kitchen and drawing-room windows both have the same aspect; there is no compass to show what it is, but every architect ought at all events to know that what is the right aspect for the kitchen must be the wrong one for the drawing-room. "A Country Home," by Mr. F. Forbes Glennie, is a sheet of elevation and plans, of which the former are rather commonplace; the "gallery" in the plan, between dining-room and drawing-room, is a good point. Messrs. Hall, Cooper, & Davis's "Four Houses at Scalby, Yorkshire" (1,791), is really a terrace, treated with some originality; the prominent features are two large projecting square bays each of which contains in its ground story the porches of two of the doors, recessed; in other respects there is original character in this design, which at least avoids the commonplace of the ordinary terrace. In Mr. Baillie Scott's "Le Nid" (1,823) we have an interior of real charm; a coloured draw-

*d*

ing showing a room in a house which is treated with white, light blue, and a delicate warm yellow, as the prevalent colours; at the back of the room, up two steps, is a small oratory, divided off by a railing, and with its altar and stained-glass window; over the opening, on the frieze, are the words:

> "We two will stand before that shrine
> Occult, withheld, untrod."

There is a touch of real poetry about this interior which it is refreshing to meet with.

Street houses form another class, of which there are a few good examples. There is one point in which street architecture differs in its conditions from the architecture of houses standing in a free space, and which is often rather lost sight of, viz., that it is much less easy to see the actual building as you see it on paper, when it stands in a street, unless the street is an unusually wide one. A country house can generally be seen, in reality, as it seems to the eye on paper. In a street elevation the lower portion, in the actual building, is generally much more prominent to the eye than the upper portion, which is only seen foreshortened. The natural conclusion would be that detail and decorative treatment should be concentrated on the lower rather than the upper portion of the front, though the reverse treatment looks better on paper. This consideration does not preclude, however, the introduction of a large and rich cornice, provided it be designed so as to present a good appearance when seen from below. We do not know that any designs in the Academy room specially illustrate this point, one way or the other; but it is one that is worth bearing in mind. Among the street architecture designs is one of Mr. Greenslade's small and delicate elevation studies (1,610), which is very refined and very suitable for a street, and would perhaps be still better without certain little bits of rather unnecessary ornament which occur on it. Mr. Batterbury's "Stone Front, 233, Strand" (1,643) is an example of a solidly treated shop front. Mr. Jaggard's "A Town House" (1,673), a design which, if we remember right, has appeared in our pages, combines a solid appearance with a flat treatment of detail which is suitable to the situation. The most important piece of street architecture in the room is Mr. Belcher's "New Premises, Hanover-square" (1,727), a large square front treated with the conventional Corinthian pilaster in the upper portion, with the conventional cornice and attic over it; what gives distinctive character to it is the very effective and graceful manner in which sculpture is introduced above the first-floor windows, making a broad band across the front, and the way in which the treatment of the windows is varied so as to give interest and change but without departing from classical symmetry and repose. Mr. Beresford Pite's drawings of three house fronts, one in Bond-street and two in Harley-street, do not show very well where they are hung; every one knows they are good work. Mr. Ravenscroft's small elevations of brick street houses for a London suburb (1,847) are in very good taste; whether placing the ground floor groups of windows out of centre with those above is an advantage may be questioned, but it is justifiable if it arises out of the planning. Messrs. Wimperis & East's "Proposed rebuilding of London newspaper offices" (1,620), on a front with a concave curve, gets a good effect from the projecting pavilions at each end of the curve, which flank the general line of elevation and form a stop to it; and Mr. Harold Cooper's "Exterior, 16, Stratton-street" (1,764), is a good piece of plain but characteristic building. Mr. Powell's "Addition to Premises, East Grinstead" (1,621), seems to have been hung simply for the drawing, which is a clever one in coloured crayon, but has absolutely nothing in it architecturally, consisting chiefly of shop blinds and awnings; and Mr. Quennell's "Entrance to house in Rosecroft-avenue, West Hampstead" (1,688), a line drawing in a quasi-antique style, comes under the same class; there is nothing in the design, it is simply a bit of very clever drawing. These two drawings are rather emphatic illustrations of the extent to which drawing, and not architectural thought, influences the choice of things for the architectural room.

In our next and final notice we shall have something to say as to the drawings of decorative design.

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## NOTES.

**Birthday Honours.** THE conferring of the honour of Knighthood on Mr. Alma-Tadema will meet with universal approval, but that is the only recognition of any kind which is bestowed upon art. As usual, and as has been the case for many years, the art of architecture, to which the country owes the decoration of its cities, is entirely ignored; indeed, one might suppose that to the persons—whoever they are—with whom really rests the responsibility of selecting candidates for titular honours, the existence of architecture and of architects is unknown. The engineers, it appears, are looked upon with more favour, and Mr. Preece receives a K.C.B. Few men have done more than he has to popularise science, as a lecturer; as an author he is best known by his text-book of telegraphy, which he wrote in collaboration with Sir James Sivewright; and he has contributed some eight or nine papers to the Royal Society, and numerous papers to the Institutions of Civil and Electrical Engineers and to the Physical Society. No one will find fault with his selection as an engineering representative. What we do find fault with is the entire and almost inexplicable ignoring, year after year, of the architects.

**The London Building Act.** THE Queen's Bench Division of the High Court of Justice has decided that a public-house does not come under Section 74 of the London Building Act. That section requires that when a building is used in part for the purposes of trade or manufacture, and in part as a dwelling-house, these separate parts shall be divided by walls and floors constructed of fire-resisting materials. The decision of the Court seems clearly right. It was urged on behalf of the owners of the public-house that no line could be drawn between the part used as a public-house and the part used as a dwelling. This is true, especially as it has to be borne in mind that the entire building is licensed. It may also be doubted whether the section was ever intended to apply to public-houses, which are only private houses where alcoholic drinks may be bought or consumed. However, be that as it may, this case of Carrick *v.* Godson & Sons has placed the matter beyond doubt, and to have any question upon which any feeling of uncertainty exists in regard to the Act set at rest is very desirable. Whether, however, much more stringent regulations in regard to the area, plan, &c., of public-houses are needed is a matter for discussion. The sanitary condition of many public-houses outside London is not what it should be.

**Appeals on Workmen's Compensation Act.** THERE are fifteen appeals already entered for hearing under this Act for the present sittings, and the number is sure to be increased from week to week. This is an unprecedented circumstance in regard to a single statute, and shows the great amount of litigation which this Act of Parliament has produced. The fact does not necessarily mean that the Act has not produced satisfactory results, taken as a whole; but it certainly does mean that it was badly drafted and has produced a great deal of litigation which ought to have been avoided. It is too much the tendency of Parliament at the present time to formulate rules of conduct very indefinitely in statutes, leaving it to the public and the Judges to make what they can of them. The Legislature vaguely lays down its intentions instead of formulating them with precision.

**Early Remains found at the Tower.** BY the courtesy of the authorities we have been enabled to see the remains that have just been discovered in laying foundations for a new guard-house (on the same site) at the Tower, Messrs. J. & M. Patrick, of Wandsworth, being the contractors to the War Office. The former guard-house was built in 1827 to replace the "Stone Kitchen," which had been fitted up in the Stone House—at one time the Spanish Armoury—situated between Coldharbour and Wakefield (or Hall) Towers, in the latter of which the Regalia is now kept. Coldharbour Tower, a gateway flanked by two drum towers,* within the Inner Ward, stood close by the south-west angle of the Keep, or White Tower. Some 9 ft. or 10 ft. below the present raised surface, and about 18 ft. south-west from that angle of the Keep, have just been found (together with human bones) some Roman masonry, and sections of squared hot-air flue-pipes, belonging, it is conjectured, to a building of no small importance. In one fragment the bonding tiles, laid in courses, are remarkable as showing, a-piece, a section of three layers—an inner streak coloured dark-blue, between two streaks coloured red. In a line with the Keep's western wall, and about midway towards the Wakefield Tower, is now disclosed a well, 90 ft. deep and about 5 ft. in diameter. The early twelfth-century masonry consists of rubble steined down to 15 ft. below the water level with Gatton ashlar—the firestone which was so largely used for dressing of the Kentish rag in the older portions of the Tower. To that date, too, is ascribed the curtain wall, mostly of rag, chalk, and rubble (and now exposed to view) extending northwards from the Wakefield Tower. That curtain wall was afterwards included in the Stone House, and against its western, or outer side, was built a picturesque row of gabled and bow-windowed houses with red brick chimneys and tiled roofs, the "Seven

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* See W. Hayward's and J. Gascoyne's large-scale bird's-eye view of 1597, and C. Lempriére's plan, 1726, engraved by J. Basire.

Houses of Office," which are cited in the survey of 1532 as being then newly built, and were pulled down in 1827. The White Tower was built just within the Roman wall of London, of which a fragment may be seen at the base of the remains of the Wardrobe Tower, near the chevette at the south-east angle of the White Tower. We may add that it is expected the subway, wherein have been discovered iron and stone shot, mingled with portions of armour and human bones, will be found to communicate with the moat underneath the St. Thomas Tower ("Traitors' Gate"), where, in the east wall, are traces of an opening now closed up, and that the south side of Garden (or "Bloody") Tower, restored by Salvin, and which shows signs of decay, is being re-faced.

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**Dundas Castle.** THIS estate, extending over 2,000 acres, near Queensferry and Dalmeny, is offered for sale by private tender. The present mansion-house was built in 1818, of Humbie stone, after the designs in the Tudor style of William Burn, of Edinburgh. The adjacent old castle crowns the extremity of the basaltic range, known as the Rock-walk, of Dundas Hill, and is approached by an avenue nearly one mile long, from the road that leads to Kirkliston from Queensferry. Having been converted into a distillery about eighty years ago, the interior was greatly altered. The original early fifteenth-century building had been erected under licenses granted by the Regent, Robert Duke of Albany, and his nephew King James I. to the house of Dundas, who had been settled there since the reigns of Alexander I. and his brother David I., in the earlier part of the twelfth century. The castle, which is L-shaped on plan, contains two rooms in each of its four stories, some of them vaulted, with an arched entrance (latterly cut square) in the re-entering angle. The now flat roof is gained by a circular staircase surmounted by a round turret carrying a beacon post and watch tower commanding an extensive view of the Forth and the castles around. A few years after the building of the castle an addition, carried up to the same height, was made at the north-west corner, for a kitchen and offices. The hall, measuring about 29 ft. by 20 ft., on the first floor, retains its ancient fireplace, with side putt-stones to withstand the thrust of the segmental arch above the hearth. The later garden, on the south side of Dundas Hill, was laid out, it is said, by Switzer during his visit to Edinburgh, *circa* 1717. The old garden, the delight of Sir Walter Dundas, who succeeded in 1583, has, together with its four summer-houses, long since been destroyed. But one interesting relic was preserved — the Renaissance fountain and sun-dial set up by Sir Walter in 1623, and illustrated in Mr. W. W. Fyfe's "Summer Life on Land and Water at South Queensferry," 1851. The fountain, of the district freestone, and richly sculptured with masks and in low relief, has a base 7 ft. square, is 8 ft. 3 in. wide at the water-troughs, and rises to a height of 7 ft. at the top of the cornice, to which there is an ascent on one side by a flight of steps; the dial-pillar rises to 5 ft. in the clear above the cornice. In the Latin inscription (much worn), Dundas commends his house and its gardens to the enjoyment of his friends, avers that to be content with ordinary things makes us even with the world, and concludes —"*potiora aliis non invidemus.*"

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**Kensington Palace.** IN the Queen's Closet at Kensington Palace is hung an interesting set of paintings (removed there from the Queen's Presence Chamber at Hampton Court) of riverside and other views of London in the earlier years of last century. The pictures by W. James, which do not possess the artistic merits of Scott's similar views, show the Horse Guards and the parade ground, with Kent's Treasury Chambers, and Downing-street, from the north-west, by the old Gun-house; Denmark (or Somerset) House, with the Temple Gardens and water gate; the Savoy and Old Somerset House; the mouth of the Fleet with the Bridewell Bridge; York water gate and stairs, with the water-tower built in 1692; and Greenwich hospital and park, with Flamsteed's Observatory and St. Alphege parish church—designed by Hawksmoor, the steeple being by John James. There is another view of Greenwich Park and the Thames, perhaps by Danckers, with one of the Savoy and Somerset House which agrees in nearly every respect with James's picture. The chimney-piece in the room, a relic from Westminster Palace, bears in relief the Tudor rose, the arms of Queen Elizabeth, and her cipher, "E. R." The purchase of a guide-book is beyond the means of many who wish to see their sovereign's early home; but as most people can read now-a-days, we think that a little pains might have been taken to give gratuitously to the public—by way of affixed notices, or distributed leaflets—some particulars of the apartments and their contents, which the Queen has enabled them to see.

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**The Dutch Gallery.** THE small and rather heterogeneous collection of pictures at the Dutch Gallery in Brook-street contains two or three small works of rare beauty, among which is pre-eminent a picture by M. Fantin-Latour, "Solitude," one of his beautifully idealised little woodland scenes, with one nude figure not too much emphasised to break the harmony of the whole; a little picture which is quite a poem in colour. His larger work, "Sara la Baigneuse," we like much less; it is comparatively commonplace, which certainly can rarely be said of this artist. Then there is a fine Forest of Fontainebleau scene by Diaz, a small study of a waterfall by Rousseau, and a very good moonlight scene by Jongkind. Mr. Fisher's "Spring" we have seen before, here or elsewhere (or one very like it), but not his "Bathers," remarkable for the colour and light on the water. The small Corots exhibited are mostly early works; the "View of Dunkirk" is interesting as being so different from Corot's usual class of subject, and a not very good specimen of Decamps takes us back to an earlier era of French art. The large sea-piece by Herr Mesdag, "A Threatening Night," is not in his best way, and the foreground waves are rather poor in treatment—commonplaces of sea-painting. As to M. Monticelli's daubs on each side of it, called "Sunset" and "Autumn," one does not know what art is coming to when such things are exhibited as pictures. But the small painting first mentioned, by M. Fantin-Latour, is alone worth a visit.

**The '91 Art Club.** THE club under this title is an association of ladies, who have held a small exhibition annually for three or four years, but only for a few days; and this year's exhibition, which opened on the 1st, is already closed. It would be worth while another time for the club to keep it open, say for a fortnight, and give people time to hear about it, for it is an exhibition containing a good deal of original work, and not (like some other ladies' art exhibitions) only consisting of what would not get a chance of exhibition elsewhere. Miss Anna Nordgren (the President) was one of the principal exhibitors, and among her eleven works was one, "Swedish Interior," of quite exceptional excellence. The best works exhibited were this and the "Sea Chase," a silvered bronze alto-relief by Miss Rope (Vice-President) who also had some other good exhibits. Among other works worth attention were Miss Bland's sketch "A Country Lane," Miss Hayter's "Early Spring," Miss Lloyd's "Portrait of Mr. Arthur Stewart," a masterful portrait to come from a lady's hand; Miss Birch's "Early Morning in Harbour," Miss Gore's "On the Ouse;" Miss Luxmoore's "Vivienne," a portrait of a girl with a violin; Miss Emily Duncan's "Burnham Beeches," a large landscape of considerable merit, and Miss Neumegen's study of an old woman under the title of "Mère Zon-bon."

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**Mr. Helleu's Exhibition.** A COLLECTION of Mr. Helleu's dry-point etchings, together with a large-size pastel portrait and some crayon drawings, is on view at Mr. Dunthorne's gallery in Vigo-street. Of the etchings there is nothing new to be said; Mr. Helleu's work of this kind is well known in London now, and always displays the same mastery of dry-point line, the same freedom of style and certainty of drawing, in his various sketches, chiefly of ladies; also it must be admitted, the same entire absence of sentiment or feeling, a failing which gives a certain kind of vulgarity to his portrait sketches; not vulgarity in an artistic sense, of course—they are quite the opposite of that; but they seem like the portraits of persons with only the outside get-up of a lady without the reality. The pastel portrait is more pleasing in this respect than the etchings. It is announced that the artist is about to come to London for a time, and perhaps it may become a fashion for ladies to have their portraits "etched by Helleu," and no doubt such portraits will always have an artistic value; but they will not satisfy every one.

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## HIGH HOLBORN TO THE STRAND:

### SOME NOTES BY THE WAY.

As the London County Council are now acquiring, at an estimated cost of 569,000*l*., the property lying between Holywell-street and the Strand, and are carrying out, at an estimated cost of 162,000*l*., the widening of Southampton-row (east side) as sanctioned by Parliament last year, some historical notes on the sites affected may be of interest.

The two measures complement the entire project of the County Council as introduced this current session. The partially vacated area bounded by Drury-lane, Kemble (formerly Prince's), Stanhope and Blackmoor streets, 106,000 sq. ft., is being dealt with under the Council's Clare Market scheme, 1895; on the opposite side of Drury-lane is a cleared area traversed by Russell, Marquis, and Cross courts, about 79,000 sq. ft., which includes the burial-ground of St. Mary-le-Strand, and will be occupied, in part, by an enlargement of the theatre, together with a block of flats and shops, to be carried out, at an estimated cost of 15,000*l.*, by, we understand, Messrs. Pilditch & Chadwick.

We can, perhaps, best indicate the range and scope of the Council's project by stating that they seek for powers affecting property which extends to and includes (*a*) on the east, the entire west sides of Kingsgate-street, New Turnstile, Gate-street (south arm), and Lincoln's Inn-fields (Newcastle, or Powis, House, excepted); all Portsmouth and Clare-streets, with Bear-yard, Vere-street Board Schools, and Sheffield and Twining (formerly Gilbert) streets; most of Houghton-street; New Inn, Danes Inn, and a part of St. Clement Danes churchyard; (*b*) on the west, the east side of Southampton-row, a line drawn from south of Holy Trinity Church, Little Queen-street, to the north-east corner of the junction of Wild-court and Chapel-place; all Wild-court, with the Board Schools, Little Wild-street, and Sardinia-street; part of Kemble-street; all Queen's Head-yard, Chapel-place, and Sardinia-place (lately King's Head-yard); the south-west sides of Great Wild and Stanhope streets; all Blackmoor-street; the north-east side of Drury-lane as far as Marquis-court; the north-east side of Catherine-street (in part), with all White Hart-yard and Little Catherine-street; the Gaiety Theatre and Restaurant, and the *Morning Post* offices.*

The two crescents radiate from and absorb Craven-buildings, Maypole-alley, and the Olympic Theatre. They cover portions of Drury-lane, Newcastle-street (formerly Magpie-alley), and Wych-street; and all of New Inn and White Hart-street. There is little doubt that in the end will be taken the whole property within the curve, comprising the Opera Comique and Globe Theatres, the rest of Newcastle-street and Drury, Windsor (formerly Denham-yard), New Church, Angel, and Helmet courts, Strand. The new thoroughfare absorbs the whole of Denzell-street, it crosses Vere, Stanhope, and Sardinia streets, and its middle line runs nearly due south from between Southampton-row and Kingsgate-street to the end of Craven-buildings and the Olympic Theatre, almost parallel with, and distant 230 ft. from, the west roadway of Lincoln's Inn-fields. We will briefly notice a few of the places and sites affected by the Bill, whose preamble has been passed by the Committee.

Kingsgate-street marks the route taken by James I. to Theobalds, and by Charles II. to Newmarket. Southampton-row, on the Bedford estate, leading from Russell-square past the ends of Vernon-place and Theobalds-road, formerly King's-way, to High Holborn, recalls the marriage of Lord Southampton, Shakespeare's friend, to Elizabeth Vernon, and the building, *circa* 1660, for Thomas Wriothesley, Earl of Southampton, and Lord Treasurer, of Bedford, or Southampton, House, where is now the north side of Bloomsbury-square; John Webb being the architect. The house, wherein his daughter and heir, Rachel, Viscountess Russell, passed her second widowhood, was pulled down after its sale by auction in May, 1800. Holy Trinity Church was built (1831) on the sites of Nos. 6, 7, 8, Little Queen-street, and enlarged and improved in 1887, by Mr. C. Forster Hayward; one may yet see at the rear the garden of the house, No. 7, wherein, on September 22, 1796, Mary Lamb in a paroxysm of insanity occasioned her mother's death. In Gate, formerly Princes-street, opposite, is the smallest square in London, consisting of but one house, now rebuilt, which bore a tablet inscribed "Princes-square, 1736." Here we are on the ground once styled Le Spencer's Lond, and cross the track of the Spencer Dig or Ditch, that flowed from Drury-lane (via de Aldewych) to Holborn-hill. The land, once owned by the Templars, was granted to Hugh Le Despencer, who forfeited it on attainder in 1326, it was restored to the family by Edward III., and ultimately granted by Henry VIII. to Sir Walter Mildmay, founder of Emmanuel College, Cambridge. Some identify Spencer House with the "Bull and Gate" coaching house, which was taken in 1863 by the Pneumatic Despatch Company, lying behind the houses rebuilt as College-chambers in 1879. Yet a claim in that respect has been advanced for the premises, pulled down at intervals in 1884-6, which stood where are now Nos. 15-6-7, Great Turnstile and 283, High Holborn. That house, since sub-divided, contained an early Jacobean chimney-piece, and is said to have been the home of Richard Penderel the Royalist.

Inigo Jones laid out Great Queen-street along a path skirting the Pightells and Purse fields, and leading to the Devil's Gap, Drury-lane, where it entered White Hart-close. The ground belonged to the jointure of the "Rose and Lily Queen," Henrietta Maria, whose badges were fixed upon the house-fronts, as we still see them banded in stone on to the brick Ionic pilasters of No. 2, Portsmouth-street, and Nos. 51-2 and 54, Lincoln's Inn-fields; her statues stood at the street's two ends. Bagford, who kept a book shop at Turnstile-alley, says the street was designed for a square, and that it was the first uniform street, the houses being stately and magnificent; Walpole says many of the houses were by John Webb, Jones's pupil. About ten or twelve were erected on the south side, *circa* 1624. The house now numbered 55-6 was by Webb. To the category of names rehearsed in the ordinary text-books we may add those of Lewis, the Mercutio of his age; Mrs. Clive, Miss Pope, Sir Joshua Reynolds, as Hudson's pupil, at No. 55-6; the Earl of Chesterfield, in 1657;* Sheridan in 1778; George Coleman the elder; at No. 5, on the north side, Miss Mitford, in 1828; and on the south side Frederick and John Crace.

Across the middle line of the new road stand the premises (rebuilt in 1880), Nos. 72-76, Great Queen-street, of a printing establishment familiar to readers of the *Builder*. Love & Wyman, Limited, as reconstituted in 1897, are the successors of Cox & Begg, who removed thither from the Savoy in 1760. Edward Cox and later partners were printers during a century and longer to the East India Company. Laman Blanchard and Douglas Jerrold had been their "readers." To Charles Wyman, who entered the firm upon John Lewis Cox's retirement, succeeded his two sons, C. W. Henry and E. Franck Wyman. Cox bought the press used by Benjamin Franklin (1723-6) when a journeyman printer at J. Watts', on the south side of Wild-court, where is now the Board School. Franklin lodged in Duke (since Sardinia) street, opposite the chapel. Some forty years later, on coming to England as delegate of the Pennsylvania Assembly, he visited Watts' to see his press, now in America, of which Mr. Charles Wyman presented a replica, perhaps also used by Franklin, to the Patent Office Museum in 1863.

Between Great Queen and Sardinia-streets are Wild-court and Little Wild-street, laid out in 1695 over the garden ground of Wild, or Weld, House, built early in Charles I.'s reign by Sir Edward Stradling, on two acres of Aldewych-close, and bought in 1651 by Humphrey Weld, a wealthy parishioner of St. Giles. The house, having a frontage of 150 ft. to Great Wild-street, and ground 300 ft. deep, contained thirty-three rooms, with garrets and cellars, as advertised "to be lett" in the *London Gazette*, 1694, No. 3010. The family used to rent it to foreign ambassadors and other persons of quality; being Roman Catholics, they often laboured under suspicion of harbouring Papists. On December 11, 1688, the day of James II.'s flight, the mob pillaged Weld House, where the Chapel Royal plate had been deposited, and burned the library and effects of Don Pedro Ronquillo, ambassador from Spain. Of Wild-court there are illustrations in the *Builder*, November 18, 1854.

From an upper window of the Soane Museum one gains a prospect unexcelled by that of any other equal area in the town for the measure and diversity of its architectural and historical interest. To our right hand is the work of Inigo Jones, Winde, and Kent; to the left are Jones's Gothic chapel, with buildings due to Taylor, Hardwick, and Scott; in front rises Barry's College of Surgeons, whilst the story of nearly four hundred years could be filled in the remoter space between Sir Thomas Lovell's gate-house at Lincoln's Inn, and the flêche of Street's great hall of the Courts of Justice.

In the fields below, on May 13, 1692, the Earls of Clare and Thanet fought the duel, which, with their lawsuit, arose after the death of their father-in-law, Henry, Duke of Newcastle, who had left the bulk of his fortune to his daughter, Countess of Clare; and there, as Burnet writes, William Lord Russell triumphed over death. In 1841 Sir Charles Barry prepared plans for new Law Courts to occupy nearly all the 7½ acres of the garden ground.

In September, 1613, the Privy Council, moved thereto by members of the Inn, direct the county justices to restrain certain proposed building, in defiance of the king's proclamation, in the Fields. To the south and north of a pathway from Great Turnstile to Fortifeue-lane (Sardinia-street) then lay respectively, the Cop and Purse Fields—jockeys' training grounds, the resort and haunt of idle and vicious vagrants, footpads, and their associates. Five years elapse, and a special commission is directed to Lords Verulam, Worcester, Arundel, and Pembroke, Inigo Jones, "et aliis pro supervisione camporum vocatorum Lincolnes Inn Fieldes." They are to frame and reduce the Fields both for sweetness, uniformity, and comeliness, into such walks, partitions, or other plots, and in such fashion both for public health and pleasure, as Inigo Jones shall, with the Sovereign's approval, design.* Of Jones's designs, covering 12 acres, only the west side, Arch, or West, row, was carried out. He began with Portsmouth House, at the south-west corner, where, at the end of a passage leading out of Portsmouth-street is No. 2, Lincoln's Inn-fields Chambers, a red-brick house that retains its original elevation with Ionic pilasters bearing on ornamented bands the cognisances carved in stone of the Queen Henrietta Maria. Turning northwards we see that some of Inigo Jones's houses have disappeared, the elevations and fronts of others have been altered and stuccoed; Nos. 54† (the Chapel Presbytery House), 55, 59-60 (Lindsey, or Ancaster House), and 64 have suffered least change. A line of piers with curtain walls and gates screened the forecourts; of the original rusticated stone piers, four, with their ball pinnacles, remain in front of Nos. 51-2, and four in front of Nos. 53-5. Lindsey House retains two of its fine red brick piers—Hatton says there were six—with carved stone finials, and two old lamp holders, but has lost the urns from above the balustrade, and the front is stuccoed. The house, built in 1640 for Robert Bertie, Earl of Lindsey, who fell at Edgehill, was sold by Robert, fourth Earl of Lindsey, advanced Duke of Ancaster and Kesteven in 1715, to Charles sixth Duke of Somerset, the "proud" Duke, who died in 1748 and devised it to his eldest surviving daughter Frances, Marchioness of Granby. It was inhabited by Spencer Perceval, and, after its conversion, in 1894, into chambers, by John Martin, the painter, who died there in 1854. Over the archway beneath Nos. 54-5, on each front is a tablet, "Dvke-street, 1648." In his early days Tennyson occupied chambers on the top floor of No. 55. John Forster lived at No. 58, described as Tulkinghorn's in "Bleak House." At No. 61, on the second floor, Thomas Campbell lived in retirement for nearly two years, 1828-30, after his wife's death. Cunningham says, in his "Life of Inigo Jones," there is an oil-colour view at Wilton showing Arch-row. In Mr. C. W. Heckethorn's book upon Lincoln's Inn-fields and around, reviewed in our columns May 16, 1896, is reproduced a print, *penes* Mr. Fancourt, of Highbury, who ascribes it to Hollar, which may represent the houses as Jones intended them to be. In our article of October 22 last upon the church of SS. Anselm and Cecilia (the Sardinian Chapel) we gave a reproduction of the silver medal by George Bower, *ob.* 1690, of which the reverse bears a beautifully wrought relief showing Arch-row, with its old elevations, the forecourt walls, the square railings, and the chapel in ruins. On August 2, 1885, we recorded the sale at auction for 13,000*l.* of No. 63, since rebuilt, extending to Queen's Head-yard in the rear, and covering 11,350 ft. superficial, which Mr. Norton, afterwards Speaker, and first Baron Grantley, bought in 1758 for 1,721*l.* In May, 1892, the freehold of No. 45, area 6,100 ft., realised 15,760*l.* In Portsmouth-street is the *soi-disant* "Old Curiosity Shop," a supposed relic of the Duchess of Portsmouth's dairy-house.

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* For the last two named, as well as for the Metropolitan Electric Supply Company's premises, Sardinia-street, new sites will be provided.

* See the advertisement in the *Mercurius Politicus*, November 19-26, 1657, of the robbery of his "pictures" in gold and jewelled cases.

* Of the present and original railings which in 1735 replaced the posts around the square, two stone obelisks are in the Soane Museum. The garden, acquired by the L.C.C. for 13,000*l.* from the trustees appointed in 1657, was opened to the public on February 22, 1895.

† Nos. 5ca, 50, 56, 62-3, and 65—rebuilt; 51-2-3, 61, and 64—elevations changed; 51-2, 54-5, and 64—Ionic pilasters retained; 51-2, and 54—roses and fleurs-de-lis on pilasters; 57-8, one house, of stone, apparently later—six Ionic pilasters, and semi-circular portico on four fluted Doric columns; 66-7, Newcastle House, by Captain Winde, for William, Lord Powis, *circa* 1686. Compare with the elevation of Thanet House, Aldersgate-street, built by Jones in 1650, pulled down in 1882.

A history of London markets should give foremost place to the "New Market" founded in St. Clement's-fields *circa* 1654 by John, second Earl of Clare, whose successful contest in respect thereof with the City of London facilitated the establishment of similar markets west and north-west of Temple Bar. The original booths and sheds, "The Colonnade," stood where are now Newspaper-buildings and the St. Clement Danes and Clare Market parish-house (W. H. Smith Memorial), 1897-8, Messrs. H. & P. Currey, honorary architects. To account for the surrounding street names we should recall that Denzell Holles, grandson of Sir William Holleis, elected Lord Mayor in 1539, married Anne, sister of John Sheffield, Lord Sheffield. Their son John Holles, of Houghton, co. Nottingham, was created Baron Houghton in 1616, and advanced Earl of Clare in 1624—honours for which he is said to have paid the Duke of Buckingham 15,000*l.* He married Anne, daughter of Sir Thomas Stanhope, and, dying in 1637, left two sons, John and Denzell. Denzell was elevated Baron Holles of Ifield; John, second Earl, married Elizabeth, daughter and co-heir of General Sir Horatio Vere, Lord Vere of Tilbury, and died in 1665. His son Gilbert, third Earl, was father of John, fourth Earl, advanced Marquis of Clare and Duke of Newcastle, married Margaret, daughter and co-heir of Henry Cavendish, second Duke of Newcastle, and succeeded to the fortune of his kinsman, Denzell, Lord Holles of Ifield. He died in 1711. His only daughter, Henrietta, brought her property in marriage (1713) to Edward, Lord Harley, son and heir of Robert Earl of Oxford. In 1640 Charles I. licensed one Thomas York to build over St. Clement's-Inn-Fields, the inheritance of the Earl of Clare, the houses to be erected on each side of the causeway leading from Gibbon's Bowling-alley, or tennis-court, at the coming out of Lincoln's-Inn-Fields to the Reindeer-yard, leading into Drury-lane, not to exceed on either side the number of 120 ft. in length, or front, and 60 ft. in breadth, and to be of stone or brick. Three years afterwards the King licensed Colonel Gervase Holles to erect a specified number of houses and streets north-west of the later market square.* The Act of 1657 for restraint of new buildings in and about London reserved to the Earl of Clare, who lived in great state where is now Clare House-court, the privilege of erecting more houses upon the Holles estate. In course of time the market changed its character, giving place to slaughter-houses with their concomitant nuisances which renit an opprobrium and reproach. The last of the slaughter-houses was pulled down in 1889 for the Strand Union receiving workhouse and casual wards, in Bear-yard. A fire in Bear-yard, December 17, 1809, revealed the walls of the theatre opened on November 8, 1660, by Killigrew and the King's company, in Charles Gibbon's tennis-court. On the front of the house (recently demolished) at the corner of Gilbert-passage and Gilbert (re-named Twining) street was a fine stone carving, with date 1659, of the arms of Lord Clare; on the splayed angle of the baker's shop, No. 13, Clare-street, is a carving of two negro's heads with date and letters "1715, S. W. M."; at the south-west corner of Denzell-street, on the side wall of the "Royal Yacht" tavern, is the inscribed tablet erected in 1682 by Gilbert, third Earl of Clare, to the memory of his uncle Denzell, Lord Holles, whom Charles II. sent as ambassador to France. Vere-street Board School occupies the site of the "Bull's Head," the resort of the Artists' Club, to which Hogarth belonged, and of Dr. Radcliffe, who was there informed of his loss of 5,000*l.* in the South Sea venture, and made his memorable reply. In Stanhope-street was born, on December 12, 1779, Grimaldi, the clown; W. West kept his toy-theatre shop in Wych-street, and there sold the "1d. plain, 2d. coloured" prints so popular some fifty or sixty years ago. The "George the Fourth" has just been rebuilt, its neighbour, the "Black Jack" (or the "Jump")—the favoured haunt of Dick Turpin and Joe Miller—was demolished in August, 1896.

In Craven-buildings, opposite the site of the old "Cock and Magpie" and Drury-court, an early home of Nell Gwynn, lived Mrs. Bracegirdle, and after her, in the same house, Mrs. Pritchard, Mme. Vestris, and Thomas A. Arne, who, at No. 17, composed the music for "Comus," revived at Drury Lane in 1738. Craven-buildings and the Olympic Theatre were erected on the ground of Drewry House, the residence of William, first Earl of Craven, who is supposed to have privately married James I.'s daughter, Elizabeth, after whom it was named, as a public house, the "Queen of Bohemia"; the theatre, first built by Astley, was rebuilt in 1890 from Messrs. Crewe & Sprague's designs. Maypole-alley commemorates the maypole in the Strand, opposite Drury-court. The pole set up by John Clarges, the farrier of Drury-court, in honour of his daughter's good fortunes, was given by Sir Isaac Newton in 1717 to the Rev. James Pound, Rector of Wanstead, for raising the big telescope which Hugon presented to the Royal Society. The Opera Comique and Globe Theatres cover the site of Lyon's Inn, an old hostelry, converted into an Inn of Chancery, *temp.* Henry VIII. The Architectural Association was founded there in 1842, and used to meet in the hall (1700) until, we believe, 1859. The carving of a lion on the corbel of a corner-post at the end of the narrow passage from the Strand to No. 36, Holywell-street (where is still the sign of the "Half Moon"), was secured about twelve years ago for the Guildhall Museum. In "Things I Have Seen, and People I Have Met," the late G. A. Sala describes the clearing of the well behind the "Old Dog," in Holywell-street (more probably the "Spotted Dog," Strand), in which was found, with a vast variety of things, a punch-bowl having a William and Mary guinea encrusted in the base, and a memorandum scrap of paper inscribed, "Dr. Goldsmith, 13sh. 10d." New Inn, whence Sir Thomas More migrated to Lincoln's Inn, has its origin in another hostelry, by sign of "Our Lady," acquired *temp.* Edward IV. by Chief Justice Sir John Fineux for the students of St. George's Inn, near the Old Bailey. Danes Inn forms a set of offices built on the site of the "Angel" inn (pulled down *circa* 1855) whence Bishop Hooper was taken to be burned at Gloucester in February, 1555. The Gaiety Theatre, opened on December 21, 1868, had been converted by the late C. J. Phipps from the Strand Music Hall, erected (on the site of the arcade named after the earlier Exeter Change) after the late E. Bassett Keeling's designs. The *Morning Post* offices were considerably enlarged four years ago from the plans and designs of Mr. H. O. Cresswell. The Globe Theatre (S. Simpson, architect) was opened on November 28, 1868.

## THE ENGINEERING CONFERENCE.

THE second Engineering Conference held in London under the auspices of the Institution of Civil Engineers has been in session this week, on the 7th, 8th, and 9th. The meetings have been held partly in the Institution building in Great George-street, and partly in the buildings of the Mechanical Engineers and the Surveyors' Institution; the sections dealing with Machinery and Electricity having met in the Mechanical Engineers' building, and those dealing with Railways, Harbours, Mines, and Metallurgy in the Surveyors' Institution building. The Middlesex County Council also allotted to the use of the Conference their Council Chamber and Committee Room, where the subjects of Docks, Canals, Waterworks, Sewerage, Gasworks, and Shipbuilding were discussed.

The papers read are all short and eminently practical, the subjects being classified as follows:—

### *Section I.—Railways.*

June 7.—"The Advantages, or Disadvantages, of Uniting the Lock and Block Signalling Appliances of Railways." By Alexander Ross, M.Inst.C.E.

June 7.—"Mountain Railways." By C. A. W. Pownall, M.Inst.C.E.

June 7.—"What is a Light Railway, and what Circumstances should Govern the Gauge?" By A. C. Pain, M.Inst.C.E.

June 7.—"The Various Systems of Railway Fog Signalling." By W. S. Boult, A.M.Inst.C.E.

June 9.—"Causes of Earth Slips in the Slopes of Cuttings and Embankments of Railways, and How to Prevent or Remedy them." By R. Elliott Cooper, M.Inst.C.E.

June 9.—"The Most Expeditious Method of Relaying the Railways of this Country, Involving the Least Interruption of Traffic, Having Regard to Safety and Economy." By Harry Footner, M.Inst.C.E.

June 9.—"Economy in Handling and Transport of Minerals." By R. C. H. Davison, M.Inst.C.E.

### *Section II.—Harbours, Docks, and Canals.*

June 7.—"The Discharging and Reloading of Large Steamers." By W. H. Hunter, M.Inst.C.E.

June 7.—"The Length, Width and Depth, and Shape and Mode of Construction of Locks and Entrances and Graving Docks, Having Regard to the Increasing Sizes and Shapes of Vessels." By R. C. H. Davison, M.Inst.C.E.

June 8.—"Sandpump Dredgers." By A. G. Lyster, M.Inst.C.E.

June 8.—"Notes on the Effects of Waves on Breakwaters in Different Depths of Water." By W. Shield, M.Inst.C.E.

June 8.—"The Design of Breakwaters." By T. W. Sandeman, M.Inst.C.E.

### *Section III.—Machinery.*

June 7.—"Forgings, and the Machines Used in Producing them." By E. S. Brett.

June 7.—"Compound Locomotives." By F. W. Webb, M.Inst.C.E.

June 7.—"The Relative Advantages of Different Kinds of Power for Tramways, Light Railways, and Motor-Car Traffic, both Heavy and Light." By Thos. Parker, M.Inst.C.E.

June 9.—"Cranes, and the Power to be Used with Them." By W. Pitt, M.Inst.C.E.

June 9.—"Machine Tools, with Special Reference to American and German Practice as Compared with English." By A. Greenwood, M.Inst.C.E.

June 9.—"Separate Condensing Plants for Factory Purposes." By Sir A. Seale Haslam.

### *Section IV.—Mining and Metallurgy.*

June 8.—"Modern Improvements in Coal Mining: Winding from Deep Coal Mines." By H. W. Martin, M.Inst.C.E.

June 8.—"Modern Practice in Gold Mining." By T. H. Hammond.

June 9.—"The Influence of Casting-temperature on Steel." By R. A. Hadfield, M.Inst.C E.

### *Section V.—Shipbuilding.*

June 7.—"On the Practicability of so Constructing Merchant Steamers as to Render them Readily Available for War Purposes." By T. Harvard Biles, M.Inst.C.E.

June 7.—"Recent Developments in Cargo Steamers." By E. W. de Rusett, M.Inst.C.E.

June 7.—"Swift Passenger Steamers of Moderate Size." By E. L. Martin, M.Inst.C.E.

June 9.—"The Application of Mechanical Devices to the Riveting and Caulking of Ships; also the Material of Ship Rivets." By R. T. Napier, M.Inst.C.E.

June 9.—Graving-blocks and Appliances. By A. J. Maginnis, M.I.N.A.

### *Section VI.—Waterworks, Sewerage, and Gasworks.*

June 8.—"The Use of Filtered Flood Water." By M. W. Hervey, M.Inst.C.E.

June 8.—"Sewage-sludge Disposal by Natural Agencies." By G. S. Woodhead, M.D.

June 8.—"A Consideration of the Rate per Head per Day of Supply in Different Towns, and of the Causes which Increase or Diminish it in Particular Instances." By J. Watson, M.Inst.C.E.

June 9.—"Labour Saving Appliances in Gasworks." By C. C. Carpenter, M.Inst.C.E.

June 9.—"Notes on the Recovery of Residual Products from Coal-Gas During the Period of Purification." By W. Foulis, M.Inst.C.E.

### *Section VII.—Applications of Electricity.*

June 7.—"Methods of Electrical Transformation." By T. Swinburne.

June 7.—"Some Non-integrating Electric Meters." By Professor Ayrton, F.R.S.

June 8.—"Economical Transmission and Distribution of Electricity from a Distance." By H. F. Marshall, M.Inst.C.E.

June 8.—"Mechanical Traction by Electricity." By G. C. Cuningham, M.Inst.C.E.

The President, Sir W. H. Preece, in the course of a short opening address, referred to one or two questions of general interest to members of the engineering profession. The following is the concluding portion of his address:—

"The Lord Chief Justice's Bill for the suppression of illicit commissions is one welcomed by every member of this Institution, and it is most gratifying to find that no suspicion of improper practice has been adduced against our profession. We do, however, hear at times of a dangerous border-ground between consultation work and contracting, which is a pitfall to be avoided, and to be surrounded by danger-signals. Again, occasionally, and fortunately rarely, we find the diploma of the Institution converted into an advertisement; this the Council strenuously protests against in the best interests of the entire body.

The examination system, introduced just at the epoch of our first conference, has proved a most unqualified success, and it has been welcomed by none more than by those who are subjected to its troubles. During the last session, 107 candidates passed the Associate membership examination, in addition to thirty-one who qualified by passing exempting examinations elsewhere, and sixty-five who satisfied the conditions of election by theses. Further, fifty-three passed the Institution examination for studentship, whilst 167 qualified in that respect by passing various recognised examinations. Thus we added 423 new names to our roll—all of whom satisfied the examination standards. The Council feel that the system of examination has enhanced the intrinsic value of the diploma of the Institution, and that it has added materially to the dignity and responsibility of the profession. This diploma has become so valuable and so necessary to the practising engineer, that occasionally would-be practitioners improperly assume the title of member or associate. Fortunately criticism is too wide-awake, and the public interest too well served by all who are jealous for the prestige of their profession, to permit deceptions of this kind to escape speedy detection.

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* Confer the Reports, just issued by the Historical MSS. Commissioners, upon the Buccleuch and Hatfield MSS., as to the building grants.

The position of engineering has rendered it necessary for all new Universities—and especially for the Imperial University of London—to form a faculty of engineering, but the Council of this Institution has deprecated the idea of conferring degrees in engineering. Every engineer must acquire a knowledge of the scientific principles and the mental tools that form the bases and aid the operations of his profession, but he can be an engineer only by becoming an expert in its practice. Examination can test the former qualification alone, and this is what we have introduced. Practical training is not a matter amenable to examination. Hence we consider that degrees in science are quite sufficient to signify the successful completion of a University career, which should be strictly scientific; and that the diploma of the Institution should be the criterion of that professional qualification which is the result of practice alone. And here may I mention that there is a tendency observable to avoid the condition that those admitted into our junior ranks shall be persons who are or have been bonâ-fide pupils of corporate members of the Institution. Further, no one can be said to be regularly educated as a civil engineer unless he has passed through the ordeal of the training to be acquired in the workshop and the drawing office. It would be well, for the comfort of the Council, if those who rather lightly, and sometimes thoughtlessly, sign forms for election, would first inquire if the conditions printed on the back of every form were properly complied with."

Among the sectional papers read on the first day those in Section I. included two subjects which are of practical interest to all travellers, of whatever profession. Mr. Bailly, in his paper on "Railway Fog-Signalling," after mentioning and classifying the various systems of fog-signalling now in use, among which however, "the man with the detonating signals" is still by far the most prevalent factor, recommended for consideration his system of magnetic signalling without contact, which operated a miniature semaphore on the engine, and was thus independent of manual agency, and fulfilled most directly the real object of such signalling viz.: to warn the driver of the train. A cognate subject was treated by Mr. A. Ross in his paper on "The Advantages, or Disadvantages, of Uniting the Lock and Block Signalling Apparatus on Railways." The object again was to suggest a means of doing away with the element of human fallibility in block signalling. The following extract explains the main point of the paper. After giving a description (hardly necessary, we should have thought, for his audience) of the working of the block system on a railway, Mr. Ross continued :—

> "It may now be observed that the locking apparatus, with the levers working the points and outdoor signals, in themselves as perfect as human ingenuity and good workmanship can make them, are worked independently of the inside block telegraph signals, the only connecting link between the two being the signalman who works both; and there is no physical obstacle to prevent him, in a moment of forgetfulness, giving outdoor signals in conflict with his indoor block instrument; and the question raised for discussion is, whether it is desirable or not, to unite and combine the two systems, either mechanically or electrically, into one complete system in such a way as to ensure, not only unity of action at one signal-box, but also with the next box in the rear and in advance.
>
> The conditions which should be fulfilled by an efficient 'lock' and 'block' arrangement may be stated as follows, viz. :—The rear signalman should not be able to lower his outdoor signals, or allow a train to proceed into the section in advance of him, until the signalman in advance has given him the necessary permission by unlocking the starting signal. The rear signalman, having received permission from the advance signalman to allow a train to proceed into the section, and having lowered his signals, and the train having moved forward on its journey, should be compelled to put his starting signal to danger; and the lever working the same, on being put back to the normal position, should become locked in such a way that it cannot be used again without the permission of the signalman in advance. This operation should free the home signal of the rear section, so that a second train may be brought forward to his starting signal; and, for the protection of this train, the home signal should be placed to danger, and, in the back stroke, become locked before a second train can be offered to the rear signalman.
>
> When the first train has arrived at the signal-box in advance, and has passed his home signal, and the signal 'train entered section' has been received from the signal-box still further in advance, the signalman must put his own signal to danger before he can give 'line clear' to the signal-box in the rear for a second train. This applies when the section is from starting signal to home signal, but if the section is from starting signal to starting signal, the condition will apply to the latter . . . .
>
> If the conditions enumerated above are secured, the advantages appear obvious, some of which may be stated to be as follows, namely :—
>
> 1. The impossibility of the outdoor signals being at variance with the indoor block instruments.
> 2. The rear signalman being compelled to forward a train to the man in advance.
> 3. The advance signalman being unable to accept a second train before his first has cleared out of the section.
> 4. Absolute protection for a train while in section.
> 5. Impossibility of the signalman in the rear forwarding any train in error.
> 6. The co-operation of three men in signalling a train."

Considering that some of the worst railway accidents have happened through the momentary failure of the human element in the machinery, even without anything that can be called carelessness, but from a mere trick of the brain, Mr. Ross's proposal is surely worth serious consideration. Mr. Pain's paper on light railways urged the standardising of one or at most two light railway gauges, so as to simplify and accelerate the supply of plant and rolling-stock for such railways.

In the machinery section Mr. Webb's short summary of the history and stages of development of his compound locomotive is interesting, but the most important sentence is the closing one, that the saving in fuel in these compound engines, where the waste steam from two high-pressure cylinders is utilised in a third low-pressure cylinder, is from 19 to 20 per cent., and that "this is confirmed by observations made in the United States." It has, we know, been vigorously denied that there is any material economy of fuel secured by the compound system; but we can hardly fancy Mr. Webb and his very prudent and financially careful railway company going on building these engines, at an extra cost in construction, if the economy were not genuine and demonstrable.

Mr. Brett's paper on the making of large forgings by dies, which he regards as still in its early stages, and capable of much greater development, is of considerable interest.

The note contributed by Mr. James Swinburne on "Methods of Electrical Transformation" is a valuable one. The title, however, is rather a misnomer, for, practically, the only problem considered is the relative costs of the mains in different systems of distribution. The modern method of using rotary converters to transform alternating into direct current brings into prominence the question of whether it would not be more economical to use high-pressure direct currents and a dynamotor. Mr. Swinburne thinks that this question deserves serious consideration. A table is given comparing the costs of the copper mains for long-distance transmission for direct monophase, diphase, and triphase currents. In the unrevised proof of his paper the numbers for triphase currents are wrongly calculated, and this rather vitiates the argument. The assumption of sine waves is also made, an assumption which has been severely criticised by Mr. Swinburne himself on other occasions. His treatment of the cost of insulating the cables is excellent. He calls attention to the incipient discharges into the air that take place at the surface of small bare copper conductors at high pressure, and the consequent waste of power that is taking place.

Professor Ayrton's paper on "Some Non-Integrating Electric Meters" is a valuable and useful compilation of facts. Electric meters as used in electric lighting are not touched on, but he considers ammeters, voltmeters, and ohmmeters. He points out how soft iron instruments are affected by the shape of the wave of the applied electro-motive force, and how this can be compensated for to a certain extent by putting an inductive coil in parallel with them. He mentions the great improvement in the magnetic qualities of iron that has taken place in recent years, and anticipates still greater improvements in the future. Galvanometers of the moving coil type (d'Arsonval) are now replacing those with a moving needle. Professor Ayrton recommends the use of a transformer for measuring large alternating currents, but does not mention what formula is to be used. We suppose he goes on the assumption that the difference between the magnetising turns on the primary and secondary coils is constant at all loads. This assumption is only permissible at heavy loads on the transformer, and when its iron core is of the closed circuit type.

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## MAGAZINES AND REVIEWS.

THE *Art Journal* is chiefly occupied by Mr. A. C. R. Carter's article on the Royal Academy exhibition, somewhat too enthusiastic for our convictions. The frontispiece is Mr. Peacock's clever picture of a lady dancing, which we like better in the engraving than in the original. In the June issue of old articles and illustrations under the title "Fifty Years of Art" there is included an admirable paper by Hamerton on "Lake Surfaces," which few men had better opportunities of studying.

The *Studio* (May 15) includes an article on "A Scheme of Decoration for a Bachelor's Room," with illustrations by Mr. G. M. Ellwood, which show rather too much straining after clever tricks of line and effect. "Jewellery and other Enamel Work by George Frampton, A.R.A." shows some illustrations of excellent and interesting work, and Mr. F. Brangwyn's designs for stained glass are also of interest; one or two of these are to be seen in execution at the Grafton Gallery; the defect that strikes us in them is a want of decorative quality of line in the details.

The *Architectural Review* (Boston) vol. vi. No. 5, contains an interesting article by Mr. Russell Sturgis, under the title, "How to Treat the Classical Orders." Mr. Sturgis seems to consider that, so far from the Classic Order having run its course, there is a new field open for it in connexion with iron trabeated construction. In the course of the article Mr. Sturgis remarks :—"Forty years of noting the opinions of the reading class of our public have convinced the writer of this, that the building most likely to be popular is a grave and simple one, as large as possible in its parts, relatively speaking, and with as much sober monotony of design as may be. To persons of such preferences as these, the charm of the classical orders is unquestioned; they are the only means of giving to these buildings a variety and play of light and shade which their surface conception demands." Not quite the *only* means, we think. What about the Riccardi Palace, for instance? The number contains an illustrated article on "Port Sunlight" and its buildings. The principal illustrations are details of the interior finish of a house by Messrs. Stone, Carpenter, & Willson, which are very refined, but are simply the Adam style transplanted to America.

The *Berliner Architekturwelt* includes illustrations of architecture, furniture, textiles, pictures, and sculpture, recognising the connexion of every branch of art with architecture; but the result is certainly not happy, especially as far as the architecture is concerned. The architectural designs are full of pretentious tricks of effect, compared with which the vagaries of the new school in England are tame and respectable.

The *Deutsche Kunst und Dekoration*, a new publication, contains a great many illustrations of decorative work of various kinds, often forcible and original, but unfortunately for the most part coarse and sensational in character.

The *Engineering Magazine* includes an article on the important subject of the "Hydraulic Transmission of Power," a means of applying power for public use which we believe is still in its early stages, in comparison with probable future developments. The writer, Mr. Ellington, considers in this issue the question of what can be done with the hydraulic power when obtained. A good many illustrations of hydraulic machines accompany the article; but they would be of more practical value if they were in the form of technical sectional drawings, instead of mere photographs of the external appearance of the implements.

The *Antiquary* contains an article on the Royal Academy, "The Antiquary Among the Pictures," a study which might be very well undertaken from the archæological side, but we do not see that much light is thrown on the archæological accuracies and inaccuracies of painters, and when the writer tells us that Mr. Abbey's "O Mistress Mine" merely suggests lay figures and cleverness of draping he is displaying his own shortcomings of perception. In the same number Mr. H. P. Feasey commences a series of articles on "Curiosities in and around our Ancient Churches."

*Scribner* has an article by Miss Cecilia Waeler on "The Modern Group of Scandinavian Painters," and under the heading of "The Field of Art" some considerations as to the education of the artist in the United States. We observe that the writer, Mr. W. H. Low, condemns the prevalence of mere fagging over model-drawing, so many hours a day, and wishes to see less "grind" and more thought. We may quote the following comment in regard to this:—

> "A vivid memory arises of the arrival in the studio where I was studying in Paris, of the youth who afterwards became its most distinguished pupil, and than whom to-day no one is more illustrious in modern art. He was barely seventeen, and he brought, to submit to our master as a means of admission to the ranks of his pupils, a great roll of drawings and sketches in colour. They were not conventional drawings from the cast or model, though doubtless he had made numbers of these, as we all must do sooner or later, but they were works which showed that the youth had the temperament of an artist and was worthy of the painstaking assistance in the development of his gift which he sought at the hands of the master. And, as I look back on the Paris of twenty years ago, I see clearly that, of the numbers of art students assembled there, every one who is known to-day, who has done anything to be known by, could have been admitted to study, if such had been the rule, by the submission of spontaneous original work."

The *Century* has little of artistic interest this month; it contains, however, an article on the always fascinating subject of "Niagara," by Mrs. Van Rensselaer, with illustrations by Mr. Castaigne.

*Macmillan* has a good article on the Rembrandt etchings at the British Museum, by Mr. C. Parkinson.

In the *Forum* is an article styled "American Art Coming into its Own," which strikes one as "a little too previous." The writer says that great attention was directed to the actual achievements of American art owing to the sale of Mr. Clarke's pictures last year, and that the public "recognises the value of the native note in native art." We should recognise it too, but where is it? Hitherto we seem only to have seen the French note in American art.

In the *Fortnightly* Mr. Archibald Little draws a parallel between "Two Cities: London and Pekin," chiefly interesting for its description of the Chinese city. He indulges in exaggerated pessimism about London, making it out as bad as possible, a kind of writing which is a cheap bid for the verdict of the class of readers who enjoy running down everything in their own country.

The *Contemporary Review* contains an admirable article by Mr. Brett on "Realism in Art," one of the best-reasoned papers on this side of the question that we have read. His position is that the sentiment which we look for in art depends on perfect execution, and is not any quality existing by itself apart from execution. We do not agree with it all, but as against the fallacy of "impressionism" it is a very powerful indictment, and an article which should be read by all who are seriously interested in painting.

To the *Revue Générale* M. Arnold Goffin contributes an eloquent and enthusiastic article on some of the early Florentine painters, more especially dealing with Fra Angelico.

The *Gentleman's Magazine* includes one of those useful popular summaries of points in astronomical knowledge which Mr. J. Ellard Gore contributes to this magazine from time to time. The present one is on "The Sun's Journey through Space," and embodies the results of modern observation (familiar to those who pay any attention to current astronomical science) as to the movement of the sun, the point in the stellar system towards which it is apparently moving, and the observed movements in some of the other "fixed" stars. There is one point in regard to this question on which we may venture a suggestion. There seems to be an inclination on the part of the astronomical world to assume that, as the planets move round the sun in orbits whose elements are strictly defined, so the sun and the other stars are revolving in defined orbits round a centre not yet defined or recognised. We would put the question: Is there really an analogy, in a mechanical sense, between the two cases? In the case of the solar system it is easy to see why a series of satellites of the sun, detached at successive periods from a central mass which still remains far greater than all their combined mass, should be strictly controlled in their orbit and rate of revolution (with the exception of some irregularities due to mutual perturbation) by this great central weight. But is there anything analogous in the system of the fixed stars? We at all events know of no central body of preponderating mass, which could control the stars as the sun controls the planets; if there were a luminous body of such comparative mass, surely even the immense distances of stellar space could not prevent its being recognisable to our vision as something far more prominent than any "first magnitude" star. No such body being apparent, may not the movement of the fixed stars be rather in the nature of a "drift," not subject to any such rigid and calculable law as that which governs the revolution of the planets round the sun? We do not profess, of course, in these pages to deal scientifically with astronomical questions; but the mechanism of the heavens is, or should be, of interest to every architect; and if our query should come under the notice of any scientific astronomer, we should be interested to know his views on this point.

The *Quarry* commences an essay on "The Mineral Industry of the United Kingdom," illustrated by a geological map of England and sections of strata.

*Knowledge* includes an article on "The Hereford Earthquake of 1896," by Mr. Charles Davison, who has long made it a special business to collect and compare data as to earthquakes and their phenomena and effects.

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## THE ARCHITECTURAL ASSOCIATION SUMMER VISITS:

### COBHAM HALL AND CHURCH.

ON the 3rd inst. a party of about thirty members of the Architectural Association, under the guidance of Messrs. G. A. Lansdown and F. W. Aldwinckle, junior, travelled down to Sole-street Station to visit Cobham Church and College, and Cobham Hall.

Arriving at Cobham village at about 1 p.m. the party first proceeded to the "Leather Bottle" inn, with its Pickwick parlour, made famous by Charles Dickens. After inspecting the parlour, which is profusely decorated with prints of all kinds, representing the characters of Dickens' novels, and with numerous portraits of the celebrated author, luncheon was served. The church was afterwards visited. It is a structure remarkable for its fine and spacious Early English chancel, which contains a superb altar-tomb, placed centrally before the communion-table. The tomb is an exceptionally rich example of early Renaissance work. It is to the memory of the Lord Cobham who founded the college close at hand, and bears upon its top effigies of Broke, Lord Cobham, and his wife. On each side are five niches, each with a kneeling figure of a knight. These figures represent members of the family of Broke, or Brooke, and they are all dressed in coats fully blazoned with their arms. Each figure kneels upon a cushion facing eastward. The cushions are beautifully decorated with arabesque work formed by a black inlaid cement. The Ionic columns at the corners of the tomb are quasi-fluted with the same material. At the ends are more figures and shields of arms. All the armorial bearings both on the coats and shields are blazoned in inlaid colour, and to any one versed in heraldry must form an extremely interesting study. On the floor of the chancel west of this tomb are a series of fine brasses, including that of Sir Nicholas de Hauberk, a reproduction of which was, not many years ago, given in *The Builder*. The architectural features of the chancel are of great interest, including, as they do, the beautiful lancet windows at the sides and in the east end, a beautiful double piscina enriched with the dog-tooth ornament, as well as a triple sedile and another piscina, both of Perpendicular work. There are the remains, near the east end of the south wall, of a stair, which is said to have led up to a rood loft, but what its real purpose was is not easy to say. In the vestry are some remains of well carved figures, which are said to have formed part of the decoration in connexion with this stair. Cobham College, formerly an ecclesiastical building, is now used as an almshouse. It consists of a building enclosing a quadrangle, the dimensions of which are about 55 ft. by 65 ft., the height of the walls to the eaves being about 17 ft. Beyond this building are the remains of another building, where are to be seen a very large arched lintel of a kitchen fireplace and a doorway having above it a very good coat of arms of the Brooke family, carved in stone, and surrounded by the Garter with its legend. This is protected from the weather by a canopy of Jacobean design, supported on consoles. It dates from the last years of the sixteenth century.

After inspecting these interesting buildings the party proceeded across Lord Darnley's park to Cobham Hall, permission to view which had been kindly granted by his lordship. The hall, which has been illustrated in Messrs. Belcher & Macartney's book on the later Renaissance architecture of England, is well known from that and other representations. The older part of the house consists of buildings forming three sides of a square. The two wings are older than the central portion, and were built by the Cobham family; they are of red brick with stone mullioned windows and dressings, and have interesting central features in the centre of each facing the enclosed garden. The central portion of the house was built by or for the Darnley family, to whom the place was granted after the attainder of Lord Cobham in the reign of James I. Later additions by Wyatt form the present entrance corridor and the stables in the rear. The interior of the house contains some very fine marble mantelpieces and a quantity of pictures, many of interesting persons and not a few of great beauty and value, Rubens and Vandyke being the authors of several.

The most interesting feature of the interior is the gilded hall, a very fine cubical room decorated in marble and gilded plaster. This is known as the music room, and it contains a painting by Vandyke of two Dukes of Lennox, which is placed over the fire mantel, and is perhaps the finest picture in the house. The interior of the house generally, as far as the visitors were permitted to see it, does not contain panelling or other architectural decoration of such interest as might be expected from the external appearance; the internal finishing being, with the exception of the mantelpieces, coeval with Wyatt's work. The visit was pronounced by those who took part in it to have been of very great interest, and the thanks of the party are heartily due to those gentlemen who organised and brought it to so successful a conclusion, also to the Vicar of Cobham, who kindly had the brasses in the church uncovered for inspection, and to Lord Darnley for his permission to view the hall.

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## ASSOCIATION OF MUNICIPAL AND COUNTY ENGINEERS.

THE members of the Association of Municipal and County Engineers held a Yorkshire district meeting at Sheffield on Saturday, June 3. This was the first occasion on which Sheffield had been visited by the Association, and consequently a good deal of interest centred in the meeting, which was very largely attended by members from various parts of the country. Mr. O. Claude Robson, of Willesden, President, occupied the chair, and amongst those present were Messrs. C. F. Wike, Sheffield; J. P. Barber, Islington; E. G. Mawbey, Leicester; E. Pritchard, Birmingham; J. Price, Birmingham; J. Cartwright, Bury; F. Baker, Middlesbrough; T. W. Stainthorpe, Totnes, Devon; A. D. Greatorex, West Bromwich; C. H. Cooper, Wimbledon; J. Cook, Lancaster; B. Godfrey, Rotherham; G. T. Lynam, Burton-on-Trent; T. H. Yabbicom, Bristol; and many others.

The Lord Mayor of Sheffield (Councillor

Clegg), in welcoming the members, said he was exceedingly glad to have an opportunity of welcoming such an important body as that represented. In consequence of the very great powers which were in the hands of Corporations, the positions of surveyors were becoming increasingly responsible, and it was exceedingly necessary that whenever information could be obtained which would add to the knowledge of members of their profession, it was desirable it should be obtained. Less than twenty-five years ago Sheffield had not realised the responsibilities due to the fact that it was the sixth largest town in the kingdom, but within recent years they had realised those responsibilities and taken steps to improve the town in a way highly creditable to them as a Corporation. When he informed them that since 1875 they had spent upon public improvements and works no less a sum than four and a half millions of money, only half of which was expended on works of a profitable nature, he thought they would agree with him that Sheffield, at any rate within that time, had done a very great deal for the interests of its citizens.

The President (Mr. Robson), in acknowledging the civic welcome, tendered the Lord Mayor very hearty thanks for the reception which he had accorded to the Association. During the twenty-seven years of their existence they had visited most of the principal towns throughout the country, and it was no secret that for some years past there had been a strong desire on their part to visit Sheffield—a city essentially of interest to all engineers by reason of its large industrial works, but of especial interest to them on that occasion by reason of the very large municipal works which were being carried out under the supervision and control of their very distinguished Engineer, Mr. Wike.

The President then announced with regret the retirement of Mr. T. W. Stainthorpe from the position of hon. secretary for the Yorkshire district, as he had taken an appointment in Devonshire. He moved a vote of thanks to Mr. Stainthorpe for the able and energetic way in which he had acted as secretary for the past seven years.

Mr. F. Baker, Middlesbrough, seconded the vote of thanks, which was accorded with acclamation.

Mr. Stainthorpe, in acknowledgment, said his work for the Association had been a labour of love, and he hoped his successor would have an equally pleasant experience of the office.

On the proposition of Mr. Cox, of Bradford, Mr. S. Stead, Borough Engineer of Harrogate, was unanimously elected secretary for the district.

### *Municipal Work in Sheffield.*

Mr. C. F. Wike, C.E., City Surveyor of Sheffield, then presented a paper on ten years of municipal work in Sheffield. After giving some general statistics with respect to the city, Mr. Wike stated that the whole of the highway and road work was done by the Corporation workmen, about 1,900 of whom were employed under his department. With certain exceptions, the main streets were, twenty years ago, narrow and tortuous; this description still applied to some of them, but great improvements had recently been made both in width and line, and these were still going on on an extensive scale. The gradients, while favourable for purposes of drainage, made the question of a suitable form of paving a most difficult one; and there was a great variety of pavement in Sheffield. From inquiries made some time ago, it appeared there were only one or two provincial towns with a larger area of wood paving than Sheffield. The proportion of macadam, unfortunately for the district rate, also ranked high. Many streets had gradients of 1 in 10, 1 in 8, and even 1 in 5, and when there was a heavy rainfall the macadam could not remain upon the surface of such streets, but was washed either upon the low-lying roads or into the sewers, from which eventually it had to be removed at great cost. About 300,000 tons of macadam had been used during the last ten years, a large proportion of which had disappeared in the shape of dust, or had been carted away as mud, or deposited in the sewers. During the last five years the question of the best kind of pavement to be used led to many discussions both in the Council and out, and, though no general principle had been settled, the rule broadly was to lay granite where the traffic was heavy and the gradients would permit (1 in 30 being the limit, except in special cases), to lay wood on some of the more important business streets, and in others gritstone paving or macadam. The comparative life of the different kinds of pavement in streets of heavy traffic had been granite twenty-one years, wood (red) about seven or eight years, gritstone rarely more than five or six years in main streets, tar macadam in busy suburban roads over four years, and dry macadam entirely according to traffic and other considerations. Where wood was laid against tram rails the life was very uncertain. Pavement of this kind laid within the last nine months was already grooving, as well as gritstone and Inverkeithing laid about the same time. Within the last few years a whinstone from the Inverkeithing quarries had been introduced, and had found favour on account of its quietness and non-slipperiness. It, however, wore very rapidly, especially under traction-engine traffic or along tram lines. In one case, where it was laid under the latter condition, it wore ¾ of an inch below the level of the rails in less than twelve months. His experience tended strongly to prove that no material would stand next to tram lines but granite, and even that after a time became grooved. Referring to the tramway system, Mr. Wike mentioned that the company's lease ran out in 1896, when the Corporation obtained an Act authorising them to take over the working of the lines which had always belonged to them, the company paying a rent of 100*l.* per mile of route per annum. The first step was to introduce additional penny fares and to increase the distance traversed for that sum—a policy which met with immediate success. In September, 1896, a deputation visited a large number of English, Scotch, and Continental cities to inquire into the various systems of traction in use, and the unanimous conclusion was that the overhead electric system was the one for Sheffield—a view confirmed by the Council. In 1897 a further Act was obtained authorising the construction of about twenty-seven miles of additional tramway. Wherever practicable double lines were included, and the wisdom of this course had already been thoroughly proved. The estimate for the work, including electrical equipment, exceeded 600,000*l.* The actual work was started in January, 1898, and since then about eleven miles of route had been constructed. The power station was approaching completion, and a contract had already been let for an extension to more than double the original size, viz., 190 ft. by 110 ft. The first instalment of the generating plant now being fixed was of 900 horse-power. The whole of the works, except the erection of the car-shed and power-house, but including the electrical bonding of the track and the laying of pipes to carry the cables, had been carried out by the Corporation workmen. The Corporation management of tramways in Sheffield had been a great success from a commercial point of view. During the last year of the company's lease the results for the nine and a quarter miles of route were: Gross receipts about 40,000*l.*; gross profits, 7,441*l.* For the last financial year under the Corporation, with nine and a quarter miles for seven months and ten and three-quarter miles for the other five, the figures were: Gross receipts, 57,503*l.*; profits after allowing for service of debt, 13,884*l.* The Sheffield sewage works were at present on the lime precipitation principle. The quantity treated per day had reached as much as 25 million gallons, the average dry weather flow being about 17½ million gallons. One of the greatest disadvantages of this method of treatment was the quantity of sludge produced. In Sheffield this amounted to from 1,000 to 1,200 tons per week; and though liberal terms had been offered to farmers and others who might use it as a manure, very little was disposed of in that manner. The only practicable method of disposal had been found to be by sending the sludge by rail to a large tip in the valley some few miles below the works, and since 1892 about 250,000 tons had been so disposed of. It was divulging no secret to say the lime treatment only did not now receive the approval of the Local Government Board, and Sheffield was, therefore, at present experimenting. Lately these experiments had been in the direction of bacteriological treatment, and good results had so far been attained. The experiments commenced in November, 1897, when two of the precipitation tanks were filled, one with slack and the other with coke, and worked on this principle. The results were considered sufficient to justify a more extensive experiment. There were now three coarse tanks, each 220 ft. by 75 ft. and three fine filters through which the effluent from the coarse tanks was passed. The first tanks were filled with rough coke to a depth of 5 ft. The bottoms of the tanks were drained by one 9-in. main drain (open socket joints) in the centre and 3-in. land tiles 6 ft. apart laid herring-bone fashion at each side. These tanks worked on an 8-hour cycle as follows—filling 1¼ hours, 2 hours rest, 3 hours for emptying, remainder of 8 hours at rest. At present only two of the tanks were completed, with a capacity of one million gallons per day, and the third tank would take half a million gallons per day. After leaving these tanks the effluent passed through a secondary filter, of similar construction to the others, but filled with fine coke breeze to a depth of nearly 4 ft. Three hours were occupied in discharging the contents of the coarse bed into the finer one and after about 1⅓ hours rest the smaller tank was emptied into the effluent culvert. As these tanks had only been in work about two months it was not proposed to speak as to the cost of the treatment, but so far as the experiment had gone no sludge had been perceptible.

Street improvements had formed an important part of recent municipal work in Sheffield. Five years ago High-street was only 31 ft. wide in the narrowest part, but it had now been widened to a minimum of about 80 ft. at a cost of about 60,000*l.* net. The minimum price paid per square yard was 22*l.* (this being part of a special arrangement) and the maximum 103*l.*, neither of these prices including business compensation. The land resold as surplus realised from 25*l.* per yard (including a large proportion of backland) to 65*l.* and one lot, consisting of a few yards of frontage, fetched as much as 206*l.* per yard. It was found that in those cases where the Corporation purchased the whole of the property and resold the surplus the result was much more satisfactory than when they contented themselves with taking only the actual land required. Another important improvement was one known as the West Bar scheme, the total estimate for which was approximately 300,000*l.*, and the width of the improved street would be 60 ft. for the greater part.

The constructional works had included four new bridges, the clearing of an unsanitary area of about five acres, known as the Crofts, at a cost of between 80,000*l.* and 90,000*l.*, and the erection of dwellings on the flat system to house about 600 persons; of baths; of a branch free library; two additional police stations; and of two refuse destructors. These two destructors would on the average be capable of dealing with about 300 tons of refuse per day out of the 400 odd tons collected. It was proposed eventually to have a third destructor to consume 150 tons per day further.

Sheffield was probably as well supplied with parks and recreation grounds as any town in the Kingdom, and these were much appreciated in a city, parts of which were so smoky and densely populated. There were eight parks and seven recreation grounds with a total area of about 325 acres. One of the parks was given by the late Mr. Mark Firth, and another, togther with five of the recreation grounds, was given by the Duke of Norfolk. The remainder cost, in the first instance, about 70,000*l.* The three largest parks, with an area of 138 acres, had been acquired and laid out during the last ten years. One of the parks contained the public museum and the Mappin Art Gallery—the latter the outcome of a bequest by the late Mr. J. N. Mappin. In another park was the Ruskin Museum, founded in Sheffield by Mr. John Ruskin, and now transferred to and managed by the St. George's Guild and the Sheffield Corporation. No description of the parks would be complete without a reference to Norfolk Park, the largest park in the City. Although this was the property of the Duke of Norfolk it was open for the free use of the public, and was maintained entirely at the cost of the Duke. The annual cost of maintaining the parks and recreation grounds was only 5,500*l.*

Mr. J. P. Barber, Islington, proposed a vote of thanks to Mr. Wike for his paper. He said that every one knew that gritstone setts could not possibly stand very heavy traffic, neither were they economical. If a satisfactory road were to be made and maintained with heavy traffic, and true economy were aimed at they must use granite and discard gritstone. His experience in London was that the Guernsey or some of the Leicestershire granites were the most economical that they could obtain in the Metropolitan district. Even Guernsey granite setts became grooved in three or four years in thoroughfares over which there was heavy traffic. He was bound to say that the main thoroughfares of Sheffield were in no respect behind some of the best-paved streets in the Metropolis. It seemed to him that all the requirements of the traffic had been carefully considered and there had been skill and discretion in deciding as to the material to be used and great care exercised in the way that material had been laid down.

Mr. Mawbey, Leicester, who seconded, said he might add his opinion to that already given that the town could not do better than adopt the two kinds of paving which Mr. Wike was advising—granite and wood. Wherever they could afford the luxury of wood they preferred it. With regard to the bacteriological treatment of sewage, it was satisfactory to hear that the result of Mr. Wike's experiments were satisfactory. He believed there was a very great future indeed for the bacterial system. They had been carrying out some experiments at Leicester both with the clarification and the final treatment of sewage and they found that the rough beds for clarification had far exceeded any chemical treatment they had had anything to do with.

Mr. F. Baker, Middlesbrough, said that with the new overhead electric system of tramways between Middlesbrough, Thornaby, and Stockton, they had adopted a road gauge of 3 ft. 6 in. instead of the ordinary 4 ft. 8½ in., to keep the ordinary vehicular traffic from using the tram track.

Mr. Cooper, Wimbledon, stated that he was reforming a bacterial bed filter at Wimbledon which was constructed in 1876. The filter was formed of burnt ballast, and they found that the sludge had penetrated right through the ballast to the bottom of the filter, thus compelling them to clean it. He had besides two acres of filters laid with 3 ft. of burnt ballast with a little soil on the top to assist the distribution of the sewage; and he was engaged in laying down two more acres of filters which would not be quite so deep and would not have anything on the surface. He could not help thinking that the work of a filter was done on or near the surface, and that the work done in the first quarter of an inch was very much more than in the second quarter, and that as it got lower the efficiency fell very rapidly.

Mr. E. Pritchard, Birmingham, remarked that Sheffield had taken a bold leap with respect to the municipalisation of the tramways. Although the overhead system of electric traction might not be considered æsthetic he believed it to be the best for Sheffield. With regard to the gauge, he did not care what they did, whether they made it 3 ft. 6 in. or 4 ft. 8½ in., the butcher boys, who were the worst offenders, would run one wheel of their carts in the groove of the rail and cut up the track. The use of steel blocks alternately with wood by the side of the rail had the effect of preventing the cutting up of the track, but there was the disadvantage of the disagreeable noise made by vehicles.

Mr. J. Price, Birmingham, said he took it that the choice of pavement was a matter of policy to be determined by the Council, and not by the official, and depended upon whether the town could afford to pay for a certain class of pavement or not. A well-constructed granite pavement was the most economical pavement going; but if the circumstances permitted, and they could afford it, most of them would favour a good wood paving.

The Chairman said the experience of all of them was that, given a certain amount of heavy traffic, granite setts were distinctly cheaper, and they would probably be using granite setts where they now used wood in London but for the fact that they were a more neurotic people than they were in the North of England.

The vote of thanks having been passed,

Mr. Wike said he had to thank the members of the Council for the great support they had given him during the past ten years, and also the members of his staff who had worked exceedingly hard and conscientiously. The Corporation had in the highways staff a body of men who were thoroughly in earnest in doing their best for Sheffield.

The Lord Mayor then entertained the President and members of the Association to luncheon in the Town Hall. The postprandial proceedings were commendably brief, as the members had a long round of visits to make to places of engineering interest.

The visits made during the afternoon included the tramways in course of construction in Fitzalan-square, the tramway power station at Kelham Island, Ball Bridge, the Walkley tramways, the Glossop-road baths, the destructors, the sewage works, where tea was provided, and the Brightside baths. The inspection of works in progress and completed proved of the greatest interest, and the meeting in every respect was a complete success.

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## THE BUILDING TRADE DISPUTE.

ON Saturday last special meetings were held in many of the London and provincial branches of the National Association of Operative Plasterers, when the members were handed ballot papers, on which they were requested to record their votes either for or against the settlement arrived at on the 30th ult. between the representatives of the masters and the men's delegates. It is considered certain that the operatives will sanction the settlement of the dispute on the lines already agreed upon. Should the result prove to be in favour of returning to work, an intimation will be immediately sent to the Master Builders' Association, who will then throw open their shops to the Union men. It is therefore highly probable that the lock-out order will be withdrawn on June 12.

A joint meeting of members of the National Association of Master Builders and representatives of the several trade unions in the industry was held on Monday in Derby. The meeting had been arranged for the purpose of the preparation of a basis of discussion for a larger conference proposed to be held in London on Thursday; but no basis has been prepared. The terms of settlement as agreed upon at the conference with the Operative Plasterers were, with some minor alterations, laid before the representatives. The representatives of the Master Builders' Association, having already accepted these terms as applied to the Operative Plasterers, were prepared to practically adopt them as the basis for discussion at a conference with the whole body of trade unions. The representatives of the trade unions, however, after they had gone carefully through the proposals, which, it was understood, included the appointment of Mr. E. T. Cook as an independent chairman, decided, it is stated, that they could not adopt them as a basis. The terms, as accepted at the conference with the Operative Plasterers in London, and as confirmed by the statement issued by the Yorkshire employers, practically allege certain practices against the whole of the unions, and that these practices are universal the governing bodies of the unions deny. Their representatives, in fact, at a meeting held in Manchester on May 15, "condemned in the strongest possible terms the untrue and misleading statements issued by the Yorkshire Federation of Building Trade Employers." Their representatives accordingly declined to discuss terms of settlement which would apply to allegations of practices the truth of which they denied.

A considerable number of members of the National Association of Master Builders travelled to Derby and met at the Midland Hotel, where the "preliminary joint meeting" with some of the representatives of the trades unions was also held. The joint meeting was attended by three members only from either side, with the secretaries—namely, Messrs. B. Greenwood (London), R. Neill (Manchester), W. Nicholson (Leeds), and J. Hassal, secretary, employers; and W. T. Wilson (Amalgamated Society of Carpenters and Joiners), W. Matkin (General Union of Carpenters and Joiners), J. Batchelor (Operative Bricklayers' Society), and G. B. Cherry (Operative Plumbers' Association), secretary. The decision of the representatives of the trade unions not to accept the proposed basis of discussion was communicated to the representatives of the employers. The representatives of the trade unions desired as a simple basis for discussion a proposal for the establishment of a Joint Central Conciliation Board to which all local disputes might be referred. This, it was thought, would allow the several districts to retain their local autonomy, and would at the same time provide a safeguard against the local adoption by either side of measures calculated to presently jeopardise the interests of the whole industry. When it was apparent that the representatives of the trade unions were not disposed to adopt the proposed basis of terms of settlement for discussion, the following resolution was adopted by the joint meeting:—

> "That, inasmuch as the representatives of the trade unions are not willing to adopt the proposed basis of conference, they be requested to submit within fourteen days their own basis for the consideration of this Association (the Master Builders' Association), and that this Conference be postponed accordingly."

A meeting of the Council of the Yorkshire Federation of Building Trade Employers was held at the Montgomery Hall, Sheffield, on the 6th inst. The attendance included representatives from all the centres covered by the Federation, and the chair was taken by the President (Mr. John Spink, of Sheffield).

The first business was the reception of the report of the Plasterers' Settlement, and the meeting expressed general satisfaction with the understanding which had been arrived at. The abortive attempt at Derby on the preceding day to settle the basis of discussion at the proposed London conference next came under discussion. Individual members expressed the opinion that the resolution of the Manchester conference of trade unionists suggesting a meeting with the federated masters was merely a device to prevent a national lock-out. This feeling was afterwards embodied in the following resolution:—

> "The Yorkshire Federation of Master Builders are of opinion that the operatives, at their Manchester meeting, when they proposed—'that we are prepared to meet the National Association of Master Builders in open conference, and discuss the questions at issue'—were not making a bonâ fide offer for a conference, because the men's delegates at Derby yesterday refused to accept, as the basis of that conference, the suggestions made by Mr. Cook, the editor of the London *Daily News*, who is an independent and impartial intermediary."

It was reported that the representatives of the trade unions were to meet in Manchester on Monday to prepare a basis for any conference between them and the National Federation of Employers, and in view of this it was resolved to ask the Northern Centre of the employers to hold a meeting as soon as convenient after the proposals of the men are made known.

The lock-out in Yorkshire, it was stated, would be maintained until some satisfactory understanding is come to with the men on the question of a general conference. The reasons given for declaring a lock-out in Yorkshire, as stated in the employers' manifesto, were that the men had imposed "tyrannical practices" upon the masters. The meeting had before it a list of these alleged practices, and resolved to print and publish them throughout the country, every instance being stated to be fully authenticated. The following examples are extracted from the list. In fairness it should be stated that the masters are in each instance possessed of the name and place of business of the employer or employers concerned:—

> "A firm of contractors erected a steam mason. The men immediately struck, and demanded that the machine should be taken out of the town. After considerable pressure by the local Master Builders' Association, terms were made restricting the output, as follows:—(1) The machine was not to be worked if six masons were not employed; (2) no overtime whatever to be allowed; (3) the machine only to plane three sides of any one stone, and do no moulding work whatever; (4) if the men be stood for work at any time, the machine must not be working.
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> Of the men employed on a contract in the East Riding, part lived near the work and the remainder were engaged from an adjoining town. The latter, in order to catch a train on Saturdays, ceased work at twenty minutes to twelve, and insisted that the local men, who were within three minutes of their homes, should leave at the same time, under penalty of the job being stopped.
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> Some time ago the whole of the master joiners in Hull were forbidden to use Canadian pine doors, the reason given being that they were made under unfair conditions of labour. A strike was threatened in the alternative. The employers have since ascertained that the men engaged in making these doors earn four guineas a week.
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> A joiner in the employ of a firm for twenty-one years was during that time appointed in succession outdoor and general foreman. On his receiving the latter berth, ninety-two joiners struck work for three weeks because he would not join their union. He then gave way and joined the Society, but was fined 2*l.* for not having done so at once.
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> A builder was compelled to discharge a non-society plumber under threat of a strike of joiners, plasterers, and labourers.
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> Five labourers, who were employed to supply three bricklayers, failed to keep them going. After the foreman had complained two or three times

two of the labourers were discharged. Two of the remaining three left at an hour's notice, and used bad language to the employer before going. They returned, along with the labourers' delegate, who complained that the contractor was working short-handed. He offered to take back the two men whom he had discharged, but the delegate insisted that he should first reinstate the two men who had left work on their own account and had insulted him. On this, the employer refused to take any of them back, and the delegate refused to allow any man to start on the job.

A contractor became embroiled with a labourers' society because of employing temporarily on a chimney shaft four non-union men with special knowledge of the work. As a matter of fact, the men were desirous of joining the Society, but were refused admission, on the ground that the whole of the existing members were not then at work. The men had to be discharged.

The lock-out is now declared to be in force in every principal town in Yorkshire, with the exception of Bradford. The Federated Masters have received from the architects, it is stated, an assurance of sympathy, the latter expressing the view that they ought to extend the lock-out to the whole of the men.

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## *ARCHITECTURAL SOCIETIES.*

THE ARCHITECTURAL ASSOCIATION OF IRELAND.—A general meeting of the Irish Architectural Association was held at the Grosvenor Hotel on Wednesday, May 31, Mr. J. H. Pentland in the chair. The Hon. Secretary read the result of the ballot for officers for the ensuing session as follows:—President, Mr. G. Sheridan, A.R.I.B.A.; Vice-Presidents, Mr. J. Halloway, Mr. M. J. Tighe; Committee, Messrs. Orpen, J. Pentland, R. M. Butler, T. E. Hudman, T. Coleman, L. O'Callaghan, C. H. Ashworth, F. Batchelor, Wm. Scott; Hon. Treasurer, J. H. Webb; Hon. Librarian, J. Geoghegan; Hon. Secs., H. Allberry, F. Hicks; Hon. Auditors, W. Sandall and J. W. Boucher. Mr. Pentland delivered a short valedictory address. The term of office of Mr. Butler, the Hon. Secretary, having expired, a vote of thanks to him was proposed by Mr. Allberry, and seconded by Mr. P. F. O'Sullivan, for the energy and attention with which he had directed the affairs of the Association since its inauguration in 1896. It is proposed that the Association visit Chester for their annual excursion and dinner on Friday, June 30. The following new members were admitted:—Messrs. G. G. Lynes, J. Baird, H. J. Lundy, J. M. Mitchell, Wm. Conolly.

EDINBURGH ARCHITECTURAL ASSOCIATION.—Members of this Association visited Arbroath on Saturday last on the occasion of their annual excursion. The President, Mr. James Bruce, W.S., the past president, Mr. Thomas Ross, and the secretary, accompanied by about thirty members, proceeded by train to Elliot Junction, and walked to Kelly Castle, now the country residence of Lord Provost M'Grady. The party proceed to examine the Castle, which is situated about two and a half miles from Arbroath on the River Elliot. The oldest portions, built about 1442 by Sir William Ochterlony, have been much added to and altered, and the building now is a picturesque and comfortable house of red stone, having a fine walled-in garden with yew hedges 4 ft. 6in. thick Luncheon was provided by Lord Provost M'Grady, and the President asked Mrs. M'Grady to be good enough to convey to him the thanks of the Association for permitting the visit, and for his hospitality. Under the leadership of Mr. T. S. Robertson, the party then visited Hospitalfield, the original of the Monkbarns of "The Antiquary." The parish church and the Abbey were next examined. The well-known abbey was founded in 1178, and the latest additions were added early in the fifteenth century. The Rev. W. Duke accompanied the members from the abbey to his church of St. Vigeans, built on the site of a Norman church, and restored twenty-seven years ago by Mr. R. Rowand Anderson, LL.D. Mrs. Duke provided refreshments, and after Dr. Duke and the hostess had been thanked the party returned to town.

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CLOCK TOWER ON THE EASTGATE, CHESTER.—A clock tower has been erected on the Eastgate, in commemoration of the Diamond Jubilee, and on the 24th ult. the clock was started. The tower, which is of ornamental ironwork, was designed by Messrs. Douglas & Minshull, of Chester, the clock having been supplied by Messrs. Joyce & Co., of Whitchurch. The ironwork of the tower was executed by Mr. James Swindley, of Handbridge.

# Illustrations.

## MODEL FOR THE STATUE OF BALZAC.

WE give an illustration of the plaster model by M. Falguière for the proposed statue of Balzac, which occupied a prominent position among the sculpture in the Old Salon this year, as that of M. Rodin occupied a prominent position in the New Salon the previous year.

It may be remembered that the commission for a monumental statue to the author of the "Comédie Humaine" was in the first instance given by the "Société des Gens des Lettres" (the promoters of the monument) to M. Rodin, who, after keeping them waiting some years, produced only the rough and almost grotesque sketch which figured in the New Salon last year, and became a *casus belli* in the artistic world. There was indication, as we have always thought, of a fine and original conception underlying M. Rodin's sketch; but the "Société" not unnaturally lost all faith in a sculptor who displayed such eccentricity of temper and aims, and took the commission out of his hands in favour of M. Falguière, a sculptor in whose saner genius and more rational temperament they could at all events feel confidence.

The result is, we think, a success, and is generally considered to be so in Paris, except by the adherents of "sculpture intellectuelle," which appears to mean unfinished sculpture. The model, which is the full size of the intended work, is colossal in scale, and represents Balzac in an attitude of deep thought, his hands clasped over one knee. The drapery is broadly treated, and there is a sculpuresque repose and dignity in the work.

As at present intended, the completed work will be erected in the Place du Palais Royal, an appropriate situation enough, since it was the centre of life of the Paris which Balzac analysed and satirised in his wonderful series of stories.

## ST. SAVIOUR'S MISSION CHURCH, EALING.

THE illustrations show the interior view looking east and the exterior view from south-east of the above-named church, which is to be consecrated on Wednesday, June 14, by the Bishop of London. The interior view was exhibited in the Royal Academy in 1897. The main object of the design has been to get a lofty and effective building that would accommodate about 1,000 adults at a very reasonable cost, and to trust to the general massing and proportion rather than to detail for effect; in fact, all elaborate ornament (except only in the case of the chancel arch and rood beam) is dispensed with, and moulded work is confined almost entirely to strings and labels.

The main form of the plan is a nave 113 ft. long by 40 ft. wide, divided into six bays of 18 ft. centres. Broad processional passages are placed on either side, and north and south transepts are thrown out from the two easternmost bays, that on the south side terminating in an apsidal-ended chapel, and that on the north side in a lofty arch opening into organ chamber. An apsidal-ended baptistry is placed at the west end of the nave.

The chancel is 46 ft. long by 29 ft. wide, with an altar raised nine steps from the nave floor level. Wide passages for returning communicants are placed north and south of the chancel, and above them are formed the organ-chamber on the north side, and musicians' gallery on the south side. Spacious clergy and choir vestries are placed on the north side, with heating chamber under. The nave walls are splayed in towards the jambs of the chancel arch, and upon this splay are placed twelve niches, with canopies over for figures of the twelve Apostles, and a stone screen, with wrought iron grille work above, divides the chancel from the nave. An elaborately carved oak rood beam is placed at the springing of the arch, upon which is placed the figure of the Crucified Saviour and attendant figures. A richly worked dossal carried to a height of 20 ft. above the altar, also curtains at the east wall, on either side, give dignity and warmth to the east end.

The roof is of barrel form, being carried at one level through nave and chancel, and gives ample scope for future decoration. At present the whole of the timber and boarding in the roof is stained green, with not unpleasing effect. The heating is by hot water, with radiators and pipes upon the low pressure system.

The church being hemmed in on all sides by dwellings of the poorer class, the external elevations have purposely been kept severely plain. A copper covered flêche, which is placed at the junction of chancel and nave roofs, is carried to a height of 46 ft. above roof, and is a conspicuous object at some considerable distance from the church.

The materials used internally are red brick and stone facings, and externally stock brick.

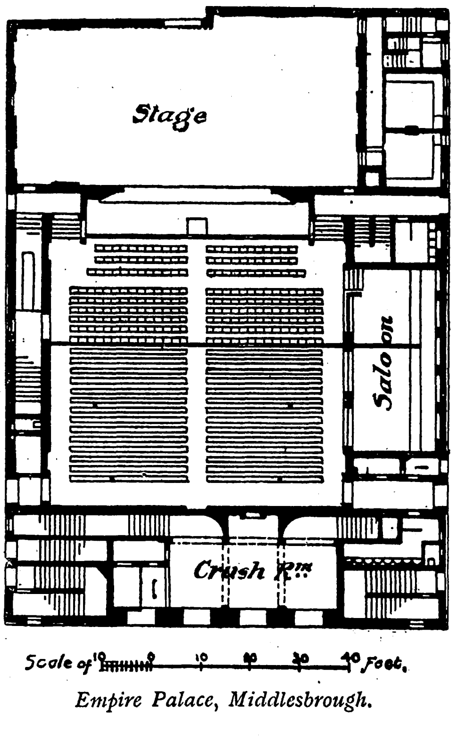
The church and all detail work has been carried out from the designs of Mr. Geo. H. Fellowes Prynne, of Westminster; Messrs. Goddard & Sons, of Farnham, being the contractors.

The figures and carving work have been done by Messrs. Martyn & Son, of Cheltenham; the dossal and altar hangings by Mr. A. Stalman, and the heating by Messrs. J. Jones & Sons.

The cost of the church, complete with fittings, will be about 11,000*l.*

## EMPIRE PALACE OF VARIETIES, MIDDLESBROUGH.

THE site selected for this building covers an area of upwards of 11,000 square feet, having frontages on three sides to Corporation-road, Pine and Dunning-streets, and a frontage to a right-of-way in the rear; being thus practically isolated. The main approach is from Corporation-road through a hall, 34 ft. by 19 ft., and 18 ft. in height, having a large recessed fireplace; at the left-hand side upon entering is the box-office, adjoining which is the staircase to the stalls, whilst on the right is a broad staircase leading to the grand circle; in addition there are two emergency exits from the stalls into Dunning and Pine-streets, and an emergency exit staircase from the grand circle into the former thoroughfare. The pit entrance is from and on a level with Dunning-street, with an emergency exit opposite directly into Pine-street, whilst the gallery entrance is from the latter street, with an emergency exit into Dunning-street.



*Empire Palace, Middlesbrough.*

The auditorium is nearly square, being 60 ft. in width by 63 ft. deep, and the average height to the false ceiling is 45 ft. The area comprises 120 orchestra stalls, 120 stalls, and a pit with a seating accommodation of about 450. Spacious saloon accommodation is provided. The grand circle has seating accommodation for 150 persons, with ample lounges. Immediately in the rear over the entrance hall is the principal saloon, 34 ft. by 27 ft., approached by two short flights of steps, thus enabling a clear view of the stage to be obtained. A further saloon is also provided on the Dunning-street frontage. Both the entrance and exit staircases terminate in roomy lobbies, and there are communication staircases directly into the stalls from either side. Four private boxes flank the proscenium, and on the gallery level are two private boxes. The gallery itself has seating accommodation for 750 persons, and a suitable saloon is provided in the rear.

The ceiling, proscenium, circle, and box-fronts are in specially designed and modelled plastic work, following in a degree the Spanish Renaissance treatment of the exterior. The ceiling is painted with allegorical subjects. The principal seats are of the tip-up pattern and upholstered in velvet, and the pit seats upholstered in leather. The stage and its accessories are roomy, and will permit of spectacular productions of all kinds. Its dimensions are as follows:—Width from wall to wall 70 ft., average depth 35 ft., height to flies 25 ft., height to grid 55 ft., proscenium opening 30 ft. square. Six dressing-rooms are provided, entirely distinct from the stage and in a separate block, each room being fitted up in the most approved manner. The stage entrance is from Dunning-street, and the scenery entrance in the rear of the building.

Messrs. Ernest Runtz & Co. are the architects.

A drawing of the building was exhibited in the Royal Academy in 1897.

## *COMPETITIONS.*

HOSPITAL, SWINDON.—The Swindon and District Hospital Board have accepted the joint plans of Mr. G. Halliday, F.R.I.B.A., and Mr. J. W. Rodger, of Cardiff, for the building of a hospital at Swindon, and have sent instructions to the architects to prepare the necessary drawings to carry out the work.

WANDSWORTH BOARD OF GUARDIANS OFFICES.—The Guardians have examined the designs sent in (twenty-eight sets in all) with the assistance of Mr. A. Graham, the assessor, and it was agreed that the first premium of 100*l.* be awarded to No. 25, second of 60*l.* to No. 12, and third of 40*l.* to No. 20. The clerk was instructed to open the sealed envelopes containing the names of the premiated authors. No. 25 was by Mr. Cecil A. Sharp, A.R.I.B.A., of 59, Fenchurch-street; No. 12 by Mr. N. F. Harber, 35, Craven-street, Strand, W.C.; and No. 20 by Mr. W. Nash, F.R.I.B.A., Bush-lane House, Cannon-street, E.C. The architect's estimated cost of the work is 20,311*l.*

## *ARCHÆOLOGICAL SOCIETIES.*

EAST RIDING ANTIQUARIAN SOCIETY.—The first summer meeting of the East Riding Antiquarian Society was held on the 31st ult. About thirty members took part in the excursion. The party left York railway station in waggonettes shortly after 11 o'clock, the route being Stillingfleet, Cawood, and Ryther. Upon arrival at Stillingfleet the party proceeded to the church, which was described by Mr. Hodgson Fowler, by whom the building was restored about twenty years ago. The style of architecture is Norman, and the most remarkable features are the porches and the doorway, which is of the original oak and fine wrought ironwork. Ryther church was also described by Mr. Fowler. This ancient edifice came into history as early as A.D. 869, when the Danes sent an expedition to clear away the forest and settle down there. In Edward the Confessor's time the owners of this land were Danes, and there was a church and a priest at that time. Perhaps the most noteworthy features of the church are the beautiful monuments of the Lords of Ryther. From Ryther the party proceeded to Cawood Castle, where the Rev. E. Maule Cole read descriptive notes by the Dean of York. They also visited the Old Manor House, which was built by Archbishop Gray and seized by Edward I., who lived there with his Queen. Cawood was restored to the Church in the time of Cardinal Wolsey, who was living there at the time of his arrest. During the Civil Wars the castle was so well defended that by order of the House of Commons it was demolished to prevent it causing any further trouble, and all that remains is an archway. The church at Cawood contains but one monument, and that was erected to the memory of Archbishop Mountain, a Cawood boy who raised himself to the position of Primate of the Northern Province. After the inspection of Cawood the return journey was begun, and the party reached York Station about five o'clock.—*Yorkshire Post.*

## *ENGINEERING SOCIETIES.*

SOCIETY OF ENGINEERS.—At a meeting of the Society of Engineers, at the Royal United Service Institution, Whitehall, on the 5th inst., Mr. C. Fell, President, in the chair, a paper was read by Mr. R. G. Allanson-Winn, entitled "Fore-shore Protection, with Special Reference to the Case System of Groyning." In introducing the subject the author referred to the advantages of utilising the destructive forces of the sea for constructive purposes, and stated that his object was rather to give an account of what had actually been accomplished in that direction than to advance his own opinions or theories. Dealing with the question of changes constantly going on in the configuration of the country, he took as an example thirty miles of the Yorkshire coast, and calculated that, at a moderate computation, over 47,500,000 cubic ft. of material were annually taken from the coast beween Flamborough Head and Spurn Point. Where did it all go to? Much was doubtless deposited at the mouth of the Humber, greatly to the detriment of that estuary, and probably more was carried down southward by the flood tide and deposited, along with material eroded from the Lincolnshire coast, in the Wash, which was gradually silting up. The erosion, in the shape of falling cliffs, was noticed now and taken account of; what did not so readily meet the eye was the gradual deposit beneath the sea, and this accretion of silt would suddenly show itself some time next century when, possibly, 100,000 acres of land in the Wash would suddenly, by comparison, spring into existence and be added almost at once to the acreage of England. Taking one century with another we did not probably gain or lose much of our area. The addition of 100,000 acres in the Wash alone would make up for a good many years of cliff erosion. Having briefly quoted certain conflicting opinions on the moot point of the travel of beach at various depths, the author endeavoured to show that, as Dungeness Point was steadily moving out into 100 ft. of water, there was strong evidence that shingle, of which the point is entirely composed, is capable of motion in water at least 100 ft. in depth. Allusion was then made to the unprecedented encroachment of the sea during the past year at Glenbeigh, on the southern shore of Dingle Bay, co. Kerry, an average of 120 ft. being recorded for a distance of over 2,000 ft. The problem here involved the protection of about 600 acres of land and some house property. The situation was one of exceeding gravity, and it had been decided to put in the groynes invented by Mr. Edward Case, of Dymchurch, because this system of low groyning had been so successful at other places where the natural difficulties were greater. Having alluded to the usually accepted methods of dealing with the question of foreshore protection, Mr. Winn pointed out that these oft-repeated and usually accepted methods had frequently met with but indifferent success, and that until Mr. Case brought out his system no one had ever promulgated a scientific theory as to the curve at which a shore should lie, or devised a simple and inexpensive form of groyne which should cause the sea itself to build up that shore to its required curve surface of repose. Mr. Case was able, by means of tables which he had constructed and the due consideration of certain details, such as range of tide, nature of shore, sections, &c., to build up any shore, save only an actually rock-bound coast, to an angle at which it would lie with the minimum chance of erosion or alteration of form. The paper was illustrated by diagrams showing, by means of sections, the actual gains at Dymchurch, Deal, Southwold, Lowestoft, and Sheringham—which places were selected from a great many where the system had been successfully applied. The author contended that the invention was to be recommended by reason of its theoretical soundness, its practical utility and economy, and by its success.

WESLEYAN CHURCH, GOSPEL OAK.—The memorial stones have just been laid of the New Wesleyan Church, now in course of erection on a site at the corner of Agincourt-road and Lisburne-road, Gospel Oak. The new church, the architect of which is Mr. Beresford Pite, is octagon shaped, and is of red brick with stone dressings. The main frontage will be to Agincourt-road. It will provide seating accommodation for 800 worshippers. In addition to the main building, a church parlour and minister's vestry will be provided.

## METROPOLITAN ASYLUMS BOARD.

THE fortnightly meeting of the Managers of the Metropolitan Asylums District was held on Saturday at the County Hall, Spring-gardens, Sir Edwin H. Galsworthy, the Chairman, presiding.

*The Projected Southern Hospital.*—A letter was read from the Local Government Board suggesting, in view of the probable heavy cost of the Southern Hospital as at present designed, a conference between representatives of the Managers, their architect, and the Board's officers. The letter was referred to the Works Committee, and it was resolved to send on to the Local Government Board the drawings of the foundations of the proposed hospital, prepared by Messrs. Treadwell & Martin, architects, together with the architects' approximate estimate of the cost of the proposed hospital buildings. The hospital is designed for 720 ordinary and eighty infirmary beds, and the approximate estimate amounts to 227,454*l.* The following works will form the subject of a supplementary estimate:—Boiler-house, and destructor and works in connexion therewith, engineering works, heating, hot-water supply, and electric or gas lighting, making up roads and paths, laying out grounds, &c., water supply so far as it relates to the well, water-tower or water-softening apparatus, laundry and kitchen engineering fittings and apparatus.

*A Hackney Improvement.*—A letter from the Vestry of Hackney asking for a contribution towards the 5,000*l.* needed to widen College-lane, Homerton, was referred to the Committee. The widening would facilitate the ambulance service of the Managers.

*The Proposed Theatre at Hampstead.*—It was resolved to protest against the proposed erection of a theatre on a site adjoining the North Western Hospital at Hampstead.

*The Paris Exhibition.*—It was agreed to spend 400*l.* on models of the North-Eastern Hospital and the Brook Hospital for the forthcoming Paris Exhibition.

*New Ophthalmic School.*—The Managers agreed to send on to the Local Government Board for approval the finished plans prepared by Messrs. C. & W. Henman, architects, for the erection of the proposed High Wood School at Brentwood for the accommodation of ophthalmia children. The approximate estimate of the cost of the buildings was reported to be 106,600*l.*

*Hospital Laundries.*—The Works Committee reported that, in the light of recent experience and advice, they had come to the conclusion that the proposed laundry buildings for the North-Eastern Hospital would admit of considerable modification and simplification, which would not only decrease the cost, but also admit of the laundry being more economically administered and more efficiently supervised. Messrs. A. & C. Harston, the architects, had accordingly prepared amended plans of the proposed permanent laundry, the total cost of which they estimated at 13,455*l.*, as against 14,450*l.*, which was the estimated cost of the plans previously approved by the Managers. The Committee also proposed a similar change in the plans of the new Joyse Green Hospital laundry, which were approved nearly two years ago. The specifications for the remaining portions of this hospital being now in the hands of the quantity surveyor, the Committee were anxious that the varied plans for the laundry should be at once approved, so that no further delay should take place in inviting tenders for the erection of the hospital.—The Managers assented to the change at Joyse Green, but postponed the consideration of the new plans for the laundry at the North-Eastern Hospital.

*Appointment of a Surveyor.*—The Works Committee recommended that Mr. Charles Edward Dance should be appointed Surveyor to the Board, at a salary of 500*l.*, with travelling expenses, office accommodation, and all necessary assistance. Mr. Dance has for ten years been building surveyor to the Great Northern Railway Company. Mr. Dance was articled to Mr. Goymour Cuthbert, A.R.I.B.A., and subsequently acted as assistant surveyor of works to Messrs. Peto Bros. Several members raised the question whether an architect instead of a surveyor should not be appointed, but the Chairman pointed out that this question had been settled at a previous meeting, and the appointment was sanctioned.

*St. Anne's Home, Herne Bay.*—It was resolved to erect an isolation block at this institution, but the details of size and construction were left to the Children's Committee for further consideration.

*Homes of "Remand" Children.* — It was agreed to purchase, for the purpose of one of the institutions to be created for children remanded by the magistrates, the three houses in Pentonville-road, with workshops, formerly occupied by Dr. Stainer as a home for deaf and dumb children. It was reported that the whole property is in a very dilapidated condition, and would need extensive repairs.

## LONDON BUILDING ACT, 1894.

### TRIBUNAL OF APPEAL AND THE DIAGONAL LINE.

THE Tribunal of Appeal under the London Building Act, 1894, sat at the Surveyors' Institution, Great George-street, Westminster, on Friday, the 2nd inst., the members present being Messrs. Arthur Cates (Chairman), A. A. Hudson, and J. W. Penfold. The appeal before the Tribunal was that in which Messrs. Hunters & Haynes, on behalf of Mr. Alfred Charles Stock, sought to overrule the decision of the London County Council, which body had declined to sanction the extension above the diagonal line mentioned in Section 41 of a portion of a building — the "Globe" public-house, Marylebone-road—which it is proposed to rebuild. On the further amended plans prepared by Mr. W. A. Scrymgour, an open space was shown at the rear of the building, but the County Council determined not to sanction these "as the Council is not satisfied that there will be provided at the rear of the proposed building such an open cubic space of air as will in case of such extension be required by the last proviso in Section 41 of the Act and it appears, moreover, that the open space proposed to be provided in the rear of such building is not such as to comply with the said Section 41."

Mr. R. D. B. Acland, barrister, appeared for the appellant, and Mr. Seager Berry on behalf of the London County Council.

From the statement of the learned counsel for the appellant it appeared that it was proposed that the public-house in question should be rebuilt on the site of the present building, 47, Marylebone-road, with the addition of 43 and 45, Marylebone-road and 21, York-place. The "Globe," in its new form, would assume the proportions of an hotel, forming the sides of a square block of buildings, facing on one side on York-place and on the other on Marylebone-road. It was proposed that the front should face on York-place. The site in question was at the north-west corner of a block of buildings and the portion of the site which the Council had refused to sanction was on the north side, and would, therefore, not materially affect the access of light or air to the space at the rear of the block. The surrounding buildings consisted of Portman Mansions, which were erected by Mr. W. A. Scrymgour, the architect who had prepared the plans for the rebuilding of the "Globe" Hotel. Portman Mansions were held on a long lease, the term being co-terminous with the lease of the site on which Mr. Stock proposed to rebuild his hotel. There was no probability of any alteration being made to the Portman Mansions. It was proposed that a portion of the new building should extend above the diagonal line referred to in Section 41 of the Act, and by the last proviso of that section the County Council or the Tribunal of Appeal must, under the circumstances, be satisfied "that an open cubic space of air will be provided at the rear of such building, equivalent to the open cubic space which would have been provided at the rear of such building if such diagonal line had been drawn from the ground level in the manner provided in Sub-section 1 (iii.) of this section, and if no part of such building had extended above such diagonal line." According to the proposed plan a greater amount of cubic air space would, urged Mr. Acland, be allowed at the rear of the proposed building than would be provided if no portion of the building were raised beyond the diagonal line, in which case it would not have been necessary to have applied to the County Council at all to obtain their sanction to the plan. This would be realised from these figures. If the building were in an entirely new street, the total cubic space to be provided would be at the outside 103,417, but in view of the fact that by Sub-Section 2, Section 41, it was provided that in the case of a new building erected in an old street the horizontal line from which the diagonal line was drawn should be drawn throughout at a level of 16 ft. above the level of the adjoining pavement, the total amount of cubic space to be provided was 71,492 cubic feet. As a matter of fact, in the plans submitted by the appellant the total cubic space provided was 104,420 cubic feet. Counsel submitted, therefore, that the open cubic space of air would be provided at the rear of the building equivalent to the open cubic space which would have been provided if the diagonal line had been drawn from the ground level in the manner provided by Sub-section 1 (iii.) of Section 41, and if no part of such building had extended above such diagonal line. On these grounds counsel submitted that the appellant was entitled to erect the building as proposed.

Mr. W. H. Scrymgour, architect, gave evidence in support of counsel's statement, and entered into an exhaustive calculation as to how the 104,420 cubic feet of space was arrived at.

Mr. Seager Berry contended that these conclusions were not accurate. The Council refused their sanction because of the unsatisfactory totals arrived at after calculations had been carefully made.

In the result, the Chairman said the Tribunal had decided to allow the appeal. They came to this decision entirely on the merits of the case, and did not intend it to be regarded in any way as fixing a principle. Quite conceivably there might be cases in which it would be desirable to take into account the space below the diagonal line. No order was made as to costs.

# Correspondence.

*To the Editor of* **THE BUILDER.**

## REMAINS OF CONVENTUAL BUILDINGS, BRISTOL.

SIR,—Having been born under the shadow of Bristol Cathedral, some memoranda of my recollections may be of interest to your readers as illustrating Mr. Paul's sketches. You are, perhaps, aware that what is now called the Lower Green was evidently formerly the Abbey farmyard; and the Norman doorway, so well drawn by Mr. Paul, led from the farmyard direct to the Abbot's house, burnt at the riots, and now called the Bishop's Palace. This passage crossed the small cloister of which there are no remains; but the site is well marked, and above it I found, in a room over the cloister, clear marks of the divisions of the cubicles, which proved it to have been the infirmary, having access, most probably, to the small cloister by a staircase, and placed upon one pair so as to avoid the damp and fogs of the marsh. I also discovered, in rebuilding Canon Norris's house, what was then supposed to be a subterranean passage, but was evidently the main sewer of the Abbey, running to the river from the kitchens and other monastic buildings. But by far the most interesting remains were in what we used to call Canon Bank's house, situated to the south-west corner of the Abbey area and pulled down by Dean Elliot, who was a very clever, practical man, as he remarked it would then tell no tales. In this house, I have always heard, were remains of the piers at the west end of the nave and other interesting work. The house stood upon the site of the Prior's lodgings and the "Sala Regia" where distinguished visitors were lodged, and contained, I am informed, many interesting remains of the monastery—among others, the western piers of the nave.

Mr. E. Godwin made some drawings of it, but where they now are I cannot say. Nearly everything has now been removed to make a new road to the Docks, which has certainly the merit of throwing open the view of the south side of the Cathedral. A room with a fine early chimney-piece occupies the space over the Newton Chapel, and is called the Pigeon-house.

T. S. POPE.

## WANDSWORTH OFFICES COMPETITION.

SIR,—After certain correspondence with the Clerk to the Guardians, with reference to an advertisement in your journal, we were eventually informed that a professional assessor would be appointed to adjudicate upon the designs submitted by competing architects, and in consequence of this we delivered a design on the date specified.

We have now had our entrance-fee of two guineas returned to us with an intimation that our drawings will be returned to us on application, but without any mention whatever being made of the assessors' name nor of those to whom premiums have been awarded, and no public exhibition of the designs appears to have been held in order to afford an opportunity to the competing architects and those interested of inspecting the designs submitted.

Under these circumstances it would almost appear doubtful whether an assessor has had the control of the competition, as surely he would have considered it his duty to have so advised the Board that his professional brethren would have been treated with more consideration.

CLARK & HUTCHINSON.

## BOOKS RECEIVED.

THE LIFE OF WILLIAM MORRIS. By J. W. Mackail. (Longmans, Green, & Co.)

RIPON CATHEDRAL. By the Ven. W. Danks, M.A. (Isbister & Co.)

LICHFIELD CATHEDRAL. By the Rev. Canon Bodington. (Isbister & Co.)

THE BUILDER'S "WHERE IS IT": a comprehensive Index of Specialities in the Building Trade. (Geo. M. Callender & Co.)

# The Student's Column.

## ARCHITECTURAL HYGIENE.

### XXI.—LIGHTING.

THE beneficial effect of sunlight upon the health of the human being is a matter of general knowledge, and it is recorded that the Romans of old used to indulge in *Solaria*, or baths of sunlight.

Modern medical authorities insist so strongly upon this necessity of sufficient light for the healthy condition of the human body that it behoves us to bestow more care upon this important subject than is usually given to it. Lighting may be conveniently considered under the following heads:—

1. *Solar light.*
2. *Assisted natural lighting.*
3. *Artificial lighting.*

### I. SOLAR LIGHT.

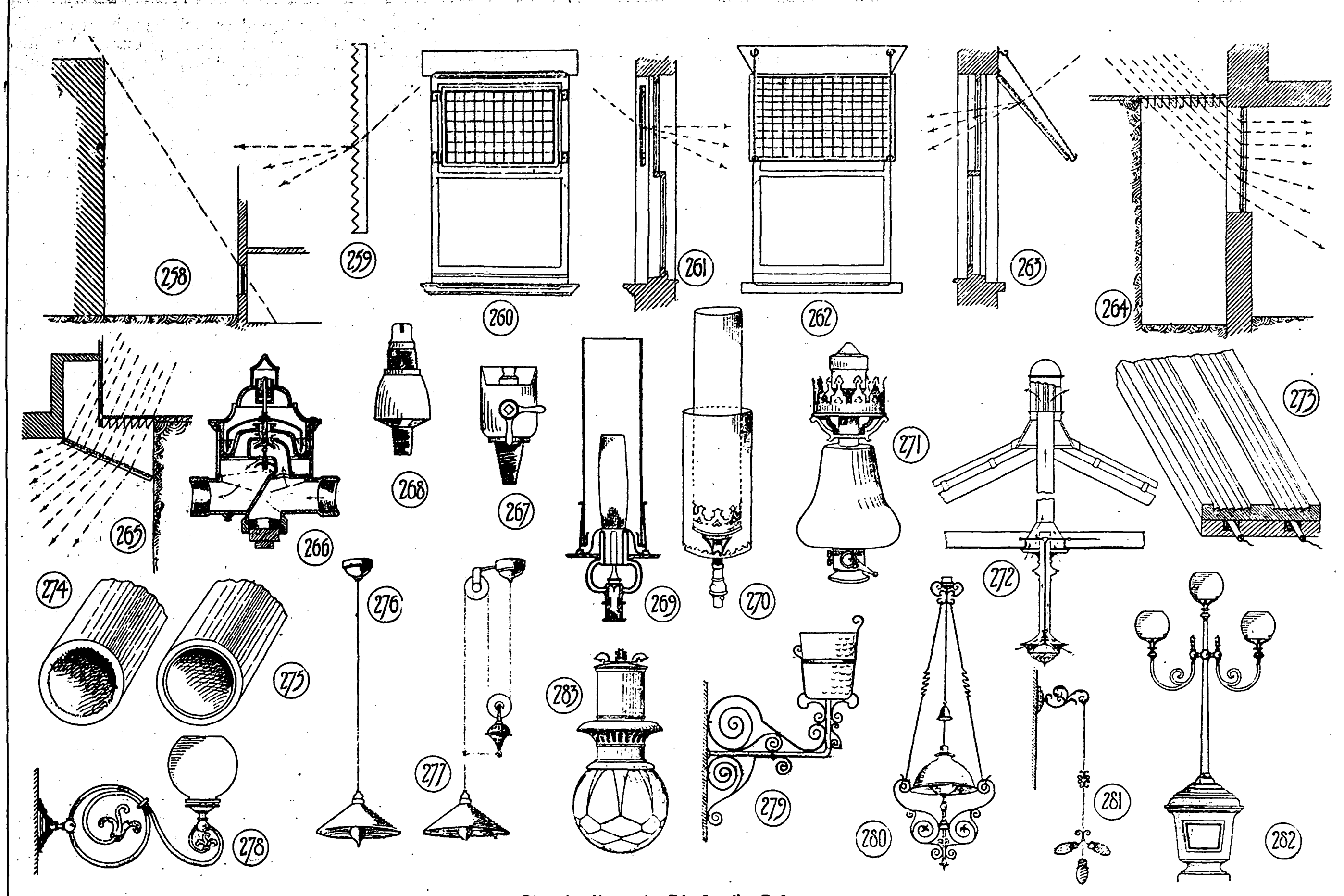
This was discovered by Newton to be a mixture, the whiteness of which is due to the proportions of its ingredients. By means of a prism of glass he threw a luminous band of light upon a screen, and this band was found to contain the following colours:—Red, green, violet, orange, yellow, blue, and indigo. The first three are the *primary* colours, and the others are an admixture caused by the overlapping of the adjacent bands in the prismatic spectrum. When an object is called a particular colour we mean that it gives free passage or reflection (as the case may be) to that particular colour or mixture of colours, and that it arrests or absorbs the remaining colours. Certain combinations and contrasts of colours are pleasing to the eye, and, according to Professor Barff, these are only existent when their combination, taken collectively, make up white light. When two or more colours of the spectrum by being blended together produce white light, such colours are said to be *complementary* of each other.[1]

Under this heading of solar light we will now consider:—

(*a*) *The question of the admission of solar light to buildings.*
(*b*) *Relative proportions of windows.*
(*c*) *Positions of windows.*
(*d*) *Glazing.*

(*a*) *The Question of the Admission of Solat Light to Buildings.*—We learn from the ancients that light has a greater illuminating value when admitted through a horizontal aperture in the ceiling, and no greater proof of this can be found than in the Pantheon at Rome. The diameter of the eye of this dome is only 27 ft., and yet one must admit that this building is comfortably and sufficiently lighted, though each superficial foot of lighting area has to suffice for nearly 3,400 cubic feet of the contents of this structure. However, it is not often given to the architect to top light many of his buildings, and we will not pursue this subject further. With regard to vertical apertures in walls, it is found that an odd number of windows in an apartment is advantageous, as it obviates a central pier, which latter is apt to give a gloomy effect. In a long and narrow room more effect is obtained by lighting from the ends than from the sides; as if lighted by windows in the longer walls so very many more shadows would be cast. This is well exemplified in the ball-room at Windsor Castle, which is 90 ft. by 34 ft., and is 33 ft. high. It is illuminated by a northern window at one of the narrower sides, occupying nearly the whole width of the wall.

(*b*) *Relative Proportions of Windows.*—The question of climate must necessarily affect our calculations, and the laws laid down by Vitruvius, Palladio, and Scamozzi can scarcely be applicable to climates more distant from the equator, and influenced by local considerations. It being an axiom that smaller and fewer windows are required in a warmer climate. Sir William Chambers recommended adding the depth and height of the rooms on the principal floors together, and taking one-eighth part thereof for the width of the window. Robert Morris recommended that the superficial area of the lighting surface should equal the square root of the cubical contents of the room in feet. Gwilt was of opinion that 1 ft. superficial of light in a vertical wall will in a square room be sufficient for 100 cube feet if placed centrally in such room. This is based on the supposition that the building is free from obstruction by high objects in the neighbourhood. The



*Illustrations to Student's Column.*

model by-laws of the Local Government Board state that the area of the windows in a room should be at least equal to one-tenth of the floor area of such room; and this provision is also incorporated in the London Buildings Act of 1894.

(*c*) *Positions of Windows.*—One of the regulations of the Educational Department is to the effect that school-desks should be lighted from the left-hand side. This is undoubtedly a wise precaution, for if the light be behind the student, the body will cast its shadow upon the work being done. If the light be on the right hand, the work will be in the shadow of that hand. And if the light be directly in front, the reflected light from the surface of the table is directed into the eyes of the worker, and consequently puts an increased strain upon them. Moreover, on raising the eyes, they are subjected to a greater illumination, which stimulates the effort of vision instead of resting the eyes when not at work, as is recommended by oculists.

It is obvious that no fixed rules can be laid down as to the positions of various rooms in relation to the points of the compass, as so much depends upon the various characteristics of the site and local considerations. However, it is well to remember that rooms which are constantly inhabited in the daytime should, wherever possible, have as much actual sunlight as can be obtained through skilful planning.

(*d*) *Glazing.*—Plate glass, though disagreeable in effect, has the practical advantage that it affords less resistance to the admission of light, and being of greater thickness it does not dissipate the heat of the room so quickly as sheet glass. Moreover, it is not so easily penetrated by sounds. Cathedral tinted glass may be used in some situations, and it is claimed that it increases illumination owing to its texture. According to Sir David Brewster, all glass with a roughened or fluted surface increases the amount of light that penetrates any window, but it should always be remembered that such surfaces are prone to harbour dust and dirt.

The following table shows the result of some recent experiments :—

| Nature of Glass. | Percentage of Light Intercepted. |
|---|---|
| Polished British plate ¼-in. thick ...... | 13 |
| 36 oz. sheet glass ...................... | 22 |
| Cast plate ¼-in. thick ................. | 30 |
| Rolled plate, four corrugations to 1 in.. | 53 |

2. ASSISTED NATURAL LIGHTING.

This is found necessary in rooms facing narrow thoroughfares and areas facing adjacent high buildings, and in basements and other places where the solar rays have but limited access. The covering of the obstructive walls with white glazed tiles or facing the same with white glazed bricks, does something to assist the reflection of light into such rooms. And the painting of the walls of the rooms in light colours, or even lining them with white tiles is found to be beneficial. It is also found that by keeping the window frame flush with the external face of the wall, more light is admitted into the room.

*External Reflectors* are sometimes placed outside windows for the purpose of reflecting light into the building. In America and Canada within the last few years the high buildings which have been erected have necessitated the adoption of some means of refracting the light to the lower windows, so as to carry the illumination to the back of the rooms. This has been effected to a larger extent by *Luxfer prisms* which have now been introduced to this country. They are designed upon the following principles :—

The direct natural light to an apartment coming from the sky is, to a large extent, absorbed by the floor, as shown in fig. 258 although even ordinary glass has some refractive influence upon light and thus bends some light into the room. This law of refraction has been utilised in the *Luxfer prisms*, and the latter are so constructed and arranged to suit the varied cases that may arise. Fig. 259 illustrates this principle. In upper floors these prisms are usually fixed in the upper half of the windows and nearly flush with the outer surface of the wall as shown in figs. 260 and 261. In the cases of very lofty buildings the lower windows have canopies as shown in figs. 262 and 263, so as to receive more light from the sky. Basements are lighted by pavement lenses which throw the light down on to a canopy fixed vertically which, in its turns, refracts the light in a horizontal direction to the rear of the apartment as shown in fig. 264. Where the pavement light is narrow and a high stall board is permissible, a sub-canopy may be used as shown in fig. 265.

3. ARTIFICIAL LIGHTING.

This is caused by the heating of some substance till it becomes incandescent. Until electricity had been used in recent years for lighting this condition was solely obtained by using the heat developed during chemical change, but since the impeding of the conduction of an electric current was found to produce incandescence, this method of illumination has steadily increased. Owing, however, to the great gas monopolies and the conservative tendencies of the inhabitants of Great Britain, the progress has been much slower than in other countries. On the American continent electricity plays a far more important part in public and private enterprise.

We may consider this subject of artificial lighting under the following headings :—

(*a*) *Candles and Lamps.*
(*b*) *Gas.*
(*c*) *The Electric Light.*

(*a*) *Candles and Lamps.*—For private dwellings there can be no question that illumination from candles and lamps is popular with certain people. Light for light, however, they are less healthy than gas; there is also more danger of a conflagration ensuing through their use unless great care is exercised. The low-flash oils, which are permitted to be sold to the poorer classes, so often occasion fires and loss of life, that some measures must surely soon be taken to modify this evil. The cheaper forms of lamps also are so dangerous that the wonder is that more accidents do not occur. It is estimated that two sperm candles or one good lamp render the air about as impure as one individual.

(*b*) *Gas*, as distilled from coal, was used by Mr. Murdoch, of Redruth, to light his own house at the end of the eighteenth century; but it was so impure as to render flues necessary to carry away the noxious odours. The lime process of purification, however, alleviated this nuisance, and allowed the use of naked flames. One gas burner will consume as much oxygen and give out as much carbonic acid as six men.

*Illumination.*—The standard method of measuring the power of illumination by gas is a spermaceti candle, burning 120 grains per hour; the consumption of the gas being reduced to 5 cubic feet per hour. The gas in the metropolis should, by statute, be of the illuminating power of sixteen candles. The specific gravity of gas (assuming air as the unit) is, for ordinary calculations, assumed as 45.

The following table is published by Messrs. Stott as their idea of the light required for various purposes.

| | Candle-power per 1,000 sq. ft. of area. |
|---|---|
| Country roads.................. | ½ |
| Small towns .................. | 4 |
| Large towns .................. | 10 |
| Hospital wards .............. | 50 to 100 |
| Barracks and drill-sheds ... | |
| Cottage parlours ............ | 150 |
| Villa dining-rooms ......... | 250 |
| Board schools.................. | 300 |
| Churches and chapels ...... | 300 |
| Banqueting halls, &c. ...... | 450 |

The above approximate calculations must, of course, be subject to the reflecting powers of the decorations and colours used in the various apartments.

*Impurities* in gas are limited more or less by the Act of 1868; the following are the usual tests. For ammonia redden yellow litmus paper with dilute acid and place it in a gas-jet; the presence of ammonia will turn it brown or restore more or less completely the original blue. Under the above Act not more than 2½ grains of ammonia are allowed to 100 cubic feet. For carbonic acid pass a jet of gas through a solution of lime and water which has been allowed to settle; the acid will cause a white discolouration. No sulphuretted hydrogen is allowed under the Act. The test is to prepare a piece of paper with acetate of lead and to put it into a jet; sulphuretted hydrogen will turn it brown.

*Pipes* of wrought iron, with screwed joints should be used. Lead and composite pipes, are to be avoided, owing to their liability to injury, and to the fact that nails are often found to have pierced them during the finishing of a building.

Messrs. Stott publish the following formula to ascertain the sizes of pipes required, the specific gravity of London gas being assumed to be constant, and the pressure being taken at $1\frac{7}{10}$ in.:—

$$N = \frac{200\,D^2 \times \sqrt[4]{D}}{\sqrt{2 \times L}}$$

Where N = the number of lights, each consuming 6 cubic feet per hour.

D = the internal diameter of the pipe in inches.

L = the length of pipe in yards.

Molesworth gives the following table of the inside diameter in inches of service pipes:—

| No. of lights burning 5 c. ft. per hour. | Distance from main in feet. | | | | | | |
|---|---|---|---|---|---|---|---|
| | 25 | 50 | 75 | 100 | 150 | 200 | 300 |
| 5 | ⅜ | ⅜ | ⅜ | ⅜ | ½ | ½ | ½ |
| 10 | ⅜ | ½ | ½ | ½ | ⅝ | ⅝ | ⅝ |
| 25 | — | ⅝ | ¾ | ¾ | ¾ | ⅞ | ⅞ |
| 50 | — | — | ⅞ | 1 | 1 | 1⅛ | 1¼ |
| 100 | — | — | 1⅛ | 1¼ | 1⅜ | 1⅜ | 1½ |

It is convenient to have a small draw off pipe at the lowest point of the service, so that the water absorbed by the gas in the reservoir (where it is stored over water) and deposited in the pipes may be drawn off. Gas readily absorbs water and deposits the same when at a lower temperature, and where water meters are used the deposit of this water in the pipes is a great nuisance, as it produces a flicker in the lighted gas which renders it impossible for convenient use.

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## OBITUARY.

Mr. W. L. Henderson.—The death has occurred at Bridge of Allan of Mr. William Low Henderson, head of the firm of Messrs. W. Henderson & Son, architects and valuators, Aberdeen. Mr. Henderson, who was seventy years of age, was a graduate of Marischal College, and had been in business for many years.

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Church, Yarmouth.—On the 31st ult. the opening and dedicatory services took place in respect to St. Luke's Church, Cobholm, erected on a plot of ground adjoining the Church Mission Room. St. Luke's Church stands on a corner site in the principal thoroughfare at Cobholm, and has been built from plans prepared by Mr. Sidney Rivett, architect, South Quay. The following were the various contractors, viz.:—Mr. A. E. Bond, brickwork and masonry; Mr. A. J. Willimont, carpentry, &c.; Mr. W. T. Spencer, plumbing and painting; coloured glazing, Mr. W. R. Weyer, of Norwich.

## GENERAL BUILDING NEWS.

The Restoration of Malmesbury Abbey.—At a meeting of the Malmesbury Abbey Restoration Committee, held in the Town Hall, Chippenham, on the 24th ult., Mr. Harold Brakspear, the architect, produced and explained the plans of the work to put the parish church in a state of repair, the cost of which, at a previous meeting, was estimated at about 10,000*l*. On the motion of the Rev. G. Windsor Tucker, seconded by Sir R. H. Pollen, the plans and specifications were unanimously adopted. Lord E. Fitzmaurice proposed that a limited number of builders be invited to compete. This was seconded by the Archdeacon of Bristol, and carried. Certain names were suggested, and it was generally agreed that the chairman should take advice as to one or two further names, and that invitations should be sent out accordingly.

Llangathen Church, Carmarthenshire.—It has been resolved to carry out certain works of restoration to this church, which dates from the fifteenth century. The present chancel arch, chancel roof, east window, and the arcade between the chancel and the Aberglasney Chapel, which evidently suffered in Puritan times (both Cromwellian and Victorian), and which have now lost all Gothic semblance, will be replaced with something more appropriate. The Cadvan Chapel, on the north side of the nave, will also be dealt with. At present the internal walls of the church are plastered (probably "Puritan"), and it will be interesting to know what work the plaster may conceal, as a small piscina, with a four-centred head, a Gothic recessed tomb (apparently) both at the east end of the south aisle, and an imposing Renaissance tomb to a Bishop in the Aberglasney Chapel, seem to show that the church was one of considerable importance. The architect—Mr. R. Wellings Thomas, of Llandrindod Wells—has decided to use the same quarry stone in the new work as the ancient dressings are executed in, viz., a red coarse sandstone from Llandebie. Stained glass has already been promised for the new east window.

Hexham Abbey Restoration.—We understand that the joint report of Mr. C. C. Hodges, as architect, and Mr. Temple Moore, as consulting architect, on the above has been adopted by the committee, and the work is to go on. The scheme is a large and important one, and comprises the building of the nave and putting back in their old places, as far as possible, all the old furniture of the choir and the detached chantries, and, to a large extent, undoing the mischief that was perpetrated in 1858-60.

Seamen's Church and Institute, Yarmouth.—The foundation stone was laid recently on the South Quay of the new church and institute to be there erected for the use of seamen and fishermen. The present buildings will be completely cleared away, and the site will be about 90 ft. by 28 ft. On the ground floor there will be a Seamen's Institute 68 ft. by 28 ft. and 12 ft. 6 in. high, with a store-room 16 ft. by 13 ft. On the first floor will be a mission church 68 ft. by 28 ft., and 22 ft. to the apex of the roof, the vestry being 16 ft. by 13 ft. The main entrance to the Institute will be from the Quay, with outer and inner swing doors. The floor will be of pitch-pine wood blocks laid on concrete, the walls having a wood dado. The church will have a broad staircase of pitch-pine leading from an entrance lobby in Row 143. There will also be an iron staircase from the vestry leading down into the open space left to the east. The ground floor walling will be of red brick, and the upper floor will be of half timber filled in with brick nogging. The architects are Messrs. Bottle & Olley. The builder whose tender has been accepted is Mr. W. Cork, and the plumber is Mr. R. A. Eastoe.

Chancel, Parish Church, Aghalee, Belfast.—On the 27th ult. the new chancel of this church was consecrated. The architect was Mr. J. H. Fullerton, of Belfast, and the contractor was Mr. Forsythe.

U. P. Church, Gardentown, Aberdeen.—A new church for the Gardentown U. P. congregation has just been opened. Mr. R. G. Wilson, Aberdeen, was the architect.

New Mission Halls, Westbourne Free Church, Glasgow.—The memorial-stone of the mission-halls in Ruchill-street, Maryhill, was laid recently. It is intended that comparatively soon a church to accommodate about 800 persons shall be erected on the same site, and that the mission premises shall be handed over to the new church. The halls will occupy a frontage to Ruchill-street of 42 ft., and provide on the ground floor a hall measuring 47 ft. by 40 ft., with a lesser hall 16 ft. 6 in. by 22 ft., and a small room 8 ft. by 13 ft. 6 in. On the upper floor there will be a hall 16 ft. 6 in. by 45 ft., divided with a folding partition, a library, and a sewing-room. At the back of the premises a house of three rooms and kitchen will be provided for the beadle. The architects are Messrs. John Honeyman & Keppie.

Church and Schools, Northampton.—On the 1st inst. was dedicated the temporary iron building which has been erected in Edinburgh-road, Queen's Park, and which is eventually to be replaced by Holy Trinity Church. The church comprises a nave and chancel. The elementary school provides, in the mixed school, for 120 places and in the infants' room eighty places. There are also boys' cloak-rooms, girls and infants' cloak-rooms, and outdoor offices. The church and schools have been erected by Mr. H. Green, from plans prepared by Mr. M. H. Holding. The plumbing, glazing, gas fitting, &c., was done by Mr. H. M. Goy, of Northampton.

Wesleyan Church, West Stanley, Durham.—The new Wesleyan Church and Sunday Schools at West Stanley, which have been erected at a cost of over 4,800*l*., were opened on the 31st. ult. The church has been designed by Messrs. Green & Brockbank, architects, Liverpool, the building contractor being Mr. Alfred Routledge, West Stanley, while Mr. Thomas Mordue, Dipton, executed the joinery work. The church seats 1,000 persons, and schoolrooms, vestries, &c., are arranged underneath.

Church of St. Simon, Paddington.—On the 30th ult. the Bishop of London consecrated the new church of St. Simon, Saltram-crescent, Paddington, a district formed out of the parishes of St. Jude's, Kensal Green, and St. John's, Kilburn. The new church, of which the chancel yet remains to be erected, is a building of red brick with Bath stone dressings, and has been constructed by Messrs. Bentley & Sons, from the plans of Mr. J. S. Alder. The cost so far incurred has been 4,500*l*.

Church Renovation, Kingston-on-Thames.—The Eden-street Congregational church was re-opened on the 28th ult., after renovation. The ceiling and walls have been decorated, the whole of the woodwork has been stained and varnished, and choir stalls, with fifty seats, have been provided on the right hand side of the pulpit. The church is now lighted throughout by electricity. The work has been carried out by Mr. Whitmarsh (G. F. Havell, Eden-street), under the superintendence of Messrs. Carter & Ashworth, architects. Messrs. Prestwich & Burt carried out the electric lighting installation. The cost has been about 700*l*.

Church Restoration, East Stockwith, Lincolnshire.—The church of St. Peter's, East Stockwith, has just been reopened after renovation. With a view to celebrating the jubilee of the church in 1896 the churchwardens instructed Mr. H. G. Gamble, architect, of Lincoln, to prepare plans for the erection of two new vestries, and for the general renovation of the interior of the building. The work has been executed by Mr. Moody, of West Stockwith, and Mr. C. Slingsby, of East Stockwith.

Catholic Schools, Stockton.—Plans have been prepared by Mr. Arthur Harrison, architect, Stockton, and approved of by the Education Department for new Catholic infants' school. The school will provide seating accommodation for 320 scholars. The contract has been let to Messrs. Johnson & Hanby, contractors, Stockton, the total cost of the schools being estimated at 3,000*l*.

Additions to King Edward's Grammar School, Stourbridge.—Additions to this school have just been carried out by Mr. W. North from plans prepared by Mr. T. Grazebrook. The new buildings include a porch and corridor, a physical laboratory, a lecture room, a chemical laboratory, and an additional class-room; and the total outlay amounts to some 2,000*l*.

Police-court, Pocklington.—A new police-court, in George-street, was opened on the 3rd inst. The building contains court-room, witnesses' retiring-room, retiring-room for the magistrates, charge-room, &c. Three cells are on the south side of the court. The principal elevation is executed with moulded red bricks and Howley Park stone. The building was designed by Mr. Alfred Beaumont, and the builder was Mr. T. S. Ullathorne, of Selby.

Masonic Hall for Lurgan, near Belfast.—At a meeting of the members of the three Lurgan Masonic lodges recently, it was agreed that the recommendation of the Building Committee to appoint Mr. Thomas M'Millen, Belfast, contractor for the erection of the new Masonic Hall on the site recently secured from the Lurgan Real Property Company in Windsor-avenue be adopted. The contract price is 1,286*l*. odd. The edifice has been designed by Mr. Godfrey W. Ferguson, Belfast.

Hotel, Nottingham.—A new hotel, "The Portland," has just been erected on Carrington-street Bridge. It contains sixty bedrooms, coffee, commercial, and private sitting rooms. The architects were Messrs. Evans & Son.

Cricket Pavilion, Reading.—Prince Christian recently unveiled the Murdoch Cricket memorial tablet, erected in the new cricket pavilion in the County Ground. The Berks County C.C. pavilion has been erected from the designs of Mr. G. W. Webb, architect, of Reading. It is in the old English, half-timbered style, and the building is surmounted by a bell-turret, while in the central gable is a large clock. The principal apartment of the building is the central luncheon room, which measures 40 ft. by 20 ft., and has a refreshment bar, cellar, and all other necessary accommodation. On the left of the main entrance is the members' dressing-room, measuring 25 ft. by 15 ft., with adjoining separate bath-room, lavatory, and other offices; while on the right of the luncheon room a committee room, about 15 ft. square; a visitors' room, about 18 ft. by 15 ft., also with separate bath-room, lavatory, and offices, and also a room and offices for the professionals have been constructed. Attached to the building on this side is a covered stand with terrace, which is reserved for the use of the professionals The floor of the pavilion is throughout raised some 5 ft. from the level of the ground, and the terrace enclosure extends about 20 ft. in front of the building. On the first floor the principal feature is the balcony running along the front and measuring 45 ft. by 7 ft., which is reserved for the use of members and their friends; this is approached by outside staircases. There is also a scorers' room, with a balcony, and a workshop and store-room, 30 ft. by 14 ft., for the use of the ground men, each approached by a separate outside staircase. Messrs. Lewis Bros. were the contractors for the building of the pavilion.

Newcastle Natural History Museum.—The Hancock Museum, Barras Bridge, has just undergone renovation. The work consisted of repairing the stonework, renewing the glass roof, improving the drainage, and several smaller items. Mr. F. W. Rich was the architect.

Proposed New Theatre, Llandudno.—The Llandudno Grand Theatre has been designed by Mr. G. A. Humphreys, in consultation with Mr. E. O. Sachs. It is to front the proposed extension of Mostyn-street. The total cost of the building, including furnishing, fittings, and decoration, is estimated at 14,000*l.*, and the site is to cost 3,000*l.*

New Infirmary at Ecclesall Workhouse, Yorkshire.—The foundation-stone has just been laid of a male infirmary which is to be erected in connexion with the Ecclesall Workhouse, at a cost of 25,000*l.* The new infirmary will consist of two blocks, both for males, and an administrative section. Mr. J. D. Webster, of Sheffield, is the architect.

Bank Premises, Glasgow.—The new buildings for the National Bank are to be erected at the south-western corner of Buchanan-street and St. Vincent-street, Glasgow. In each street the length of frontage is practically the same—about 100 ft. The architect is Mr. J. M. Dick Peddie, Edinburgh.

Moyses' Hall Museum, Bury St. Edmunds.—On the 31st ult., Moyses' Hall, formerly used as a police-station, was opened as a museum of antiquities and curiosities. Recently, under the supervision of Mr. J. Campbell Smith, the Borough Surveyor, the building has been restored for its present purpose, care having been exercised that none of its ancient historic features should be destroyed. During the progress of the restoration work an archway was discovered, connecting the outer with the inner room. The archway, erected with fragments of Norman material, apparently taken from the outer wall at the period when it was rebuilt, seems to belong to a later period than the structure itself.

Railway Station, Droitwich.—The Great Western Railway Company has just opened a new railway station at Droitwich. The station was designed by the company's engineers, Mr. W. D. Robotham & Mr. W. K. Woodward. The contractor was Mr. A. Bloxham, of Banbury.

Batley Town Hall.—Plans for the proposed new town hall, Batley, have been prepared by Messrs. W. Hanstock & Son, architects, of Leeds and Batley. The intended position of the new building is on the Market Hall estate, and the present Market Hall will be removed to permit the erection of the new structure. The estimated cost is 30,000*l.* exclusive of the site, which is the property of the Corporation.

Manor Asylum, Horton, Epsom.—This building has just been opened by Mr. N. N. Hubbard, Chairman of the Asylums Committee of the London County Council. Originally the scheme provided for the accommodation of 700 female patients. There were to be four blocks for chronic cases, with 440 beds; three for the infirm, with 176 beds; and two for convalescents, with eighty-four beds. The Council, however, subsequently sanctioned the conversion of one of the blocks for the reception of 110 male patients. Sixty beds are in single rooms. Each block is complete in itself, and has besides the necessary sanitary provision and bath, a ward scullery, clothes, boot, and food stores, and three nurses' rooms. There are two general bath-rooms and a needle-room built off the main corridors, in addition to the accommodation provided in the wards for the purpose. The recreation hall, with stage, is designed to seat 400 people. The visiting-room is arranged in a central position, and a special set of rooms have been provided in connexion with the block nearest the entrance for the reception, bathing, and examination of new cases. A mess-room is provided for the non-resident officers in a position adjacent to their offices. The resident staff, other than those provided for in the wards, will be housed in the mansion-house and its out-buildings. A lodge has been designed for each entrance to the estate. Offices for the chaplain, clerk, steward, and dispenser, and a laboratory and mortuary are provided. The buildings were designed and their erection supervised by the Asylums Committee's Engineer, Mr. W. C. Clifford Smith. The principal contractors were Messrs. Leslie & Co. (temporary buildings), Messrs. Kirk & Randall (alterations to Manor House, &c.), Messrs. Isler & Co. (bore-hole for water and pumping plant), and Messrs. W. Summerscales & Son (laundry machinery). Messrs. J. & F. May supplied the kitchen and scullery plant.

Factory Premises, Nottingham.—A block of buildings has just been erected on a site on the Colwick-road, Nottingham. The buildings, in which will be carried on the trade of furniture-making, comprise a saw-mill, the main block of workshops, boiler-house, engine-house, a generating station, which supplies the electricity for lighting the buildings and running the whole of the machinery, and the repairing-shop. The architect was Mr. W. B. Starr, of Nottingham.

Bank Premises, Dublin.—The business of the present branch of the Hibernian Bank in Dorset-street will shortly be transferred to the new building erected for them at the junction of Dorset-street and St. Joseph's-avenue, formerly known as White's-lane. The architect was Mr. W. H. Byrne, and the builder Mr. Kevin Toole.

Public Baths and Working-class Dwellings, Stratford.—At the Stratford Town Hall recently, Mr. H. H. Law, M.Inst.C.E., held an inquiry on behalf of the Local Government Board into the application of the West Ham Council, for sanction to borrow certain moneys for the erection of public baths at Stratford, and 5,950*l.* for the purchase of land as a site for dwellings for persons of the working class. Mr. Hilleary, Deputy Town Clerk, said the houses which the Council intended to erect would be double tenements, and would be let at 6s. 6d. per week for the half house. The land was situate at Plaistow, within a short distance of a block of 150 houses. Mr. Maurice Russell said the site comprised 16,400 superficial yards, exclusive of roads, with 1,904 ft. frontage, and a depth of nearly 80 ft. The question of the baths, lock-up, and shops was then considered, it being pointed out that sanction was asked to borrow 39,135*l.* Mr. A. Saxon Snell submitted the plans, and explained the arrangement of the building. The building would be erected of red bricks with facings of Portland stone. The bath floors would be of concrete, and the building fireproof throughout.

Cottage Hospital, Blairgowrie, Perthshire.—It is proposed to erect a cottage hospital at Blairgowrie. The building will be of Blairgowrie Quarry material, with Bannockburn stone facings. The accommodation will consist of two wards of three beds each. A special ward will also be provided for cases that may require to be isolated. The building will also include an operating-room, bath-room, &c. Mr. Lake Falconer, of Blairgowrie, is the honorary architect.

Infectious Diseases Hospital, Burnley.—A Local Government Board inquiry was held at Burnley recently by Mr. W. W. E. Fletcher into an application by the Burnley Joint Hospital Board for sanction to borrow 6,000*l.* for the erection of an infectious diseases hospital. Mr. F. S. Button is the architect.

Reformatory, Loanhead, Edinburgh.—A new reformatory was opened at Loanhead on the 3rd inst. The architect was Mr. T. T. Paterson, of Edinburgh.

New Grammar School for Dudley.—The newly-erected grammar school in St. James's-road, Dudley, was opened on the 7th inst. The school is situated in St. James's-road, near the church of that name. The front elevation consists of three large gables, flanked at the western end by a smaller gable set back, and at the eastern end by a small battlemented window and a small tower. In the centre of the roof is a bell-tower. The school and house have been erected from the plans, selected in a competition, of Messrs. Woodhouse & Willoughby, of Manchester, and the building contract has been carried out by Messrs. Webb & Round, of Dudley; the clerk of the works being Mr. George Hancox, of Pensnett. The rear of the building is lower than the front, and there are entrance porches at the eastern and western ends. The basement contains heating chamber, kitchen, and mess-room on the same level as the playground, which is partly covered and will be paved with Davies's patent limestone asphalte. On the ground floor are the porches, entrance hall, master's room, central hall, five class-rooms, lavatory, and cloak-room. There is a teachers' room on the second floor. The central hall is 56 ft. by 28 ft. The dimensions of the class-rooms are 18 ft. 9 in. by 20 ft., and this floor is paved in American birch, laid by Mr. Roger Lowe, of Farnworth, Bolton. The wing extending to the rear consists of the chemical laboratory, preparation room, and lecture theatre. The whole of the premises have been built with Edwards' (Ruabon) red brick and terra-cotta, and are roofed with tiles supplied by Mr. G. Hall, Birmingham.

Extension of the British Art Gallery.—The additions that have been made to the British Art Gallery at Millbank are now nearly complete. The new galleries consist of ten rooms, of which two are to be devoted to sculpture. The additional space provided will necessitate a rearrangement of the pictures. The architect for the gallery was Mr. Sidney Smith.

Drill Hall, Landport, Portsmouth.—The new drill hall for the 3rd (Duke of Connaught's Own) V.B. Hampshire Regiment (rendered necessary by the Admiralty taking over the present building for the Naval Barracks) will have a frontage to Stanhope-road. The material will be dark red brick, with Portland stone dressings. The building will consist of a large drill space, round which are grouped the various offices. The drill hall proper occupies the ground floor, its dimensions being 144 ft. by 120 ft.; there will be two galleries. To the right of the main entrance, and leading from the large hall, will be a smaller hall, to be known as the gymnasium and recruits' hall. The dimensions of the second hall are 60 ft. by 46 ft., and dressing-rooms are attached. Over this portion of the building is the officers' mess-room and ante-room. On the ground-floor to the left of the main entrance there are Commanding Officer's room, orderly-room, armoury, men's recreation-room, junior N.C.O.s' room, band-room, and stores. On the first floor over the band-room is the committee-room; and the sergeants' mess occupies a space of about 60 ft. by 26 ft. over the N.C.O.s' room and part of the men's recreation-room. Adjoining the sergeants' mess is a room which will be set apart for the use of the Hampshire Yeomanry and stores for the quartermaster. The building will be mainly of two stories, a third story and a portion of the block being the caretaker's apartments. The plans for the new building have been prepared by Major A. H Bone.

New Halls for Springburn, Glasgow.—The new halls which the Glasgow Corporation have resolved to erect for the Springburn district will occupy a prominent site at the corner of Millerbank-street and Keppochhill-road. Included in the design are two halls placed together longitudinally, and so arranged that while the entrances, exits, and retiring-rooms for each are quite separate and distinct, they may be let together *en suite* when occasion requires. The main hall measures 77 ft. by 50 ft., exclusive of crush-hall and orchestra, and provides seating accommodation for 1,209 persons. The principal entrances are from Millerbank-street, and these open into a crush-room, from which any part of the hall may be reached. In the dividing wall between the two halls are two sets of double doors, which will be opened when the halls are used *en suite.* The platform entrance is from Keppochhill-road, and communicates by means of a corridor under the platform with the retiring-rooms which overlook the lane. On the ground floor is a committee-room, while immediately above are situated the dressing-rooms for the artistes. There is a cloak-room in connexion with the ladies' and gentlemen's retiring-rooms in the basement. In the basement under the main hall a large store for forms, &c., is provided, together with three committee-rooms, which are placed so that they are lighted and ventilated to an area to Keppochhill-road. It is proposed that these rooms should be divided by movable partitions. The lesser hall measures 32 ft by 27 ft., and provides seating accommodation for 408 persons. The principal entrance is from Millerbank-street, and from the entrance-hall a staircase leads upward to the gallery and downward to basement. There are emergency exits at each side of platform. The kitchen is placed in the basement under the lesser hall, and a lift for the convenience of purveyors is provided from the kitchen corridor to the service lobby at the south side of platform. The materials for the exterior will be red freestone and green Westmoreland slates for roofs. The total cost of the building is estimated at 11,404*l.* Mr. W. B. Whitie is the architect.

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## *SANITARY AND ENGINEERING NEWS.*

Bridge over the Spey at Boat of Garten, Inverness-shire.—A bridge is being erected over the Spey at Boat of Garten, and on the 27th ult. the foundation stone was laid. The bridge, which is of some 350 ft. span, is of timber with stone piers and abutments, and was designed by Mr. A. Mackenzie. The contractor is Mr. Charles Mackay, Inverness, the sub-contractor for the mason work being Mr. A. Macpherson, of Newtonmore.

Sewerage Works, &c., Manchester. — On the 2nd inst. Mr. E. A. Sandford Fawcett held a Local Government Board inquiry, at the Manchester Town Hall, into the application of the Corporation for leave to borrow 30,000*l.* for works of sewerage in connexion with the Moston Brook culvert, and 3,000*l.* for the equipment of the Harrison-street lodging-house. Mr. Hudson, Deputy Town Clerk, said it was intended to spend the 30,000*l.* on the repair of the Moston Brook culvert, which carried the Moston Brook from Green Mount to the River Irk. In August, 1898, the culvert collapsed at Hall's-crescent, Collyhurst, causing serious damage. An inspection of the sewer had been made, and Mr. Wilkinson, C.E., had presented a report to the Corporation in which he recommended the execution of strengthening works in the existing culvert, and the construction of a supplementary culvert at a point near Queen's-road, discharging into the River Irk near Smedley Bridge. The Corporation had adopted this scheme, and the new culvert would be circular, 10 ft. in diameter.—Mr. T. de Courcy Meade, the City Surveyor, gave evidence with reference to the detail working of the scheme. As to the application with regard to the Harrison-street lodging-house, Mr. Hudson said that the construction of a lodging-house had been already sanctioned by the Local Government Board. At a former inquiry estimates were put in for the buildings only, amounting to 21,701*l.*, and no provision was made for the equipment of the house, which was to accommodate 363 men.

The New Beachy Head Lighthouse.—The lighthouse situated at Belletoute, the second cliff westward of Beachy Head—a structure so familiar to visitors to Eastbourne and its vicinity—will soon be a thing of the past. To the existing light, good and serviceable as it has proved in most respects, there has always been one objection. Situated, as it is, at an altitude of 285 ft. above high water, spring tides, it is frequently capped with fog, and at such times it is more or less invisible. It has, therefore, been deemed advisable by the responsible authorities not to place the new lighthouse on the headland at all, but on the foreshore beneath (viz., about one and a quarter mile eastward the old one), where far less fog prevails than higher up, and whence its light will be visible from Dungeness on the eastward around through south to the western limit of the present light. This scheme involves the construction of a massive granite tower, the foundations of which will be laid at a level of 9½ ft. under low water, and temporary dams will have to be formed to admit of the setting of the lowest portions of the work. The tower, which will be rather over 47 ft. in diameter at its base, is to be solid for 47 ft. 6 in. upwards, with the exception of the space required for the storage of water, and its height to the top of the masonry will be 123 ft. 6 in. Above the solid portion will come the rooms, eight in number (the four uppermost ones being 14 ft. in diameter), and finally the lantern, in which will be installed a Dioptric (lenticular) illuminating apparatus of the most modern and approved type, giving two white flashes in quick succession every fifteen seconds. It is expected that the new lighthouse, which is from the designs of Mr. T. Matthews, the engineer-in-chief to the Trinity House, will be completed within three years from this date.—*Daily News.*

Sewage Works, Oswestry.—An inquiry was held on behalf of the Local Government Board by Mr. W. A. Ducat, at Oswestry, on the 2nd inst., into an application by the Town Council for sanction to a loan of 3,500*l.* to meet the cost of proposed new sewage works. In 1896-7 Mr. R. C. Wynne Roberts, the then Borough Surveyor, began a series of experiments as to dealing with the sewage by its purification on bacteriological principles. Mr. G. W. Lacey said the works being constructed consisted of two series of filter beds, nine in each series.

Sewage Disposal, Gildersome, Yorkshire.—At the Urban District Council Offices, Gildersome, on the 1st inst., Colonel J. T. Marsh, R.E., Local Government Board inspector, held an inquiry respecting the application of the Gildersome Urban District Council for permission to borrow 12,500*l.* for purposes of sewerage and sewage disposal. The technical features of the proposed scheme were explained by Mr. John Waugh (engineer) and Mr. G. B. Waugh.

## *STAINED GLASS AND DECORATION.*

Memorial Windows, Consett Parish Church —Two stained-glass windows have been placed in the chancel of this church, in memory of the late vicar. The windows were designed and executed by Mr. A. O. Hemming, of London.

Memorial Window, Ledbury Church, Herefordshire.—A stained glass window, the work of Mr. C. E. Kempe, has just been erected in Ledbury Church in memory of the late Mr. C. E. Maddison.

St. Andrew's Church, Eccles, Manchester. —An oak reredos, consisting of shafts, pinnacles and arcading, has just been dedicated in this church. The whole forms a frame to a sculptured panel in high relief, designed and modelled by Mr. Percy Bacon, subject "The Lord's Supper." The reredos was designed by Mr. Frank P. Oakley, and executed by Messrs. Percy Bacon & Bros. of London, under the supervision of the architect.

## *FOREIGN.*

France.—A special inquiry is to be set on foot shortly to ascertain if there are still any dwelling-houses in Paris in so insanitary a condition as to constitute a public danger, and also to inquire into the general condition of working-class dwellings in the city.——M. Aimé Morot has resigned his position as professor of painting at the Ecole des Beaux-Arts. It is probable that M. François Flameng will succeed him.——M. Loviot, the eminent architect, has been commissioned to prepare the plans for the temporary building for next year's Salon. It will be on a site comprised between Avenue Saxe, Avenue Breteuil, Rue Barthélemy, Rue Bellard, and Rue Perignon. The principal entrance will be in the Place de Breteuil. The plan will comprise a semi-circular central garden with galleries giving access to the picture saloons.——The Académie des Beaux-Arts has been occupied with the election of two new members in place of the late M. Duplessis and the late Marquis de Chennevières. In the room of the former it has elected M. Guiffrey, Director of the Gobelins, and author of a history of tapestry and of various critical works on art. The place of the Marquis de Chennevières is taken by M. Rougon, also a well-known writer on art.——The Ministère des Affaires Etrangères has been officially informed that next year the United States Government intend to establish a "Prix de Paris," corresponding with the Prix de Rome in France, and with similar objects.——New post and telegraph offices have been built at Pau and Montélimar.——The "Société des Architectes des Bouches de Rhône" has organised four competitions in decorative design :—the first for craftsmen ; the second for pupils of the Ecole des Beaux-Arts; the third for those of the Ecoles Professionelles ; and the fourth for work done by women.——The new Town Hall at Argenteuil was opened last Sunday. The architects are MM. Maistrasse and Berger and M. L. Batton.——The death is announced, at the age of sixty, of M. Pierre Outin, the painter. He was a pupil of Cabanel and Lecomte, and exhibited portraits and *genre* pictures almost every year at the Salons. Among his works we may mention especially "Le Mort du Gentilhomme" (Salon of 1868), "L'Amateur" (1872), "Manon Lescaut" (1877), "Quentin Durward" (1878), and "Courses d'Automme" (1880). He exhibited a portrait in the Salon of this year.

Sanitation of Bombay.—We understand that the Bombay Municipality have retained the services of Mr. Santo Crimp, M.Inst.C.E., of Westminster, to advise them on the sanitation of the city. Mr. Crimp will proceed to Bombay in September next, and will probably remain there about two months. One of the most important points which Mr. Crimp will have to consider will be the question of lowering the level of the subsoil water under the city, an exceedingly difficult operation, having regard to all the circumstances. That the drying of the subsoil in such a climate as that of Bombay is of the greatest importance, from a sanitary point of view, cannot be questioned, and it is to be hoped that Mr. Crimp will be able to devise some method by which this can be accomplished, and thus help to lessen the unhealthy condition of the city.

## *MISCELLANEOUS.*

The York-Street Insanitary Area, Leeds.—An inquiry was held at the Leeds Town Hall on the 30th ult., by Colonel J. T. Marsh, R.E., Local Government Board Inspector, with reference to the Provisional Order, confirmed by the Act of 1896, in regard to the housing of working classes displaced under the York-street insanitary area scheme. What the Corporation ask is the exclusion from the scheme of a lodging house in Harper-street, and of certain land adjoining the North-Eastern Railway, and the sanction of the Board to the disposal of certain land comprised in the scheme for purposes other than the erection of dwellings for the accommodation of persons of the working class.

The Holborn to the Strand Improvement Scheme.—The London County Council Improvements Committee propose to acquire for 200,000*l.*, for the housing of 2,070 persons of the labouring class, about to be evicted from the Clare Market and Drury-lane district, the site, in part, of Reid's Brewery, Clerkenwell-road (formerly Meux's in Liquorpond-street). Further negotiations are in progress for the purchase of all the site between Hatton Garden and Gray's Inn-road, which will provide room for buildings to accommodate nearly 1,000 more.

The Lakes of Killarney.—The Killarney district is owned by the Earl of Kenmare and Mr. Herbert, of Muckross. The latter proprietor, having lately disposed of his agricultural land to the tenants, is now about to sell the mansion-house and demesne which have belonged to his family during a long period. The property, within which lies the middle lake, comprises deer forests, game and fish preserves, lakes and islands, extending over 13,000 acres ; the sale will include Muckross Abbey, the Devil's Punchbowl, Torc Mountain, and Waterfall, O'Sullivan's Cascade, Old Weir Bridge, the Meeting of the Waters, and many other famed features of the locality. It has been suggested that the property, for which a tentative offer of 30,000*l.* has been refused, should be purchased by the State for dedication to the public ; the levying of tolls during some years past seems to preclude the establishment of public rights of way.

St. Dunstan's, Fleet-street.—Dr. Tristram, Q.C., Chancellor of the Diocese, has agreed, provisionally, to grant a faculty for the sale of the site on the west side of the church tower. The proposed enlargement of the Law Life Assurance Society's premises (John Shaw, the younger, architect) will be carried out after the designs of Mr. W. E. Clifton, and the purchase-money, 4,500*l.*, is to be devoted to the erection of a rectory-house on the east side of the tower. The sale is made under an Act, 10 Geo. IV., c. 96, appointing trustees to pull down the old church and erect a new one, with powers of sale over such parts of the old site and any land purchased under that Act as might not be required. The trustees sold the ground now occupied by the Law Life Society and (on the east side) by Sir John Leng, M.P., proprietor of the *Dundee Advertiser.* The present sale will result in covering the two fore-courts on either side of the tower, which rises from the ground, and in blocking up the body of the church as now seen from the street.

Kildrummie Castle, Aberdeenshire.—It is stated that the recent purchaser of this property intends to build for himself a new castle upon the old site. Kildrummie, situated on an eminence sloping to an affluent of the Don, was built by Gilbert de Moray, Bishop of Caithness, during the reign (1214-49) of Alexander II., and ranks as one of the largest of its kind in Scotland. It was formerly owned by David, Earl of Huntingdon, Robert Bruce, and the Earls of Mar. The curtain walls, having a gateway on the south side and towers at the angles, enclose an enceinte hexagonal on plan, within which stand apart the great hall and the chapel. At the north-west angle is the now ruined Snow tower, 53 ft. in diameter, which contained a draw-well. Against the north wall, 200 ft. long, abuts a block having the hall, 73 ft. by 41 ft., on its first floor. Of the chapel, which projects at an angle from the east curtain wall, only the east end remains ; it has three thirteenth-century lancet windows. Edward I. captured the castle in 1306, and made Nigel Bruce prisoner. It is conjectured that to the subsequent occupation by the English is due the square-headed trefoil over a two-light window in the north-east tower. James III. bestowed Kildrummie upon Robert Cochrane, the architect, to whom was granted, it is said, a patent as Earl of Mar, and who was beheaded at Lauder Bridge (1482). The masonry of the castle consists of well coursed and dressed ashlar, of freestone, brought from a distance.

The Electric Lighting of Penzance.—Mr. Frank Latham, C.E., Surveyor for the Borough of Penzance, has prepared an exhaustive scheme for the supply of electricity to the district of Penzance and the construction of a refuse destructor in the Borough. He considers the wisest course for the Corporation to pursue would be to obtain an order which will enable them to supply electricity to, firstly, the Esplanade, Morrab-road, Alexandra-road, Chapel-street, Market Jew-street, and Alverton-road ; and, secondly, the whole Borough. The system of electric lighting which he considers would best answer the requirements of the district is the low tension, continuous current, three-wire system, with accumulators. As to the cost, he estimates the installation would cost 21,365*l.*, and the annual expenditure for working and maintenance 3,468*l.*, making the cost per light 18s. 7d. per annum.

Memorial Tablet, St. Botolph, Bishopsgate. —A tablet to the memory of the late rector of the parish (the Rev. William Rogers) was dedicated recently in this church. Above the panel is a profile portrait in low relief. The monument was designed by Mr. J. F. Bentley, and was executed by Messrs. Farmer & Brindley, of Westminster Bridge-road.

## *CAPITAL AND LABOUR.*

Settlement of the Building Dispute at Sunderland.—The builders' labourers at Sunderland decided on the 1st inst. to return to work at the old rate of 6½d. per hour. They will receive time and a quarter for overtime, and 1d. per hour extra for work in connexion with dirty drains, &c. The employers have agreed to withdraw their notice for a reduction of ½d. per hour. By a re-arrangement of meal hours the labourers will work the same hours as the journeymen whom they serve. There still remain a few points in regard to certain rules which the employers are prepared to discuss after the men return to their work. About 400 labourers originally came out on strike. The dispute started on April 15.

Bricklayers' Strike at St. Helens.—About 200 bricklayers and masons are on strike at St. Helens. Six months' notice, which under the trade rules must be given when an alteration of wages or working hours is desired on either side, was handed in on December 1 by the men. The men want to be paid at the rate of 9½d. an hour instead of 9d. as at present ; secondly, they request that there shall be only one apprentice to every four men, and not more than three employed by one firm, instead of a proportion of one apprentice to three men, and not more than six in a shop, as under present conditions ; thirdly, they ask that the allowance of walking time be placed on a more favourable basis for them. The masons number about twenty, and their demand also is for an extra ½d. per hour, which would bring their wages up to the Liverpool standard.

The Norwich Building Trade.—The points raised as to wages and rules by the various classes of workmen in the Norwich building trade have been amicably settled, after repeated conferences, and ½d. per hour advance will be given to carpenters, bricklayers, masons, builders' labourers, and painters.

Chester Bricklayers' Labourers.—The Chester bricklayers' labourers have discontinued work in consequence of their demand not having been granted by their employers. Six months ago they demanded a rise of their wages from 5½d. to 6d. per hour.

The Strike at Messrs. Doulton's. — The strike at Messrs. Doulton & Co.'s Worcestershire clayfields, which commenced seven weeks ago, has become a lock-out. Some men had obtained fresh situations, but others, not receiving pay from the union, returned to work. More hands followed, but an intimation was given that union men would not be reinstated. The union executive have resolved to continue strike pay.

Bricklayers' Strike at Wellingborough.—The dispute in the building trade at Wellingborough reached a crisis on the 5th inst. by the bulk of the bricklayers connected with the district branch of the Amalgamated Society of Bricklayers, Wellingborough ceasing work. Some little time since it appears that the officials of the society on behalf of the members put in for an advance of wages, the standard rate here being 7½d. per hour, and for an alteration in the code of working rules. As, however, a halfpenny advance was obtained last year, and many of the men are already receiving more than the standard, the demand for a further increase was withdrawn, and it was decided to restrict the demand to a revision of the working rules, the chief point at issue being the number of apprentices. On some firms it is alleged the greater proportion of hands employed are boys and young apprentices, and the men desire a restriction to be put upon this, so that the number of apprentices employed in proportion to men shall be limited and defined. To this the masters demur, and, acting upon a resolution passed at a meeting of the men on Saturday, a large number of the bricklayer came out on strike.

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## *LEGAL.*

### IMPORTANT POINT UNDER THE LONDON BUILDING ACT, 1894.

THE case of Carrit *v.* Godson came before a Divisional Court of Queen's Bench, composed of Justices Day and Lawrance, on the 5th inst., on the appeal of the London County Council from a decision of a Metropolitan Magistrate in a matter concerning the alleged contravention of the London Building Act, 1894. It appeared from the special case that the respondents, Messrs. G. Godson & Sons, were engaged in erecting the "Horse and Groom" public-house, in St. John-street, Clerkenwell, it being a building exceeding ten squares (of 100 square feet each) in area, and to be used as a fully licensed house, but not as a hotel, the ground floor consisting of a bar, lavatory, and pot room; the first floor of a public room, lavatory, spirit store room, kitchen, larder, and scullery; the second and third floors of bed rooms and living rooms. The only means of communication between the floors is a staircase terminating in the lobby on the ground floor. The licencee would live in the building and the whole building is included in the license. A notice of irregularity required the respondents to construct throughout of fire-resisting materials all passages, staircase, and other means of approach to the part of the building to be used as a dwelling-house under Section 74 of the Act. In order to get from the street to the lobby and staircase it is necessary to enter the door in the front of the bar and to cross thence through the bar to the lobby which gives access to the staircase. The door separating the lobby from the bar is to be and the staircase itself and lobby are constructed of fire-resisting materials, but the floor and other parts of the bar are not of fire-resisting materials. The lobby which gives access to the staircase also opens into a back yard, extending from the whole width of the house, and to a depth of 100 ft., surrounded in part by buildings and in part by a wall 8 ft. high at its lowest part. There is no exit from the yard except that which leads into the lobby. The appellants contended that the building was one used in part for the purposes of trade, and in part as a dwelling-house, and was so used within the meaning of Section 74, Sub-section 2, and that the way through the bar to the lobby and staircase was, under the circumstances, a means of approach to the part of the building to be used as a dwelling-house, and that not being constructed throughout of fire-resisting materials it was in contravention of the Act in question. The respondents, however, contended that the building was not a building used in part for purposes of trade and in part as a dwelling-house; that it was not within the section; and that, even if it were, the way through the bar of the public-house to the lobby was not a means of approach to the part of the building to be used as a dwelling-house. The magistrate decided that the building was not a building used or intended to be used in part for the purposes of trade and in part as a dwelling-house, and that it was not so used or intended to be used within the section. He also held that, even if it were, the way through the bar to the lobby was not, under the circumstances, a means of approach to the part of the building to be used as a dwelling-house, and dismissed the summons.

Mr. Horace Avory appeared for the London County Council, and Mr. A. F. Wootten for the respondents.

At the conclusion of the arguments of counsel, Mr. Justice Day, in giving judgment, said that there was great difficulty in applying the section to a building of this description. The only matter in which it came within the section was because it was of the requisite size. He could not see that this was a "building used in part for purposes of trade and manufacture, and in part as a dwelling-house." A publican carried on his business all through the licensed premises. In addition, there was in this building a staircase leading to an open space, and that staircase was made of fire-resisting material. He thought that the learned magistrate's construction of the section was right.

Mr. Justice Lawrance concurred.

The appeal was therefore dismissed.

### ACTION AGAINST AN ELECTRIC LIGHT COMPANY FOR AN ALLEGED BUILDING TRESPASS.

THE case of Prifchard *v.* The Bromley (Kent) Electric Light and Power Company, Limited, came before Mr. Justice Ridley, sitting without a jury, in the Queen's Bench Division on the 31st ult. and the 1st inst. It was an action brought by the plaintiff, Mr. Alfred William Pritchard, to restrain the defendants from committing an alleged building trespass, there being also a claim for damages.

It appeared that the plaintiff in 1892 became the owner in fee of certain land and premises in West-street, Bromley, and it was said that the defendants had established in the centre of the town of Bromley, and immediately contiguous to the plaintiff's premises, extensive works for the generation of electric power and light for the purpose of supplying light and electric power to the town of Bromley and the surrounding district. It was alleged that when the plaintiff purchased his premises the situation was not as valuable as it subsequently became, the premises being situated in the centre of the town of Bromley. On the south side of the plaintiff's building there were two windows which were the only windows giving light on that side. On the western side there were three other windows and also a doorway. On the eastern front of the building there were two windows and a doorway, which said windows and doorway were alleged to have existed for about fifty years. The plaintiff's case was that the defendants by themselves and their predecessors in title had committed the following trespass and nuisance, and had deprived him of light and air to his premises:—

1. By the erection of a wall or high wooden hoarding along the entire length of the building on the south side, and only situated at a distance of a few inches from his building, and which, besides being on the plaintiff's land, entirely covered up the two windows on the south side of his premises.

2. By pulling down a boundary wall between his and the defendants' premises on the west side, and leaving the plaintiff's land and premises unprotected and covered with rubbish, and by then erecting for the purpose of their (defendants') building a very high wall, which completely overshadowed the west windows of plaintiff's building, and so deprived him of light and air.

3. By taking out foundations and laying in concrete partly on the land of the plaintiff for the said wall.

4. By trespassing on the plaintiff's land by their workmen and agents, and interfering with the plaintiff's rights.

5. By placing along the front of the building a notice board 11 ft. long and 3 ft. deep. The plaintiff further alleged that the defendants had excavated adjacent to the wall immediately adjoining his premises on which the defendants had erected for the purpose of their works a shaft or chimney stack 120 ft. high and 22 ft. at the base, which he said would interfere with his rights of property and also with his light and air. The defendants, by their defence, denied that the plaintiff had acquired the prescriptive right to light in respect of the south windows and doorway and generally denied the plaintiff's allegations. They also said alternatively that what they did was by virtue of the leave and licence of the plaintiff verbally given by him to Mr. Graty, the builder who was executing the work, in May, 1898. They further denied that the chimney stack would interfere with the rights of the plaintiff, and also that their works were a nuisance.

Mr. C. E. Jenkins, Q.C., and Mr. Yelverton appeared for the plaintiff; and Mr. Jelf, Q.C., and Mr. Hume Williams, Q.C., for the defendant company.

His Lordship, after hearing the evidence, in giving judgment, held that the plaintiff had failed to make out his case with regard to the hoarding on the south side of his premises, and on that issue gave judgment for the defendants. He held, however, that the defendants had committed a technical trespass by having placed concrete on the land of the plaintiff as claimed in paragraph 3 of the Statement of Claim and on this head awarded the plaintiff one farthing damages. With regard to the issue as to the obstruction of light and air, his Lordship awarded the plaintiff 35*l.* damages and gave him the general costs of the action. His Lordship gave the defendants the costs of all the issues on which the plaintiff had failed to prove his case.

### MANCHESTER COMPENSATION COURT:

#### CLAIM AGAINST A BUILDER AND JOINER.

ON the 1st inst. Mr. Adshead Elliott, the arbitrator appointed by Judge Parry to hear cases under the Workmen's Compensation Act, sat at the Manchester County Court to adjudicate in two matters.

In the first case, Frederick Harrison, of 248, Collyhurst-road, Harpurhey, was the applicant, and Charles Robert Richard Lambert, of Dutton-street, Strangeways, joiner and builder, the respondent. Mr. W. Cobbett, who appeared for the applicant, a labourer, twenty-three years of age, stated that his client was engaged as a labourer by the respondent, and was doing machine work at the time of the accident. This happened on January 31, at the respondent's workshop in Dutton-street. The applicant was planing a piece of wood upon the planing machine, when his right hand was caught by the revolving knives. The consequence was that he lost the portions of the first three fingers of the right hand above the second joints, and the little finger was permanently stiff. He was totally incapacitated for work at present, and had been since the accident, and would be for three months, when he would only be able to take up work which did not involve the full use of the right hand. His average weekly earnings had been 15s. 8d., and when he could return to work he might earn about 8s. a week. The amount claimed as compensation was 7s. 10d. a week. Mr. Jordan, for the respondent, denied that Harrison was planing at the time of the accident, or that he was doing machine work at all. He was told to hand pieces of wood to the foreman, and then go to the back of the machine and take the planks away after they had been cut. He had no cause to go within 5 ft. or 6 ft. of the machine, and he had no right to do anything such as he said he was doing. He was expressly ordered and told that he must not touch the machine.

The Arbitrator awarded the applicant 7s. 10d. a week until the present time, and 3s. a week afterwards.—*Manchester Courier.*

### PAVING FOOTWAYS.

AT Lambeth Police-court, Mr. Hopkins gave his decision in regard to a summons taken out by the Camberwell Vestry against Mr. Andrew James Walke, the owner of a house in East Dulwich-road, to recover the sum of 23*l.* 14s. 9d., being the apportioned cost of paving the footways of that thoroughfare. The summons, which was taken out under the 105th Section of the Metropolis Local Management Act, 1855, was first before the Court three weeks since, when Mr. McMorran, Q.C., appeared for the Vestry and Mr. Horace Avory represented the defendant. The case, which was a test one, turned upon the question whether the road was a "new street" within the meaning of the Act. The Vestry contended that it was, and proposed to pave the footways from the "King's Arms" to Goose Green, and to apportion the cost among the adjoining owners. It was admitted that some years since the Vestry tar-paved the footpaths, but it was contended that the work which was then done was in the nature of temporary as distinguished from permanent works. For the defence it was argued that the tar-paving put down by the Vestry was in the nature of permanent work, and that consequently they had exhausted their powers under the 105th Section of the Metropolis Local Management Act. Mr. Hopkins remarked that if he thought the decision in this case really turned upon the question whether or not the road could now be held to be a new street within the Section, he would feel compelled to arrive with considerable doubt at the conclusion that it might so be held. But the case was evidently so near the line, as he understood the cases, that he should state the agreed facts for the information of the Divisional Court, and leave the decision upon that point to the Court, as he was not able upon that point to find any fact outside the agreed facts which would help the Court to a conclusion. But he thought the decision might turn upon another point, and might be reached by a shorter road than the difficult question of a new street or not. He enumerated several findings which he considered brought the case within the case of the "Camberwell Vestry *v.* Hunt," and did not think the Vestry could support an assessment upon the frontagers. He therefore dismissed the summons. On the application of a solicitor representing the defendant, Mr. Hopkins allowed twenty guineas costs as against the Vestry. —*Times.*

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## MEETINGS.

FRIDAY, JUNE 9.

*Institution of Civil Engineers.*—Engineering Conference (concluded).

*Institution of Junior Engineers.*—Visit to the Bankside Works of the City of London Electric Lighting Company. 6.30 p.m.

MONDAY, JUNE 12.

*Royal Institute of British Architects.*—General (business) meeting (1) to receive report of scrutineers *re* election of council, committees, &c., for next session; (2) election of candidates for membership; (3) Mr. H. Hardwicke Langston to move the following resolution: "That in the opinion of this meeting it is desirable to put a suitable and prominent inscription on the street front of No. 9, Conduit-street, indicating that those premises are occupied by the Royal Institute of British Architects"; (4) to receive and consider the Report of the Special Committee appointed by the Council to consider the Administration of Building By-laws in non-Metropolitan Districts. Also to receive and consider a resolution on Party Structures, passed by the Special Committee above mentioned, and approved by the Council. 8 p.m.

WEDNESDAY, JUNE 14.

*Carpenters' Company.*—Examination at their Hall. 6 to 10 p.m.

THURSDAY, JUNE 15.

*Society for the Encouragement of the Fine Arts.*—Third conversazione.

*Society of Antiquaries.*—8.30 p.m.

*Institute of Sanitary Engineers (Incorporated).*—Half-yearly general meeting for the reception of balance-sheet, annual reports, &c. 8 p.m.

*Carpenters' Company.*—Examination at their Hall. 6 to 10 p.m.

FRIDAY, JUNE 16.

*Carpenters' Company.*—Practical Examination at the Company's Schools, Great Titchfield-street. 9.30 to 5.30.

SATURDAY, JUNE 17.

*People's Palace Architectural Society.*—Visit to Drapers' Hall, E.C. 3 p.m.

*Carpenters' Company.*—Viva Voce Examination at the Hall. 12 noon.

*Incorporated Association of Municipal and County Engineers.*—Northern District Meeting at Whitehaven.

## PRICES CURRENT OF MATERIALS:

### WOOD.*

Per Petersburg standard hundred.

| | £ | s. | d. | £ | s. | d. |
|---|---|---|---|---|---|---|
| White Sea: first yellow deals | 17 | 5 | 0 | 18 | 5 | 0 |
| Second do. | 13 | 10 | 0 | 15 | 0 | 0 |
| Third do. | 11 | 0 | 0 | 11 | 10 | 0 |
| Battens, 40s., 30s., and 15s. less respectively. | | | | | | |
| Petersburg: first yellow deals | 12 | 0 | 0 | 14 | 10 | 0 |
| Second do. | 11 | 0 | 0 | 12 | 10 | 0 |
| Battens, 30s. and 20s. less respectively. | | | | | | |
| Petersburg, white deals | 10 | 0 | 0 | 12 | 0 | 0 |
| Do. white battens | 8 | 0 | 0 | 9 | 10 | 0 |
| Riga, white deals | 8 | 10 | 0 | 9 | 10 | 0 |
| Swedish mixed yellow deals | 13 | 10 | 0 | 17 | 0 | 0 |
| Third do. | 12 | 10 | 0 | 14 | 10 | 0 |
| Fourth do. | 11 | 0 | 0 | 12 | 0 | 0 |
| Fifth do. | 10 | 0 | 0 | 11 | 0 | 0 |
| Battens, 30s., 20s., and 10s. less respectively. | | | | | | |
| Whitewood, 10 to 20 per cent. less. | | | | | | |
| Finnish unsorted yellow deals | 10 | 0 | 0 | 10 | 10 | 0 |
| Battens, 10s. and 5s. less respectively. | | | | | | |
| Whitewood, 5 to 10 per cent. less. | | | | | | |
| Norwegian second yellow battens | 8 | 0 | 0 | 9 | 0 | 0 |
| Third do. | 7 | 10 | 0 | 8 | 10 | 0 |
| Fourth do. | 7 | 0 | 0 | 8 | 0 | 0 |
| Whitewood, 10s. less. | | | | | | |
| Danzig, Crown Deck deals, per 40 ft. 3 in. | 0 | 15 | 0 | 1 | 5 | 0 |
| Brack | 0 | 12 | 0 | 1 | 0 | 0 |
| St. Lawrence Pine deals, &c., per P.S.H.:— | | | | | | |
| 1st, Bright and Dry, regular sizes | 19 | 0 | 0 | 25 | 10 | 0 |
| ,, ,, oddments | 12 | 0 | 0 | 18 | 15 | 0 |
| 2nd ,, regular sizes | 14 | 0 | 0 | 17 | 5 | 0 |
| ,, ,, oddments | 9 | 10 | 0 | 13 | 0 | 0 |
| 3rd ,, regular sizes | 9 | 5 | 0 | 10 | 5 | 0 |
| ,, ,, oddments | 7 | 0 | 0 | 8 | 10 | 0 |
| 4th ,, regular sizes | 6 | 5 | 0 | 7 | 5 | 0 |
| ,, ,, oddments | 5 | 15 | 0 | 6 | 15 | 0 |
| St. Lawrence Spruce deals, &c. | | | | | | |
| First, regular sizes | 8 | 5 | 0 | 10 | 5 | 0 |
| Second ,, | 7 | 5 | 0 | 8 | 5 | 0 |
| Third ,, | 7 | 0 | 0 | 7 | 15 | 0 |
| Fourth ,, | 5 | 15 | 0 | 6 | 15 | 0 |
| Oddments and battens at 20s., 10s., 7s. 6d., and 5s. less respectively. | | | | | | |
| New Brunswick Spruce deals, &c. | 7 | 0 | 0 | 7 | 15 | 0 |
| Oddments, battens, and fourths | 6 | 5 | 0 | 7 | 5 | 0 |
| United States pitch pine planks and boards | 8 | 0 | 0 | 12 | 0 | 0 |
| Prepared Boards, per square | | | | | | |
| 1¼ by 6½ and 7 in. 1st yellow | | 11 | 6 | | 14 | 9 |
| ,, ,, 2nd ,, | | 10 | 0 | | 11 | 9 |
| 1 by 6½ and 7 in. 1st ,, | | 8 | 6 | | 10 | 9 |
| ,, ,, ,, white | | 8 | 0 | | 8 | 9 |
| ,, ,, 2nd yellow | | 8 | 0 | | 9 | 9 |
| ,, ,, ,, white | | 6 | 6 | | 7 | 3 |
| ⅞ by 6½ & 7 in. 1st & 2nd yellow | | 7 | 3 | | 8 | 0 |
| ,, ,, ,, white | | 6 | 9 | | 7 | 6 |
| ¾ by 6½ and 7 in. 1st yellow and white (grooved, tongued, and beaded) | | 6 | 3 | | 8 | 9 |
| ¾ by 6½ and 7 in. 2nd yellow and white (ditto) | | 5 | 3 | | 7 | 6 |
| ⅝ by 6½ and 7 in. 1st yellow and white (ditto) | | 5 | 3 | | 6 | 0 |
| ⅝ by 6½ and 7 in. 2nd yellow and white (ditto) | | 4 | 9 | | 5 | 6 |
| Narrower widths at 10 per cent. less. | | | | | | |
| 3rd quality at 15 per cent. less than 2nd. | | | | | | |
| Danzig and Memel Fir Timber— per load | | | | | | |
| Best middling | 2 | 10 | 0 | 3 | 10 | 0 |
| Good middling and Second | 2 | 0 | 0 | 3 | 5 | 0 |
| Common middling | 1 | 10 | 0 | 2 | 10 | 0 |
| Undersized | 1 | 10 | 0 | 1 | 15 | 0 |
| Swedish and Norwegian Balks | 1 | 5 | 0 | 1 | 15 | 0 |
| Baltic Oak Timber— | | | | | | |
| Danzig and Stettin—Large | 3 | 10 | 0 | 4 | 0 | 0 |
| Small | 2 | 0 | 0 | 2 | 5 | 0 |
| Quebec Timber per load | | | | | | |
| Yellow Pine | 4 | 12 | 6 | 6 | 5 | 0 |
| Oak | 4 | 7 | 6 | 6 | 10 | 0 |
| Elm | 3 | 17 | 6 | 4 | 17 | 6 |
| Ash | 3 | 2 | 6 | 4 | 7 | 6 |
| Birch | 3 | 10 | 0 | 5 | 10 | 0 |
| New Brunswick, &c., Birch | 2 | 5 | 0 | 3 | 0 | 0 |
| American Pitch Pine Timber | 2 | 17 | 6 | 3 | 10 | 0 |
| Wainscot, per log, 18 cubic ft.— | | | | | | |
| Crown (Eng. & Dutch) } nominal | 6 | 0 | 0 | 7 | 15 | 0 |
| Brack } nominal | 5 | 5 | 0 | 6 | 5 | 0 |
| Lathwood, per cubic fathom— | | | | | | |
| Petersburg | 4 | 0 | 0 | 6 | 10 | 0 |
| Riga and Danzig | 4 | 10 | 0 | 5 | 10 | 0 |
| Norway Poles, per ft. run | 0 | 0 | 1 | 0 | 0 | 1½ |
| Oak Staves, per mille full size pipe | | | | | | |
| Memel, Crown | 210 | 0 | 0 | 220 | 0 | 0 |
| Brack | 180 | 0 | 0 | 190 | 0 | 0 |
| Danzig | 165 | 0 | 0 | 175 | 0 | 0 |
| Bosnia, single Barrel (nominal) | 28 | 0 | 0 | 30 | 0 | 0 |
| United States, Pipe | 35 | 0 | 0 | 42 | 10 | 0 |
| Hogshead, extra heavy and double extra | 27 | 10 | 0 | 32 | 10 | 0 |
| Indian Teake per load | 11 | 5 | 0 | 16 | 5 | 0 |
| British Guiana Greenheart | 0 | 0 | 0 | 8 | 0 | 0 |
| Mahogany, per foot superficial— | | | | | | |
| Honduras, cargo average | 0 | 0 | 4½ | 0 | 0 | 6 |
| Nicaragua, do. | 0 | 0 | 4¾ | 0 | 0 | 5¼ |
| Tabasco, do. | 0 | 0 | 4 | 0 | 0 | 6½ |
| Mexican, do. | 0 | 0 | 3½ | 0 | 0 | 4 |
| Panama, do. | 0 | 0 | 3 | 0 | 0 | 4 |
| African, do. | 0 | 0 | 3½ | 0 | 0 | 5 |
| Cuba, do. | 0 | 0 | 5½ | 0 | 0 | 7½ |
| St. Domingo, do. | 0 | 0 | 5 | 0 | 0 | 7 |
| Do. Curls (good to prime) | 0 | 0 | 9 | 0 | 1 | 3 |
| Walnut, American (logs) | 0 | 2 | 3 | 0 | 4 | 6 |
| Do. do. (planks and boards) | 0 | 2 | 0 | 0 | 7 | 6 |
| Italian, per foot superficial | 0 | 0 | 3 | 0 | 0 | 7½ |
| Black Sea, per ton | 6 | 0 | 0 | 12 | 0 | 0 |
| Satin Walnut (logs) per foot cube | 0 | 1 | 0 | 0 | 1 | 3 |
| Satin Walnut (planks and boards) | 0 | 2 | 0 | 0 | 2 | 9 |
| Sequoia (Californian redwood), per foot cube | 0 | 1 | 9 | 0 | 2 | 0 |
| Whitewood, American (logs) | 0 | 1 | 3 | 0 | 1 | 6 |
| ,, ,, (planks and boards) | 0 | 1 | 6 | 0 | 2 | 9 |
| Quartered oak ,, ,, ,, | 0 | 2 | 3 | 0 | 4 | 0 |
| Kauri pine (logs) | 0 | 1 | 9 | 0 | 2 | 0 |
| ,, ,, (planks) | 0 | 2 | 3 | 0 | 2 | 9 |
| Jarrah (planks) | 0 | 2 | 3 | 0 | 2 | 6 |
| Lancewood spars each, fresh and large | 0 | 6 | 0 | 0 | 10 | 0 |
| Lancewood spars, ordinary to fair | 0 | 4 | 0 | 0 | 6 | 0 |
| Degame spars | 0 | 8 | 0 | 0 | 12 | 6 |

### METALS.

| | £ | s. | d. | £ | s. | d. |
|---|---|---|---|---|---|---|
| Iron—Pig, in Scotland ton | 3 | 5 | 1 | 0 | 0 | 0 |
| Bar, Welsh, in London | 6 | 0 | 0 | 6 | 5 | 0 |
| Do. do. at works in Wales | 5 | 15 | 0 | 5 | 17 | 6 |
| Do. Staffordshire, in London | 6 | 5 | 0 | 7 | 10 | 0 |
| Copper—British cake and ingot | 80 | 0 | 0 | 80 | 10 | 0 |
| Best selected | 80 | 10 | 0 | 81 | 0 | 0 |
| Sheets, strong | 82 | 0 | 0 | 84 | 0 | 0 |
| Chili bars | 75 | 7 | 6 | 0 | 0 | 0 |
| Yellow Metal lb. | | | 7d. | | | 7½d. |
| Lead—Pig | | | | | | |
| Spanish ton | 14 | 5 | 0 | 0 | 0 | 0 |
| English Com. Brands | 14 | 10 | 0 | 0 | 0 | 0 |
| Sheet, English, 6 lbs. per sq. ft. and upwards | 15 | 10 | 0 | 0 | 0 | 0 |
| Pipe | 16 | 0 | 0 | 0 | 0 | 0 |
| Zinc—English sheet ton | 31 | 0 | 0 | 0 | 0 | 0 |
| Vieille Montagne | 31 | 10 | 0 | 0 | 0 | 0 |
| Spelter | 27 | 5 | 0 | 27 | 10 | 0 |
| Tin—Straits | 117 | 0 | 0 | 0 | 0 | 0 |
| Australian | 117 | 2 | 6 | 117 | 12 | 6 |
| English Ingots | 119 | 10 | 0 | 120 | 10 | 0 |
| Banca | 114 | 0 | 0 | 0 | 0 | 0 |
| Billiton | 113 | 0 | 0 | 0 | 0 | 0 |

### OILS.

| | £ | s. | d. | £ | s. | d. |
|---|---|---|---|---|---|---|
| Linseed ton | 19 | 15 | 0 | 0 | 0 | 0 |
| Cocoanut, Cochin | 29 | 5 | 0 | 0 | 0 | 0 |
| Do. Ceylon | 25 | 15 | 0 | 0 | 0 | 0 |
| Palm, Lagos | 24 | 0 | 0 | 0 | 0 | 0 |
| Rapeseed, English, pale | 23 | 5 | 0 | 0 | 0 | 0 |
| Do. Brown | 21 | 15 | 0 | 22 | 0 | 0 |
| Cottonseed ref. | 16 | 5 | 0 | 17 | 0 | 0 |
| Oleine | 17 | 0 | 0 | 19 | 0 | 0 |
| Lubricating U.S. | 0 | 5 | 6 | 0 | 7 | 6 |
| Do. Black | 0 | 5 | 0 | 0 | 6 | 0 |
| Tar—Stockholm barrel | 1 | 6 | 6 | 0 | 0 | 0 |
| Archangel | 1 | 0 | 0 | 0 | 0 | 0 |
| Turpentine | 33 | 15 | 0 | 34 | 0 | 0 |

## RECENT PATENTS:

### ACCEPTED SPECIFICATIONS.

### *Open to Opposition until July 31.*

[1898] 11,377, Fowler, Manufacture of Acetylene. 11,473, Hartley, Coal-saving Attachment for Fire Ranges, with a Bar for Flat Irons and Cooking Purposes. 11,837, Loesche & Zschunke, Stone Cutting Machine. 11,847 and 14,498, Hargreaves & Poulson, Sand, &c., for Making Moulds and Cores. 11,944, Gimsons, Tack or Nail Driving Machinery. 12,011, Deimel, Lehmann, & Sylten, Electrical Gas Igniters. 12,211, Wood, Varnish. 12,470, Krassellet, Hinges. 12,548, Weir, Brickwork of Water Tube Steam Boilers. 13,408, Addicott & Holland, Ash Curbs for Fireplaces. 13,968, Forbes, Acetylene Lamps. 14,144, Parkinson, Generator for Acetylene Gas Lamps. 14,303, Robinson, Public Lamp Standards. 14,773, Rippingille's Albion Lamp Co. & Hancock, Closing Devices for Oil Containers of Oil Lamps and for Oil Cans, &c. 14,824, Babbe, Pannikins for Carrying Meals. 15,046, Ozias, Weighing Apparatus. 15,084, Simmance & Abady, Rapid Water Heating by Gas, &c. 15,466, Brierley, Outdoor Seats. 15,900, Causer, Rack Pulleys. 15,921, Cocker, a Dust, Draught, and Rain Excluding Appliance for use with Sliding Window Sashes. 16,076, Spiers, Construction of Portable Sectional Buildings of Wood and Iron, or other Composite Materials. 16,132, André, Gas Cooking Apparatus, Ovens, &c. 16,156, Halls & Halls, Incandescent Gas Burners. 16,228, Williams & Normanton, Cord Shortening Apparatus for Lamps. 16,295, Rix, Moulding Pottery, &c. 16,348, Rutnagur, Water-waste Prevention. 16,358, Leggott and W. & R. Leggott, Regulating Skylights. 16,454, Slating Roofs. 17,153, Bysouth, Stair-treads and Coverings for Subways, Landings, &c. 21,328, Greenwood, Guards for Circular Saws and Similar Machinery. 22,277, Müller & Gareis, Automatical Gas and Vapour Igniters. 23,454, Dey & Dey, Workmen's Time-recorder. 23,832, Wise, Derrick Swinging Gear. 26,006, Butler & Minty, Sliding Window-sash Fastener. 26,129, Standing & Dixon, Intermittent Siphonic Flushing Apparatus. 26,790 and [1899] 6,028, Allgemeine Elektricitäts Gesellschaft, Current Conducting Connexion between Electrical Conductors and Electrical Resistances with Small Heating Capacity. 27,358, Cassels, Combined Bath and Washbasin. 27,506, Alda, Doors for Use in Ventilating Mines and for other purposes. [1899] 2,371, Naturin, Regenerative Gas Burners. 4,774, Heaton & Smith, Electrical Cut-out or Fuse. 5,375, Merz, Saws or Sawing Devices for Cutting Metal Cold. 6,152, Heard & Snyder, Subdividing Laminated Material. 6,266, Cheffins, Cranes for Excavating and Dredging. 6,311, Gehre, Artificial Stone. 6,584, Horst, Interchangeable Coal and Gas Grate. 6,967, Sayre, Holders for Lamp Globes, Shades, and Reflectors. 7,086, Almon, Machines for Sand-papering, Dressing, or Finishing Wood, &c. 7,579-80, Cloos, Electrical Switching Apparatus. 7,628, Jordan, Stove Cover and Gas or Vapour Burner. 7,966, Feltus, Combination Tool. 8,231, Marshall & Faulds, Baking-ovens. 8,387, Körting, Ceiling Blocks and Slabs. 8,388, Browne and Fraser & Chalmers, Raising Water from Mine Shafts and other places. 8,395, Smethurst, Means for Securing Wires in Fencing Standards, &c. 8,401, Folding Cabinet for Vapour and Hot-air Baths. 8,541, Klein, Flushing Apparatus. 8,547, Park, Centrifugal Pumps, especially those used in Dredging Operations. 8,733, Smillie, Screw Cutting Tools. 8,796, Woolliscroft & Todd, Presses for Bricks and other Blocks. 8,820, Staveley & Parsons, Electrical Signals or Indicators.

### ABSTRACTS OF PATENTED INVENTIONS.

2,784.—Electrical Switches: *O. C. Immisch.*—The purpose of the invention is to prevent injurious sparking at a switch's main contacts; a contact is carried on, but is insulated from the switch arm, and when the main contact is broken, a circuit is completed through another contact, a core, and a coil, the core being at once drawn up, whereby the circuit is broken.

2,812.—Walls, Slabs, and Paving: *J. W. Klinck & W. Cooke.*—Facing-slabs are fashioned with tongued and grooved interlocking edges, and with grooves in imitation of brick-work joints, and are secured in position by means of nails; they are composed of, preferably, clay or cement, or other materials to simulate stone or brick-work, and can be used for paving purposes.

2,822.—Fire-Proof Ceilings: *F. Cohn & H. G. B. Brunckhorst.*—The ends of fire-proof blocks are stepped to rest upon strips or ribs of the joists or upon the lower flanges of iron girders, whilst their sides are grooved and tongued, cement or mortar is filled in the spaces below the joists and girders and supported by network or gratings; for moulding the blocks, are used boxes having angle-iron sides and locked ends, and a transverse partition is made movable by rack and pinion gear between the sides of the box so that the blocks may be moulded in different lengths.

2,896.—Portland Cement: *E. H. Hurry & H. J. Seaman.*—A crusher or mixer delivers the cement-rock by a chute into the buckets of an elevator, whence the rock is fed by gravity to a pulveriser, and then to a bin which supplies a rotary roasting furnace mounted upon roller bearings, and projecting into a chamber fitted with an ash-pit and leading to a chimney stack; the cement, in the shape of slurry, may be pumped into the furnace wherein a burner, which injects high-pressure air and powdered fuel, roasts the material to clinker; a rotary inclined cylinder conveys the clinker to a reducing apparatus, where it is wetted; the material is next passed through a rotary cooling conduit (see Patent No. 23,145 of 1895), and the process is completed by the conveyance of the cooled clinker, by means of an elevator, to a bin which supplies a pulveriser.

2,955.—Safety Appliance for Lifts: *J. Stannah*—A pipe connects the plunger to the ram cylinder, the plunger having an area greater than that of the supply port of the hydraulic slide valve; the pressure lifts the plunger clear of the slide valve, but in the event of injury to the main the pressure upon the plunger's outer end exceeds that upon its inner end, forcing it against the back of the slide valve which it thereupon locks.

2,963.—Fire Escape Ladders: *W. J. Worth.*—The ladder sections are extended or retracted, and so held, by an arrangement of bell-crank stops to which is connected the rope which passes over pulleys at the ends of the sections in such a manner that, when the rope's free end is pulled, the stops become disconnected from the rungs upon which they act, and when the strain is relaxed the stops again engage, automatically with the rungs, under the action of spiral springs; the stops can also be controlled by a separate rope instead of by springs.

2,973.—Casting Pile Shoes: *A. Harris.*—As an improvement upon the Patent No. 14,815, of 1884, the inventor casts the points of the shoes in a chill or mould about iron or steel bars, which are made to interlock with the cast metal by being bent inwards or being rounded, bevelled, or serrated; the dove-tailing may be effected also by inserting rivets through holes in the bars. During the operation of casting the bars are held in their places by clips upon standards of the moulds, or the clamping bars may be secured by screws in inclined slots in the mould.

2,993.—Water Waste Preventers: *W. Tordoff.*—At the bottom of the cistern, which, under normal circumstances, is empty, is a valve suspended by rod, which has a slot through which the float-arm passes, the float-arm being connected by links to a rocking-shaft that carries a tumbler; when the chain is pulled the tumbler falls over, and so both closes the valve and lets the float-arm fall to open the inlet. As soon as the cistern is filled the rising float tilts the tumbler up again and so closes the inlet, and opens the valve for flush delivery; the rocking-shaft is connected to a tipping basin, whence leakage may be discharged into the overflow pipe beneath.

3,067.—Repair of Lift Valves: *E. J. Barker.*—To facilitate repairs, a socket piece, screw-threaded to engage with the casing and having a handle, is connected to the valve, the lowering of the valve to connect the inlet and outlet causes a plug that rests upon the valve to fall too, then, if the valve and socket are taken out the plug descends to close the opening next above the valve.

3,107.—Emptying Service Pipes: *H. S. Paige.*—The contrivance is for emptying service and supply pipes during frosty weather without discharging the water from the supply cisterns; at the entrance of the service pipe is a ball valve which a pull-chain attached to a lever within guide-rods normally raises out of action, whilst a weight upon the valve rod closes the valve on the chain's release; an inlet tube above the cistern admits air to the service pipe; a cut-off cock connected to a two-ways draw-off cock by toothed wheels is fitted to the supply pipe from the main, so that one cock is closed when the other is opened; to empty the supply pipe one should draw enough water from the cistern to slightly open the ball-cock and admit air into the pipe—if the device is used for a water-supply system wherein the service pipes are supplied directly from the main, the air enters the supply pipe through one of the service taps.

3,139.—Measures of Length: *C. J. M. Bonnefoi.*—In order to vary the relative motion so as to give correct readings for different scales of plans and maps, a roughened cone is placed on the face of the wheel carried by an arm concentrically with the pinion, as an addition to the gear which transmits the roller's movement to the index hand upon the spindle of the pinion; the cone bears against the wheel's rough edge, and the required velocity ratio is to be attained by changing the cone's position by means of a connecting rod, a screw, and a milled head, the scale at which the instrument works is indicated by a pointer that moves over a scale at the back.

3,145.—Combined Square, Ruler, and Protractor: *J. A. Labat-Guilmant.*—The contrivance, for use on drawing-boards, comprises a double T-square, having two blades and two stocks, whereof one is normally pressed against a handle upon the other by a spring, the other stock is faced with metal plates, and the former stock with rubber nipples, one blade carries an adjustable block (also faced with rubber nipples) through which the other blade can slide; the instrument can be made to move up and down the board by pressing the stocks together, upon their release the rubber nipples grip the board's edge. To a sliding block upon the blades is pivotted another graduated blade, which is set to any desired angle by a link and a sliding block.

3,150.—Sash-fastenings: *G. W. Westgarth.*—In a bracket on the lower sash is pivotted a lever having a slot and a balance weight at either end, the slotted end passing through one or other of the holes in a standard of the upper sash and engaging with tapered cross-pieces, and the slot's face taking a vertical position when the parts become so engaged, the action of closing the sashes knocks back the weighted end of the bracket when it is in the disengaged (or turned-over) position, and so causes the sashes to become automatically fastened.

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* The prices named are for the wood as imported and landed in the docks. Ten per cent., approximately, should be added in order to arrive at the current trade prices.

3,178.—Soldering Apparatus: *M. Tomellini & G. Francia.*—Means are provided for cooling and drying the hydrogen in a generator of oxyhydrogen flame used in soldering aluminium, &c.; the zinc is laid on a grating in one vessel and the dilute sulphuric acid is introduced through a pipe leading from a vessel above; the generated hydrogen passes through a pipe and washing vessel, which condenses vapour produced by the heat of chemical action, when the latter pipe is closed (by a tap) the dilute acid is forced, by pressure of the hydrogen, below the zinc and arrests the action; the gas, dried and cooled, passes to a bronzed branch pipe, one branch being connected to the burner, and the other branch to the air-supply. The latter supply branches have taps for security's sake.

3,207.—Electrical Arc Lamps: *S. Bergmann.*—In a guide tube moves a carbon holder, consisting of a split tube attached to a body and stem, wherein slides a block, the holder being guided within the tube by a ring of balls, which are placed between the block and the body and make electrical contact with the tube; pressure of the block against the balls may be obtained through its own weight or by means of a spring held by a cap screwed on to the stem.

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## SOME RECENT SALES OF PROPERTY:

### ESTATE EXCHANGE REPORT.

| | |
|---|---|
| May 23.—By Edward Bond (at Thame). | |
| Brill, Bucks.—Stone Pits Field, 12 a., f. | £500 |
| May 24.—By J. Margetts & Sons (at Banbury). | |
| Farnborough, &c., Warwick.—A freehold farm, 64 a. 2 r. 9 p. | 1,575 |
| Fenny Compton, Warwick.—Two freehold cottage tenements | 170 |
| By Richardson & Pearce-Brown (at Goole). | |
| Swinefleet, &c., Yorks.—Various enclosures, 75 a. 3 r. 26 p., f. | 4,283 |
| Enclosures, with cottage, &c., thereon, 28 a. 3 r. 6 p., f. | 3,200 |
| May 25.—By Chesterton & Sons. | |
| Harringay.—Harringay-rd., twenty plots of building land, f. | 1,810 |
| By Dyer, Son, & Hilton. | |
| Forest Hill.—Lowther Hill, two plots of building land, f. | 150 |
| Brockley Pk., a plot of building land, f. | 200 |
| Blackheath.—8, Aberdeen-ter., u.t. 53 yrs., g.r. 16*l*. | 520 |
| Lee.—Eltham-rd., Pendennis, u.t. 61 yrs., g.r. 18*l*., e.r. 80*l*. | 380 |
| By H. J. Bliss & Sons. | |
| Bethnal Green.—16 and 18, Wennington-rd., u.t. 58 yrs., g.r. 5*l*. | 610 |
| 17 and 19, Ashwell-rd., u.t. 58 yrs., g.r. 6*l*. 6s. | 580 |
| Mile End.—39 and 43, Bloomfield-rd., also l.g.r. 10*l*., u.t. 67 yrs., g.r. 20*l*. | 575 |
| Bethnal Green.—2, 4, and 6, Ames-st., f. | 1,885 |
| Leytonstone.—17, 19, and 21, Acacia-rd., f. | 730 |
| St. George's East.—43 to 51 (odd), Berner-st., u.t. 16 yrs., g.r. 15*l*. 15s. | 705 |
| Plaistow.—209 to 215 (odd), Becton-rd., f. | 1,050 |
| By G. F. Harrington. | |
| Finchley.—15, Alexandra-grove, f., e.r. 65*l*. | 850 |
| By J. & R. Kemp & Co. | |
| Camden Town.—219, Camden-rd., u.t. 36¾ yrs., g.r. 10*l*. | 610 |
| By Newbon, Edwards, & Shephard. | |
| Crouch End.—68, Palace-rd., u.t. 78½ yrs., g.r. 10*l*., r. 42*l*. | 420 |
| 5 and 7, Palace-rd., u.t. 78½ yrs., g.r. 16*l*., r. 80*l*. | 740 |
| 1, 5, 11, 13, 17, and 19, Topsfield-rd., u.t. 78½ yrs., g.r. 36*l*., r. 170*l*. | 1,685 |
| 15, Lynton-rd., u.t. 78½ yrs., g.r. 6*l*., r. 30*l*. | 280 |
| 44, Weston Pk., u.t. 82½ yrs., g.r. 10*l*., e.r. 55*l*. | 500 |
| Canonbury.—20 and 21, Sebbon-st., u.t. 20 yrs., g.r. 10*l*., r. 60*l*. | 300 |
| Stoke Newington.—108, Cazenove-rd., u.t. 77½ yrs., g.r. 13*l*., e.r. 80*l*. | 900 |
| City-rd.—27, Westmoreland-pl., f., r. 36*l*. | 500 |
| Clerkenwell.—36½, White Horse-alley, f. | 175 |
| Hornsey.—15, 17, 19, and 31, Lightfoot-rd., f., r. 130*l*. | 1,685 |
| Lightfoot-rd., f.g.r. 6*l*. 10s., reversion in 99 yrs. | 170 |
| By Stimson & Sons. | |
| Vauxhall.—Upper Kennington-lane, c.g.r. 120*l*., reversion in 18½ yrs. | 3,700 |
| Upper Kennington-lane, c.g.r. 45*l*. 4s., reversion in 6½ yrs. | 3,735 |
| Harleyford-rd., c.g.r. 33*l*., reversion in 6½ yrs. | 3,700 |
| Camberwell.—Picton-st., f.g.r. 15*l*., reversion in 73 yrs. | 405 |
| 11, 13, and 15, Brisbane-st., f. | 980 |
| 21 and 23, Waterloo-st., f., r. 92*l*. | 1,325 |
| 1a, 2a, and 3a, Guildford-pl., f. | 850 |
| Newington Butts.—F.g.r. 80*l*., reversion in 43 yrs. | 2,575 |
| Canning Town.—Blanche-st., f.g.r.'s 39*l*. 10s., reversion in 76 yrs. | 880 |
| South Lambeth.—Hartington-rd., f.g.r. 27*l*. 10s., reversion in 60 yrs. | 845 |
| Southwark.—2 to 5, Mansfield-st., with timber-yard in rear, u.t. 1½ yrs., g.r. 20*l*. | 105 |
| By J. A. & W. Tharp. | |
| Clapton.—26, Clapton-sq., f., r. 100*l*. | 3,050 |
| Edmonton.—41, Snell's Park, f., e.r. 42*l*. | 700 |
| By C. C. & T. Moore. | |
| St. George's East.—72 to 82 (even), Grove-st., 36 to 46 (even), Christian-st., f. | 6,600 |
| 48 and 50, Christian-st., f. | 820 |
| 1 to 4, Matilda-pl., f. | 790 |
| 1 to 4, Matilda-st., f. | 1,070 |
| 54 and 56, Christian-st., f. | 795 |
| 58, 60, and 62, Christian-st., f. | 3,620 |
| 66, Christian-st., and 24 and 26, Fairclough-st., f., r. 87*l*. | 1,500 |
| 28 and 30, Fairclough-st., f. | 800 |
| 41 to 63 (odd), Christian-st., f. | 6,870 |
| 65, 65a, 65b, 67, 69, 69a, Christian-st.; 24, Fairclough-st.; and 31, 32, and 33, Brunswick-st., area 6,400 ft., f. | 6,000 |
| 19 to 30, Brunswick-st., f. | 4,370 |
| 75, 77, and 79, Ellen-st., f. | 1,105 |
| By Charles Hawkins (at Stoke Ferry). | |
| Stoke Ferry, &c., Norfolk.—A freehold farm, 53 a. 3 r. 16 p. | 1,525 |
| Methwold, Norfolk.—The Mundford Field, 97 a. 2 r. 38 p., f. | £600 |
| The Swan Closes, 11 a. 3 r. 30 p., f. | 400 |
| By J. J. Hill & Weaver (at Masons' Hall Tavern). | |
| Tottenham Court-rd.—No. 101, "The Bull's Head" p.-h. (Tottenham Distillery), u.t. 80½ yrs., r. 310*l*., with goodwill | 48,000 |
| Haverstock Hill.—England's-lane "The Washington Hotel," u.t. 62½ yrs., r. 100*l*., with goodwill | 25,700 |
| By Slee, Son, & Carden (at Masons' Hall Tavern). | |
| Enfield.—The Town, "Ye Olde Pente House" p.-h., u.t. 38 yrs., r. 100*l*., with goodwill | 650 |
| By Baxter, Payne, & Lepper (at Bromley). | |
| Downe, Kent.—Four freehold Cottages, r. 36*l*. 14s. | 400 |
| By George Turner (at Ipswich). | |
| Ipswich.—Felaw-st., The Old Workhouse, area 3 a. 1 r, 38 p., f. | 8,200 |
| By White & Sons (at Dorking). | |
| Westcott, Surrey.—Hill House and 2 a. 0 r. 32 p., f. | 2,250 |
| An enclosure of land, 0 a. 3 r. 36 p., f. | 260 |
| Five freehold cottages | 620 |
| May 26.—By Furber, Price, & Furber. | |
| St. Albans, Herts.—Watford-rd., St. Stephen's House and 1 a. 2 r. 20 p., r. 75*l*. | 2,250 |
| Clapham.—19, Cavendish-rd., u.t. 85½ yrs., g.r. 12*l*. | 580 |
| By Protheroe & Morris. | |
| Leyton.—Grange-rd., a block of building land, f. | 300 |
| Shaftesbury-rd., a block of building land, f. | 140 |
| Stondon Massey, Essex.—Stock's Cottages and 10 a. 0 r. 16 p., f. | 540 |
| By Rider & Sons. | |
| Notting Hill.—64 and 66, Walmer-rd., and 2, Silchester-mews, u.t. 64 yrs., g.r. 22*l*. 2s. 6d. | 715 |
| 50, Golborne-rd., u.t. 67 yrs., g.r. 10*l*., e.r. 50*l*., with goodwill | 400 |
| Shepherd's Bush.—19, Caxton-rd., f., r. 28*l*. | 415 |
| By Dowsett, Knight, & Co. | |
| Notting Hill.—91, Clarendon-rd., u.t. 40 yrs., g.r. 10*l*., e.r. 55*l*. | 355 |
| By Walter Hall. | |
| Canning Town. — Victoria Dock-rd., "The Windsor Castle" p.-h, f.g.r. 110*l*., reversion in 95½ yrs. | 2,635 |
| Clapham.—12, Mayflower-rd., u.t. 83 yrs., g.r. 10*l*., r. 50*l*. | 500 |
| 29, Severns-rd., u.t. 85 yrs., g.r. 8*l*. 8s., r. 42*l*. | 460 |
| By G. A. Wilkinson & Son. | |
| City of London.—120 to 123, Fenchurch-st., and 8, Billiter-sq., area 8,200 ft., let on building lease for 80 yrs., at per annum | 2,200 |
| By Baker & Sons. | |
| Harrow, Middx.—Peterborough-rd., The Harrow Cycle Depot, f., r. 90*l*. | 1,330 |
| 1 to 5, Cambridge-villas, r. 119*l*.; Wellington-rd., Brightview, Waterloo Villa, and Aston Villa, r. 85*l*. 16s., f. | 1,190 |
| 1, 2, and 3, Jubilee-ter., u.t. 97 yrs., g.r. 7*l*. 10s., r. 115*l*. | 1,320 |
| 4, 5, and 6, Jubilee-ter., u.t. 97 yrs., g.r. 6*l*. | 805 |
| 1 to 6, Queen's-ter., u.t. 97 yrs., g.r. 10*l*. 10s. | 1,555 |
| 1 to 4, Canning-villas, f. | 2,000 |
| May 27.—By Bruton, Knowles & Co. (at Gloucester). | |
| Upleaden, Glos.—Bayton's Farm, 72 a. 2 r. 29 p., f. | 1,600 |
| A freehold holding, 3 a. 2 r. 27 p. | 350 |
| By Winch & Sons (at Hawkhurst). | |
| Sandhurst, Kent.—Enclosure of Marsh land, 23 a. 2 r. 19 p., f. | 640 |
| Lomas Farm, 108 a. 3 r. 22 p., f. | 2,500 |
| A freehold messuage and an orchard, 0 a. 3 r. 2 p. | 185 |
| Hope House Farm, 106 a. 0 r. 15 p., f. | 1,600 |
| The Mill Brooks and Heel Fields, 16 a. 3 r. 24 p., f. | 300 |
| Hoadland and Reynold's Farm, 167 a. 1 r. 11 p., f. | 2,375 |
| May 29.—By Durrant & Lamperd. | |
| Bromley, Kent.—36 and 37, Palace-rd., f., r. 45*l*. | 870 |
| East Finchley.—King-st., a freehold building site | 280 |
| Rotherhithe.—674 and 678, Rotherhithe-st., f., r. 44*l*. | 575 |
| Lee.—10, Bromley-rd., u.t. 65 yrs., g.r. 7*l*. 10s., r. 35*l*. | 300 |
| Forest Hill.—4, Rockbourne-rd., u.t. 62 yrs., g.r. 6*l*. 6s., r. 26*l*. | 225 |
| Bromley, Kent.—Park-rd., f.g.r.'s 19*l*. 10s., reversion in 61 yrs. | 535 |
| Widmore-rd., f.g.r.'s 23*l*., reversion in 61 yrs. | 640 |
| Peckham.—Kirkwood-rd., f.g.r.'s 8*l*. 8s., reversion in 74 yrs. | 205 |
| By H. J. Bromley. | |
| Forest Hill.—28, Rockbourne-rd., u.t. 61 yrs., g.r. 6*l*. 10s. | 280 |
| By Elliott, Son, & Boyton. | |
| Hampstead.—80 and 82, Goldhurst-ter., u.t. 79 yrs., g.r. 24*l*., r. 120*l*. | 1,075 |
| Kentish Town.—Malden-rd., "The Newbury Arms" p.-h., i.g.r 84*l*., u.t. 41½ yrs., g.r. 12*l*. | 1,410 |
| Stoke Newington.—Nevill-rd., i.g.r. 40*l*., u.t. 65 yrs., g.r. 10*l*. | 620 |
| By Mark Gilbert. | |
| Enfield Highway.—Turkey-st., the Grove House Estate, 10 a., f. | 4,000 |
| Canning Town.—18, 20, and 22, Blanche-st., u.t. 76 yrs., g.r. 9*l*. | 300 |
| By Leopold Farmer. | |
| Hampstead.—1 to 6 and 8 to 11, Smyrna-rd., u.t. 81 yrs., g.r. 65*l*., r. 378*l*. | 3,700 |
| Kilburn.—12, Cambridge-gardens, u.t. 60 yrs., g.r. 12*l*. 10s., e.r. 65*l*. | 700 |
| Regent's Pk.—55, Park-rd., u.t. 10 yrs., g.r. nil, r. 60*l*. | 265 |
| By F. Warman. | |
| Highbury.—10, Highbury New Pk., u.t. 50 yrs., g.r. 15*l*., r. 80*l*. | 1,050 |
| 67, Highbury New Pk., u.t. 10 yrs., g.r. 15*l*., e.r. 100*l*. | 825 |
| Finsbury Pk.—86, Queen's-rd., u.t. 76 yrs., g.r. 10*l*. 10s. | 1,075 |
| Crouch Hill.—23, Mount Pleasant-villas, u.t. 76 yrs., g.r. 10*l*. 10s., r. 52*l*. 10s. | 650 |
| Regent's Pk. — 126, Albany-st., u.t. 24 yrs., g.r. 9*l*. 10s., e.r. 70*l*. | 500 |
| 77, Little Albany-st., u.t. 24 yrs., g.r. 2*l*. 10s., r. 26*l*. | 130 |
| Barnsbury.—102, Richmond-rd., u.t. 7 yrs., g.r. 1*l*. 3s. 4d., e.r. 45*l*. | £140 |
| By Reynolds & Eason. | |
| St. Pancras.—43, Cardington-st., an improved rental of 149*l*., u.t. 19 yrs. | 2,350 |
| Bloomsbury.—118, Gower-st., an improved rental of 70*l*., u.t. 15 yrs. | 760 |
| Stoke Newington.—28, 30, and 32, Londesborough-rd., u.t. 64 yrs., g.r. 12*l*., r. 78*l*. | 890 |
| St. George's East.—202 and 210, St. George-st., f. | 800 |
| Stepney.—20 and 22, Elsa-st., f. | 475 |
| Poplar.—1 to 4, Caledonia-ter., f. | 940 |
| 56, Cotton-st., f., r. 42*l*. | 450 |
| 1 and 2, Woolmore-st., f. | 555 |
| Bromley-by-Bow.—64 to 72 (even), Brabazon-st., f. | 1,160 |
| By Wootton & Green. | |
| Notting Hill.—47 to 57 (odd), Latimer-rd., f., r. 258*l*. 10s. | 2,700 |
| 59, Latimer-rd., f., r. 50*l*. | 600 |
| 272, Latimer-rd., f., r. 55*l*. 8s. | 600 |
| 266 and 268, Latimer-rd., u.t. 64 yrs., g.r. 9*l*. 18s. 4d., r. 71*l*. | 510 |
| Latimer-rd., "The British Volunteer" b.-h., also 1 and 3, Park-st., u.t. 66 yrs., g.r. 70*l*. | 925 |
| Shepherd's Bush.—21 and 23, Tadmor-st., f., r. 60*l*. | 900 |
| 96, 98, and 100, Devonport-rd., f. | 1,555 |
| 118 and 120, St. Stephen's-av., f. r. 72*l*. | 1,050 |
| Wimbledon.—De Burgh-rd., two building plots, f. | 140 |
| Gunnersbury.—Thorney Hedge-rd., a plot of land, f. | 185 |
| By Wilkinson, Son, & Welch (at Brighton). | |
| Hove, Sussex.—Hove Lodge Mansions, f.g.r. 120*l*., reversion in 97 yrs. | 3,325 |
| By W. Ludlow & Briscoe (at Birmingham). | |
| Northfield, Worcester.—West Heath-rd., Broom Hill and 0 a. 2 r. 28 p., u.t. 96 yrs., g.r. 10*l*. | 1,000 |
| Knowle, Warwick.—Darley Mill Farm, 18 a. 3 r. 7 p., f. | 1,800 |
| May 30.—By P. and G. Geen. | |
| Wood Green.—Blenheim-rd., &c., f.g.r. 44*l*., reversion in 81 yrs. | 780 |
| Notting Hill.—44, 66, and 68, Portland-rd., u.t. 50 yrs., g.r. 26*l*., r. 140*l*. | 1,165 |
| Wood Green.—16, Truro-rd., u.t. 78 yrs., g.r. 17*l*. 7s. | 540 |
| Lambeth.—3, Lambeth Palace-rd., u.t. 14½ yrs., g.r. &c., 23*l*. 19s. | 270 |
| By Debenham, Tewson, & Co. | |
| Hornsey.—Middle-lane, f.g.r.'s 25*l*. 10s., reversion in 80 yrs. | 690 |
| Holloway.—Tufnell Park-rd., i.g.r.'s 26*l*., u.t. 65 yrs., g.r. 5*l*. | 460 |
| Blackfriars.—13, Aquinas-st., area 5,500 ft., u.t. 9½ yrs., g.r. 33*l*. 12s., r. 129*l*. | 500 |
| By J. Horatio Hibbard. | |
| Hackney.—2 and 5, St. Mark's-ter., u.t. 67 yrs., g.r. 12*l*. 10s. | 775 |
| By F. Jolly & Co. | |
| Stoke Newington.—47, Milton-rd., u.t. 53 yrs., g.r. 4*l*. | 270 |
| By Walter Simmonds. | |
| Camberwell.—92A, 94, to 108 (even), Westmacott-st., f. | 2,260 |
| 35 to 45 (odd), Waterloo-st., f. | 1,260 |
| By A. H. Turner & Co. | |
| Piccadilly.—2, Albemarle-st., f., r. 1,000*l*. | 16,070 |
| By Ventom, Bull, & Cooper. | |
| City of London.—52, Bread-st., u.t. 68 yrs., g.r. 355*l*., e.r. 1,115*l*. | 7,000 |
| Camberwell.—3, 4, 5, and 6, Camberwell Green, f. | 5,000 |
| By St. Quintin & Son. | |
| Regent-st.—Nos. 210 and 210A, also 48, King-st., u.t. 20 yrs., g.r., &c., 119*l*., r. 1,670*l*. | 20,000 |
| By Ellis, Morris & Co. | |
| Holloway.—1 to 4, Cottenham-ter., u.t. 67 yrs., g.r. 24*l*. | 880 |
| Acton.—77, Park-rd., f. | 235 |
| 39 and 41, Stanley-rd., f. | 460 |
| Turnham Green.—17 and 19, Bollo-lane, f. | 680 |
| By Harman Bros. | |
| Stoke Newington.—37, Lordship Pk., u.t. 74½ yrs., g.r. 10*l*. 10s., r. 65*l*. | 1,045 |
| 46, Fountayne-rd., u.t. 77½ yrs., g.r. 9*l*. 10s., r. 48*l*. | 665 |
| Limehouse.—Grenade-st., &c., a corner building site, with building thereon, area 4,088 ft., c., r. 60*l*. | 875 |
| Clapton.—1, Charnock-rd., u.t. 82 yrs., g.r. 9*l*., r. 38*l*. | 350 |
| By C. C. Taylor & Son. | |
| Bromley-by-Bow.—2 to 30 (even), Tibbatt's-rd., u.t. 63 yrs., g.r. 42*l*. 18s. | 2,575 |
| Hoxton.—1 to 5 and 13 to 17, Hutley-pl., u.t. 19 yrs., g.r. 25*l*. | 675 |
| By Alfred Richards. | |
| Rayleigh, Essex.—The Rayleigh Gas Works, f. (as a going concern) | 1,270 |
| By Orgill, Marks, & Orgill (at Masons' Hall Tavern). | |
| Chalvey, Bucks.—"The Garibaldi" b.-h., f., r. 45*l*. | 2,150 |
| 372, Sussex-pl., f. | 325 |
| 1, 2, and 3, Garibaldi-cottages, f. | 430 |
| By Whetherly & Haslett (at Masons' Hall Tavern). | |
| Stoke Newington.—Newington Green-rd., "The Edinburgh" p.-h., and shop adjoining, u.t. 43 yrs., r. 150*l*., with goodwill | 15,500 |
| Oxford-st.—Well-st., "The Champion" p.-h., u.t. 45 yrs., r. 130*l*., with goodwill | 10,500 |
| By A. Robertson (at Camberwell). | |
| Walworth.—194, Hillingdon-st., f. | 315 |
| Dulwich.—38, Wood-vale, u.t. 76 yrs., g.r. 6*l*., e.r. 34*l*. | 315 |
| By Stephenson & Alexander (at Cardiff). | |
| Cardiff, Glamorgan.—172, Newport-rd., u.t. 73 yrs., g.r. 5*l*. 10s. | 625 |
| 139 and 139½, Bute-st., u.t. 50 yrs., g.r. 6*l*. 7s. 6d., r. 120*l*. | 1,100 |
| Penarth, Glamorgan.—Upper Cliff, u.t. 54 yrs., g.r. 10*l*., r. 100*l*. | 1,525 |
| By Edward Bond (at Thame). | |
| Haddenham, Bucks.—A copyhold residence and 2 a. | 610 |
| Garfield House, also a cottage, f. and c. | 405 |
| Home Field, 24 a. 1 r. 13 p., f. and c. | 1,060 |
| By Alfred Richards (at Enfield). | |
| Enfield.—Birkbeck-rd., a block of building land, f. | 260 |
| Hawthorne-grove, two blocks of building land, f. | 350 |
| By R. Dalton & Son (at Carlisle). | |
| Carlisle.—56, 58, and 60, Castle-st., area 410 yds., f. | 3,300 |

# COMPETITIONS, CONTRACTS, AND PUBLIC APPOINTMENTS.

## COMPETITIONS.

| Nature of Work. | By whom Advertised. | Premiums. | Designs to be delivered |
|---|---|---|---|
| *Isolation Hospital | Wharfedale Union Hos. Com. | 30*l*. and 15*l*. | Sept. 1 |

## CONTRACTS.

| Nature of Work or Materials. | By whom Required. | Forms of Tender, &c. Supplied by | Tenders to be delivered. |
|---|---|---|---|
| Two Shops and House, Denbigh-st. Llanrwst | W. J. Williams | P. McIntyre, Archt. The Square, Llanrwst | June 13 |
| *Brick and Concrete Sewer | Lewisham B. of W. | Surv. Dept. Town Hall, Catford, S.E. | do. |
| *Kerbing, Tar Paving, &c. | do. | do. | do. |
| *Granite Spalls and Broken Granite | Hackney Vestry | J. Lovegrove, Vestry Hall | June 14 |
| *Portland Cement | Hove Corp. | Surveyor, Town Hall | do. |
| *Timber Diving Platform and Two Rafts | L.C.C. | Parks' Dept. 9, Spring-gardens, S.W. | do. |
| Laundry Buildings, Blackhill, co. Durham | N. W. Durham Steam Laundry Co. | G. T. Wilson, Archt. 121, Durham-rd. Blackhill | do |
| Granite Setts (650 tons) | Rochdale Corp. | J. Leach, Town Hall | do. |
| Sewers | do. | S. S. Platt, C.E. Town Hall | do. |
| *Flints | Kingston-on-Thames Corp. | Boro Surv. Clattern House, Kingston-on-Thames | June 15 |
| *Council Offices and Fire Station | Sutton (Surrey) U.D.C | C. C. Smith, Public Offices, Sutton, Surrey | do. |
| *Galvanised Iron Dust Pails (2,000) | Bethnal Green Vestry | F. W. Barratt, Vestry Hall, Church-row, Bethnal Green | do. |
| Laying 6½ miles Cast Iron Pipes, Rowberrow | Axbridge R.D.C. | A. Powell, C.E. 3, Unity-st. College Green, Bristol | do. |
| Three Cottages, Toft Monks | Trustees | A. Pells, Archt. Beccles | do. |
| Additions to Workhouse | Amesbury (Wilts) Union | J Harding & Son, Archt. Salisbury | do. |
| Rebuilding Tower of Cathedral, Killaloe, Ireland | ...... | J. F. Fuller, Archt. Brunswick-chmbrs. Dublin | do. |
| Additions to The Beeches, Faygate, Sussex | ...... | W. Buck, Archt. Horsham | do. |
| Offices | Ashburton Sch. Bd. | H. M. Firth, Ashburton | do. |
| Store Buildings, Otley-road | Bradford Provident Indus. Soc. Ltd. | Rycroft & Firth, Archt. Bank-bldgs. Manchester-road, Bradford | do. |
| Surveyor's Materials | Gillingham (Kent) U.D.C. | F. C. Boucher, Gardiner-st. New Brompton | do. |
| Street Works, Devonshire-st. &c. | Birmingham Corp. | J. Price, City Engr. Council House | do. |
| Additions to Shippon, &c. Scholefield, Nelson | E. Carr | H. Holgate, Archt. Market-st. Colne | do. |
| Additions to Asylum, Wadsley | West Riding C.C. | Clerk of Works, The Asylum, Wadsley, Sheffield | do. |
| Destructor Buildings | Belfast Corp. | City Surveyor, Belfast | do. |
| *Concrete Dam, &c. and Road Raising | N. Wales Counties Asylum | J. T. Wood, C.E. 3, Cook-st. Liverpool | do. |
| *Shed, Derby | Midland Railway | Co.'s Archt. Cavendish House, Derby | do. |
| *Laundry Apparatus and Machinery | Wandsworth & Clapham Union | T. W. Aldwinckle, 1, Victoria-st. S.W. | do. |
| Museum, Rossall School, Fleetwood, Lancs. | | Wright & Son, Surv. Lancaster | June 16 |
| Sewerage Works, Carlton | Barnsley R.D.C. | W. J. Lomax, Engr. 11, Fold-st. Bolton | do |
| Alterations to House, Church-road, Harrington | J. B. Little | W. G. Scott & Co. Archt. Victoria-bldgs. Workington | June 17 |
| Schools, Loy Houses, Cookstown | M. & E. J. Houston | J. M. Robinson, Cookstown, Ireland | do |
| Hospital, Carnarvon | Building Committee | R. L. Jones, Archt. Market-st. Carnarvon | do. |
| Alterations, Carmel Chapel, Treherbert | ...... | J. Rees, Archt. Pentre, R.S.O. Glam | do |
| Additions to Corn Exchange | Loughborough Corp. | A. H. Walker, C.E. Town Offices, Loughborough | June 19 |
| Additions to Cottages, Durnsford-rd. | Wimbledon U.D.C. | C. H. Cooper, C.E. Broadway, Wimbledon | do. |
| Two Cottages, Halwell, Devon | ...... | W. F. Tollit, Archt. Gate House, Totnes | do |
| Road Works | Tunbridge Wells Corp. | W. C. Cripps, Town Hall | do. |
| Coastguard Houses, &c. Mullion, Cornwall | ...... | J. Roberts, Mullion | do. |
| Cast Iron Pipes (815 tons) | Belfast Water Commissioners | L. L. Macassey, C.E. Belfast | do. |
| Additions to Schools, Dyfatty | Swansea Sch. Bd. | A. W. Balden, Dynevor-place, Swansea | do. |
| Bridge | Wallasey U.D.C. | H. W. Cook, Public Offices, Egremont, Cheshire | do. |
| Street Works, Riverdale-road | Erith U.D.C. | F. Parish, High-st. Erith | do. |
| Road Works, Griffin-street | Wolverhampton Corp. | J. W. Bradley, C.E. Town Hall | do. |
| Surveyor's Materials | Market Bosworth R.D.C. | W. Thorpe, Surv. Nailstone, Nuneaton | do. |
| *Fifty-three Cottages and Five Blocks of Tenements | Tunbridge Wells Corp. | Borough Surveyor | do. |
| *Sewering and Making-up Roads | do. | do. | do. |
| *Institute, Swimming Baths, Laundry, &c. | Beckenham U.D.C. | Council Offices | do. |
| *Fog Signal House, Dwellings, &c. | Trinity House Corp. | E. G. Verity, 31, Golden-sq. W. | do. |
| *Wood Paving Blocks | Bermondsey Vestry | F. Sumner, Town Hall | do. |
| Alterations to Schools, Albert-road | Penarth Sch. Bd. | Seddon & Carter, Archt. Bank-b'dgs. Cardiff | June 20 |

## CONTRACTS—*Continued.*

| Nature of Work or Materials. | By whom Required. | Forms of Tender, &c. Supplied by | Tenders to be delivered. |
|---|---|---|---|
| Eleven Houses, Ovenden Wood, Halifax | S. Webster & Son, Ltd. | Jackson & Fox, Archt. Halifax | June 20 |
| Sewers, Grassendale, Lancs. | Garstang U.D.C. | F. W. Bowden, C.E. Public Offices, Grassendale | do. |
| Kerbing, Upper Greetland | Halifax R.D.C. | T. Gordon, Surv. Clifton, Brighouse | do. |
| *Providing and Laying Urinals | Tottenham U.D.C. | P. E. Murphy, 712, High-rd. Tottenham | do. |
| *Work in Erection of Hospital, also Heating, &c. Apparatus | Sheffield Corp. | Flockton, Gibbs, & Flockton, 15, St. James-row, Sheffield | do. |
| *Laying York Paving | Tottenham U.D.C | P. E. Murphy, 712, High-rd. Tottenham | do. |
| *Hospital | Basingstoke U.D.C. | J. Gibson, 3, New-st. Basingstoke | June 21 |
| Houses, Bridlington Quay | T. H. Harris | S. Dyer, Archt. Bridlington Quay | do. |
| Additions to Workhouse | Hemsworth (Yorks) Union | T. H. Richardson, Archt. Hemsworth | do |
| Granite (600 tons) | Braintree U.D.C. | H. H. Nankivell, Surv. Waterworks, Braintree | do. |
| *Fire Escape Staircases | St. Pancras Guardians | Browett & Taylor, 9, Warwick-ct. Holborn, W.C. | June 22 |
| Granite Setts | Grays (Essex) U.D.C. | A. C. James, Surv. High-st. Grays | do |
| Alterations to Police Buildings, Polmadie | Glasgow Corp. | J. Lindsay, City Chambers, Glasgow | do |
| Church, Lostwithiel, Cornwall | ...... | S. Hill, Archt. Green-ln. Redruth | do. |
| Four Houses, Kelvedon, Essex | ...... | Chancellor & Son, Archt. Chelmsford | June 23 |
| Stabling, &c. Square-rd. Halifax | ...... | J. F. Walsh, Archt. L & Y. Bank-chambers, Halifax | d |
| Paving Flags | Tewkesbury Corp. | W. Ridler, Boro. Surv. Tewkesbury | June 24 |
| Street Works, Clyde-rd. &c. | Withington (Lancs.) U.D.C. | A. H. Mountain, C.E. Town Hall | do |
| Schools, Blaina, Mon. | Trustees | W. S. James, 77, High-st. Blaina | June 25 |
| Bridge Repairs | Alnwick R.D.C. | J. Short, Surv. Alnwick | June 26 |
| Reservoir, Snableazes | do. | H. W. Walton, Alnwick | do. |
| Schools, Owm | Aberystwyth Sch. Bd | R. L. Roberts, Archt. Victoria-chmbrs. Abercarn | do. |
| Boiler House, &c. | Edinburgh Corp. | Borough Engineer, 1, Parliament-sq. Edinburgh | do |
| Houses, Bundoran & Belleek, Ireland | G. N. Ry. Co. | T. Morrison, Amiens-st. Terminus, Dublin | June 27 |
| *Granite | N. Walsham U.D.C. | Surv. Council Offices | June 28 |
| Granite (200 tons) | Bournemouth U.D.C. | W. T. Streather, Surv. Winton, Bournemouth | do. |
| Villa, Greenroyd Estate, Halifax | — | M. Hall, Archt. 29, Northgate, Halifax | do. |
| *Works at Relief Offices | Islington Guardians | W. Smith, 65, Chancery-lane, W.C. | June 29 |
| Well Sinking | North Walsham (Norfolk) U.D.C. | J. C. Melliss, C.E. 264, Gresham House, Old Broad-st. E.C. | do |
| *Underground Convenience | Brighton Corp. | F. J. C. May, Town Hall | June 30 |
| *Post Office, Chatham | Commrs. H.M. Works | Office, Storey's Gate, S.W. | do. |
| *Cleansing, Repairs, Painting, of 14 Schools | West Ham Sch. Bd. | W. Jaques, 2, Fen-court, E.C. | July 4 |
| *Workhouse | Stamford Union | J. H. Horton, 50, King-st. South Shields | July 17 |
| *Medical Schools at College, Liverpool | University College Liverpool | A. Waterhouse & Son, 20, New Cavendish-st. W. | No date |
| Residence, South Croydon | ...... | W. Towell, Archt. 21, Buckingham-st. W.C. | do. |
| Offices, Mount Stuart-sq. Cardiff | ...... | H. T. Thornley, Archt. 100, St. Mary-st. Cardiff | do. |
| Three Cottages, Willesden | ...... | T. F. Shore, Archt. 60, Nicoll-rd. Harlesden, N.W. | do. |
| Alterations to Premises, Wade-st. &c. Leeds | O'Hara & Co. | J. E. Preston, Archt. Chapel Allerton, Leeds | do. |
| Additions to Store Buildings, East Kirkby | ...... | L. Bright, Archt. 9, St. Peter's Church Walk, Nottingham | do. |
| House at National Schools, Harrietsham, Kent | ...... | H. Bensted, Archt. Maidstone | do. |
| Water Works | Perth C.C. | Thomson & Wright, C.E 22, Rutland-sq. Edinburgh | do |
| Residence, Compton Parochial Hall, Shawford | Compton Parish Council | Colson & Co. Archt. 45, Jewry-st. Winchester | do |
| Four Houses, Wakefield-rd. Bradford | ...... | J. Young & Co. Archt. 62, Market-st. Bradford | do. |
| Additions to 104-106, Holton-rd. Barry Dock | D. L. Evans & Co. | D. E. Knapman, Archt. Barry Dock, Glam. | do |
| House, Trebanog, nr. Porth | ...... | Veall & Sant Archt Cardiff | do |
| Tenements, High-st. Dunbar | ...... | Swanston & Legge, Archt. Kirkcaldy, N.B. | do |
| *Extension of Laundry | Farnboro Laundry Co. | W. E. Trevena, Ridgemount, Southampton-st. Farnboro, Hants. | do. |

## PUBLIC APPOINTMENTS.

| Nature of Appointment. | By whom Advertised. | Salary. | Application to be in. |
|---|---|---|---|
| *Clerk of Works | South Shields S.B. | 3*l* per week | June 13 |
| *Clerks of Works (2) | Beckenham U.D.C. | 4*l*. 4s. & 3*l*. 13s. 6d. perweek | June 19 |
| *Surveyor | Bermondsey Vestry | 300*l*. per annum, residence, coal, gas, &c. | June 21 |

*Those marked with an asterisk* (*) *are advertised in this Number. Competitions, p.* iv. *Contracts, pp.* iv. vi. viii. x. & xxi. *Public Appointments, pp.* xviii. & xxi.

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| | |
|---|---|
| May 31.—By BELCHER, ADKIN, & BELCHER (at Wantage). | |
| Wantage, Berks.—Station-rd., five building plots | £258 |
| An enclosure of land, 7 a. 2 r. 30 p., f. | 275 |
| Truelocks and 4 a. 2 r. 33 p., f. | 360 |
| Barnards and 52 a., f. | 1,975 |
| Clement's and Fuller's homesteads, 5 a. 1 r. 20 p., f. | 415 |
| Eight freehold cottages | 345 |
| Various enclosures of land, 233 a. 0 r. 17 p., f. | 2,235 |
| By HEPPER & SONS (at Harrogate). | |
| Harrogate, Yorks.—Regent Parade, The Bilton House Estate, 2 a. 0 r. 12 p., f. | 5,000 |
| By H. LUKE & SON (at Bridport). | |
| Marshwood, Dorset. — Hackeridge and Batts Farms, 190 a. 2 r. 5 p., f. | 3,300 |
| By REEVE & FINN (at Hastings). | |
| Brede, &c., Sussex.—Purster and Hole Farms, 153 a. 1 r. 32 p., f. | 2,000 |
| June 1.—By HAMILTON & MIALL. | |
| Canning Town.—145 to 155 (odd), North Woolwich-rd., f. | 1,150 |
| Rotherhithe.—568 to 580 (even) Rotherhithe-st., f. | 1,300 |
| By H. S. HAWLEY & CO. | |
| Bethnal Green.—4, 6, and 8, Selby-st., f. | 840 |
| By J. HOOD & SONS. | |
| Stepney.—2 and 10, Belgrave-st., u.t. 9 yrs., g.r. nil | 250 |
| Shadwell.—20 and 22, New Gravel lane, f. | £345 |
| 84, Wapping Wall, f. | 355 |
| Commercial-rd. East.—25, 27, and 29, Morris.st., f. | 900 |
| By HOLCOMBE, BETTS, & WEST. | |
| St. John's Wood.—36 and 38, Loudoun-rd., u.t. 38 yrs., g.r. 20*l*., r. 120*l*. | 1,110 |
| Stratford.—165, Leyton High-rd., u.t. 80 yrs., g.r. 5*l*. | 200 |
| Shepherd's Bush.—18, Frithville-gardens, u.t. 84½ yrs., g.r. 8*l*., r. 40*l*. | 415 |
| By G. F. FRANCIS. | |
| Chelsea.—3, Cheyne-row, f., r. 21*l*. | 380 |
| By C. C. & T. MOORE. | |
| Mile End.—468A, Mile End-rd., f. and c., e.r. 45*l*. | 710 |
| Sampson's-place, a building site, area 2,215 ft., f. | 450 |
| Bow.—9, Avenue-rd., u.t. 33 yrs., g.r. 3*l*. 10s. | 400 |
| 125 and 127, St. Stephen's-rd., f. | 620 |
| Clapton.—25 to 31 (odd), Carlton-rd., f. | 830 |
| Homerton.—1 to 4, Hockley-st., f. | 790 |
| Bromley.—14a and 16a, Three Mills-lane, and 1a, 1 and 3, Imperial-st., u.t. 65½ yrs., g.r. 10*l*. | 550 |
| 5 to 27 (odd), Imperial-st., u.t. 65½ yrs., g.r. 30*l*. | 1,440 |
| By NEWBON, EDWARDS, & SHEPHERD. | |
| Dalston.—21 to 29 (odd), 32 to 46 (even), Graham-rd., u.t. 53 yrs., g.r. 71*l*. 10s., r. 491*l*. (in lots) | 5,995 |
| Highbury.—34, Highbury-hill, u.t. 53 yrs., g.r. 17*l*. 10s., r. 55*l*. | 435 |
| Camden Town.—2, Arlington-ter., u.t. 48 yrs., g.r. 7*l*., e.r. 46*l*. | £415 |
| Finchley.—1, Torrington-pl., f., r. 55*l*. | 555 |
| By STIMSON & SONS. | |
| Highgate.—Hornsey-lane, Castlemere and Ivanhoe, f., r. 260*l*. | 3,750 |
| 69, Whitehall Park, f., r. 60*l*. | 1,150 |
| Crouch End.—52, Weston-pk., u.t. 82½ yrs., g.r. 10*l*., r. 50*l*. | 520 |
| 19, 21, 23, and 27, Ella-rd., u.t. 82½ yrs., g.r. 31*l*. 1s., r. 185*l*. | 2,045 |
| Tooting.—21, 22, and 23, Mandrake-rd., f. | 1,005 |
| Stamford Hill.—14, Amhurst-pk., u.t. 66 yrs., g.r. 18*l*., e.r. 150*l*. | 1,650 |
| Forest Gate.—17, Sebert-rd., f., r. 30*l*. | 505 |
| Old Kent-rd.—80, 82, and 84, Trafalgar-rd., u.t. 33 yrs., g.r. 6*l*. | 970 |
| Dulwich.—28 to 62 (even), Landells-rd., u.t. 78½ yrs., g.r. 81*l*. | 3,250 |

*Contractions used in these lists.*—F.g.r. for freehold ground-rent; l.g.r. for leasehold ground-rent; i.g.r. for improved ground-rent; g.r. for ground-rent; r. for rent; f. for freehold; c. for copyhold; l. for leasehold; e.r. for estimated rental; u.t. for unexpired term; p.a. for per annum; yrs. for years; st. for street; rd. for road; sq. for square; pl. for place; ter. for terrace; cres. for crescent; yd. for yard, &c.

## TO CORRESPONDENTS.

A. H.—J. B. R. (Amounts should have been stated). A. E. K. (Sent too late).

NOTE.—The responsibility of signed articles, letters, and papers read at public meetings, rests, of course, with the authors.

*We cannot undertake to return rejected communications.*

Letters or communications (beyond mere news items) which have been duplicated for other journals are NOT DESIRED.

We are compelled to decline pointing out books and giving addresses.

Any commission to a contributor to write an article is given subject to the approval of the article, when written, by the Editor, who retains the right to reject it if unsatisfactory. The receipt by the author of a proof of an article in type does not necessarily imply its acceptance.

All communications regarding literary and artistic matters should be addressed to THE EDITOR; those relating to advertisements and other exclusively business matters should be addressed to THE PUBLISHER, and *not* to the Editor

## TENDERS.

[Communications for insertion under this heading should be addressed to "The Editor," and must reach us *not later than* 10 *a.m. on Thursdays.* N.B.—We cannot publish Tenders unless authenticated by the name and address of the sender; and we cannot publish announcements of Tenders accepted unless the amount of the Tender is given, nor any list in which the lowest Tender is under £100, unless in some exceptional cases and for special reasons.]

* Denotes *accepted.* † Denotes *provisionally accepted.*

ABERYSTWITH.—For the erection of twenty workmen's houses, for the Town Council. Mr. Rees Jones, Borough Surveyor, Corporation Offices, Aberystwith. Quantities not supplied :—

| | Per house. |
|---|---|
| Williams & Co. | £256 9 |
| D. Williams | 229 0 |
| Rees & Son | 210 0 |
| E. Jenkins | 200 0 |
| Davies & Stephens | 198 0 |
| Owen Bros. | 197 0 |

[Tenders referred to committee for consideration and report.]

BILSTON.—For supplying and laying water main, Orton, near Wombourn, for the Urban District Council. Mr. C. L. N. Wilson, A.M.Inst.C.E., Council Offices, Bilston. Quantities by Mr. G. Kenwick, F.S.I., Birmingham :—

| | | | |
|---|---|---|---|
| H. Roberts | £553 0 0 | C. J. Nevett | £448 16 3 |
| Holloway, Wolverhampton* | 467 4 9 | Engineer's estimate | 540 0 0 |

BRANKSOME.—For tar-paving, kerbing, &c., to footways, for the Branksome Urban District Council. Mr. Samuel J. Newman, Surveyor to the Council :—

| | A. | B. |
|---|---|---|
| Wainwright & Co. | (No quotation) | 3,486 5 8 |
| S. Minty | 2,623 11 6 | 2,973 11 6 |
| E. Bradshaw | 2,822 19 0 | 2,904 0 10 |
| G. T. Budden | 2,667 17 0 | 2,830 0 8 |
| Asphaltic Limestone Concrete Company | 2,623 14 0 | 2,704 15 10 |
| Josiah Smart | 2,369 5 2 | 2,571 19 9 |
| H. C. Brixey | 2,052 1 9 | 2,538 14 9 |
| Maichin & Co. | 2,440 2 7 | 2,521 4 5 |
| Grounds & Newton | 2,289 10 11 | 2,451 14 7 |
| Turner, Heaton, & Mitchell, Manchester* | (No quotation) | £2,403 16 11 |

A.—If local gravel is used for the bottom layer of tar-paving.

B.—If limestone as specified is used for tar-paving throughout.

BRIDLINGTON QUAY.—For the erection of a pair of semi-detached villas, Spring-street, for Mr. F. G. Purdon. Mr. J. Earnshaw, architect, Bridlington Quay :—

| | | | |
|---|---|---|---|
| Blackburn & Son | £1,499 0 0 | J. H. Hudson | £1,328 13 0 |
| E. Corner | 1,385 0 0 | W. Moody | 1,318 10 0 |
| W. Barnes | 1,360 0 0 | A. Gardam | 1,158 14 6 |
| T. Blackburn | 1,329 0 0 | E. Wilson* | 1,137 14 5 |

[All of Bridlington Quay.]

BRIDLINGTON QUAY.—For the erection of two houses and three shops, for Messrs. Lowson. Mr. J. Earnshaw, architect, Carlton House, Bridlington Quay :—

| | | | |
|---|---|---|---|
| J. H. Hudson | £2,307 0 | A. Gardam | £1,749 15 |
| W. Moody | 1,850 0 | T. Blackburn | 1,664 0 |
| F. Blackburn | 1,757 0 | J. Rennard* | 1,550 0 |
| E. Corner | 1,750 0 | | |

[All of Bridlington Quay.]

BROMLEY (Kent).—For the erection of a house on the Sundridge Park Estate, for Mrs. Hindley. Messrs. Niven & Wigglesworth, architects, 34, Mecklenburg-square :—

Lewis Evans, Bromley .................... £1,600

BROMLEY (Kent).—For the erection of a house, Park-hill, Bickley, for Mr. Stenhouse. Messrs. Niven & Wigglesworth, architects, 34, Mecklenburg-square :—

Lewis Evans, Bromley .................... £1,595

BURTON-ON-TRENT.—For the erection of Artisans' Dwellings (Block No. 1) on the Horninglow Estate, for the Burton-on-Trent Artisans' Dwellings Company, Limited. Mr. Thomas Jenkins, architect, 35, High-street, Burton-on-Trent. Quantities by the architect :—

Henry Edwards* .................... £3,862 10

BURTON-ON-TRENT.—For alterations to the Stapenhill Vicarage, for the Rev. F. W. Meynell. Mr. Thomas Jenkins, architect, 35, High-street, Burton-on-Trent. Quantities by the architect :—

George Kennard*, schedule of prices.

CAISTOR, Lincs.—For the erection of a school-room adjoining the Congregational Church, for the Committee. Mr. J. H. Cooper, architect, Lincoln :—

| | | | |
|---|---|---|---|
| Towle & Son | £463 0 0 | Eastor, Caistor* | £398 7 0 |
| S. Phillips | 410 5 4 | H. & R. Mawer | 395 0 0 |

CARDIFF.—For alterations and additions to Nos. 8 and 9, High-street, Cardiff, for Mr. Samuel Hall. Mr. S. Rooney, architect. Quantities by Mr. S. Rooney, jun. :—

Thomas & Co., Cardiff* .................... £1,000

CARDIFF.—For rebuilding No. 15, High-street, Cardiff, for Mr. E. B. Reece. Mr. S. Rooney, architect. Quantities by Mr. S. Rooney, Junr. :—

C. H. Gibbon, Cardiff* .................... £1,200

CASTLETON (near Cardiff).—For erecting a cottage and bakehouse at Castleton, for Mr. M. Baker. Mr. S. Rooney, architect. Quantities by architect :—

Fursey & Harris, Castleton* .................... £448

CEFN.—For alterations to English Baptist Chapel, Cefn, Ruabon. Mr. J. W. Jones, architect, Brooklea, Acrefair, Ruabon :—

| | | | |
|---|---|---|---|
| R. Hopley | £1,089 12 7 | Humpreys* | £925 10 0 |
| T. T. Jones | 1,057 0 0 | | |

CHELMSFORD.—For the erection of a house in Queen's-road, Springfield Park. Mr. R. Mawhood, architect :—

| | | | |
|---|---|---|---|
| Weight | £488 | Gowers* | £485 |

CHELMSFORD.—For the erection of a pair of villas in King Edward-avenue, for Mr. W. C. Girdlestone. Mr. R. Mawhood, architect :—

| | | | |
|---|---|---|---|
| W. Fincham | £1,190 | J. Gowers* | £1,150 |

CLACTON-ON-SEA.—For the erection of two houses, Marine Parade West, for Mr. W. F. Stauffer. Mr. T. H. Baker, architect and surveyor, Clacton-on-Sea :—

| | | | |
|---|---|---|---|
| Everitts & Son | £2,875 | H. J. Linzell | £2,547 |
| Myll & Ellis | 2,670 | F. Dupont | 2,477 |
| E. West | 2,643 | J. McKay | 2,438 |

[Architect's estimate, £2,400.]

ECCLES (Lancs.).—For sewering, kerbing, paving, &c., in Joseph-street and Parrin-lane, Winton. Mr. A. C. Turley, C.E., Borough Surveyor, Town Hall, Eccles :—

*Joseph-street.*

Wm. Stamp, Urmston .................... £321

*Parrin-lane.*

Wm. Snape & Sons, Eccles .................... £2,909

ERWR DELYN.—For erecting a lodge at Erwr Delyn, for Mr. T. R. Thompson. Mr. S. Rooney, architect. Quantities by Mr. S. Rooney, Junr. :—

W. Rees, Dinas Powis* .................... £475

EXMOUTH.—For the erection of shop and house, Exeter-road, for Mr. S. Hallett. Mr. R. M. Challice, architect, 9, Bedford-circus, Exeter :—

| | | | |
|---|---|---|---|
| Frank Grace, Manchester-street, Exmouth* | £650 | J. J. Lacey | £650 |
| | | W. J. Stokes | 620 |

FALMOUTH.—For alterations to drill hall, for a Committee who represent a body of Guarantors of the expense. Mr. W. M. Tressider, Borough Surveyor, Falmouth :—

E. N. Moss, Falmouth .................... £529

HALIFAX.—For rebuilding St. Paul's Church, Alma-street. Messrs. Gray & Sons, architects, 28, George-street, Halifax :—

| | |
|---|---|
| *Masonry, &c.*—Greenwood & Son* | £515 0 |
| *Joinery.*—C. J. Nowell* | 264 16 |
| *Slating and Plastering.*—Arthur Firth* | 91 0 |
| *Plumbing and Heating.*—Naylor & Son* | 128 0 |

[All of Halifax.]

HERTFORD.—For the repair of roads in several parishes for the Rural District Council. Mr. J. W. Riggs, highway surveyor, Fanshawe-street, Hertford :—

| | |
|---|---|
| Robert Green | £31 per mile. |
| J. Brown, Marden Farm, Hertford‡ | 21 ,, |

‡ Accepted for the whole of the 39½ miles of roads.

HUDDERSFIELD.—For the erection of three houses, Cliffe-lane, Cliffe End. Mr. J. Berry, architect, 9, Queen-street, Huddersfield :—

| | |
|---|---|
| *Masonry.*—W. Gledhill, Lockwood | £750 |
| *Joinery.*—White & Brearley, Golcar | |
| *Plumbing.*—Taylor & Sons, Lockwood | |
| *Painting.*—R. Heaton, Paddock | |
| *Slating.*—T. Allison, Ltd., Milnsbridge | |
| *Concrete.*—J. Cooke, Huddersfield | |
| *Plastering.*—Robinson & Shaw, Paddock | |

LEEDS.—For the erection of Parochial Institute Cavendish-road. Mr. H. Walker, architect, 8, Upper Fountaine-street, Leeds :—

Thos. Hannam, Raglan-road, Leeds.... £3,838 10

LEYTON (Essex).—For the construction of a chimney-shaft, for the Urban District Council. Mr. W. Dawson, C.E., Town Hall, Leyton :—

| | | | |
|---|---|---|---|
| Cross & Co. | £4,607 0 | J. Jackson | £3,147 0 |
| Myles & Warner | 4,200 10 | F. J. Coxhead, Leytonstone* | 2,935 0 |
| Gregar & Son | 3,993 0 | | |
| Neil & Co. | 3,450 0 | | |

LONDON.—For new drainage works, and alterations to The Hall, Lincoln's Inn. Mr. Dennett H. Barry, Surveyor to the Honourable Society of Lincoln's Inn, 21, Old-square, W.C. :—

| | | | |
|---|---|---|---|
| B. C. Hubble | £2,675 | Alfred Bush* | £1,677 |
| J. Douglas | 1,975 | | |

LONDON.—For alterations and rebuilding, Kensington Dispensary, Church-street, W., for the Trustees. Mr. G. Gordon Stanham, architect, 100B, Queen Victoria-street, E.C. Quantities by Mr. Gilbert Booth, 3, Adelaide-street, W.C. :—

| | | | |
|---|---|---|---|
| Duffield & Son | £3,340 | Barker & Co. | £2,992 |
| G. A. Watts | 3,267 | Perry & Co. | 2,925 |
| Walter Nash | 3,150 | Kearley | 2,870 |
| John Appleby | 2,995 | Speechley & Smith | 2,845 |

LONDON.—For the erection of new business premises in High-street and Wirtemburg-street, Clapham, for Mr. J. G. Waite. Mr. Fred. E. Halford, architect, Ingram House, 165, Fenchurch-street, E.C. Quantities by Mr. A. J. Thompson, 50, Lincoln's Inn-fields, W.C. :—

| | | | |
|---|---|---|---|
| W. Downs | £4,428 | George Parker | £4,140 |
| Killby & Gayford | 4,355 | Garrett & Son | 4,086 |
| Woodward & Co. | 4,299 | Edwards & Medway | 4,056 |
| J. E. Olver | 4,281 | Nichols Bros.* | 4,028 |

LONDON.—For the erection of new mission-hall in Grange-road, The Chase, Lavender Hill, S.W., for the London City Mission :—

Nichols Bros.* .................... £385

LONDON.—For the erection of new flour mills at Millwall Docks, E., for Messrs. McDougall Bros., exclusive of constructional ironwork. Mr. Robert E. Crossland, architect, 1, Racquet-court, Fleet-street, E.C. :—

| | | | |
|---|---|---|---|
| Shillitoe & Sons | £16,250 | Harris & Wardrop | £14,987 |
| Foster & Dicksee | 15,819 | Perry & Co. | 14,961 |
| Patman & Fotheringham | 15,476 | Greenwood & Son | 14,738 |
| Ashby & Horner | 15,464 | J. Carmichael | 14,362 |
| Killby & Gayford | 15,430 | H. J. Williams | 14,286 |
| H. Lovatt | 15,338 | Holliday & Greenwood | 13,500 |
| Outhwaite & Son | 15,234 | | |

*For the Constructional Ironwork and Gangways at above.*

| | | | |
|---|---|---|---|
| Hawkins & Baxter | £2,370 | Deane, Ransome, & Co. | £2,024 |
| Moreland & Son | 2,262 | | |
| Shaw & Co. | 2,181 | | |

LONDON.—For erection of chimney shaft and alterations and additions to boiler-house at the South-Eastern Hospital, for the Metropolitan Asylums Board :—

| | Chimney Shaft. | Alterations to Boiler House. |
|---|---|---|
| Kirk & Randall, Woolwich, S.E. | £6,590 0 0 | |
| F. & H. F. Higgs | — | £5,432 0 0 |
| F. & F. J. Wood | — | 5,223 0 0 |
| Hilton & Sons | £1,669 10 0 | — |
| Harris & Wardrop | 1,479 0 0 | 6,124 0 0 |
| Whitehead & Co., Ltd. | 1,075 0 0 | 4,525 0 0 |
| Cross & Co. | 1,042 12 4 | 4,685 9 0 |
| J. O. Richardson, Albert Works, Peckham, S.E.* | 969 0 0 | 3,858 0 0 |

[Architect's estimate, £5,396.]

LONDON.—For structural and decorative improvements at Mortimer House, Egerton-gardens, South Kensington. Mr. W. Macie Seaman, architect :—

| | | | |
|---|---|---|---|
| A. Bush | £1,273 | W. H. T. Kelland | £910 |
| Spiers & Son | 1,168 | R. S. Buckeridge | 865 |
| J. Cannon | 1,097 | | |

LONDON.—For new drainage work and reconstruction of the water-closets at the Parish Schools, Hornsey-road, N., for the Guardians. Mr. William Smith, architect, 65, Chancery-lane, W.C. :—

| | | | |
|---|---|---|---|
| Gunn | £829 | Stevens Bros. | £754 |
| Kirby | 805 | Kirk & Randall | 720 |
| Ward & Lamble | 792 | Weibking & Sons* | 654 |

LONDON.—For exterior painting at Great College-street School for the School Board for London :—

| | | | |
|---|---|---|---|
| Willmott & Sons | £315 0 0 | W. Brown | £177 12 0 |
| R. S. Buckeridge | 280 0 0 | T. Cruwys | 177 0 0 |
| H. Wall & Co. | 222 0 0 | F. T. Chinchen | 172 11 6 |
| Stevens Bros. | 204 0 0 | T. Nicholson* | 153 0 0 |

LONDON.—For the erection of club premises, Nos. 45 and 47, Albany-road, Camberwell, S.E., for the North Camberwell Radical Club and Institute. Mr. A. J. Perriam, F.S.I., architect, 43, Cannon-street, E.C. Quantities by the architect :—

| | Section A. | Section B. | Total. |
|---|---|---|---|
| Battley, Sons, & Holness | £4,995 | £2,304 | £7,299 |
| Nash‡ | 4,825 | 2,400 | 7,225 |
| Bloomfield & Evans | 5,017 | 2,182 | 7,199 |
| Downs | 4,883 | 2,248 | 7,131 |
| Marchant & Hirst | 4,805 | 2,312 | 7,117 |
| Tyerman | 4,640 | 2,264 | 6,904 |
| Edwards & Medway | 4,630 | 2,170 | 6,800 |
| Courtney & Fairbairn* | 4,539 | 2,245 | 6,784 |

‡ Too late.

LONDON.—For the erection of boundary walls at Wandsworth Cemetery, for the Wandsworth Burial Board :—

| | | | |
|---|---|---|---|
| Parsons & Co. | £296 | R. F. Seed | £267 |
| Williams & Co. | 293 | Fane & Co. | 250 |
| Dakin & Co. | 273 | R. S. Ronald | 245 |

LONDON.—For additions to St. Catherine's Church, Hatcham, for the Rev. Howard Truscott. Mr. E. Beckett Lamb, architect, 31, Craven-street, Strand, W.C. :—

| | | | |
|---|---|---|---|
| Higgs & Hill | £2,724 | A. B. Chirgwin | £2,246 |
| Battley, Sons, & Holness | 2,375 | R. Avard | 2,220 |

RHOOSE.—For the erection of "Kemey's Arms Hotel, Rhoose, near Cardiff, for Mr. John Weaver. Mr. S. Rooney, architect. Quantities by Mr. S. Rooney, jun. :—

J. T. Hampson, Cardiff* .................... £2,350

SALTASH (Cornwall).—For the erection of stables, extension of quay, and building boundary wall, for Messrs. Bennett & Palmer. Mr. Edgar M. Leest, architect, Public Hall Chambers, Devonport :—

| | Stables. | Quay. | Boundary Wall. |
|---|---|---|---|
| J. Paynter | £369 0 | £279 | — |
| Taylor & Mutton, Saltash* | 352 10 | 205 | £80 |

ST. BRIDES MAJOR (Cardiff).—For the erection of new granary, &c., Pool Farm, St. Brides Major, for Mr. T. R. Thompson. Mr. S. Rooney, architect. Quantities by Mr. S. Rooney, jun. :—

J. T. Hampson, Cardiff* .................... £350

[*See also next page.*

ST. MELLONS (Cardiff).—For erecting a pair of cottages at Ty-r-Winch, St. Mellons, for Mr. W. Williams. Mr. S. Rooney, architect. Quantities by architect :—

| | |
|---|---|
| Fursey & Harris, Castleton* | £490 |

SOUTHAMPTON.—For the erection of a shop and dwelling-house in Shirley-road, Southampton, for Mr. F. Long. Messrs. Jurd & Sanders, architects, Portland-street, Southampton :—

| | |
|---|---|
| Thomas Howell* | £450 |

SOUTHAMPTON.—For the construction of new road at Bitterne, near Southampton, for Mr. John White. Messrs. Jurd & Sanders, surveyors, Portland-street, Southampton :—

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Saunders & Co. | £535 | 16 | 5 | Joseph Butt | £292 | 13 | 9 |
| Clarke & Sons | 365 | 0 | 0 | Isaac Barrett | 287 | 0 | 0 |
| Grounds & Newton | 322 | 16 | 5 | James Shepherd* | 219 | 2 | 6 |

SOUTHAMPTON.—For construction of roads, sewers, curbing, channelling, &c., at Atherley Estate. Messrs. Jurd & Sanders, surveyors, Portland-street, Southampton :

| | |
|---|---|
| F. Osman | £584 |
| Grounds & Newton | 382 |
| Joseph Butt* | 345 |

SOUTHAMPTON.—For the erection of offices and factory in French-street, for Mr. James Dupré. Messrs. Jurd & Sanders, architects, Portland-street, Southampton :—

| | Buildings with Bath stone facings. | | Extra if Ham Hill stone facings. | | Total. | |
|---|---|---|---|---|---|---|
| Jenkins & Son | £2,152 | 0 | £42 | 0 | £2,194 | 0 |
| Brinton & Bone | 2,015 | 16 | 50 | 0 | 2,065 | 16 |
| Hood | 1,937 | 0 | 20 | 0 | 1,957 | 0 |
| F. Walters | 1,840 | 0 | 30 | 0 | 1,870 | 0 |
| P. Merefield | 1,780 | 12 | 55 | 0 | 1,835 | 12 |
| Golding & Ansell | 1,766 | 0 | 13 | 18 | 1,779 | 18 |
| G. Harris* | 1,720 | 0 | 41 | 14 | 1,761 | 14 |

TROWBRIDGE.—For kerbing, channelling, paving, &c., in Mortimer-street, for the Urban District Council. Mr. F. E. G. Bradshaw, Surveyor, Town Hall, Trowbridge :—

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Free Bros. | £453 | 3 | 9 | Free & Sons, Bristol | £400 | 0 | 0 |
| West Gloucester Pennant Stone Company | 443 | 14 | 5 | | | | |

TROWBRIDGE.—For the erection of the first portion of a Technical School at Trowbridge, Wilts, for the Committee. Mr. Thos. Davison, architect, London. Quantities by Mr. Geo. Fleetwood, 3, New-court, Lincoln's Inn, London :—

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Stephens, Bastow, & Co., Ltd. | £5,712 | 0 | 0 | Hayward & Wooster | £5,090 | 0 | 0 |
| Williams | 5,459 | 0 | 0 | G. Moore | 4,898 | 18 | 11 |
| Long & Sons | 5,130 | 0 | 0 | Ed. Linzey | 4,716 | 0 | 0 |
| | | | | Wm. Webb | 4,638 | 9 | 0 |

TUTBURY.—For alterations to shop premises in High-street, for the Burton-on-Trent Co-operative Society, Limited. Mr. Thomas Jenkins, architect, 35, High-street, Burton-on-Trent. Quantities by the architect :—

| | |
|---|---|
| A. Geary, Burton-on-Trent* | £159 |

UPWELL.—For the erection of a manse. Messrs. Kerridge & Sons, architects, the Club Chambers, Old Market, Wisbech. Quantities by the architects :—

| | | | |
|---|---|---|---|
| Elworthy & Co. | £370 | Hipwell & Co. | £340 |
| Girling & Co. | 355 | J. F. Parker | 336 |
| J. J. Jarvis | 340 | W. Sutton, Upwell* | 330 |

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WIMBORNE (Dorset).—For making-up, draining, &c., Grove-road, for the Urban District Council. Mr. C. Munckton, surveyor, Council Offices, Wimborne :—

| | |
|---|---|
| G. T. Budden, Kinson, Dorset | £185 |

[Surveyor's estimate, £168.]

Council decided to carry out the work by their own men under their Surveyor.

WINLATON-ON-TYNE. — For pulling down and rebuilding the "New Inn," for Mr. R. Newton, Victoria Brewery, Newcastle-on-Tyne. Mr. J. G. Crone, architect, 50, Grainger-street, Newcastle-on-Tyne :—

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| J. Lockey | £2,328 | 0 | 0 | T. H. Wilson | £1,987 | 14 | 0 |
| R. Smith | 2,290 | 0 | 0 | Armstrong & Son | 1,984 | 6 | 6 |
| Thompson & Co., Blaydon* | 2,057 | 0 | 0 | | | | |

* Accepted subject to modifications.

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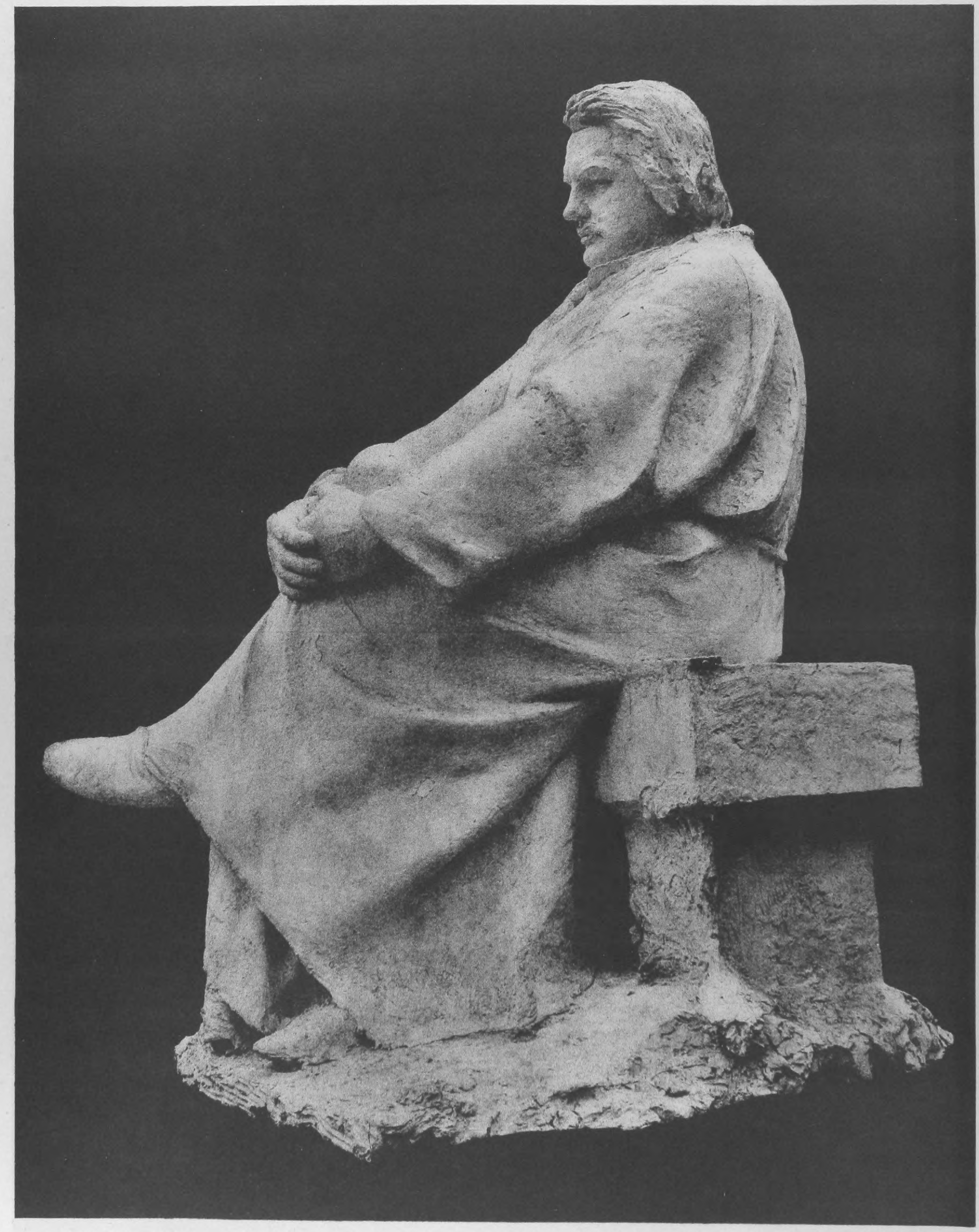

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PLASTER MODEL FOR A STATUE OF BALZAC.—M. FALGUIÈRE, SCULPTOR.

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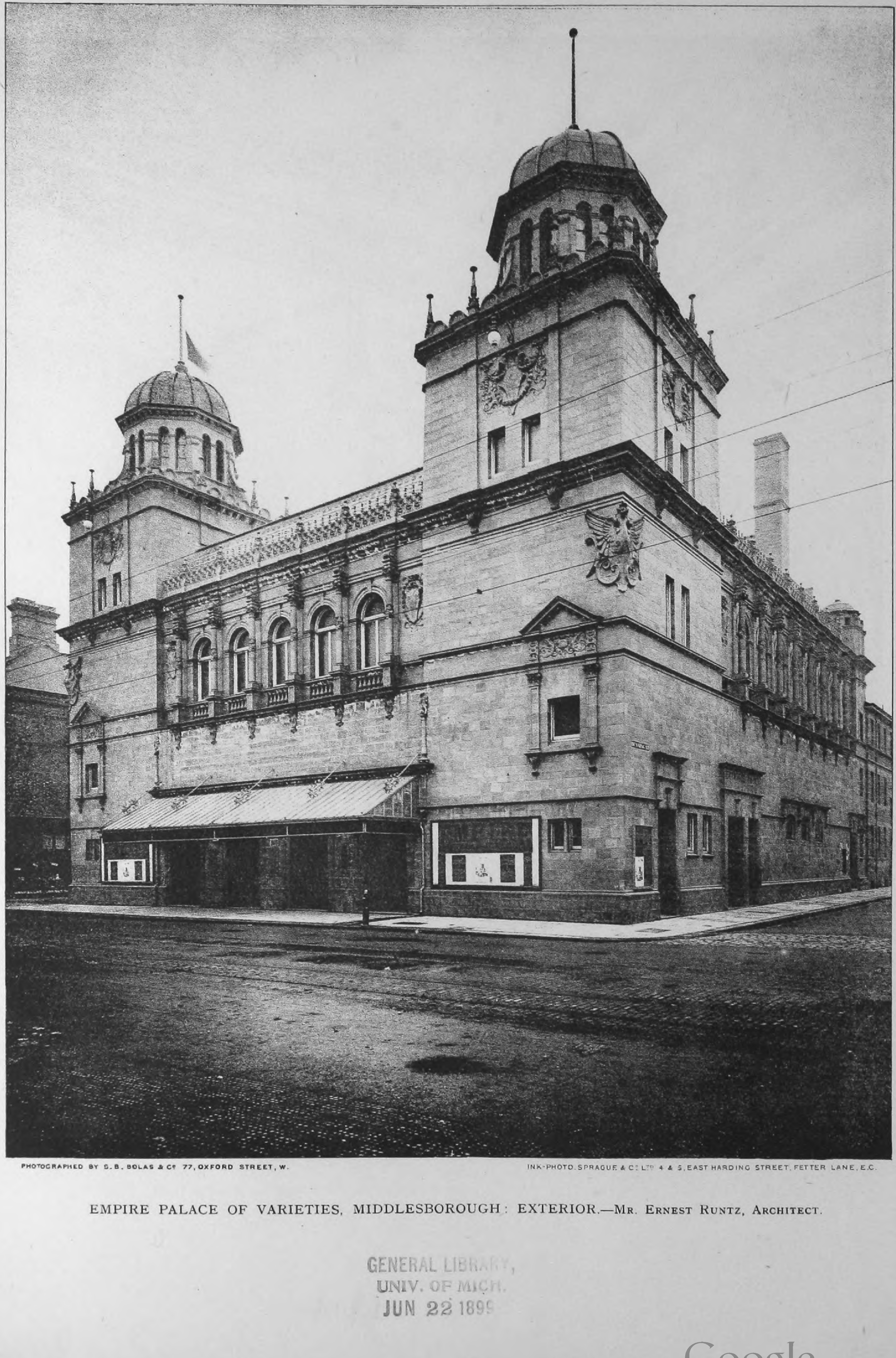

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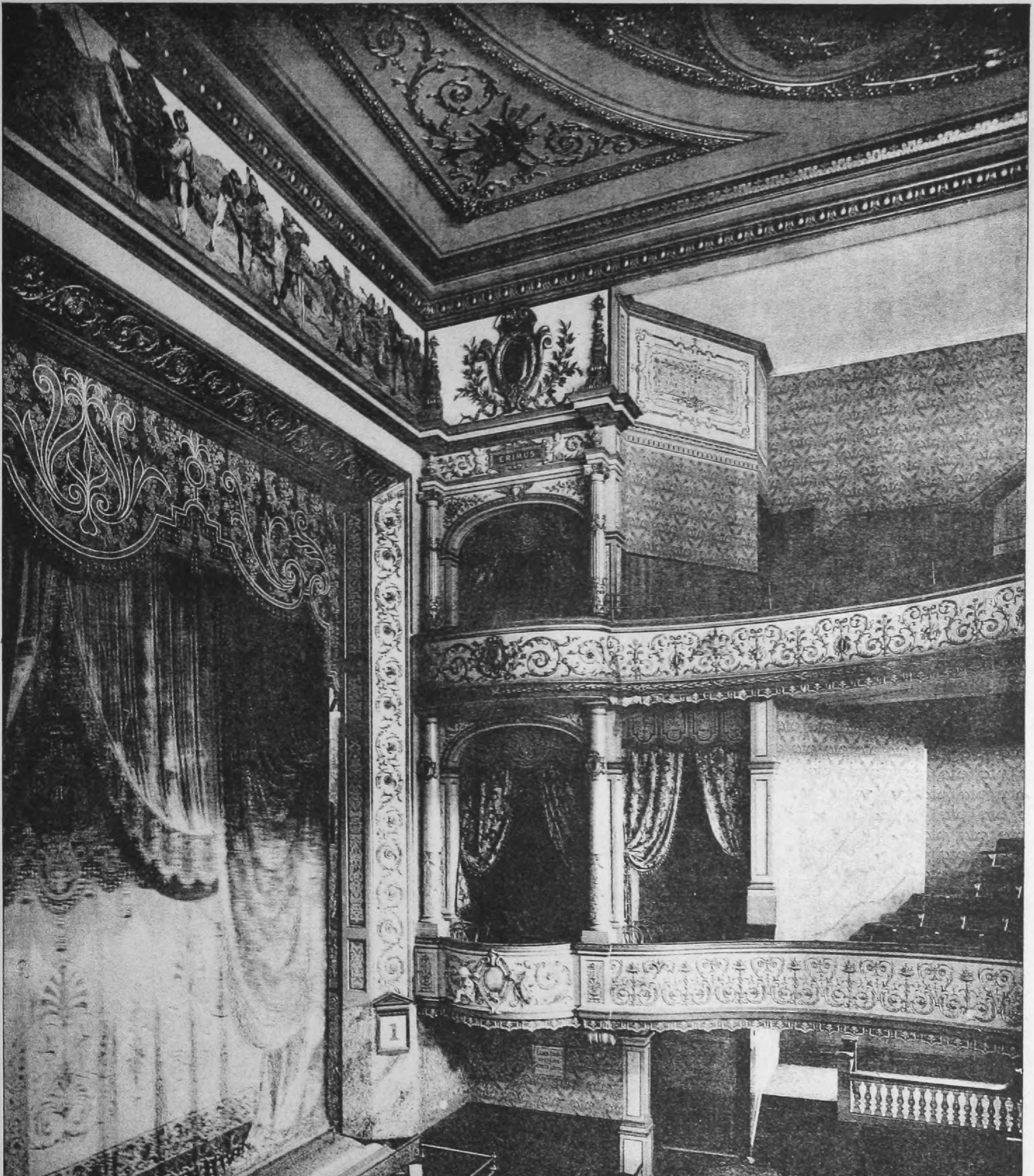

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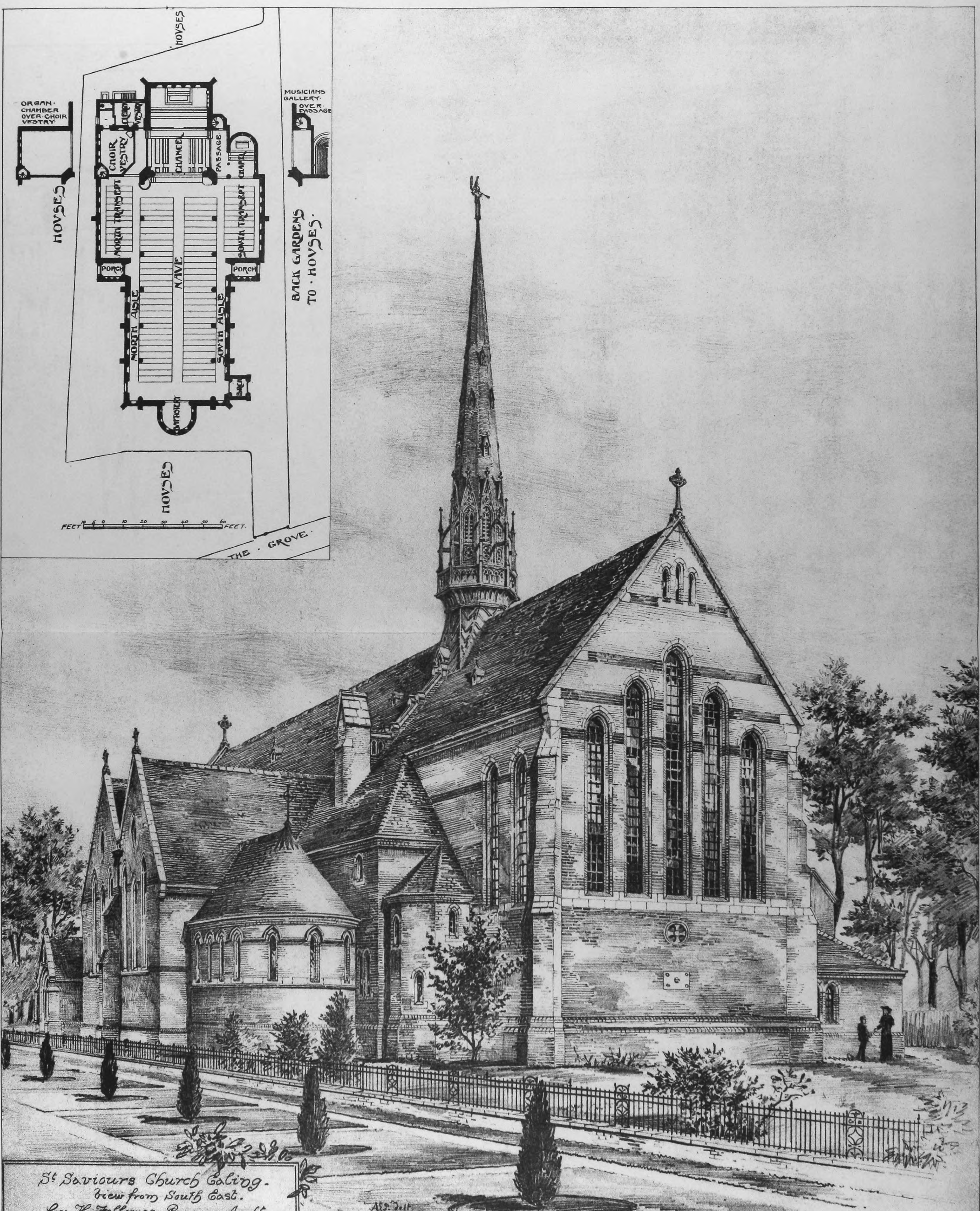
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PORCH
PORCH
NAVE
NORTH AISLE
SOVTH AISLE
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Delt 1895

St Saviours Church Ealing.
View from South East.
Geo. H. Fellowes Prynne, Archt.

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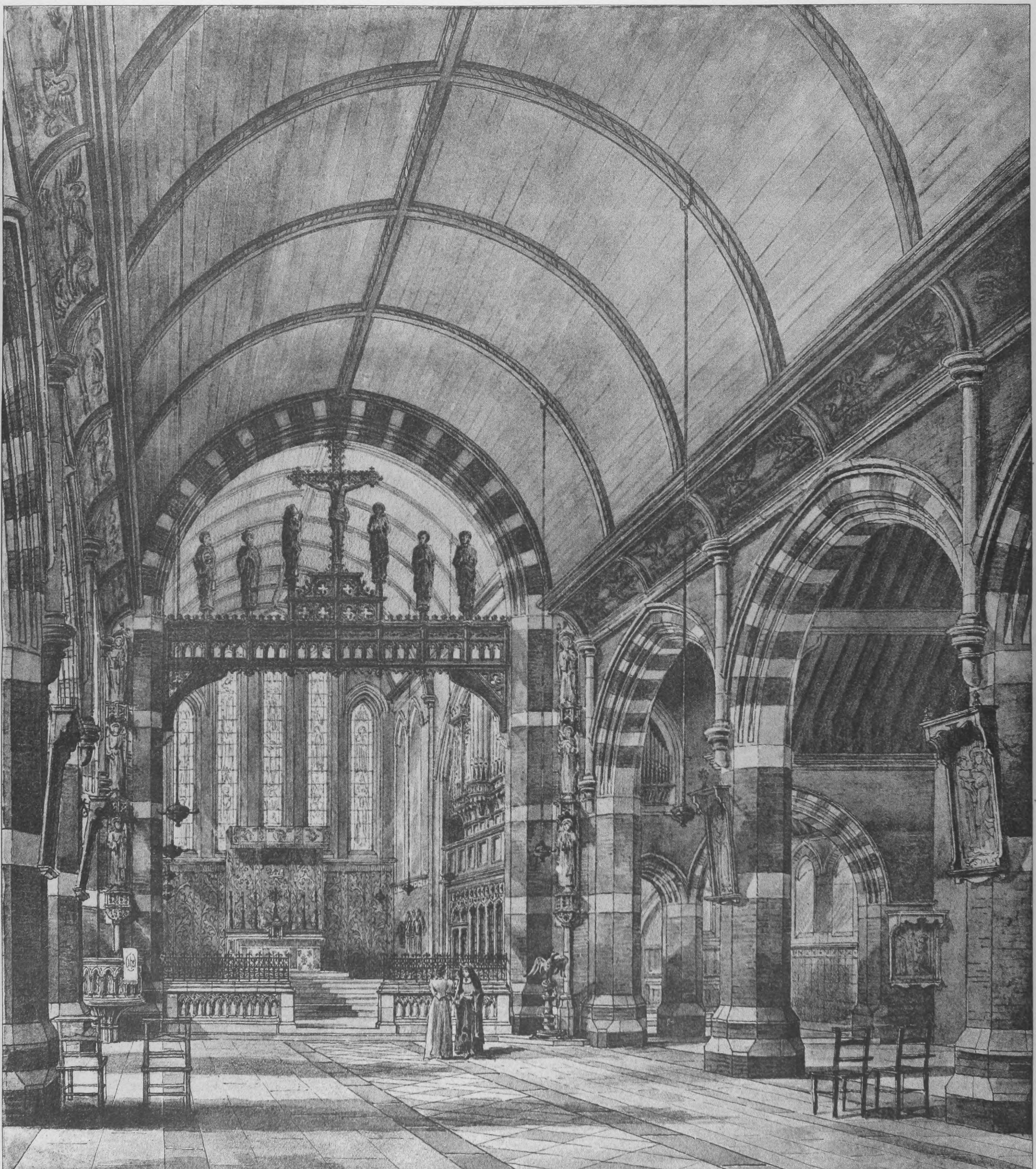
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# The Builder.

VOL. LXXVI. No. 2941. JUNE 17, 1899.

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Melksham House, Wilts : Alterations and Additions.—Mr. A. C. Martin, Architect ........ *Single-Page Ink-Photo.*
Proposed House, Limpsfield.—Mr. E. T. Marriott, Architect ........ *Single-Page Ink-Photo.*
Sheringham Hotel : New Dining-hall Block.—Messrs. G. J Skipper, F.R.I.B.A., & F. W. Skipper, Architects ........ *Single-Page Photo-Litho.*
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## *Restoration of Hexham Abbey.*

AFTER many centuries of decay, neglect, and ill-usage, Hexham Abbey Church is now to receive the attention which is necessary, not only to preserve the existing portions in repair, but to fit it for the requirements of its present use as the parish church. The fact of its actual use in this capacity should not be overlooked, as the object of the work to be done, under these circumstances, is not mere restoration, but the placing of the building in a fit state for its present practical requirements.

The existing condition of things was one that could not under any circumstances continue much longer; and the recent growth of the town as a residential resort, the fact that it only possesses one church, and that only a portion of that is available for seating a congregation, clergy, and choir, rendered it imperative that a change should be made, and that at once. An appeal was made last year to the public on behalf of the abbey for general repairs and improvements, and a sum of 3,500*l.* was raised in a few months. A large committee was appointed, which includes the Bishop of Newcastle, Canon Greenwell, the President of the Architectural and Archæological Society of Durham and Northumberland, and some of the most influential residents in the district. Mr. C. C. Hodges, of Hexham (whose monumental book on the abbey is well known), has been appointed as acting architect, in conjunction with Mr. Temple Moore, of London, as consulting architect. These gentlemen have made a careful survey of the building, and have submitted their Report to the committee, which has been adopted unanimously. The Report is too long to print *in extenso;* but we may give a summary of it.

The first section deals with all the repairs needed to be done to the fabric. These are very considerable, and embrace a number of things not of general interest, and which we need not mention in detail. There is nothing, however, recommended in the form of "restoration" in the sense in which the word was used by the architects of thirty years ago. Simple repairs are all that are advised, no skinning of the surface either internally or externally, so that the ancient and rugged appearance of the church will remain as it is. The urgent repairs are to be dealt with at once, and the other sections are to be taken in regular order, so that the whole can be accomplished during the next few years.

The body of the Report is occupied with what is of greater general interest, viz., the scheme proposed for the extension of the church; and in order that our readers may grasp its true significance, it will be necessary to devote a few lines to the history of the fabric.*

An early Romanesque church was built at Hexham under St. Wilfrid about 673. This church was extended on a rebuilding scheme towards the close of the twelfth century, but never reached completion, as the nave had not been rebuilt when the church was burned by the Scots in 1296. The early nave seems to have remained as a ruin for another century, and the rebuilding was not attempted till near the close of the fourteenth century. The work was begun, but never finished. The impoverishment of the house, and the general decrepitude of the Augustinian order to which it belonged, delayed the work so long that the dissolution of the monasteries found the nave little more than begun, and put an effectual stop to its continuation.

Hexham Abbey has, therefore, remained as a naveless church, and though the transepts are of unusual proportions, it has an appearance of incompleteness which detracts much from its character. The existing plan is that of the letter T. It is not without companions in distress, and curiously enough the only three cathedral churches which belonged to the Augustinian order—Carlisle, Bristol, and Oxford—are somewhat parallel cases. Carlisle still remains to all intents and purposes a naveless church, as six of its original eight bays are gone. Oxford had its nave cut down to a length of four bays by Wolsey, when he took the church over to form the chapel of his newly-founded college at the time of the dissolution.* Bristol has been more fortunate. Its Norman nave remained till the sixteenth century, when it was removed by Abbot Elliot with a view to a rebuilding in the style of his time; but his death in 1526 stopped the work, and the dissolution ten years later caused it to be abandoned. The church remained incomplete till 1876, when the new nave was begun from Mr. Street's designs, but its western towers were not finished till 1888 under Mr. Pearson. Within the last two or three years the roofless nave of Dunblane Cathedral has been restored, and is again in use after having been a ruin since the Reformation. St. Mary's Church, Southwark, has had its nave rebuilt, to reproduce as nearly as can be what the destroyed one was. Christ Church Cathedral, Dublin, has also of late years been recovered from a state of semi-ruin and its nave rebuilt. In these two latter cases the rebuilding in the style of a past age may, we think, be justified. The building of a complete modern church in imitation Mediæval style has of course nothing but fashion to justify it. But architecture is design as well as history, and in adding to an existing ancient church, harmony of architectural style and design must be taken into consideration.

Among smaller conventual churches there are a few instances of ruins being restored for use as churches of the reformed religion. Abbey Dore was repaired and given to the parish in 1634 by Lord Scudamore. Blanchland Abbey, in Northumberland, was a ruin till the munificent Lord Crewe, Bishop of Durham, restored it and gave it to the parish in 1752. The church of the Augustinian Priory at Brinkburn, on the Coquet, was restored 1858-60, and made a parish church at the cost of the late Mr. Charles Hodgson Cadogan, the owner of the estates.

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* For a description and illustrations of Hexham Abbey, see the *Builder* for April 1, 1899.

* The remainder of the English cathedrals have their plans practically complete. Norwich has lost its Lady Chapel, Hereford the western bay of its nave, and Ely the north wing of its western transept.

What has been done at Bristol and other places can be done at Hexham. The congregations are now too large for the accommodation. The church is full to overflowing, and it is felt that the whole of it is wanted, and that it should all be used as one church. The intention is, therefore, to build the nave, and put in it the seats now in the choir, to seat portions of the transepts with chairs, and to clear the choir so that it may be brought back in great measure to its condition before it came to be used as the congregational part of the church.

The only difficulty in the building of the nave is that of cost, and there is little doubt that this will be overcome. The site is a portion of the old churchyard, which has been closed for forty years. The foundations of all the walls are in existence. The south wall is standing for its whole length to a height of 16 ft., and is 6 ft. in thickness. The west wall is standing to the same height, and is 7 ft. 3 in. in thickness. It contains the western doorway to its full height, though robbed of its moulded archstones and built up. There is a curious chamber in the thickness of the wall, and entered by a small arched doorway in the south reveal of the longer doorway. This chamber is covered with flat stones, which are grave covers with crosses on them. There is the lower part of a newel stair in the wall, between the western respond and the great buttress projecting to the west on the line of the arcade. The base of the respond remains complete, and has a moulding of very simple section. There was an aisle on the north side only, with an arcade of six bays.

The newel stair was approached by a doorway in the north-west angle of the aisle, from which a mural passage is carried southwards to the line of the arcade where the well of the stair is placed. A small portion of the west front at its south end is of thirteenth century date, showing that the nave formed part of the rebuilding scheme of that time. This fragment has a bold base moulding with a straight slope and a throated weathering. The base course of the fifteenth century work on the west and north sides is a plain hollow. It is clear, from the details of the western processional doorway, that the work was recommenced before the end of the fourteenth century; and that it was in progress in the fifteenth century is shown by the details of the west end, and the mention of the work in Roger Thornton's will in 1429. Carter's plan, which was made in 1795, shows the jambs of the south-west window, and the gallery in the wall, which was carried through at the level of the window-sills. A slight sketch of the jamb moulding on the same plan shows that it was of the same character as that of the base of the respond which remains. That the work ever rose much above the level of the window-sills is improbable, and that it was never finished is clearly shown by the condition of the east wall, which has never been protected by a roof since it was built.

It is proposed to build the nave in the plain and massive phase of the "Perpendicular" style which is peculiar to the North. Owing to the wars with Scotland and the impoverished condition of the border country in the fourteenth and fifteenth centuries, "Perpendicular" work is almost unknown in Northumberland and the bishopric of Durham; there is more in the castles than there is in the churches; and it is not until Yorkshire is reached that any of the larger churches show much work of this period. The architect has therefore a free hand to a large extent, and should produce what Edmund Sharpe would have termed a piece of "Cistercian Perpendicular." The main features of the design will be a range of lofty traceried and transomed windows in the south wall, which is 60 ft. in height; a west front, with a single doorway and a large window over it, and an octagonal turret as a termination to the newel stair. The single aisle on the north will be divided from the nave by an arcade of six bays, above which will be a clearstory. The roof will be of oak with moulded beams and braces, similar to the roofs on the choir and transepts.

In dealing with the rearrangement of the church, the only difficult problem the architects had to solve was the treatment of the rood screen. This is an exceptionally fine one with close panels, and, as far as its western side goes, has escaped alteration, or much mutilation. Its removal was out of the question. It is therefore proposed to render it an open screen during the time of service by hinging the main panels on the west side, so that there will be five large openings. These can be closed at other times, so that the present appearance of the screen will remain unchanged. The long range of picture panels placed above the loft will be removed, as they are no part of the screen, and cannot be seen where they are. They were fortunately saved at the Dissolution and fixed up to act as an auxiliary screen to the choir before the days of heating apparatus. They show a valuable series of mediæval paintings of three classes, the "Dance of Death," scenes from the Passion, and pictures of Northumbrian saints. They will be carefully cleaned and placed where they can be seen to advantage. The east side of the screen is modern in its lower part. This will be altered and made an open arcade with a suitable ceiling under the organ gallery. The organ is a fine one, and suits the church. It will remain where it is, but will be clothed with a new front of suitable character towards the west.

The choir stalls, of which about half remain, will be replaced [in their old position at the west end of the choir, with four return stalls on each side at the west end. The original number of thirty-eight will be made up again. The old book-boards will be replaced, and seats for choir boys arranged in front of them. The ancient pulpit with painted panels will be fixed on the north side of the choir for use at occasional services. A new pulpit with reading desk will be placed against the south-west tower pier, so as to command the four arms of the church. The four-stalled sedilia of oak will be placed on the south side of the choir in the second bay from the east. It is now a piece of lumber in the vestry. The small detached chantry chapels of Sir Robert Ogle, who died 1410, and Prior Rowland Lexhman, who died 1491, will be replaced in their original positions, from which they were removed in 1858. The altar tomb and effigy of Prior Lexhman will again find its its proper position outside the chapel. The Ogle chantry was entirely of oak, and the greater portion of it is still in the church, and it can easily be reconstructed. The matrix of the brass of Sir Robert Ogle and a portion of the brass remains.

A new altar of full size will be provided, and will be brought to the west to the extent of half a bay, and a screened enclosure formed with returns up to the first pair of piers from the east. The reredos will be of oak, carved and gilded with painted figures in a range of canopied niches, and a rich carved and gilded cresting. The enclosure will be partly formed of the very fine series of seven panel paintings of some of the bishops of Hexham, which are preserved in the church, and were executed between 1464 and 1476. The remainder of the enclosure will be made up of new work of similar design to the old.

The monumental effigies will again be treated with proper respect. That of Gilbert de Umfreville (*obiit* 1307) will be replaced in its old position on the south aisle of the choir. The other three will be placed between the columns in the choir, raised on plain stone bases. The font will be moved to a suitable position in the south transept, and its fine carved canopied cover, the fragments of which are still in the church, and which was broken up and nailed in front of a gallery, like hawks on a barn-door, in the last century, will be reconstructed and placed on the font. It is a fine example, though late, and has fellows at three of the churches in Newcastle, as well as at Selby, Thirsk, and Well in Yorkshire. A vestry will be formed in the south bay of the south transept aisle, and the screens to divide it from the church will be partly composed of the old parclose screens which formerly screened off a chantry chapel in the same place. The old internal wind porch, of eighteenth-century date, will be re-used as the wind porch to the south door.

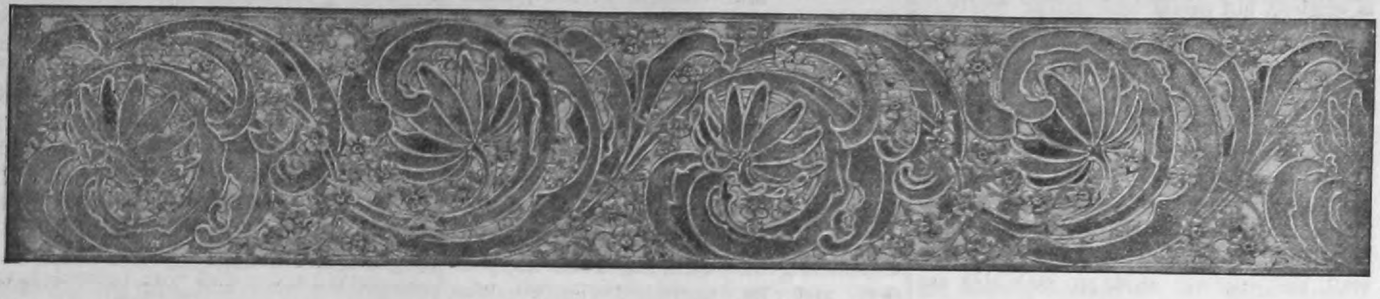
In this way the great store of ancient carved and painted woodwork in the church will be utilised, and with reference to this the Report says:—

> "We feel that the greatest care should be taken of the ancient woodwork left in the church, an inheritance of which Hexham may feel justly proud. In dealing with it, it should be treated with tenderness and veneration, and should only be moved in order to treat it with greater respect than has hitherto been shown to it, and to bring its beauties into greater prominence."

The floor of the choir was altered and relaid 1858-60. It will be taken up and the old steps and levels recovered. These are given on Carter's plan. There will be an opportunity of finding the remaining foundations of Wilfrid's church, which should not, in the interests of history, architecture, and archæology be lost. Valuable discoveries are almost sure to be made, as the site of the nave is the site of the body of Wilfrid's Church, and is the spot where many of the pre-Conquest stones have been found.

The nave is estimated to cost about 8,000*l.* if built in a plain manner. The Committee state that no mischief will be done and nothing will be destroyed; everything will be brought out, located, and utilised in a better manner than at present. Hexham Abbey will then rank as one of the complete cross churches which are used in their entirety, as Selby Abbey has lately come to be.

The architects' Report closes with a list of some cross churches (not the large cathe-



*Design for a Frieze. By Mr. A. L. Gwatkin.*

drals) which are used as a whole, and gives their dimensions to show that the congregation at Hexham will see and hear as well as in other large churches of the same type, which, as originally designed, were not intended to be used solely, or even primarily, for congregational purposes.

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## ARCHITECTURE AT THE ROYAL ACADEMY.—IV.

### DECORATIVE WORK.

THE purely decorative designs at the Academy are not very numerous. We may take first the designs for stained glass, the decorative art most closely connected with architecture, but which of course is but very inadequately represented by coloured drawings. If the Royal Academy were really what its title professes—an academy of "arts," there would be a space provided for the exhibition of actual stained glass, in a proper light, as is the case at the Paris Salon; and since the best stained glass produced in England is quite superior to the best produced in France, it is the more to be regretted that our own Academy has no means of exhibiting the glass itself, and that probably most of its members care nothing about the subject. The drawings, however, enable one to form an opinion of the design, and some idea as to the effect of colour intended.

The great shortcoming in modern stained glass consists in the apparent impossibility, on the part of most designers, of getting out of the mediæval groove. The revival of stained glass in this country came in with the general mediæval revival, and consequently the old formula of saints under canopy-work, which is imitated more or less closely from architectural detail of the same class, seems still to be, with most people, the only ideal of a stained glass window. Designs like that of Messrs. Shrigley & Hunt for the north transept window of Doncaster Church (1,696), are in fact little more than a kind of church furniture, in reference to which not even the actual designer's name is given, and all that can be said of this example is that it is a respectable specimen of its class. Messrs. Percy Bacon & Brothers' stained glass window for St. Aidan's Church, West Hartlepool (1,697), though of the usual general type, shows some special character and very good taste in the treatment of the accessory detail in which the figures are framed—small and delicate work, with a good deal of white glass introduced amid the colour. Mr. Dix's "Design for Window for St. Stephen's Wittenhall," and Mr. Langsford's "Memorial Window, Wembley Parish Church" (1,689 and 1,690) are exhibited as personal work and not as that of a firm, but present no special characteristics to differentiate them from many other windows. Mr. Steggles's "Design for Stained Glass Window" (1,691) has the merit of being a very pretty little drawing, and of showing some little originality in the manner in which the Late Gothic architectural detail is modified to take its place in a window. The staircase window for Fenham Hall, by Messrs. Shrigley & Hunt, escapes from the mediæval pattern, and is a nice bit of design. The window is a narrow one with a semi-circular head, and contains three detached circular medallions, the upper one concentric with the window head, occupied by small figures; the spandrel spaces between the medallions are partly filled by square projections from the line of the border; the white space is diversified with rather delicate conventional ornament of a Renaissance type. This is a window out of the common, and the designer's name should have been given. After the informal but decisive announcement made in our columns before receiving day at the Academy, that in the case of architects "employing artists" the artist's name would be given in place of that of the firm for whom the design was made (a threat which does not seem to have been carried out), we cannot but wonder how it is that firms who manufacture and sell stained glass but do not give the name of the designer are allowed to exhibit at the Academy under the name of the firm, stained glass being necessarily a more personal form of design than even architecture.

The architect's collaboration with the stained-glass artist is illustrated in the elevation drawing of the interior east end of St. Luke's, Enfield (1,719), exhibited by Messrs. James Brooks & Son. This shows their architectural arrangement which forms the frame for Mr. Westlake's stained glass and decorative paintings, and under the circumstances should properly have been exhibited under the joint names of Messrs. Brooks and Mr. Westlake. It is illustrated and described in the present issue (see under head of "Illustrations"). In Mr. Dix's "Design for Window, St. Mary's, Windermere" (1,805), the angels who are attendant on the principal figures form a decorative background which takes the place of the usual canopy work; a detail to be welcomed as an escape from the conventional groove. Mr. Whall's "West Window of Private Chapel, Douglas Castle" (1,702), at once shows itself as original design; the shields in colour have a very decorative effect, but we can see no beauty or appropriateness in the ragged and almost realistic lines of the tree-like divisions of the window. Mr. Stephen Adam's "Design for Stained Glass Memorial Window" (1,808) indicates some fine colour, and the treatment of the figures is effective and not commonplace; why then did he spoil a good design by introducing a landscape with a winding river behind the figures? Such a treatment is absolutely absurd in stained glass, destroying its whole character as a window—a glass plane for transmitting light.

Wall decorations naturally group with stained glass; requiring somewhat of the same general character of treatment, only for reflected instead of transmitted light, and dispensing with the element of leading or other supports. Mr. Victor J. Robertson's "The Four Seasons" (1,712), a wall painting in a semi-circular lunette (part of the space of which, however, is cut into by a door) is, though small, the most important of the wall decoration exhibits, as it is in fact the only one in which the figure is the principal element. The design consists of several draped figures grouped together and characterising the four seasons; the composition is a good one and the colour pleasing; perhaps for a decorative painting a little more severity of line would have been an improvement. In "Decoration to Walls of a Music Room" (1,713) Mr. James Millier shows a pretty and carefully-drawn elevation of the side of a room with details in the Adam style (including exceedingly long and meagre Corinthian pilasters), on one half of which the intended heightening of effect by gilding is shown: the whole effect is very good, but there is not an original stroke in it; it might all be got out of books. Mr. Temple's "Bath-room Dado" (1,692) is a good bit of decoration; in the lower portion are gilt panels with symbolical water lines on them; between these rises the stem of a plant which, above the panel line, puts forth leaves and branches in a decorative angular manner, enclosing a purple flower in the centre. A very original piece of wall decoration is Mr. Frank Murray's "Decorative Frieze for Board-room, P. and O. Steamship Company" (1,744); a portion only is shown; the frieze is divided into compartments by short pilasters flanked on each side by a kind of flat decorative indication of an ancient ship's prow; these features, facing each other, make convex borders to a painted panel between, with a marine subject on it. This is a clever bit of work, and not like anything we have seen before. In "Poppies: Design for a Frieze" (1,801), Mr. E. M. Atkins shows a flowing piece of floral design rather recalling Classic acanthus foliage than any more modern choice of vegetation; it is rather cold and uninviting in colour. Mr. Gwatkin's design for a frieze, of which we give an illustration, is a good bit of design in conventionalised floral forms. There is also near this a sheet of nine "Designs for Textiles," by Mr. Alfred Carpenter (1,798), all of which are good both in a decorative and in a textilean sense. Mr. Elwood's "Study for a Wall-paper" (1,701) is original, but would look rather spotty in execution.

One or two designs for the treatment of rooms, which might have been included under our last article, may be mentioned here. Mr. Geo. O. Scorer's "Hall Interior" (1,747) is a coloured elevation showing an effective treatment got by simple means. There are three elliptical arches with terra-cotta archivolts cutting into a plain plastered wall, the narrower ones on each side are windows, the wider one shelters the fireplace or ingle-nook, with a plain red-brick backing and a tile dado with vertical stripes of green below this; the actual fireplace is built up in the centre in stone. The drawing is well executed and the effect of the whole good. Then there is another interior of a room by Mr. Baillie Scott—"Drawing-room, Chaplain's house, St. Mary's Home, Wantage" (1,802), with the same combination of colour as his other interior (1,823) mentioned last week, though hardly of the same interest. Mr. Elwood's small drawing, "Design for a Chimney-piece" (1,700) deserves attention as a bit of really original work; the chimney-piece itself is a broad thin slab supported on colonnettes, and carrying a kind of semi-circular apse erection coloured red, and the lower part of which is divided by miniature pilasters into four compartments each enclosing a painted figure. The lamp shades are affixed to and hung over from the ends of "apse" in a characteristic manner; altogether an original little design. Lastly, we must not overlook Mr. Skipworth's drawing of altar and retable hangings in the Lady Chapel, Rochester Cathedral (1,795), which shows, as usual with his designs for work of this kind, some very delicate pierced and carved detail, the altar-slab, of marble, being framed in a wooden structure with figures carved on each side on the background of pierced work; at the back of the altar are the retable hangings, of blue at the sides, with a white centre on which is worked a figure of the Virgin.

On the whole, in spite of various drawings which are pleasant and interesting for study, the architectural room cannot be said to be a very exciting show this year.

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## NOTES.

The Dublin Corporation Bill.

It is not usual for a Bill, which is in a true sense a local Bill, to be discussed in the House of Commons. It was as well, perhaps, that a short debate, however, should take place, as it did on Tuesday, on the Dublin Corporation Bill. This measure enlarges the area of the city of Dublin, and takes into it various outlying districts. It was attempted in the House to alter the decision of the Select Committee by which, though not unanimously, the Bill had been approved. No enlarging measure of this kind ever fails to be opposed, because there are always a number of interests which may be touched; but there cannot be a doubt that these enlarging measures are best alike for the central portion and for the outlying districts. Sanitary affairs are more cheaply and efficiently managed. There is often in small districts an apparent economy which is not in the end a real saving. We have no doubt that in a few years the outlying districts which will become part of the City of Dublin will be the better for the measure.

The London Gas Inquiry.

MR. GEORGE LIVESEY, Chairman of the South Metropolitan Gas Company, was last week heard by the Select Committee of the House of Commons. In his opinion, "persistent incapacity and incompetency all through" in the working of the Gas Light and Coke Company's business is the sole reason why gas is not sold by this company as cheaply as by the South Metropolitan Company. Considering the advantages of its position, and its unrivalled opportunities, the great company might be, and ought to have been, selling gas at the lowest price in the metropolis, said Mr. Livesey. Referring to meter rents, he said that he did not consider it fair to put the charge for meters on to the price of gas, because some consumers used more gas than others. The abolition of meter rents by the Gas Light and Coke Company did not, in his opinion, really benefit the consumers, because the ¾d. per 1,000 cubic feet of gas, which is the equivalent of the meter rent, is paid for in the higher price of gas. If meter rents had not been abolished, the price of gas could have been proportionately reduced. This is true, but it would still leave a difference of 9¼d. between the prices charged by the two companies. Mr. Livesey put forward a mass of facts and statistics to support his charge of mismanagement against the Gas Light and Coke Company, and those interested in gas matters generally will find much food for study in his evidence. Little or no advance has, however, been made towards devising a method of working which will enable the offending company to reduce its gas charges to the level of those of either of the other two metropolitan companies.

Bow Church Restoration.

As intimated in our issue of last week, the venerable parish church of Bow was re-opened on the 12th instant by the Bishop of London. Much comment has been evoked by the appearance of the three oak tie-beams which have been inserted in the nave to prevent the further spread of the walls. These beams have, we understand, been left in their present rough, unmoulded, and unsightly condition at the special request of the Society for the Protection of Ancient Buildings, which is apparently of the opinion that all new work added to ancient buildings must be of as primitive and unornamental an appearance as possible, without regard to its harmony with the original building. Since publishing our illustration of the old Market House which existed at the east end of the church, we have found in Dunstan's history of the parish of Bromley St. Leonard (1862) a record of the fact that the Market House and School were removed in the year 1829. With reference to this parish of Bromley-by-Bow, it may be added that, according to some authorities, a small nunnery, which existed until the Dissolution, was established here in the time of William the Conqueror, and it is perhaps the history of this nunnery which Sir Walter Besant has mistaken for that of Bow Church. We may mention, in connexion with the restoration, that most of the new oak work, including the new choir benches, which has been introduced during the present restoration, has been carried out by the School of Handicraft, of Essex House, Mile End.

The Maison Dieu, Dover.

THE forthcoming sale of the Maison Dieu property at Dover, which covers about an acre and a half in Biggin-street, and is traversed at the rear by the River Dour, includes the old building known as "Maison Dieu." The original hospital of St. Mary was founded in the early years of the reign of Henry III., who was present at its dedication, by Hubert de Burgh, Earl of Kent, Chief Justiciary of England, and Constable of the Castle, for a master, brethren, and pilgrims. Dugdale cites letters of "inspeximus" of 2 Henry VI. confirming various grants by Henry III., and Richard III.'s grant of lands in River (near Dover) and Thanet is amongst the Harleian MSS. The hospital formed the residence of the King's Chancellor and suite when the Sovereign and Court visited Dover on going to and returning from France. Its gross annual income at the Suppression is given in Tanner's "Notitia" as amounting to 231*l*. 16s. 10d. In the Record Office is preserved a MS. inventory of the plate, goods, furniture, and cattle belonging to the hospital, taken in 26 Henry VIII., which mentions the great chamber called the "Hoostrye" (or guest-house), the little chamber, the master's house, stables, kitchen, infirmary, garner, brewhouse, bakehouse, and barns, and reckons the silver, "one with th' other," at 527½ oz., with masers and nuts 159 oz. in weight. The buildings,* which comprised a large hall with side rooms and an end chapel, measuring 132 ft. by 89 ft. (the walls 4 ft. thick, included), were converted by Henry VIII. into a victualling office for the Navy, and so continued until the Peace of 1814, the hall having been used as a brew and bake house and store rooms. The north portion was pulled down in 1831; three years later the Corporation bought the building for purposes of a town hall, sessions house, and prison; a new entrance was made beneath the south-west window, cells for seventy-five prisoners were made under the hall (as reduced to 124 ft. by 29 ft.) and the belfry tower was fitted as the Governor's residence—after the plans of Captain Boxer, R.N. The tower projecting from the south angle, is 24 ft. square at its base, and rises to 55 ft. above the present raised surface of the ground. Buck's view, 1734, shows the tracery, now lost, of the row of windows along the side that faces south-east. The adjoining Town Hall and Assembly Rooms, built at a cost of about 18,000*l*. after Burges's designs, were opened in July, 1883.

Seats in Cathedral Closes.

No complaint can, generally speaking, be made of the arrangements for visitors inside English cathedrals, though the manner in which certain parts are closed against those who desire to study architecture without the guidance of a verger is often provoking. On the other hand, it is much to be desired that seats should be placed outside cathedrals, so that those who wish to spend some time in viewing the external parts of these buildings should not be compelled to stand. In the delightful close of Peterborough Cathedral there is not a single seat to be found.

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* Similar, in plan, to the hospitals or bede-houses of St. Augustine at Sherborne, Bishop Bubwith (1424) at Wells, St. Mary (*temp.* Henry II.) at Chichester, and William Browne (1493) at Stamford; compare also with the Domus Dei (*temp.* Henry III.) at Southampton, Holy Trinity (*temp.* Richard II.) at Arundel, and the Domus Dei, since the garrison chapel, at Portsmouth.

Those who visit York Minster are better provided for; but, in addition to the seats on the north side, it would be desirable to provide a bench or two to the west and south. The more opportunities there are given for the leisurely and comfortable view of the English cathedrals the better they will be appreciated and valued.

**The Structure of Metals.**

PROFESSOR J. A. EWING and Mr. W. Rosenhain gave last month the Bakerian Lecture to the Royal Society, the subject chosen being the crystalline structure of metals. Although nothing startlingly new was advanced, yet their microscopic researches seem to have placed it beyond doubt that no metal under any circumstances ceases to be crystalline. When the polished surface of a metal is etched and examined under a powerful microscope it is seen to consist of irregularly-shaped grains with clearly marked boundaries. Each grain is a crystal, the growth of which has been arrested by its contact with the neighbouring crystals. When the metal is bent and again microscopically examined the surface of each grain is seen to be marked with a system of parallel lines, but the lines on one crystal are not necessarily parallel to the lines on another. Professor Ewing has shown that they are slips along cleavage or guiding planes in the crystal, the effect of each slip being to develop a step on the polished face. The bending of a piece of non-elastic metal is, therefore, caused by the numerous finite slips that take place along the cleavage planes of the crystals that form the metal. Professor Ewing's researches on the structure of alloys were fruitful in valuable results. The alloy shows large grains quite different from the grains of pure metal. Each grain consists of a mixture of the two metals, one of them appearing as crystals on the face of the other. If it is strained, the structure becomes more marked, as the slips cause differences of level between the two constituents. A study of the micro-structure of alloys affords a simple explanation of their anomalous behaviour in regard to heat and electricity. If the more expansible metal exist as separate pieces within the other, then the effect of heating will be to press the two together, and thus the joints between the two will conduct electricity better, with the result of minimising the worse conductivity due to heating. It is possible even for an alloy to have a negative temperature coefficient. A simpler explanation of this puzzling phenomenon could hardly be given.

**Rous' Fire-Resisting Material.**

ON Friday, the 9th inst., some interesting experiments were conducted at Willesden Green to show the effects of a conflagration on "Rous' fire-resisting and non-conducting material." The material itself is a kind of plaster, the precise composition of which was not divulged, but which was said to be a combination of chemicals mixed with lime, and a vegetable fibre. Tungstate of soda is one of the constituents. For the purposes of the experiments a small hut had been erected; it was match-boarded externally, and in the interior the laths of the walls and ceiling had been coated with the plaster. A fierce fire was then lighted in the interior, and after a time some of the plaster, which was about ¾ in. in thickness, powdered up and exposed the laths behind. These did not immediately catch fire, however, and it was not until the fire had been lighted for an hour that any material damage was done to the little building. At the expiration of that time the laths were eaten through in places, and the external match-boarding was set alight. There was no pyrometer or other means present to enable one to judge of the temperature employed, and the net result of this experiment was that the material certainly retards the progress of a conflagration. Had the plaster been drier it is probable that it would not have powdered with such facility. In order to show that the material is a non-conductor of heat a small flat block was placed on a fire, and after some time had elapsed, and whilst still on the fire, the top of the block was found to be quite cool. It seems probable that the principal use to which this material will be put is for the covering of steam pipes and the like.

**Technical Schools, Barrow-in-Furness.**

THE contract for these schools, which were the subject of an architectural competition about eighteen months ago, has just been let for about 15,000*l.* A correspondent sends us a copy of the instructions to architects in the competition, in which it is stated that "the cost of the building is not to exceed 9,000*l.*, inclusive of architect's commission," and that the Committee "will exclude from competition any designs if the Assessor (with or without the assistance of a surveyor) should determine that their probable cost will exceed by 10 per cent. the intended outlay or the estimate of the competitor." Of course we do not know what may have happened in the interval between the competition and the actual commencement of the building; but some explanation is surely called for.

**The Paris Commemorative Chapel.**

THE architect of the chapel erected to commemorate the victims of the Paris bazaar fire has submitted his scheme for the interior decoration of the monument, in addition to the painting of the cupola by M. Maignan. According to this scheme the high altar, an erection in Louis XVI. style, will be in white marble combined with chiselled bronze heightened with gilding. Behind the altar will be a niche with a statue of the Virgin, four mètres high, in hammered copper, the model for which will be made by M. Daillion, sculptor. In front of the four piers of the dome, four black veined marble vases will be placed on pedestals. The pavement of the chapel is to be in marble in four colours —white, light grey, dark grey, and black, forming a design in keeping with the general style of the building.

**Dudley Gallery Art Society.**

THE summer exhibition of water-colours by the Dudley Gallery Art Society does not contain many works to strike one by their force and originality; the general level is very mediocre. Among works that call for observation we may note one by Mr. G. Marks, "Solitude" (247), a wooded landscape very fine in colour, and on a larger scale than the beautiful little highly-finished landscapes which he has been in the habit of exhibiting here; also in rather a different style of treatment. Mr. Albert Stevens's large drawing of "The Castle of Chillon" (228) is an excellent work of what may be called the academical school. One of the best works in the room is Mr. C. J. Adams's "Shadows and Sunny Glimmerings" (67), a kind of pastoral, very true in effect and delicate in execution. In a very different style Miss Margaret Bernard shows a fine broad sketch, rather than picture, of "Marshes, Breamore, Wilts" (75). Among others we may mention Mr. Duassut's "Wayside Pastures" (91), Mr. Coleridge's "Haytime in the Lodden Meadows" (102), Miss Nesbitt's "Low Tide, Whitby" (135), Mr. F. A. Verner's "Wimbledon Common" (210), Miss Skidmore's "Grampian Hills" (243), and Mrs. Stevens's "Hayfield, Chamounix" (293), with a riot of wild flowers in the foreground, delightful to the eye though not perhaps improving to the hay.

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## THE ROYAL INSTITUTE OF BRITISH ARCHITECTS.

THE fifteenth general meeting (business) of the Session of this Institute was held on Monday at 9, Conduit-street, W. Mr. John Slater presiding.

### *Election of Council, &c.*

The minutes having been taken as read, the report of the scrutineers appointed by the annual general meeting to direct the election of the council, standing committees, &c., for the year of office 1899-1900, was received. The following is the result of the election :—

*President.*—Mr. William Emerson.

*Vice-Presidents.*—Messrs. J. McKean Brydon; W. Milner Fawcett, M.A.Cantab., F.S.A.; H. L. Florence ; E. A. Gruning.

*Hon. Secretary.*—Mr. Alexander Graham, F.S.A.

*Members of Council.*—Messrs. F. T. Baggallay ; Thomas Blashill ; James Brooks, Past Vice-President ; J. J. Burnet, A.R.S.A. (Glasgow) ; W. D. Caröe, M.A. Cantab., F.S.A. ; T. E. Collcutt ; J. A. Gotch, F.S.A. (Kettering) ; E. T. Hall ; H. T. Hare ; E. W. Mountford ; Beresford Pite ; John Slater, B.A.Lond. ; R. Phené Spiers, F.S.A. ; H. Heathcote Statham ; Leonard Stokes ; Sir John Taylor, K.C.B. ; Paul Waterhouse, M.A. Oxon ; Aston Webb, A.R.A., F.S.A., Past Vice-President.

*Associate-Members of Council.*—Messrs. J. Sivewright Gibson ; H. V. Lanchester.

*Representatives of Allied Societies*—Messrs. D. Barclay (Glasgow Institute of Architects) ; R. Isaac Bennett (Manchester Society of Architects) ; J. Crocker (Devon and Exeter Architectural Society) ; Thomas Drew, R.H.A. (Royal Institute of the Architects of Ireland) ; Robert Evans (Nottingham Architectural Society) ; C. B. Fowler (Cardiff, South Wales, and Monmouthshire Architects Society) ; W. Glover (Northern Architectural Association) ; A. E. Sawday (Leicester and Leicestershire Society of Architects) ; J. Smith (Sheffield Society of Architects).

*Representative of the Architectural Association* (London).—Mr. G. H. Fellowes Prynne.

The following members were declared duly elected to serve on the Standing Committees for the ensuing year of office :—

*Art Standing Committee.—Fellows:* Messrs. J. Macvicar Anderson, F.R.S.E.; James Brooks ; J. M. Brydon ; W. D. Caröe, Ernest George ; H. T. Hare ; E. W. Mountford ; H. H. Statham ; Alfred Waterhouse, R.A., LL.D. ; William Young. *Associates:* Messrs. R. S. Balfour, J. Sivewright Gibson, H. V. Lanchester, A. N. Prentice, W. H. Romaine-Walker, J. W. Simpson.

*Literature Standing Committee.—Fellows:* Messrs. John Bilson ; H. L. Florence ; Alexander Graham ; B. Ingelow ; J. Tavenor Perry ; W. A. Pite ; Sydney Smirke ; R. Phené Spiers ; H. H. Statham ; Paul Waterhouse. *Associates:* Messrs. A. S. Fowler, M.A.Oxon., F.S.A. ; J. H. Jones, B.A.Lond. ; A. N. Prentice ; R. Elsey Smith ; L. Waterhouse, M.A.Cantab. ; P. S. Worthington, M.A.Oxon.

*Practice Standing Committee.—Fellows:* Messrs. T. Batterbury, S. Flint Clarkson, T. Harris, G. Hubbard, A. H. Kersey, J. Douglass Mathews, W. Hilton Nash, Beresford Pite, J. Osborne Smith, E. Woodthorpe, M.A. Oxon. *Associates:* Messrs. W. H. Atkin-Berry, C. H.

Brodie, H. Hardwicke Langston, Sydney Perks, A. W. Tanner, W. H. White.

*Science Standing Committee.*—*Fellows:* Messrs. L. Angell, M.Inst.C.E.; Delissa Joseph; H. W. Pratt; J. S. Quilter; H. D. Searles-Wood; Percival Gordon Smith; A. Saxon Snell; Lewis Solomon; W. C. Street; Benjamin Tabberer. *Associates:* Messrs. S. B. Beale; H. W. Burrows; Max Clarke; B. J. Dicksee; Matthew Garbutt, Assoc.M.Inst.C.E.; Charles Henman.

The Hon. Auditors for the past official year, Messrs. Zeph-King and Frederick William Marks, were re-elected for the ensuing year.

The following gentlemen were then elected members of the Institute as *Fellows*:—Messrs. G. F. Bodley, A.R.A., Royal Gold Medallist elect, London; E. A. Johnson, Abergavenny; G. A. Bligh Livesay, Boscombe, Bournemouth; E. A. Minty, Westminster; Andrew Murray, the Guildhall, E.C. As *Associate*:—Mr. Jasper Wager, of H.M. Office of Works. As Honorary Corresponding Member, Comte Paul de Suzor, member of the Imperial Academy of Fine Arts, St. Petersburg, correspondant of the Institute of France, &c., of St. Petersburg.

### *The Institute Premises.*

Mr. H. Hardwicke Langston then moved, and it was agreed, "That in the opinion of this meeting it is desirable to put a suitable and prominent inscription on the street front of No. 9, Conduit-street, indicating that those premises are occupied by the Royal Institute of British Architects."

### *Building By-laws in Non-Metropolitan Districts.*

The meeting proceeded to receive and consider the report of the Special Committee appointed by the Council to consider the administration of Building By-laws in Non-Metropolitan Districts. The report, which was recommended by the Council for approval and adoption, was as follows:—

"The Committee have considered the present condition of building by-laws in England outside the County of London, and their administration.

Some of the larger municipalities are governed in these respects under private Acts of Parliament, but the great majority of boroughs and urban districts have adopted by-laws under the Public Health Acts which have been confirmed by the Local Government Board, and they are for the most part founded on, though they do not absolutely follow, the model by-laws issued by that Board.

Around some of the larger centres of population there are urban districts which have obtained the sanction of the Local Government Board to building by-laws varying in several particulars from the model by-laws and from one another. This want of uniformity in districts closely adjacent causes inconvenience and irritation to building proprietors as well as to architects.

It is within the powers of rural sanitary authorities to apply for and obtain from the Local Government Board 'urban powers,' which have been freely granted. They can then adopt the whole of the model by-laws.

When adopted the by-laws become operative not only in that part of the district which is crowded, but also in its suburbs and outlying districts; and thus a rural district, often extending for miles round the large village or small town which forms its centre, has just the same building regulations as a crowded town.

It is the experience of the Committee that some of the by-laws thus introduced are not well adapted for general use throughout the country, and when applied in connexion with ordinary buildings over large areas of a purely rural character, they become oppressive.

The enforcement of unnecessary regulations in respect of matters in which the public has no practical interest seems to the Committee an improper interference with the liberty of the subject.

It gives useless trouble to local authorities.

It multiplies undesirably officials to be paid out of the rates.

It adds unreasonably to the cost of building.

It promotes monotony in design, stultifies invention, and prevents improvement.

It occasionally stops building. More particularly it discourages the erection of cottages for the labouring classes by landed proprietors on their country estates.

Recognising the necessity for such building by-laws as are proved to be essential to the safety or health of the public, and desiring that the by-laws relating to the same subject should, as far as practicable, be alike throughout the country, the Committee suggest that the model by-laws should be grouped in divisions as detailed below, in order that buildings in rural localities may be relieved from those divisions which appear inapplicable in such places. In an appendix they deal in detail with each division so far as amendment appears to them needed therein.

### *Suggested Divisions.*

A. Definition of Terms and Exempted Buildings [Model By-laws 1 and 2].

B. New Streets [3-8].

C. Space about Buildings and Area of Windows [53-58].

D. Structure of Party Walls [25-32].

E. Structure of Walls, Foundations, Roofs, and Chimneys [11-23, 33, 34, 36-52].

F. Sanitation, Preparation of Site, and Drainage [9, 10, 17, 52*a*, 60-89].

In rural districts the Committee consider that A, D, and F would suffice. It might be desirable to add B in the case of any part of a rural district likely to become urban.

Possibly E might be added, to apply only to large public buildings, warehouses, and factories of considerable height. Ordinary shops should not be regarded as other than domestic buildings.

In towns where a competent building surveyor of experience is engaged the whole of the by-laws should be in force. In such places exemptions from certain divisions of the by-laws should be made applicable to particular buildings rather than to districts. The Committee are of opinion that in no case should the exemptions extend to sanitary matters. The exemptions they suggest are set forth in the Appendix, Division A, No. 2.

It appears to the Committee that no model by-laws can be considered complete which do not include those to be enforced by Local Authorities with respect to the staircases and exits of public buildings and factories, even though authorised otherwise than under the Public Health Acts.

It is of great importance that the requirements of the Local Authorities as to the deposit of drawings should be reasonable, and that they should be explicitly stated. The Committee suggest that in all cases a block plan, with the lines and depths of drainage shown thereon, together with the nearest public roadway and adjoining premises within 100 ft. of the proposed building, should be deposited, and that, where required, plans and sections (together with elevations, if needful to explain methods of construction) should be submitted for inspection during a defined and limited time; which drawings should be then returned, stamped, if approved, or, if not approved, accompanied by a precise statements of the particulars in which the by-laws have not been complied with.

It would be of great advantage if an appeal could be provided to a technical authority as to the meaning and applicability of by-laws.

The Committee have the honour to lay this Report, with the appendix, before the Council of the Royal Institute of British Architects, and request that it may be submitted to a General Meeting.

It might be well to forward copies to the allied societies, for their consideration, before the meeting is called.*

On the report being adopted, the Committee suggest that the Institute should request the Local Government Board to receive a deputation, whose objects would be to point out to the Board the desirability of altering some of their model by-laws and arranging them in divisions, and to request the Board to take such steps as may be necessary to bring the new method of administering the by-laws before the notice of the Local Authorities.

The influence of those who are interested in building would have to be brought to bear upon the Local Authorities to urge them to give effect to the proposed measures of relief by adopting such, and such only, of the divisions of the by-laws as would be applicable to their districts or to different portions thereof.

### SYNOPSIS OF MODEL BY-LAWS AS ISSUED BY THE LOCAL GOVERNMENT BOARD.

| No. | | Division. |
|---|---|---|
| 1. | Interpretation of terms ... | See Appendix, A. |
| 2. | Exemptions ... ... ... | See Appendix, A. |
| 3-6. | New streets. *Retain* ... | B. |
| 7. | New streets ... ... ... | See Appendix, B. |
| 8. | New streets. *Retain*... ... | B. |
| 9, 10, 10*a*, 10*b*. | Sites. *Retain* | F. |
| 11, 12. | Walls. ... ... ... | See Appendix, E. |
| 13-16. | Walls. *Retain* ... ... | E. |
| 17. | Damp course ... ... ... | See Appendix, F. |
| 18, 19, 20, 21. | Walls ... ... | See Appendix, E. |
| 22, 23. | Walls. *Retain* ... ... | E. |
| 24. | Wood in external walls. *Omit.* | |
| 25-32. | Party-walls... ... ... | See Appendix, D. |
| 33, 34. | Support of timbers. *Retain.* | E. |
| 35. | Brick nogging. *Omit.* | |
| 36-51. | Chimneys, &c. *Retain.* | E. |
| 52. | Roofs. *Retain* ... ... | E. |
| 52*a*, 60*a*. | Water on roofs, &c. ... | See Appendix, F. |
| 53, 54. | Open spaces ... ... | See Appendix, C. |
| 55, 57. | Windows ... ... ... | See Appendix, C. |
| | Heights of stories. *Omit.* | |
| 56. | Ventilation under floors. *Retain.* | C. |
| 58. | Ventilation of rooms. *Retain.* | C. |
| 59. | Ventilation of public buildings. *Omit.* | |
| 60. | Subsoil. *Retain.* ... ... | F. |
| 61-64. | Drainage. *Retain.* ... | F. |
| 65. | Drainage ... ... ... | See Appendix, F. |
| 66-79. | Drainage. *Retain.* ... | F. |
| 80-85. | Ashpits. *Retain.* ... ... | F. |
| 86-89. | Cesspools. ... ... ... | See Appendix, F. |
| 91, 92. | Notices and plans... ... | See Report. |

### APPENDIX.

### *Division A.—Definitions and Exemptions. Interpretation of Terms.*

### *Model By-laws.*

No. 1.—Terms defined by the Acts under which the by-laws are made should be inserted here for general information.

'Base' of a wall carried on a bressummer should mean the course above the bressummer. See London Building Act, 1894.

'Topmost Story' should be defined to include a one-story building.

As far as possible the interpretations should accord with the London Building Act, 1894.

### *Exempted Buildings.*

No. 2.—It is undesirable that any buildings should be exempt in practice from supervision respecting sanitation and drainage; certainly not railway stations.

No 2 (*h*) (*i*) (*j*).—To be substituted for Model By-law No. 2 (*h*) (*i*) (*j*).

The following buildings to be exempted from all By-laws excepting Division F. (Sanitation, &c.).

(*h*) Any building, not being a public building or factory (or which, being a public building or factory, is one story only in height and is without any gallery), which is situated not less than 15 ft. from the boundary of the curtilage thereof.

For the purposes of this By-law two domestic buildings shall be regarded as one building provided they are separated by a party-wall in accordance with Division D.

*Note.*—This is not intended to exempt any public building or factory from By-laws regulating exits and stairs, should such By-laws be introduced.

(*i*) Any building situated with 15 ft. of the boundary of the curtilage, which is distant 15 ft. at the least from any public way and from any other building within the curtilage, and does not exceed 600 superficial feet in area nor 15 ft. in height, provided that its external or party-wall towards the boundary of the curtilage is constructed as provided for a party-wall in Division D.

($j_1$) Greenhouses if not attached to other buildings (see London Building Act).

($j_2$) Greenhouses attached to other buildings so far as regards the necessary woodwork of their sashes, skylights, doors, and frames.

### *Division B.*

No. 7 (*c*).—Suggested amendment:—He shall construct on one side at least of such street a footway not less than 6 ft. wide.

### *Division C.*

No. 53.—Omit 53 in favour of 53A.

No. 54.—Add to 54 and its provisos Section 41 London Building Act, part of Sub-Section i., modified thus:—

Where there is a basement-story directly and sufficiently lighted and ventilated, or where the basement-story is not constructed or adapted to be inhabited, or where there is no basement-story, and where the ground-story is not constructed or adapted to be inhabited, the open space required by this section may be provided above the level of the ceiling of the ground-story or a level of 16 ft. exclusive of lantern lights, measured from the level of the adjoining pavement.

Section 52 of the London Building Act should also be introduced in the following form:—

In the case of domestic buildings and stables or other dependent buildings abutting in the front upon a street and in the rear upon a mews or public way, the sufficient open space provided for the domestic building shall serve also for the stables or dependent building.

It might be desirable to introduce Section 45 London Building Act respecting 'Courts within a building.'

No. 55.—Suggested amendment: Every person . . . shall construct . . . suitable windows in such manner that effectual means of ventilation by direct communication with the open air shall be provided for every habitable room of such building.

*Note.*—It is not desirable that the heights of stories should be arbitrarily fixed by By-laws.

### *Division D.—Party-Walls.*

### *Model By-laws.*

Such parts of Nos. 19, 20, 21, and 22 as relate to party-walls, and Nos. 26, 27, 28, 29, 30, 31, and 32.

Every wall built for the separation of adjoining buildings belonging to different owners or occupied or adapted to be occupied by different persons shall be constructed of good bricks, stone, or other hard and fire-resisting material, properly bonded and solidly put together with good mortar.

Such wall shall in no part be less than 8½ in. in thickness. It may, however, be divided into two thicknesses of 4¼ in. by a flue, provided that such flue be pargetted, and has an opening into one only of the adjoining premises.

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* Copies of this Report have been sent to the allied societies, and their opinion invited thereon, according to the suggestion of the Committee.

Such wall shall extend from the foundations or footings up to the underside of the incombustible roof covering, and shall be built or properly corbelled out to the full extent of any projecting string, eaves, or other architectural feature any part of which within 3 ft. of the party-wall is constructed of wood or other combustible material.

It shall also be carried up the full width and height of any turret, dormer, lantern light, or other erection on a roof or flat any part of which within 4 ft. of the party-wall is constructed of wood or other combustible material.

No timber shall be built into or placed in any party-wall nearer than 4½ in. to the centre line thereof, nor within 9 in. of the inside of any flue or chimney opening, nor within 7 in. of the upper surface of any hearth; nor shall any wooden plug be driven into any such wall nearer than 6 in. to the inside of any flue or chimney opening.

Such wall shall in each of the following cases be carried up above the roof or flat or gutter of the highest building adjoining thereto to such height as will give a distance of at least 15 in., measured at right angles to the slope of the roof, or above the highest part of any flat or gutter, as the case may be, and shall be properly coped and protected from water soaking into the wall:

(*a*) When either of the adjoining buildings has a roof not externally covered with slates, tiles, metal, or other incombustible material;

(*b*) When either of the adjoining buildings exceeds 30 ft. in height, measured from the lowest part of the ground floor story to the tie of the roof, or to halfway up the gable if the roof has no tie;

(*c*) When either of the adjoining buildings is intended or adapted to be used as a public building or as a warehouse, factory, or workshop.

When either of the adjoining buildings is of the class described under (*c*) and exceeds the dimensions described in (*b*), the wall shall be carried up for a distance of 36 in. above the roof, flat, or gutter, as the case may be, and shall also extend 12 in. higher and wider on each side of any turret, dormer, lantern light, or other erection on a roof or flat any part of which within 4 ft. of the party-wall is constructed of wood or other combustible material.

### *Model By-Law.—Buildings Adjacent to the Boundary of the Curtilage thereof.*

No. 25.—When the external wall of a new building is within 7 ft. 6 in. of any boundary of the curtilage other than a public road, the wall shall be built of incombustible material, and no timber or other combustible material shall be fixed beyond the face of such wall.

### *Division E.—Structure of Walls, &c.—Model By-laws.*

No. 11.—Add:—Any story in a roof, and the story immediately below the roof not being the ground story of a detached or semi-detached domestic building, may be enclosed with timber studding, not less than 4 in. thick, properly framed, covered externally with weather-tiling or plastering, and internally with plaster work covering the whole surface excepting the necessary openings. Such enclosure, when properly corbelled out, may overhang the wall below provided the soffit be plastered.

No. 18 (iii.).—Add to 18 (iii.): A pier not less in width and breadth than twice the thickness of the wall as defined for each story, and standing on a solid foundation, shall be deemed to be a return wall for the purposes of measuring the length of walls.

Nos. 19 and 20.—Omit 'and every party wall,' and add in both cases: The minimum thickness of every party wall shall be 4½ in. less than that prescribed for an external wall of corresponding height and length, but in no case less than 8½ in.

Add to 19 (not 20).—Where the wall of any domestic building, hereby required to be 13½ in. or more in thickness, is covered externally with tiles or other similar incombustible and impervious material securely fastened thereto, the said thickness may be reduced by 4½ in., provided that such reduction shall not be made on more than one story nor on any ground story, nor on any story exceeding 10 ft. in clear height.

No. 24.—Omit 24. See Sec. 55, London Building Act, 1894.

No. 35.—Omit. There is no corresponding rule in the London Building Act, 1894.

No. 52A.—Omit. See Division F, substituted By-law.

### *Division F.—Sanitation, Preparation of Site, Drainage.*

### *Model By-laws.*

No. 17.—Substitute 'floor' for 'timbers' in line 5. In the second paragraph a vertical damp-course should be substituted for the hollow wall described.

Nos. 52A and 60A.—Substitute the following:—Every person who shall erect a new building shall make suitable provision for carrying off the rain-water from the roofs, flats, gutters, and areas in such manner as not to cause dampness in any part of the walls or foundations of such building or any adjoining building.

No. 65.—It should be made to appear that this applies only to foul drains.

Nos. 86 to 89.—The provisions respecting cesspools are unpractical and unsatisfactory. The question of the disposal of sewage where no sewers are available requires reconsideration under modern conditions."

The Chairman formally moved the adoption of the report.

Mr. Lacy W. Ridge seconded the motion. He remarked that the most sanguine of them could not expect the Local Government Board to adopt the suggestions of the report bodily. Nevertheless, every point had been carefully considered. Their main principles were: That by-laws should be as much alike as possible throughout the country; and that they should not be enforced in places where the public had no interest in interfering. At the present time there was a great deal of unnecessary interference, because by-laws which were applicable to a large town were also applied in an open field. The Committee had divided the by-laws up in such a way that those only could be applied which the circumstances required.

Mr. W. Woodward said a more sensible report had never emanated from a Committee of the Institute. The paragraph about the Model By-Laws was singularly wise, as was that at the end, which pointed out the great advantage that would arise if a technical authority could be constituted to decide as to the meaning and applicability of the by-laws. He thought that such an authority could decide as to what should and should not apply to an outlying district. As to the paragraph with regard to the requirements of Local Authorities, he was glad to find that the Committee had omitted all reference to the scale of the suggested block plans. All who had dealings with the London County Council would appreciate this point. Then the Committee very wisely added, "which drawings should be then returned, stamped if approved, or if not approved accompanied by a precise statement of the particulars in which the by-laws have not been complied with." This suggestion, he hoped, would be communicated to the London County Council. Of course, they had one splendid amendment introduced into the Act of 1894—that the County Council should give its reasons for objecting to any plan. If the point suggested were pressed upon the Local Government Board he was sure the architects practising in the provinces would be the first to appreciate it.

Mr. P. Gordon Smith said the report had his entire sympathy. The whole question was full of difficulties because he foresaw that it opened up certain alterations in the principles and legislation which had hitherto guided them. The law as it stood allowed any Rural District Council to apply for urban powers, and he would remind the meeting that it would be a very grave responsibility for the Local Government Board to take upon itself if they refused to grant such powers when applied for. Any Government Department would, he thought, feel this responsibility too great to give a refusal. However that might be, the proposals in the report had a great deal to commend them to those in authority, and he would do all he could to bring them into force. There were admittedly some points that were debatable.

Mr. Ralph Nevill said that with regard to the adoption of urban powers by Rural Authorities he could not express his agreement with Mr. Gordon Smith. He always understood that the Local Government Board was specially intended to keep in order the Local Authorities to prevent them usurping too much power or misusing that which they possessed. Every one knew that unreasonable requirements were now made. For instance, the 8 ft. 6 in. height for cottages was ridiculous, and he suggested that the deputation should, when it goes up, urge the limitation of the regulation to 8 ft., and not only that, but allow the ceiling and floor to be included. It was absurd to say that 8 ft. was not amply sufficient for health. The exclusion of gables in prescribing the thickness of walls below, and the sufficiency of concrete as a footing, should also be urged.

Professor Kerr thought it very necessary that a tribunal of some sort should be constituted to deal with matters that were doubtful. Constantly difficulties arose with reference to the interpretation of the Act. In London they were driven back upon this consideration—What is the policy of the County Council?

Mr. Lacy Ridge said such questions as that of the administration of the Building Act could not be one of policy but of law.

Professor Kerr replied that admitting that that was so, it would be well to have a technical authority to clear up points as to the interpretation of the Act and by-laws. He would like a tribunal to be in a position to say that such and such was the intention of the Act. As a District Surveyor of many years' standing he had always tried to interpret the Act not on the letter of the law but on its principle.

Mr. Lacy Ridge, replying to the discussion, pointed out to Mr. Ralph Nevill that the height of rooms were not in the Model By-Laws at all, so they had no opportunity of objecting, except by a note. With reference to the suggested tribunal, he was glad that the proposal received Mr. Gordon Smith's approval. If there was a difficulty about such things in London, it was tenfold worse in the rural districts, where the by-laws were sometimes enforced without discretion, and very little knowledge. He differed from Mr. Gordon Smith as to the duty of the Local Government Board. He thought that authority ought to restrain small Local Authorities when they were assuming powers they were unfitted to carry out.

The Chairman remarked that it must be a source of great satisfaction to Mr. Lacy Ridge to find almost unanimous agreement with the conclusions to which the Committee had arrived.

The motion to adopt the report was then put and carried *nem. con.*

### *Party Structures.*

The Chairman moved the resolution passed by the Special Committee and approved by the Council, as follows: "That the Royal Institute of British Architects petition the Local Government Board to promote a Bill in Parliament to regulate the procedure in dealing with party structures in a similar manner to the London Building Act of 1894 in all parts of England where there are no Acts of Parliament dealing with such party structures."

Professor Kerr said nothing could be more useful to them as architects than that section relating to party structures. All partnership disputes were difficult and protracted, and in this case they had a partnership in a structure with the partners on either side of it. The danger was that as soon as they began to contest the ownership they got into the hands of the lawyers, from whose clutches they emerged with difficulty. He seconded the motion.

Mr. Lacy Ridge explained that this resolution was separated from the Special Committee's report because the subject it dealt with required legislation rather than departmental treatment.

Mr. Woodward suggested that a clause should be added providing for reference to a tribunal of appeal.

Mr. Lacy Ridge hoped the meeting would intrude nothing of the kind into the resolution. Such a course would only complicate the subject.

The resolution was carried unanimously.

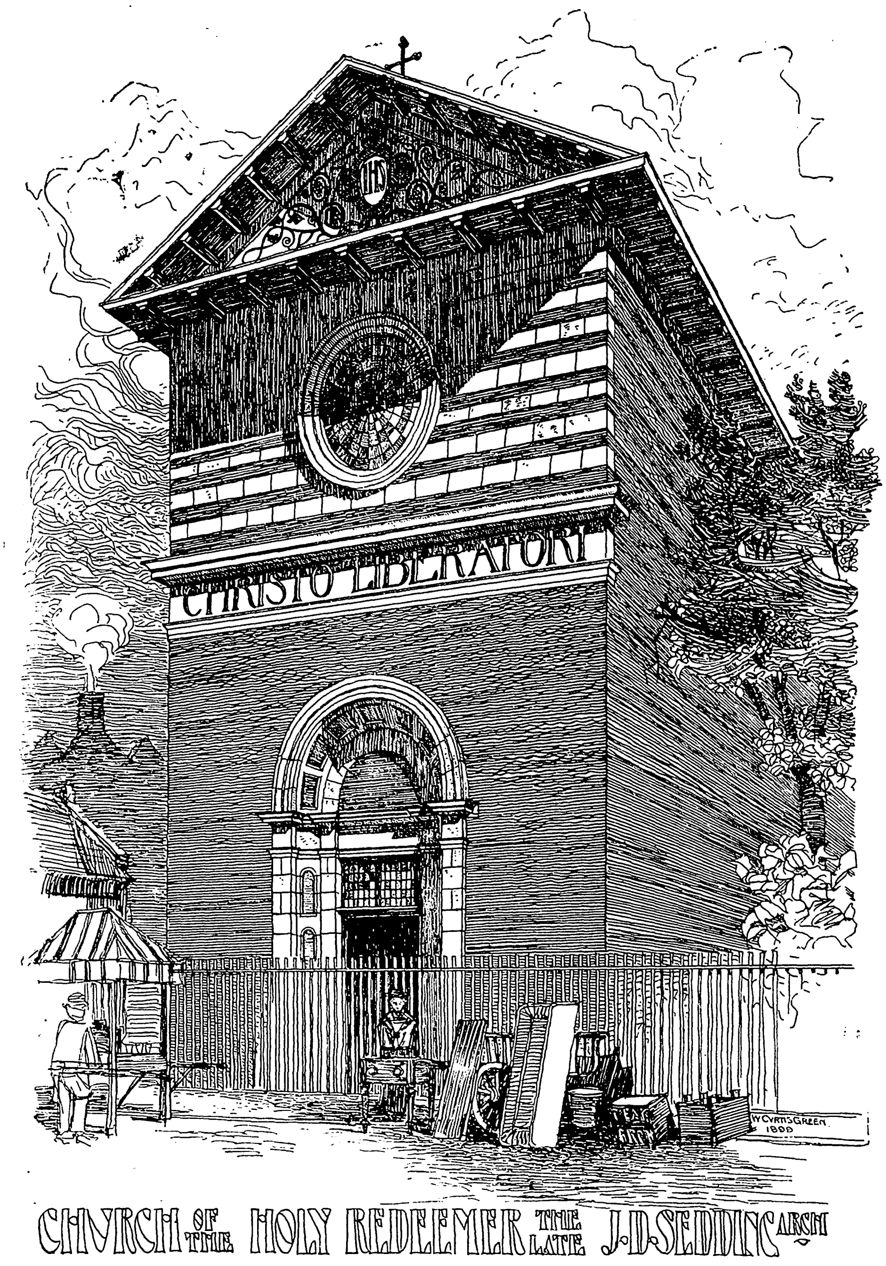
### *Congratulations to Sir Alma Tadema.*

Mr. J. M. Bryden said he had received the permission of the Chairman to move a resolution on a subject which did not appear on the agenda. Sir Alma Tadema, who had been one of those to receive from her Majesty a knighthood, had done excellent service to the Institute as a member of the Art Committee. He had, moreover, taken great interest in architecture, and he moved that a message of congratulation be forwarded to him in the name of the Institute.

Mr. E. W. Mountford seconded the motion, which was carried with acclamation.

The Chairman announced that the next meeting would be held on June 26, when the Gold Medal would be presented. The annual dinner of the Institute would be held on the following evening.

PUBLIC IMPROVEMENTS, LEICESTER.—Lieut.-Colonel A. C. Smith, R.E., a Local Government Board inspector, held an inquiry at the Town Hall, Leicester, recently, into the application of the Corporation for leave to borrow 6,185*l.* for street improvement purposes, and 830*l.* for recreation ground purposes. It was explained that the first matter dealt with the question of the High-street improvement. The proposal was to purchase the premises of 40 and 42, High-street, and a warehouse at the rear, in connexion with the widening of the street. The 830*l.* for recreation ground purposes was to defray the cost of laying out the Taylor-street recreation ground. The Borough Surveyor, Mr. E. G. Mawbey, described the character of the work.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CHURCH OF THE HOLY REDEEMER THE LATE J.D. SEDDING ARCH^T

*Sketches of London Street Architecture.—XXXII.*

## LONDON STREET ARCHITECTURE.—
## NO. XXXII.

THE Church of the Holy Redeemer, Clerkenwell, by the late Mr. Sedding, stands among squalid surroundings, and is built of similar bricks and roofed with common slate; the effect of the elevation consisting in the proportion and arrangement of the materials and the projecting eaves. Red facing bricks are only used to alternate with the stone bands; the lower portion of the exterior consisting of ordinary stock bricks.

A view of the interior of the church, which is treated with great originality, will be found in the *Builder* of May 7, 1887.

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## GLASGOW DISTRICT HALLS COMPETITION.

THE Corporation of Glasgow having resolved to provide halls suitable for the local needs of districts distant from the existing larger halls of the city, this competition is for the first of these, the districts being in Springburn and Cowlairs, which lie to the north of the city, and both have a large middle-class population. Of late years a very large amount of important work has been done by the achitectural department of the City Engineer's office; that official is now the responsible head, the post of City Architect having been allowed to remain vacant for over a dozen years. The Glasgow architects have protested long ago against this unsatisfactory arrangement, but the only concession made has been the throwing open to competition of some blocks of working-class houses. The successful competitor in the present instance is Mr. Whitie, a draughtsman in the City office, who will now start practice in his own name; the result is creditable to the municipal staff, as it is likewise satisfactory to independent architects that the responsibilities of a design can now be accredited to a person rather than a department.

The site is level, a rectangle 117 ft. by 88 ft., open on three sides, Keppoch-hill-road, Millarbank-street, and a lane; the fourth is closed in by dwelling-houses. The requirements were, halls to seat 1,200 and 400, for use independently or in conjunction, and to have connexion with a kitchen for purveying; besides necessary cloak-room accommodation and retiring-rooms for artistes and five committee-rooms, which might be independently let were also asked for. The limit of cost was put at 12,000*l.*, the successful architect was promised the work at a commission of 4 per cent. Three assessors were appointed, two elected by the Glasgow Institute of Architects, Mr. John J. Burnet, A.R.S.A, and Mr. T. L. Watson, F.R.I.B.A.; and Mr. McDonald the City Engineer, who together prepared, and in December issued, the conditions of competition; on a date shortly thereafter the assessors met, prepared to answer any questions submitted by intending competitors, and a public exhibition of the designs was promised. Drawings were sent in at the end of February, but it was May before a decision was publicly announced, and only now are the drawings exhibited. It would have been of interest also had the description accompanying each design, giving a note of cubical contents, &c., been affixed to the drawings, and so open for reference by the visitor.

Mention may be made, too, of an advertisement that appeared in the daily papers after the issue of the conditions, recommending that the two halls should be capable of being thrown into one another. It is very unfortunate if any competition has been influenced by an instruction not contained in the conditions or authorised by the assessors as a correction. Regarding the reduced commission, it should be said that protest by the Glasgow Institute of Architects was ineffectual with the majority of the Town Council, who could plead the precedent set by other municipalities, and the circumstance that the Institute, without approving either of the commission, or even of a competition, offered the services of two of its members to help in its right guidance.

The accepted design, by Mr. William B Whitie, shows both halls on the ground floor. The large one, running the long way of the site, is well proportioned, and of such dimensions that the back gallery and side balconies are of moderate size. The platform is ample and the lighting good, and there are staircases at each of the four corners. The entrance is at one end, from Millarbank-street, and herein the disposition of the cloak-rooms is the weak point in an excellent plan. They are in the basement, reached by stairs under these that lead to the gallery. Ladies and gentlemen are separated to rejoin only in the vestibule amidst the full current of new arrivals; a quite impossible arrangement. By a modification in the planning of the basement one can see how a circuit might be formed with advantage, cutting off one-half of the vestibule for arrivals, and using one stair for descent of both ladies and gentlemen would effect an improvement; but even then the arrangement would leave much to be desired. The lesser hall is just alongside the larger, connected by two pass-doors; whether used independently or conjointly, the disposition is good; its cloak-rooms are also on the basement, but, as less important, the objection is not so great in its case. The purveyor's service from kitchen is particularly good for both halls, whether used independently or together, though an entrance for goods, &c., might be had from the lane rather than from the front street; the artistes' accommodation is suitable and the committee-rooms convenient. The ground floor is raised six steps above the pavement level; the excavation necessary for the basement is consequently great, and if it is the case that the site is sandstone, two or three feet of quarrying might still be saved by raising the whole building. The elevations are but mediocre; in stone of a classic treatment that quite truthfully expresses the plan—except, perhaps, the high masking wall at the small hall, deemed necessary for balance, but without any particular interest. The end of the hall has the entrance doors double; they would be better thrown into one. Overhead is a rather insignificant great window; it is contained within quarter columns that support a broken semicircular pediment. The side of the hall is very simple, clearstory windows under a cornice; beneath all is plain wall, broken only by a range of small windows. There are no gratuitous towers or gables, the roof is exposed and has only a moderately-sized lantern, so that in the matter of cost it may be believed the conditions have been met.

The design by Messrs. Thomson & Sandilands in general size and arrangement of the great hall is not much dissimilar to the successful one, but they place their building on the long axis of the site. The hall is equally lit from both sides, and breadth is found for side corridors under the galleries. The lesser hall is placed underneath, half sunk below the pavement level: for independent use the arrangement is good, and even when both are required for one function there are advantages. The cloak-rooms are ample and well arranged; artistes'-room and committees-room are good, but the kitchen service is very bad. The architectural treatment is rather florid. Twin towers flank a gable in which is a large window that combines with the entrance underneath to form a feature. At the side—to Keppoch-hill-road—is the lesser hall entrance. Between the line of street and the building is a wide sunk area. A pen-and-ink perspective is given.

In the design by Messrs. Watson & Salmond the larger hall is an octagon of 63 ft. diameter, roofed (single) with a saucer-shaped dome, with an eye for light. At two of the sides of the octagon are recesses, one for the platform, another deeper one opposite receives a gallery that has a horseshoe balcony that runs round two-thirds of the circle. The cloak-room accommodation is good and readily accessible. The small hall is on the same floor, but somewhat pinched, and purveyor and artistes alike suffer. The excavation and bulk of building above ground are both moderate. The architectural treatment, however, is so good as to counterbalance some greater deficiencies in plan. Simple and dignified, the building could be taken for nothing but a public hall.

It says a good deal for the openness of mind shown by the assessor that three such dissimilar types should have been selected. The design by Mr. Henry Mitchell shares with the last the architectural honours of the competition. The large hall runs the length of the site, but is set back to the lane, permitting of the principal entrance being to a side of the hall—and there is much to recommend the arrangement; there is another entrance at the end. The vestibule and cloak-room accommodation is thus very simple and planned with dignity, but perhaps something less sumptuous would have sufficed. The lesser hall is placed on the upper floor, and the purveying suffers in consequence. The internal treatment of the halls and corridors is well thought-out. Externally, the hall has its side necessarily screened by the lesser hall and the committee-rooms. This frontage has the principal entrance; over a shallow area there is a colonnade; a large lantern over the great hall is also seen. To the other frontage the hall is expressed by a gable pediment but wanting the level cornice; encroaching on what would be the tympanum is a three-light window, below is a range of smaller lights to an upper corridor, and beneath is the smaller entrance. The openings generally are rusticated, the style is English Renaissance, the drawings are beautifully prepared, and include a wash perspective. Perhaps it has been on the matter of cost that this design has failed to obtain a better position in the competition.

Another type is shown by Messrs. Thos. Dykes & Robertson, where both halls are on the ground floor, but running the *breadth* of the site; the result is a shortened hall. The compensation is that ample space is formed for cloak-room—and additional ones are suggested on a mezzanine floor—and entrances for artistes, purveyor, &c., by the lane are conveniences worth much. The elevations are correct Classic if not very interesting; a fine perspective is given. No. 13 has also his halls on the ground floor, running across the site, but on the axis. The short hall here has necessitated two galleries, the upper of a rake only met with in theatres. The arrangement of cloak-rooms, &c., is particularly good, but in this case they have been got at too great a sacrifice. The elevation is of a kind resembling a typical French municipal hall, symmetrical and with heavy cornice.

Messrs. Jas. Corman & R. J. Somerside, with both halls on a level, in the large one show a gallery that encroaches over a full half of its floor area. If both halls were let at the one time, the exit and entrances would be badly arranged, and cloak-room accommodation too. The elevation shows a well-proportioned dome that emphasises the staircase, and the entrance is stately; but otherwise the use of a large Order embracing two stories for both façades is not good, as it serves equally for the hall of the story and for parts where there are really two floors.

No. 9 has a short, broad hall, and galleries that project too far over the floor area, and the cloak-rooms are not properly utilisable if both halls were independently let. The style is distinctly "free," but there are many good bits. No. 5 is noticeable for the curious way the lesser hall in its upper part is disconnected from the general design—on plan the separation is not so good as regards cloak-rooms. No. 6 has also both halls on ground floor, and broadside to the site; at the platform end is an elliptical apse; the galleries project too far, and the hall would be dark underneath; no advantage is taken on one side of a well that would afford light.

Several designs show the hall on the upper floor. No. 2 thus gets a very fine entrance vestibule, and the other accessory apartments are well provided for, but it would be a serious inconvenience to mount so high for both halls, and still higher for the gallery. Crossing the platform is a bridge connecting the ends of side galleries that, left open as shown, would surely be objectionable. The style adopted is Scotch Renaissance. No. 1 has also the hall on the upper floor, 17 ft. above the pavement; result—a building of great cubical contents, though it must be said that as, perhaps, the most simple of any in its architectural treatment, cost, perhaps, is not exceeded. It is strange to see a flat ceiling 30 ft. high and so much space run to waste in the roof. Mr. Geo. Sinclair has likewise a building of great bulk through raising his hall; the vestibule spaces ahd other apartments are too liberal. The style is a dignified Italian Renaissance.

The design of Messrs. James Salmon & Son shows the two halls alongside, with wide openings between, but what has been gained for connexion's sake is at the expense of convenience, if the halls were in use simultaneously for different purposes. The style is a modernised Scottish Baronial, well treated, and illustrated by a pen perspective. Messrs. Baptie & Bonn also give halls separated only by partitions, and so to be thrown open to one another; a double gallery is given to the great hall; a dome is the architectural feature of this design, and the façades support it well.

No. 7 more completely than any other has taken up the idea of throwing both halls into one for a great meeting, and shows considerable ingenuity with the problem. Mr. Charles McL. McDonald to a lesser degree meets the supposed demand, the small hall being connected to the large by sliding partitions; but these are under the gallery, so the union is for supper and ball-rooms, not for platform meetings, concerts, or the like. Mr. David Barclay, jun., has his halls on the ground floor, but if let independently the arrangement would be unsatisfactory. The lesser hall has a flat roof with two cupolas.

The eighteen designs submitted show a good average of ability, for the requirements of the case were not easily reconcilable; in selecting, a compromise was to be expected, and Mr. Whitie's plan and elevation has deficiencies, but on the whole the assessor's judgment approves itself.

## A NEW METHOD OF VENTILATING SEWERS.*

By Sir Charles Cameron, C.B., M.D.

The ventilating openings in the street sewers, which are now so general in almost every town in the United Kingdom, have not met with universal approval. When first used many complaints were made of the unpleasant odours emitted from them. The late Sir Robert Rawlinson was wont to say when such a complaint was made, "Put more ventilators in the sewer." No doubt the larger the number of ventilators the less the odours from any one of them. Practically the sewage of Dublin is now conveyed in sewers open to the external atmosphere. If they were altogether open it would be better than their present state of being open only at certain points. The houses opposite those points receive more than their due share of whatever comes out of the sewer, whereas if the sewer were as open as a ditch, every house would be treated alike to the emanations, if any, from it.

I am bound to say that, as a rule, there are no sensible nuisances caused by the street sewer ventilators; but there are occasional exceptions to this rule. Now and then persons complain to the Public Health Committee that the ventilators near their houses are offensive. On examination these complaints are generally found to be justifiable. Ordinary sewage generally has very little odour until it becomes stale; but now and then what may be termed exceptional sewage, having an offensive odour, flows through sewers in our streets, and it is chiefly from such sewage that the offensive emanations come through the ventilators.

The chief object in the use of ventilators is to prevent a greater pressure of the air of the sewers than that of the external atmosphere. It is assumed that the gases generated by the fermentation of the organic matter always present in sewage might cause the sewer air to acquire sufficient pressure to force the traps on the house drains connected with the sewer. I have always doubted very much whether the sewer gases could acquire a pressure sufficient to displace 2 in. or 3 in. of water. I have made many experiments in reference to the so-called pressure in the air of sewers. I have had the sewer ventilators closed on considerable lengths of sewer mains, and have inserted delicate pressure gauges in them. I never observed any pressure, except of the most trifling kind, in the air of the sewers when the ventilators were closed. I did, however, notice that in the early morning air often passed into the sewers from the streets. This descent of the air into the sewer I attributed to the insuction of air from the sewer into houses, the drains of which were untrapped or provided with defective ones. When the fires began to be lighted in the kitchens, air was drawn into the street sewers, especially in these parts of the City inhabited by the poorer classes. According to my experience, the pressure which occasionally may be observed in the sewers is sometimes caused by the wind. When a strong gale is blowing, gusts of wind enter the sewer through the ventilating opening.

The second object in ventilating sewers is to protect the workmen engaged in cleaning or repairing them. I greatly doubt whether the emanations from ordinary sewage are so abundant and dangerous as to imperil life or health. The manholes should, of course, be open for some time before the sewer is entered. Death of workmen from inhalation of sewer gases has not been infrequent, but it has been caused, not by ordinary sewage air, but by sulphuretted hydrogen set free from refuse from gas works, or from waste gases from gas engines allowed improperly to get into sewers, or from other exceptional causes.

It is worth noting, in connexion with the subject of this paper, that the sewers of one city as large as Dublin are not ventilated at all. This city is Bristol. Its sewers discharge their contents into a tidal river in which the water rises so high that for a large portion of the day the sewage cannot escape into the river. Bristol enjoys a remarkable immunity from typhoid fever, and I am informed that no injury to the health of the workmen who cleanse the unventilated sewers has taken place.

Notwithstanding the experience of Bristol, I confess that I am in favour of the ventilation of street sewers, though not by the means now generally employed. I object to the ordinary sewer openings in streets which are narrow and confined, and I have suggested another method of ventilation, which my colleague, Mr. S. Harty, City Engineer of Dublin, has approved of, and uses under certain circumstances. In order to explain my system it is necessary to say a few words in reference to the passage of gases through certain solid substances. If we take a gas, say oxygen or hydrogen, and enclose it in a vessel of metal, glass, or glazed porcelain, it will remain there for an indefinite period; but if the vessel is composed of unglazed porcelain or plaster of Paris, the gas will rapidly pass out of it. If a galvanic porous cell be connected with a glass tube, the latter filled with water, and its open end sealed in water, and a vessel of coal, or hydrogen, gas be placed over the cell, the water will be immediately expelled from the tube. This phenomenon is explained as follows:—All gases diffuse in right lines in all directions. The lighter gases diffuse more rapidly than the heavier ones, and all pass through porous materials. As coal-gas is lighter than air, it passes more rapidly into the cell than the air in the cell passes out of it, and therefore pressure is caused, as shown by the expulsion of water from the tube.

I have applied this property of the diffusion of gases through porous materials to the ventilation of sewers. Cylinders, composed of a mixture of two parts of porcelain clay and one of sulphate of lime, 18 in. in height and 6 in. in diameter, are used. Four or six are inserted in the crown of the sewer, and in a chamber resembling that used for the ordinary ventilators. The rain that enters the chamber from the street is carried into the sewer through a small siphon, and no wet can get at the cylinders.

As the cylinders allow air to pass freely through them, but effectually bar the passage of micro-organisms, there can be no greater pressure in the sewer air than in the street atmosphere. Air continuously comes out of the sewer, filtered through the cyclinders, and air as continuously enters the sewer through the porous vessel. The action of the filter on the air resembles the action of a Pasteur filter on water.

The sewer diffuser ventilator is manufactured by Messrs. Doulton, of Lambeth, London, and Burslem, Staffordshire.

The "fresh air inlets" of the house drains are often the outlets for foul air. When they are placed in the basement areas of houses they not infrequently cause an unpleasant odour. Whenever a water-closet is flushed the air in the soil pipe is forced out through the inlet into the external air. Mica valves are occasionally used at the inlets to prevent the gases from the soil escaping into the atmosphere. They are never air-tight, and soon go out of order. A better protection against the emission of foul air through the inlet would be a porous plate such as is used in the diffuser ventilator. As every precaution is usually taken to prevent even a "pin-hole" in the soil pipe, it seems contradictory that a large opening should be made in it.

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* A paper read at a meeting of the Royal Institute of Architects of Ireland May 25 last.

In conclusion, I may state that the sewer diffuser ventilators have given satisfaction in Dublin, and have been found efficacious. They have been in use for the last two years, and, on examination, have been found to remain quite clean.

## ROYAL ARCHITECTURAL MUSEUM AND WESTMINSTER SCHOOL OF ART.

The annual general meeting of this Institution was held on Thursday last week at the Museum, Tufton-street, Dean's-yard, Westminster. Mr. J. P. Seddon, a member of the Council, took the chair in the unavoidable absence of the President, the Duke of Westminster.

On the motion of Mr. Pollen, seconded by Mr. Charles Foster Hayward, the Duke of Westminster was re-appointed President.

Mr. M. B. Adams moved, and Mr. Pain seconded, and it was agreed, that Sir Arthur Blomfield, A.R.A., be appointed a Vice-President in place of the late Mr. Walter Carew Cocks, and that the other Vice-Presidents be re-elected.

The report, which was then read by the curator, Mr. F. Ford, stated that the Council had again to record the loss of some of the oldest and staunchest supporters of the institution, notably of Mr. Walter Carew Cocks and Professor T. Hayter Lewis, F.S.A. Mr. Cocks, who was one of the Vice-Presidents, very rarely missed a Council meeting, until declining health prevented his attendance; and even then he more than once expressed a hope that he might be able to inspect the recent additions to the School of Art. Professor Lewis also was always to be relied on, and his active interest in the Museum remained unabated until he was incapacitated by illness. During the year the new class-rooms added to the Museum on the south side have been completed, furnished, and occupied, and have been found extremely useful. The results of the Examinations held in 1898 were, on the whole, very satisfactory. In 1897 the number of candidates from the Westminster School of Art who were presented in the most advanced subject, drawing from the life, was sixty-one, of whom only two failed. It was scarcely to be expected that this remarkable result could be repeated, but in 1898 there were sixty-four candidates, and again only two failed, the failures in this subject being only one in thirty, as against one in four for the Kingdom generally. It is customary for the Science and Art Department to mark special distinction in these annual examinations by the award of prizes known as "Queen's Prizes," entitling the winners to the selection of books to the value of forty shillings. Of these prizes, in 1898, no fewer than five were awarded to students of the Westminster School of Art. In the National Competition also the work sent up from this School of Art was more than usually successful. Six students obtained prizes, viz.: Albert J. Baker and Frances Drummond, book prizes for drawing from the life; Millicent J. Owen, book prize for a modelled mirror frame; Edgar G. Vernon, bronze medal for design for a fireplace; James Begg, silver medal for a modelled design for a door knocker; and Henry J. Strutt, the much-coveted prize of a gold medal, for a modelled panel or grille for a music-room. At the request of the Science and Art Department some of these works were subsequently sent with others to an exhibition at the Royal Industrial Art Museum at Budapest, and thence to Vienna and other places, and ultimately Mr. Strutt's gold medal work was purchased by the Austro-Hungarian Government. The Council feel that while these successes redound to the credit of the school, it is but fair to add a word of cordial congratulation to Mr. Mouat Loudan, Mr. J. Holgate, and Mr. F. E. E. Schenck, to whose careful and judicious teaching they are so greatly due. Notwithstanding the heavy and exceptional expenditure of the last two years, the finances of the Institution are in a satisfactory condition. But 375*l*. of the loan of 500*l*. from the Technical Education Board (L.C.C.) towards the enlargement of the School of Art remains to be paid off in three annual instalments.

On the motion of the chairman, seconded by Mr. Lee, the report and statement of accounts were received and adopted.

Mr. Aston Webb, A.R.A., then moved that the following gentlemen be appointed members of Council for the ensuing year, in addition to the President, hon. treasurer and hon. secretary, viz., the Earl of Wemyss and Sir A. Blomfield, A.R.A. (vice-presidents), Messrs. C. Foster Hayward, F. S. A. Sydney, W. Lee, W. Pain, J. Hungerford Pollen, M.A., J. P. Seddon, Aston Webb, A.R.A., and, as representatives of the London County Council, Messrs. L. H. Hayter, W. R. Lethaby, Leon, and Dr. Garnett. He also moved that the auditors, Messrs. Pain and Leake, be re-appointed. This having been agreed to,

Sir Wyke Bayliss read a paper entitled "The Bogey in the Studio: An Address to Art Students on the Questions of the Day."

On the motion of Mr. Aston Webb, seconded by Mr. Adams, a vote of thanks was accorded to Sir Wyke Bayliss.

A vote of thanks to the Chairman for presiding brought the proceedings to a close.

## ELECTRICITY AT THE ENGINEERING CONFERENCE.

Mr. Cuningham's paper on "Mechanical Traction by Electricity" was exactly the kind of communication suitable for an engineering conference, and gave rise to an interesting discussion. He pronounced most decidedly in favour of low-speed (70 revolutions) compound condensing engines and boilers of the Lancashire type, with Green's economisers. He quoted numbers, from his own experience, showing the great saving effected by economisers. In conclusion, he stated that more money could be lost on the one item of power than would pay all the other working charges. In the discussion Mr. Hammond said that he was inclined to agree with the author in his preference for low-speed plant, but Mr. Crompton spoke in favour of high-speed engines. The author's figures with regard to the saving effected by economisers were called in question. Professor Kennedy also stated that he knew cases where the cost of the power was only 10 per cent. of the total cost, and this, of course, greatly modifies some of the author's statements. Personally, it came as a surprise to us to see that there were still many electrical engineers in favour of low-speed engines.

Mr. Parshall's paper on the "Economical Transmission and Distribution of Electricity from a Distance" is a very valuable one, as it gives the opinions of a most original thinker who has also been a successful pioneer of new methods of traction in this country. In his opinion single-phase transmission has had its day. He stated that the popular system with the more progressive engineers was polyphase transmission at low frequency and a voltage of from 5,000 to 40,000, according to the distance and conditions of transmission. Of polyphase systems in work in this country, he mentioned the installations at Dublin and Middlesbrough. In addition, there are in course of construction the large installations of the Central London Railway, the London United Tramways, and the Glasgow and Metropolitan. In the subsequent discussion many other systems were recommended, and it was curious to note what very different conclusions various engineers had arrived at and how each was firmly convinced his own conclusion was the right one. Mr. T. Parker was in favour of high-tension continuous current machines and could point to numerous successful installations. Professor Kennedy thought that single-phase transmission, with rotary converters, was worthy of consideration. Dr. Edward Hopkinson, in the previous discussion, said that accumulators were most useful in traction stations. As a rule, therefore, the engineers praised the systems with which they had most to do, and perhaps this was natural. Considering, however, the large polyphase plants being put down in America at 40,000 volts, and considering also that Steinmetz's discovery, news of which has just come over from America, of a simple way of getting polyphase currents from ordinary alternators must greatly popularise this system, we are inclined to think that Mr. Parshall's conclusions are correct.

## CITY AND GUILDS OF LONDON INSTITUTE.

The exhibition of practical work executed by candidates at the Institute's technological and manual training examination is now open to the public in the north gallery of the Imperial Institute. The work is on view as it was presented to the examiners; in many of the subjects the examination is divided into three parts (such, for instance, as carpentry and joinery), then there is a paper of questions requiring written answers, specimens of finished work done during the session, and practical work set and executed in given materials in a certain time under the direct supervision of the examiners. The thoroughness of this system is producing good work, specially that done in the classes in manual training in wood and metal work for teachers in public elementary schools, some four or five hundred candidates competing in this class alone besides artisans. A feature this year is four exhibits of plasterer's work, a class but newly started, which has for its object the improvement of modern plaster work. The exhibits are not very hopeful, but the notion is a good one. Exceedingly beautiful results are obtainable in this material, and it would repay more careful study, and, indeed, reorganisation in its executive as well as artistic side. Basket work is also started for the first time, there being two divisions, one for cane and the other for willow work. The plumbers are represented by work in various stages. There are many other trades that have their special classes—millinery and lithography, photography and shoemaking, bookbinding and woven linen, mechanical drawing and house decorating, jewellery and clock making.

## *ARCHITECTURAL SOCIETIES.*

Glasgow Architectural Association.—The annual business meeting of this Association was held in the Rooms, 187, Pitt-street, on the 6th inst., the President, Mr. George S. Hill, in the chair. The business of the evening comprised the reading of the Secretary's, Treasurer's, and Librarian's reports, which were adopted, and the election of new office-bearers for the ensuing session. The following gentlemen were elected to office:—President, Mr. John Fairweather, A.R.I.B.A.; Vice-Presidents, Mr. Chas. E. Whitelaw, Mr. Wm. J. Blain; Secretaries, Mr. Alex. Wingate, Mr. Thos. Ramsay; Treasurer, Mr. Walter S. Tucker; Librarian, Mr. Andrew Rollo. General Committee: Messrs. Geo. S. Hill, A.R.I.B.A., Jas. Lochhead, A.R.I.B.A., Alex. McGibbon, A.R.I.B.A., Jas. McKissack, Alex. Davie, Wm. Vickers, Wm. S. Lukeman, and Robert J. Walker. A vote of thanks to the retiring President, Mr. Geo. S. Hill, concluded the business.

## *COMPETITIONS.*

Joint Epidemic Hospital, Arbroath.—At a meeting of the Joint Committees of the County and Burgh Local Authorities held in Arbroath Town Hall on the 7th inst. to consider the competitive plans for the new joint epidemic hospital at Arbroath, it was agreed to award the first premium to Mr. Hugh Gavin, architect, Arbroath, and to recommend that this gentleman should be appointed architect for the new buildings, which are estimated to cost about 8,000*l*. The premium for the successful design is 20*l*. The other premiums were awarded as follows:—Messrs. Dall & Arnott, Edinburgh, 15*l*.; Mr. D. M'Kerrow, Manchester, 10*l*. In all twenty-four designs were sent in, and Mr. Morham, City Architect, Edinburgh, acted as assessor.

Springburn Halls, Glasgow.—The result of the competition for the Springburn Halls, Glasgow, was as follows:—1st, Mr. Wm. B. Whitie, 196, St. Vincent-street; 2nd, Messrs. Thomson & Sandilands, 241, West George-street; 3rd, Messrs. Watson & Salmond, 231, St. Vincent-street. The assessors were Messrs. J. J. Burnet, A.R.S.A., T. L. Watson, F.R.I.B.A., A. B. McDonald, M.Inst.C.E.

Forfar County Council New Fever Hospital.—At a meeting of the Forfar County Council it was decided to approve of the recommendation of Mr. Morham, assessor, to place first the design lodged by Messrs. M'Arthy & Watson, architects, Edinburgh, for the new fever hospital. The second premium has been awarded to Mr. Alex. Cullen, architect, Glasgow, and the third to Mr. T. Martin Cappon, architect, Dundee. There were thirty-four competitive designs sent in.

## *ARCHÆOLOGICAL SOCIETIES.*

ROYAL ARCHÆOLOGICAL INSTITUTE.—At the general meeting, on the 7th inst. (Sir Henry H. Howorth, President, in the chair), Chancellor Ferguson read a long and exhaustive paper on "Consistory Courts and Consistory Places." In his preface he dealt with the various kinds of ecclesiastical courts—archiepiscopal, episcopal, archi-diaconal, decanal, dean and chapter's, prebendal and manorial courts, and other courts of peculiars. He showed the origin of these courts of peculiars, numbering nearly 300, and pointed out that they were most abundant in the wealthy dioceses of the South of England, but were few in the north, and wholly absent from the four poor Welsh dioceses. He then proceeded to deal separately with each English and Welsh diocese, showing the number of courts having jurisdiction in each, and describing the court places of the episcopal courts. The normal place for these courts is the westernmost bay of the north nave aisle, but there are many exceptions. These courts should be enclosed and furnished with a table and seats for the registrar and the proctors and others having business in the courts; while the chancellor should have a chair of state under a canopy, as at Lichfield and Norwich; of these two courts Chancellor Ferguson exhibited photographs, and also of that at Carlisle, where the chancellor has no canopy. Some courts have no furniture whatever, and have been appropriated by deans and chapters as receptacles for coals and ladders, and the like. The furniture was generally Jacobean, and so abhorrent to the correct man, who generally restored it out of existence.—Mr. Albert Hartshorne contributed a paper on "Samuel Daniel, the poet, and Anne Clifford, Countess of Pembroke, Dorset and Montgomery, his pupil." Commenting on the retirement of the poet, when at the height of his fame, from the society of his numerous distinguished, noble, and literary friends in London, seemingly at the end of 1610, when he took to a pastoral life in the remote Somerset village of Beckington, Mr. Hartshorne gave an account of the existing remains of the house which he has identified on the small estate, still called Clifford's Farm, and where Daniel died in 1619; and gave a description of the monument in Beckington Church, set up by the poet's noble pupil, Anne Clifford. With regard to this notable personage, reference was made to her struggle for years to regain the rights of which her father's unjust will had deprived her, and also to the noble uses to which she put her great fortune when, at last, it fell to her in 1643—restoring the ruined castles of her inheritance, rebuilding churches, and exercising bountiful hospitality until 1675, when she died in her eighty-seventh year. Judge Baylis, Dr. Wickham Legg, Mr. W. H. St. John Hope, and Mr. Emanuel Green took part in the discussion on these papers. A vote of congratulation was passed to the President on his appointment as a trustee of the British Museum.

BRITISH ARCHÆOLOGICAL ASSOCIATION.—The concluding meeting of the session of this Association was held at 32, Sackville-street on the 7th inst., Mr. Thos. Blashill, Hon. Treasurer, in the chair. Mr. Hornblower exhibited a fine Roman cameo, dug up in Worship-street at a depth of 18 ft.; also some Flemish and other pottery found in Curtain-road, Shoreditch, at a depth of 8 ft., in excavating for foundations of a new factory. Mrs. Day exhibited an original description of the "First Aërial Voyage in England," by Vincent Lunardi, in 1784. Mrs. Pears contributed some notes upon a curious discovery recently made on the Scarisbrick Estate, in Martin Mere, between Southport and Rufford. This consisted of a canoe or "dug-out." The canoe is 16 ft. 6 in. over all, the greatest breadth being 4 ft., the inside width 3 ft. 9 in.; it is made out of the trunk of an oak tree. The wood having warped at the stern, a boomerang-shaped piece of wood has been used to hold it together with wooden pegs. This remedy apparently failed, and a sheet of lead of about the thickness of a sixpence was placed over the warp, and attached with pegs or nails, which from the analysis of the dust from the peg-holes, appear to have been of iron. The vessel was discovered whilst ploughing, and the obstacle to the plough was thought at first to have been a stump, but on carefully digging away the soil the canoe was unearthed. It was lying slightly on one side and tilted upwards; the position in which it was found was about 200 yds. from the old bank of the lake. Mrs. Collier read a paper "On the Châteaux and Domestic Dwellings of France in Mediæval Times" which was profusely illustrated by drawings, photographs, and engravings. A paper "On Ancient Customs" by Mr. Andrew Oliver was read by the author, and a short paper contributed by Dr. Russell Forbes in continuation of his account of the discoveries in the Forum at Rome, was read by Mr. Patrick, Hon. Sec.

WOLVERHAMPTON ARCHÆOLOGICAL SOCIETY.—The opening excursion of this Society took place on Saturday last to Prestwood Hall and Stourton Castle. Over fifty persons formed the party. Prestwood Hall was first visited, and then an inspection was made of Stourton Castle, an untenanted Tudor mansion with Georgian additions. The rooms were inspected and the grounds explored, and subsequently the President of the Society (Mr. T. G. Baker) read a paper on "The Life and Times of Reginald Pole," who was born at Stourton Castle in March, 1500.

## THE LONDON COUNTY COUNCIL.

THE London County Council reassembled on Tuesday after the Whitsuntide recess at the County Hall, Spring Gardens, Lord Welby, Chairman, presiding.

*Loans.* — On the recommendation of the Finance Committee, it was agreed to lend the St. Giles District Board 5,000*l.* for the purchase of land for the extension of offices, stoneyard, &c.; the Wandsworth District Board 10,000*l.* for a contribution towards provision of open space, and 1,100*l.* for wood paving works; the Clerkenwell Vestry 2,677*l.* for wood and granite paving works; Battersea Vestry 30,000*l.* for the purchase of two wharves, and 12,555*l.* for wood paving works; the Holborn Guardians 5,000*l.* for drainage works at the infirmary; and the London School Board 150,000*l.* for new schools.

*Factory and Workshop Acts.*—The adjourned report of the Building Act Committee on the Factory and Workshop Acts, 1878 to 1895 was then considered. The Committee's report, which was printed in our issue for April 29 last, was agreed to after the following alterations had been made:—The following words have been inserted (under II.) in the clause relating to alternative means of escape: "where more than forty persons are employed above the ground floor," so that the clause now reads:—"It may, however, be laid down as a general principle (subject to the exceptions hereafter mentioned) that where more than forty persons are employed above the ground floor, distinct and separate alternative means of escape, exclusive of windows, loop-hole doors, &c., are required from each of the upper floors, either by means of (*a*) a second staircase in the same block; (*b*) a proper staircase in another block, to which access is available on all the upper floors by proper openings in the party or division walls, or by external communication; or (*c*) open iron bridges where the blocks are not adjoining each other;" and from clause (*c*) (III., Staircases) the following words have been deleted, "and not less than three steps."

*Holborn to Strand Street and Clare Market Area.*—On the recommendation of the Improvements Committee it was agreed:

(*a*) That the estimate of 200,000*l.* submitted by the Finance Committee be approved, and that the Council do sanction the acquisition for 200,000*l.* under Part III. of the Housing of the Working Classes Act, 1890, of the portion of Reid's Brewery bounded by Clerkenwell-road, Gray's Inn-road, Portpool-lane, and Leather-lane, and shown by pink and purple colour upon the plan presented to the Improvements Committee on May 10, 1899.

(*b*) That in connexion with the rehousing of persons of the labouring class to be displaced by the formation of the proposed new street from Holborn to the Strand and the clearance of the Clare Market area, Parliamentary powers be sought in the session of 1900 to enable the Council to acquire compulsorily the land bounded by Clerkenwell-road, Leather-lane. Hatton-wall, and Hatton-garden, and shown by yellow colour upon the plan presented to the Improvements Committee on May 10, 1899.

*New Theatre at Whitechapel.*—The Theatres and Musical-halls Committee reported:—"We have considered nine drawings, seven dated 12th and two dated January 14, 1899, of a theatre which it is proposed to erect in the Whitechapel-road on the site of premises known as Wonderland, which were until last November licensed by the Council for music. The total boundary of the site of the proposed theatre is 556 ft., of which 31 ft. front to the Whitechapel-road, 155 ft. to a footway 20 ft. wide, 51 ft. to a footway 15 ft. wide, 93 ft. to a footway 10 ft. wide, and 226 ft. to buildings. The total frontage to thoroughfares of the width required by the regulations is 186 ft., whereas it should be 278 ft. To compensate for this, however, 144 ft. of frontage are given on to footways of 10 ft. and 15 ft. in width. It should, moreover, be pointed out that by the efforts made to comply with the site regulation for theatres a great improvement, which has been sanctioned by the Council, has been effected in the locality, as a footway 20 ft. in width will be formed between the Whitechapel-road and Charlotte-street. Having regard to all the circumstances of the case, we think the site should be accepted. The theatre will have seating accommodation for 1,646 people, and the regulations as to construction will be strictly adhered to."

The report was adopted.

*New Theatre at Finsbury Park.*—The same Committee recommended, and it was agreed, to approve plans of a proposed new theatre in St. Thomas's-road and Rock-street, Finsbury Park. The Committee stated:—"The site complies with the regulations, as half the total length of the boundary abuts on public thoroughfares which are of more than the required width. The theatre will have seating accommodation for 1,802 persons, and the regulations will be complied with in all respects."

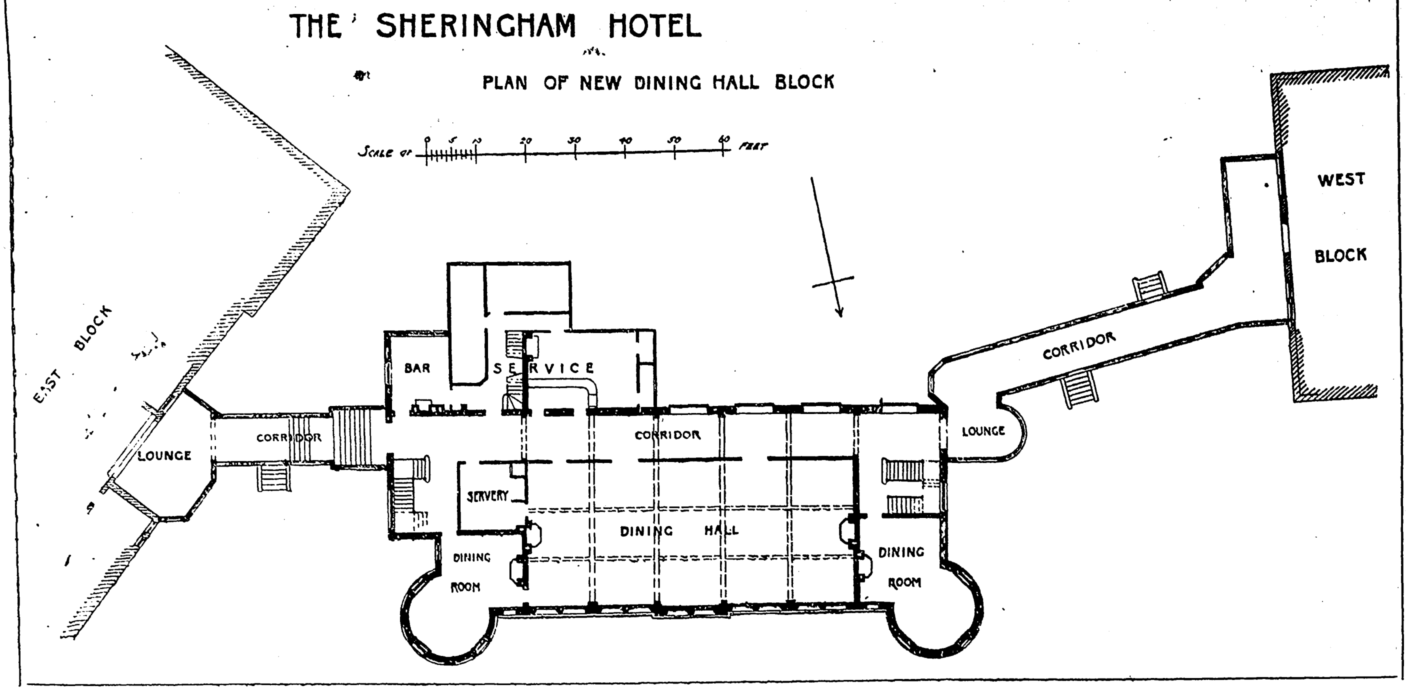
*Chimney Fires.*—The Fire Brigade Committee in reference to chimney fires recommended, and it was agreed, that the Fire Brigade Act should be amended to enable the Council to recover a penalty not exceeding 20s. as a civil debt from the occupier of premises as compensation for the loss and trouble occasioned to the Brigade in attending to extinguish the fire.

*Water Supply.*—The Water Committee presented a long report on the water supply for the Metropolis, and on their recommendation it was agreed: "That the Standing Orders be suspended so far as they would affect proposals for legislation in the Session of 1900 dealing with the Metropolitan Water Supply, and that the Water Committee be authorised, if they deem it advisable, notwithstanding the Standing Orders, to recommend application to Parliament on this subject at any time not later than November 14, 1899."

*Rotherhithe Tunnel Rehousing.*—The Bridges' Committee recommended, and it was agreed that the estimate of 4,900*l.* submitted by the Finance Committee for the purchase of certain land required in connexion with the rehousing of persons of the working classes who will be displaced by the carrying out of the Rotherhithe Tunnel scheme, be approved, and that the Bridges' Committee be authorised to purchase the land in question, in accordance with the powers given by Part III. of the Housing of the Working Classes Act, 1890.

*Art and History Committee.*—On the motion of Mr. Granville-Smith, the following was agreed to: "That it be referred to the General Purposes Committee to consider and report as to the desirability of appointing a new standing Committee to be called the 'Art and History Committee' to which all questions of an artistic, archæological, or historical character should be referred, so that the artistic claims or needs of the streets, buildings, monuments, antiquities, statues, and works of art of the metropolis may be fully considered."

*Underground Electric Tramway.*—Mr. Baker moved and it was agreed, "That it be referred to the Highways Committee to investigate and report to the Council as to the practicability of constructing a shallow underground electric tramway from Westminster (*viâ* Parliament-street, Strand, Fleet-street, and Cheapside) to the Bank, thence under Moorgate-street to the terminus of the North Metropolitan Tramways Company at Finsbury-pavement, on a similar principle to those laid under Andrassy Strasse, Budapest, and in Boston, U.S.A., provision



THE SHERINGHAM HOTEL

PLAN OF NEW DINING HALL BLOCK

being made beside the tram lines for suitable subways to contain gas and water mains, electric light mains, telephone wires, &c."

The Council adjourned shortly before seven o'clock.

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## Illustrations.

### EAST END, ST. LUKE'S, ENFIELD.

THE Church of St. Luke's, Clay Hill, Enfield, is now being erected and will be ready for opening on St. Luke's day of this year. The illustration, from a drawing which is hung at the Royal Academy, represents the treatment of the east end internally. The altar is of Indian teak, and the panels are painted to represent the "Adoration of the Lamb." The reredos is of stone. The centre figures are our Lord carrying the Cross. The side panels are the Agony in the Garden and the Entombment. The smaller top panels contain angels holding the emblems of the Crucifixion. The stained glass designs in the lower windows represent various passages in Christ's life on earth. The three upper lights represent Christ in majesty, the Virgin on one side and St. John the Baptist on the other, and the four Evangelists in the lower spaces of the side windows.

The whole of the paintings and stained glass are being done by Mr. N. H. J. Westlake. The architects are Messrs. James Brooks & Son.

### CAVENHAM HALL, SUFFOLK.

THIS house, which is now in course of completion, has been built on a large shooting estate in the neighbourhood of Bury St. Edmund's.

The old mansion house, situated in the lower portion of the park, is being used for housing the workmen during the erection of the new hall, which is placed some 300 yards to the south-west, on more rising ground.

On the finishing of the stable buildings and gate lodges the old hall will be entirely pulled down by the contractors, Messrs. Waring & Gillow, Limited.

The house has been built of dark red narrow bricks, averaging five courses to the foot, supplied by Messrs. Allan & Co., of Sudbury, and the stone facings are of Casterton stone; the main cornices are of deal lined with lead to form the gutters, and the roofs have been covered with tiles supplied by the Brosely Tilery Company.

Messrs. Clement Jeakes & Co. are the engineers for the heating and hot water supply, and Messrs. Tewson & Streatfield are carrying out the electric lighting. Mr. Taylor is the clerk of works.

The drawing is now on view at the Royal Academy. Mr. Andrew N. Prentice is the architect.

### MELKSHAM HOUSE, WILTS.

THIS old house as it existed before alteration was very dark and cramped. The principal front was on the north, where there is a broad lawn with fine trees and a good view of the old church.

The problem in the alteration was to admit south sun into the house without encroaching upon the existing garden. A very sunny bit of garden has been added in place of the old backyard, giving opportunity for some south windows.

The house is one of the old Wiltshire homes, and the materials and treatment largely follow the existing house. Hartham Park stone was used for window dressings, the roofs being covered with stone tiles. Messrs. G. Davies & Son, of Melksham, were the builders; the joinery being by Mr. William Carpenter of the same town.

Mr. A. C. Martin was the architect.

The drawing is exhibited at the Royal Academy.

### PROPOSED HOUSE AT LIMPSFIELD.

THE site for this house was a difficult one as it was necessary for the building line to be parallel to the road, and that elevation has a southern aspect. But from the other side of the house an exquisite view is obtained, looking over wooded hills, which made it essential for a large window to be thrown out in that direction, having another one towards the west.

The site accounts for the kitchen and drawing-room being on the same side of the house.

The materials employed are the local Limpsfield stone up to the string course, and above that the walling is of brick faced with rough-cast.

The house is to be begun almost at once.

Mr. E. T. Marriott is the architect.

The drawing is exhibited at the Royal Academy.

### THE SHERINGHAM HOTEL, NORFOLK.

THE drawing shows the central block (containing large dining-hall and private dining-rooms, &c., on the ground floor, kitchen and service apartments in the basement, and sitting and bedrooms, &c., on the upper floors) which was built to add to the accommodation of the existing hotel, then consisting of two separate establishments; hence the connecting corridors. These corridors, being 10 ft. wide and in parts 15 ft. high, with spacious windows to north and south, form, with their lounges and alcoves, agreeable resorts at any time, and are not to be regarded as mere communications.

The dining hall is 67 ft. by 29 ft. wide and 15 ft. high, and is finished with a high dado and deep Tynecastle frieze over it, with dark wood beams in the ceiling, and Tynecastle filling in between, and with oak doors, chimney-pieces, &c.

As to the design itself, it is the outcome of difficulties. The two original buildings on the site stood at most awkward angles with each other, and to put another block between them with more angles seemed to the architects to be wholly wrong. Hence, in the new building, instead of square angles, the two large circular towers were planned and the awkwardness minimised. As for the rest, the ten semi-circular coupled windows light the dining hall; the half-timber work in the upper story is added to give a connecting link in design with the east block, which is nearly all half-timber work. The west block, being merely a square red and white brick building, was but little regarded in the placing or design of the new block, which was located so as to give the best sea views for all windows.

The architects were Messrs. George J. & F. W. Skipper, of Norwich; and the general contractor Mr. George Riches, of Cromer.

### NEW HOUSE, REIGATE.

THIS is an illustration of the garden front of a house in course of erection upon the crown of the hill, and adjoining Reigate Heath, Surrey. It is built in brick, and faced with red facing brick upon a boasted stone plinth from the Selsfield quarries, near Turners Hill, similar stone being used throughout in the dressings. The upper story and roof is covered with Broseley tiles, relieved in the gables, &c., with oak half-timbering and rough cast.

The works are being executed by Messrs. Walter Holt & Sons, of Croydon, under Mr. Frederick G. Knight, architect.

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## *ENGINEERING SOCIETIES.*

SOCIETY OF ENGINEERS.—A visit was made by the members and associates of the Society of Engineers, on the 14th inst., to the London station and goods depot of the Great Central Railway, Marylebone. Among those present were Mr. John Corry Fell, President; Mr. Charles Mason, Vice-President; Messrs. W. W. Beaumont, A. T. Walmisley, J. W. Wilson, and Henry Adams, Past Presidents; and Mr. Perry F. Nursey, Secretary. The passenger station consists of a brick and terra-cotta building having a frontage of about 325 ft., and containing the booking-hall, waiting-rooms, refreshment-rooms, cloak-room, parcel office, and other rooms with general offices overhead on the first and second floors. These rooms are all entered from the promenade, and the booking-hall has also an entrance from the street, under a covered way which extends from the station to the hotel across the intervening roadway, which has a total width of 90 ft. The promenade has a width of 100 ft. by about 250 ft., and from it the various platforms and lines of rails extend northwards. The promenade and the platforms and rails for a length of 500 ft. are roofed over with a steel roof glazed with Mellowes' glazing, and supported upon steel stanchions. None of the spans exceed 50 ft. in width, and the total width at present roofed over for platforms and rails is 155 ft. The company, however, owns the block of land lying to the west of the station, and between it and the new street called Harewood-avenue, for future extension by which the area of platforms and rail accommodation can be made double its present size. The platforms, from the hydraulic buffer stops to the north end, are about 1,000 ft. in length. Owing to the fact that in former years the sand and gravel on the site of the building had been excavated and the space filled in with refuse, the foundations of the station had to be carried down about 25 ft. below the platform level, and a basement was therefore constructed under the whole of the building. The portion under the refreshment-rooms has been made available for kitchens, &c., in connexion with that department. The goods depôt is situate with a frontage on one of the new streets made by the company, and called Rossmore-road, and extends northwards therefrom. The main building has a length of 384 ft. by a width of 255 ft., and is constructed of brick walls with steel stanchions and girders carrying the various floors internally. There are five floors, consisting of the basement, ground, and three upper floors. The ground floor is made at rail level, but trucks can be lowered into the basement by means of hydraulic wagon hoists. The whole of the machinery of cranes, hoists, traversers, capstans, &c., is worked by hydraulic power, and the building is lighted by electricity, the power and light being both provided from the hydraulic and electric power house belonging to the company in the vicinity. There is, in addition to the goods depôt proper, a large vault area under the road approach, a considerable amount of roofing on the east, west, and sides of the building, and a large range of goods offices, with mess-rooms, &c., for the men, fronting upon Lisson-grove, where the principal entrance to the goods yard and depôt is situated. It will be noticed, in regard both to passenger and goods lines, that the level of rails has been so arranged that at each place they are at the proper level for the most convenient access to the adjoining streets.

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## APPLICATIONS UNDER THE LONDON BUILDING ACT, 1894.

AT the meeting of the London County Council on Tuesday the following applications under the London Building Act, 1894, were considered. Those applications to which consent has been given are granted on certain conditions. Names of applicants are given in brackets. Buildings are new erections unless otherwise stated.

### *Formation of Streets.*

*Brixton.*—That the resolution of the Building Act Committee of March 27, 1899, acting on behalf of the Council, with regard to the application of Mr. J. Fasnacht, on behalf of Captain T. T. Jennings, R.N., be rescinded. That an order be sealed and issued to Mr. J. Fasnacht, refusing to sanction the formation or laying-out of three new streets for carriage traffic, upon the Lambeth Wyke Estate, Hackford-road, Brixton.—Agreed.

### *Lines of Frontage.*

*Dulwich.*—Wood and tile pents to the entrances of six semi-detached houses in course of erection on the west side of Calton-road, Dulwich (Mr. J. H. Cooper).—Consent.

*Fulham.*—A porch and staircase addition in front of the proposed Welsh Presbyterian Chapel on the north side of Effie-road, Fulham (Mr. E. Avern for the trustees of the chapel).—Consent.

*Fulham.*—A one-story shop at the rear of No. 569, Fulham-road, Fulham, to abut upon Harwood-road (Mr. D. Matthews for Mr. C. Thomas).—Consent.

*Hackney, North.*—The retention of a wood and iron covered way at the entrance to No. 97, Stamford-hill, Hackney, abutting on Linthorpe-road (Messrs. J. Douglass Mathews & Son for Mr. F. Tite).—Consent.

*Hammersmith.*—One-story shops on part of the forecourts of Nos. 360, 362, 364, and 366, King-street West, Hammersmith (Mr. J. Hume for Mr. M. Bartlett).—Consent.

*Kennington.*—A one-story shop upon part of the forecourt of No. 98, St. Mark's-road, Kennington, at the corner of Farmer's-road (Mr. A. E. Mullins for Mr. T. A. Jones).—Consent.

*Kennington.*—Four houses with bay-windows on the sites of Nos. 134, 136, 138, and 140, Lower Kennington-lane, Kennington (Mr. C. Barker for the Duchy of Cornwall).—Consent.

*Kensington, South.*—An open porch and projecting balconies in front of Nos. 120 and 122, Cromwell-road, South Kensington (Mr. J. Douglas).—Consent.

*Lewisham.*—That the application of Mr. W. J. Larke for an extension of the period within which the erection of one-story shops on part of the forecourts of Nos. 30, 32, 34, and 36, Loampit-hill, Lewisham, was required to be completed, be granted.—Agreed.

*Lewisham.*—Buildings on the southern side of a proposed extension of Manor Park, Lee (Mr. A. W. Osborn for Messrs. Johnson & Aldridge).—Consent.

*Lewisham.*—A bay-window to a house on the east side of Springbank-road, Hither-green, Lewisham (Mr. A. C. Baker for Mrs. N. E. Baker).—Consent.

*Lewisham.*—A church on the east side of Hither-green-lane, at the corner of Wellmeadow-road, Lewisham (Messrs. Gordon, Lowther, & Gunton for the trustees of the Hither-green Wesleyan Church).—Consent.

*Lewisham.*—One-story shops upon part of the forecourts of Nos. 143 and 145, High-street, Lewisham (Mr. J. O. Cook for Messrs. Charman & Co.).—Consent.

*Lewisham.*—A one-story addition to the laboratory at the Colfe Schools, Lewisham-hill, Lewisham, to abut upon Walerand-road (Mr. H. Porter for the Worshipful Company of Leathersellers).—Consent.

*Marylebone, West.*—Building on the east side of Abbey-road and west side of Grove End-road, St. John's-wood, on the Neville Lodge Estate (Messrs. Boehmer & Gibbs for Mr. H. Lovatt).—Consent.

*St. Pancras, East.*—A theatre on the west side of High-street, Camden-town, to abut also upon Crowndale-road and Bayham-place (Mr. W. G. R. Sprague for Messrs. Marler & Saunders).—Consent.

*Wandsworth.*†—Houses, with shops, on the western side of Garratt-lane, Wandsworth, between Fountain-road and Smallwood-road (Mr. W. C. Poole for Mr. G. F. Darby).—Consent.

*City of London.*—Oriel windows on the second and third floors in front of Nos. 55 and 56, St. Paul's Churchyard, City (Mr. E. C. Beaumont for Messrs. Jones & Co).—Refused.

*Greenwich.*†—A one-story shop upon the forecourt of No. 8, Denzil-terrace, Westcombe-hill, Greenwich (Mr. H. J. Lloyd).—Refused.

*Holborn.*†—An iron and glass conservatory and inclosure to balcony on the first floor level in front of the Inns of Court Hotel, Lincoln's-inn-fields, Holborn (Mr. E. Carritt for the Inns of Court Company).—Refused.

*Brixton.*—A one story gate-keeper's lodge upon the forecourt of a factory on the site of Nos. 139 to 141, Clapham-road, Brixton (Mr. E. T. Hall for Sir Joseph Causton & Sons, Limited).—Refused.

*Greenwich.*—A wood and tile covered way at the entrance to Fairhaven, Mycenæ-road, Blackheath (Mr. W. T. Walker for Mr. R. Young).—Refused.

*Hackney, Central.*—A workshop on the east side of Lansdowne-road, London-fields, Hackney, between Blackstone-road and Wilman-grove (Mr. W. H. Adams).—Refused.

*Hackney, Central.*—A one-story addition upon part of the forecourt of the Star Laundry, No. 8, Anton-street, Hackney (Mr. H. C. Reeves for the Star Laundry Company, Limited).—Refused.

*Hackney, North.*—Shops, with workshops over, upon the forecourt of No. 46, Northwold-road, Hackney, to abut upon Bowling-green-street (Mr. G. H. Capper for Mr. A. Jackson).—Refused.

*Hammersmith.*—A one-story station building on the site of Nos. 48, 50, and 52, Uxbridge-road, Hammersmith, at the corner of Providence-place (Sir Benjamin Baker for the Central London Railway Company).—Refused.

*Holborn.*—A one-story addition upon the forecourt of No. 29, Lincoln's Inn-fields, Holborn (Messrs. Marshall & Nelson for Mr. F. Marshall).—Refused.

*Kensington, South.*—An addition, with one-story shops, on the north side of No. 12, Sumner-place, Kensington, to an advanced line in Old Brompton-road (Mr. W. H. Collbran).—Refused.

*Lewisham.*—That Mr. H. H. Bridgman be informed that the Council is not prepared to accede to his request for consent to a one-story workshop on the east side of Arthurdon-street, Ladywell-road, Lewisham (for Mr. T. Candy).—Agreed.

*Marylebone, West.*—An iron and glass roof over a portion of Stratford-mews, St. Marylebone, in front of Nos. 2 to 7, Stratford-mews (Mr. G. Hornblower, for Messrs. Marshall and Snelgrove).—Refused.

*Norwood.*—Three blocks of residential flats upon the site of Nos. 160 to 174, Brixton-hill (Mr. E. J. Pullar for Mr. W. Wheeler).—Refused.

*Bow and Bromley.*—New church of St. Andrew, Brickfield-road, Bromley-by-Bow, Poplar, at less than the prescribed distance from the centre of Marner-street (Mr. W. D. Caröe for the Rev. J. Parry).—Consent.

*Chelsea.*†—An addition to the workshops at Nos. 37 to 49, Keppell-street, Chelsea (Messrs. Langdale, Hallett, & Co.)—Consent.

*Hampstead.*—A greenhouse on the north side of College-villas-road, Hampstead (Mr. R. Morris for Mr. F. Debenham).—Consent.

*Kensington, South.*—An addition at the rear of No. 22, Kensington-gore, South Kensington, at less than the prescribed distance from the centre of Jay-mews (Mr. F. G. Knight for Mr. L. Sterne).—Consent.

*Woolwich.*—A boiler-house on the eastern side of Harden's-lane, High-street, Woolwich (Messrs. Kirk & Randall).—Consent.

*Fulham.*—A covered playground at the William-street Schools, Hammersmith, to abut upon Cumberland-crescent (Mr. T. J. Bailey for the School Board for London).—Consent.

*Holborn.*†—An outside iron staircase at No. 51, Ormond-yard, Holborn (Mr. C. W. Patten for Mr. T. Blaxhall).—Refused.

### *Space at Rear.*

*Hammersmith.*—A modification of so much of the provisions of Part V. of the London Building Act, 1894, with regard to the extension above the diagonal line as directed to be drawn by Section 41 of that Act, so far as relates to the erection of a block of residential flats on the north side of Addison-court-gardens, Blythe-road, Hammersmith, and that the Council, in the exercise of its powers under that part of the Act, do permit the erection of such block of residential flats with an open space at the rear (Mr. R. J. Worley).—Agreed.

### *Deviations from Certified Plans.*

*Mile End.*—Certain deviations from the plans approved by the Council for the rebuilding of Nos. 16, 18, 20, 22, 24, and 26, Frimley-street, Mile End-road, Mile End Old Town, so far as relates to the proposed construction of wooden staircases and landings on the open space at the rear of such buildings (Mr. E. Jackson).—Consent.

*Lambeth, North.*—Certain deviations from the plans certified by the District Surveyor, under Section 43 of the London Building Act, 1894, so far as relates to the proposed rebuilding of the "Rising Sun" public-house on the site of Nos. 54 and 56, York-road, Lambeth, at the corner of Vine-street (Mr. R. Sawyer for Mr. R. H. Barnes).—Refused.

### *Lines of Frontage and Width of Way.*

*Bethnal Green, South-West.*†—A three-story house, with a workshop and stable at the rear, upon the site of No. 467, Bethnal Green-road, Bethnal Green, at less than the prescribed distance from the centre of Holly Bush-gardens (Mr. W. Stone for Mr. G. P. Bate).—Refused.

*Islington, North.*—A block of residential flats on the northern side of Tollington-park, Islington, to abut also upon Pine-grove (Mr. C. J. Bentley for Mr. J. C. Hill).—Refused.

*Woolwich.*—A portico and projecting steps and area inclosures to a proposed theatre on the north side of Wellington-street, Woolwich, at the corner of Lower Market-street (Mr. B. Crewe for Mr. C. Sonnes).—Refused.

### *Width of Way and Space at Rear.*

*Southwark, West.*—That the Council, in the exercise of its powers under Section 13 and Part V. of the London Building Act, 1894, do consent to and allow the erection of two blocks of dwelling-houses, adapted to be inhabited by persons of the working class, on a site on the north side of Sumner-street, Southwark, at the corner of Love-lane, at less than the prescribed distance from the respective centres of those streets, with an open space at the rear (Mr. F. Bailey for the City of London Electric Lighting Company, Limited).—Agreed.

*Rotherhithe.*—That the Council, in the exercise of its powers under Sections 13 and 41 of the London Building Act, 1894, do not consent to, nor permit of, the rebuilding of the "Dundee Arms" public-house, No. 61, Artillery-street, Rotherhithe, to abut also upon Church-street and the proposed approach road to the Tower Bridge, on the site of that house and two dwelling-houses adjoining, at less than the prescribed distance from the centre of Artillery-street and Church-street respectively, and without an open space at the rear (Mr. G. W. Thompson for Messrs. Noakes & Company, Limited).—Agreed.

### *Width of Way and Height of Buildings.*

*Bow and Bromley.*—Two buildings, to be used respectively as a bakery and warehouse, on the east side of Fawe-street, Morris-road, Bromley-by-Bow (Mr. Max Clarke for Spratts Patent, Limited).—Refused.

### *Formation of Streets.*

*Bermondsey.*—That an order be issued to Mr. C. Sheath, sanctioning the formation or laying out of a new street for carriage traffic to lead from Abbey-street to Gedling-street, Bermondsey (for the South-Eastern Railway Company). That the name Druid-street be approved for the new street.—Agreed.

*Hackney, South.*—That an order be issued to Messrs. F. Chambers & Son, sanctioning the formation or laying out of new streets for carriage traffic on the Powell estate on the north side of Millfields-road (for Mr. J. D. Powell and the trustees of the Rev. W. Powell). That the names Mildenhall-road (in continuation), Thornby-road (in continuation), and Cotesbach-road be approved for the new streets.—Agreed.

*Brixton.*†—That an order be issued to Messrs. R. B. Grantham & Son, sanctioning the formation or laying out of a new street for carriage traffic to lead from Russell-street to St. Ann's-road, Brixton (for the Ecclesiastical Commissioners).—That the name Ackworth-street be approved for the new street.—Agreed.

*Norwood and Wandsworth.*—That an order be issued to Mr. F. A. Powell, sanctioning the formation or laying out of four new streets for carriage traffic on the Highview Park Estate, Canterbury-grove, West Norwood, and in connexion therewith, the widening of a portion of Royal-crescent (for Mr. J. Wilson). That the names Broxholm-road, Ivymount-road, Minet-road, and Glenine-road, be approved for the new streets.—Agreed.

*Strand.*—That an order be issued to Messrs. Beadel, Wood, & Company, sanctioning the formation or laying out of a street for foot traffic only out of the south-west side of Drury-lane, St. Martin-in-the-Fields, and of a street for foot traffic only in continuation of Crown-court (for the Duke of Bedford). That the names Martlett-court (in continuation) and Crown-court (in continuation) be approved for the new streets.—Agreed.

*Wandsworth.*—That an order be issued to Messrs. Robertson & Barrie sanctioning the formation or laying out of two new streets for carriage traffic on the Avenue estate, Bickersteth-road, Lower Tooting. That the names Byton-road and Loubet-street be approved for the new streets.—Agreed.

### *Adaptation of Footway for Carriage Traffic, and Width of Way.*

*Fulham.*—That an order be issued to Mr. W. Elsdon refusing to sanction the adaptation of a portion of Caroline-place, Lillie-road, Fulham-road, Fulham, for carriage traffic.—Agreed.

*Fulham.*—Stables on the east side of Caroline-place, Lillie-road, Fulham (for Mr. W. Elsdon).—Refused.

### *Working Class Dwellings.*

*Hammersmith.*—That the Council do make an order as follows—Whereas Messrs. N. S. Joseph, Son & Smithem . . . Under the provisions of Section 42 of the London Building Act, 1894, delivered, on behalf of the trustees of the Guiness Trust, at the County Hall, a plan of a lodge and three blocks of intended dwelling houses, to be inhabited by persons of the working class, and proposed to be erected, not abutting upon a street, on a site on the east side of Fulham Palace-road, Hammersmith. Now the Council, in the exercise of its powers under Section 42 of the said Act, does by this order sanction the said plan. . . .—Agreed.

### *Buildings for the Supply of Electricity.*

*Lambeth, North.*—That the Council do approve of the plans submitted with the application of Mr. W. B. Pinhey for the Charing Cross Electricity Supply Corporation, Limited, for alterations and additions to buildings at the Corporation's electricity generating station, No. 85, Commercial-road, Lambeth.—Consent.

*The recommendations marked † are contrary to the views of the Local Authorities.*

## THE BUILDING TRADE DISPUTE.

IT will be remembered that the terms of settlement in the plasterers' dispute were referred to the members of the National Association of Operative Plasterers for their acceptance or rejection. The vote was declared on Saturday. It shows that 4,585 were in favour of accepting the terms and only 369 against, or more than twelve to one for acceptance. The men resumed work on Monday.

A meeting of the representatives of the unions concerned in the present dispute in the building trade was held in Manchester on the 12th inst. At the Derby conference recently the withdrawal of the lock-out in Yorkshire was made conditional on the representatives of the men agreeing to a basis for a joint conference, submitted by the editor of the *Daily News.* The men could not accept the basis, and suggested that they could only deal with the question of conciliation. The men were asked to submit their alternative proposals within a fortnight, and the meeting on the 12th was held to consider their position. The chair was occupied by Mr. Wilson, President of the Amalgamated Society of Carpenters and Joiners. The question of a basis for a conference was discussed at great length, and a basis of settlement by the appointment of a joint conciliation board to consider all questions in dispute was drawn up. This will have to be submitted to the executive committees of the various bodies represented for their special consideration, and the reports thereon will be received at another meeting to be held next Monday.

The Lancashire plasterers have, it is stated, resumed work, the masters having advanced wages from 8¼d. to 9¼d.

## BOOKS RECEIVED.

EXAMINATIONS IN SANITARY SCIENCE; Questions, with suggestive answers. By Ernest R. Matthews. (The St. Bride's Press.)

THE WORKMEN'S COMPENSATION ACT, 1897. By W. Addington Willis. Sixth Edition. (Butterworth & Co., and Shaw & Sons).

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"TIMBER AND TIMBER STRUCTURES."—We are compelled to hold over until next week the interesting paper on "Timber and Timber Structures," recently read at Carpenters' Hall by Professor Roger Smith.

# Correspondence.

*To the Editor of* THE BUILDER.

## ENGINEERING ARCHITECTURE.

SIR,—In your paper on this subject, recently read before the Institute of Architects, you adduced Rennie's London Bridge as a good example. That Rennie's views as to such architecture were sound might be inferred from his work; but he happens to have expressed these views in such a clear and admirable way, that I think you will like to quote his words for the benefit of your readers. They are contained in a long and interesting address, which he delivered, as President, at the 1846 Annual General Meeting of the Institution of Civil Engineers, and may be found in the "Civil Engineer's Journal" for May, 1847, Vol. X., page 149. After alluding to the intimate connexion between the work of the engineer and architecture, "not merely as regards construction but in taste also," he goes on to say—

"The works of the engineer, associated as they are for the most part with the great operations of nature, should be designed and constructed so as to harmonise with them. They must strike by their mass and proportion rather than by trifling details or minutiæ of ornament, which, as a matter of taste, would be misplaced and unnecessary, and wasteful as regards expenditure. Consistently, therefore, with their first grand object of fitness for their purpose, they should be simple; and in the few instances where ornament may be necessary, it should harmonise with the structure and be sparingly used."

I think it would be difficult to put such sound sense in more excellent language.

J. D. CRACE.

⁂ Mr. Crace is right. Would that modern engineers would take Rennie's words to heart!—ED.

## THE DEVIATION OF LINE IN ANCIENT CHURCHES.

SIR,—For the twist in old churches pious and fanciful reasons have been given, which Mr. J. T. Micklethwaite disposed of in his paper on the Growth of Parish Churches, by pointing out that, as they were altered and enlarged by degrees, without going out of use, they got a little out of line quite naturally and by accident.

The new Church of Holy Trinity, Aberystwyth, bears out this theory. It is a rather long, cruciform church (155 ft.), and has been built by degrees. When the temporary east wall was taken down it was found that the new choir has a most perceptible list to the south, a fact which neither architects nor contractors had discovered.

H. A. PROTHERO.

⁂ The fact does not speak very well for the setting out of the modern building referred to. But we can hardly accept the theory as accounting for the numerous instances occurring in mediæval churches.—ED.

## BOW CHURCH RESTORATION.

SIR,—In the issue of the *Builder* of to-day you have an article relating to the above. I wish to corroborate the statement you make as to the date of the tower (1480-1490).

The upper part of the tower was destroyed by a violent storm, and in 1829 was rebuilt under the superintendence of Mr. William Ford, an architect who was a friend of mine in my young days. I have the drawings made by him for the work of the rebuilding, and which were carried out. I well remember that he told me in taking down the masonry several coins were found embedded in the joints, and they were of the reign of the seventh Henry.

WALTER A. HILLS, F.R.I.B.A.

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PRIMITIVE METHODIST CHURCH AND SCHOOLS, STAPLEFORD, NOTTS.—At Stapleford recently, the foundation and memorial stones of a new church and schools were laid. Mr. T. Harper, of Hyson Green, is the architect of the new buildings, and Mr. C. Moult, Stapleford, contractor, the amount of the contract being upwards of 1,600*l.*

MUNICIPAL BUILDINGS, MAINDEE, MONMOUTHSHIRE.—The formal opening of the Maindee Municipal Buildings took place recently. The buildings were constructed from the designs of Mr. R. H. Haynes, Borough Engineer, at a cost of 5,900*l.* The structure provides accommodation for the fire brigade, police, and a branch reading-room and lending library. At the rear are sheds for the use of the Works and Sanitary Committees' apparatus, together with a house for the steam roller. The space between the front buildings and the sheds has been paved, and will be used as a police parade and drill ground,

# The Student's Column.

## ARCHITECTURAL HYGIENE.

### XXII.—LIGHTING (*continued*).

GOVERNORS.—The pressure of gas is measured by the height of a column of water that it will support, stated in tenths of an inch. It is desirable to keep the pressure constant, so as to ensure uniformity in burning; any excess of pressure produces waste, and it is generally conceded that for ordinary burners seven-tenths is the best pressure. Gas is supplied to the consumer at pressures varying from 1 in. to nearly 4 in., and hence it is always advisable for the householders to have a *governor* to maintain an equal pressure irrespective of the Gas Company. Fig. 266* is a section taken through a Stott governor fixed to a service pipe or meter. It closes with an increase of pressure from the mains, and opens with a decrease; as jets are turned out, so much gas is shut off from the meter, and *vice versa.* The practice that some householders adopt of turning off the gas at the meter every night is not to be commended, because very often the taps to some of the fittings are left open, and consequently when the supply is turned on again the gas escapes from such fittings, and an accident is probable.

*Burners.*—The two burners mostly in use for ordinary domestic purpose are the "fish-tail" and the "bat-wing," which are shown in figs. 267 and 268 respectively. The "fish-tail" has a circular depressed top, from which two jets of gas are inclined to each other, and as they impinge upon themselves a broad but thin sheet of flame is produced. The "bat-wing" has a semi-circular bulb with a fine vertical slit from which issues a flat, semi-circular flame. There are many forms of the "*argand*" burner, a section of one being shown in fig. 269. The "*mantleless incandescent*" is a form of argand, but has two chimneys (see fig. 270); the air supply to the burner being brought down between the inner and the outer glass is thus warmed, and more perfect combustion is obtained. This company claim that their burner gives a candle power of 33·40, as against 16·0 of the London Argand and 9·15 of the ordinary flat flame; all three consuming 5 cubic feet of gas per hour.

The *Welsbach Incandescent Gaslight Company* created quite a revolution in lighting by their mantles, which are placed over a Bunsen burner; the only cause that prevents their more extensive use is the fragility of these mantles. If placed in positions to avoid draughts, and where there is small risk of vibration, the mantles may last six months; but in unfavourable positions they have been known to fail after a few hours. The mantle is manufactured by soaking an ordinary cotton netted hood in a solution of thoria and cevia. It is then dried and ignited, thus leaving only the metallic oxides; the mantle is then dipped in collodion, which renders it less brittle to handle. The collodion is burnt away when the mantle is placed on the burner, and the brittle network of oxides is left. Just recently, however, the Welsbach Company have introduced a new anti-vibration spring attachment, as shewn in fig. 271, to be used where the burners are subject to shock and vibration, and this seems to be successful to a large extent. A new burner has also been introduced which obviates the use of a chimney.

Messrs. Siemens invented the regenerative burner by which the air and gas is heated previously to their junction; the apparatus is, however, costly and not much in use. Messrs. W. Sugg & Company are the agents for the *Somzée-Greyson Intensified Gaslight Company*, whose system consists of using gas under a higher pressure with an incandescent mantle; the installation is, however, rather expensive. Fig. 272 shows a method of extract ventilation with a *sun light* containing many burners on a ring, and drawing out the heated vitiated air as it rises to the top of the room.

*Acetylene.*—This gas is made by adding water to calcium carbide and is now being used to some extent; the generating plant required being somewhat simple. It is much more powerful than coal-gas and does not evolve carbonic oxide. The plant for 100 lights costs between 60*l.* and 100*l.*, and it will, no doubt, be much used where the electric current is not obtainable. Experiments with this form of lighting will be watched with much interest;

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* For the illustrations mentioned in this chapter see our previous issue, page 575.

at present the clogging of the burners and the disagreeable smell are two great disadvantages.

*The Electric Light* possesses many advantages over other illuminants, the more important being that there is no combustion, as with gas, to consume the oxygen in the air. It gives a steady light, it is easily switched on and off without striking matches; decorations are preserved and remain clean for a longer period, and it can be put in positions where gas would cause a conflagration. The definitions of the following terms which often occur may be found of use:—

*An ampère* is the unit of quantity.

*A volt* is the unit of pressure.

*A watt* is an ampère multiplied by a volt.

*An ohm* is the unit of electrical resistance.

An *electrical horse-power* is equal to 746 watts, thus a current of 7·46 ampères at 100 volts pressure is equal to one electrical horse-power.

A Board of Trade *unit* is the standard measure of output, and this consists of 1,000 watt-hours. Thus, 10 ampères of current at 100 volts pressure for one hour is equal to one Board of Trade unit.

*Production.*—Where it is possible to obtain current from a public supply station it is usually more economical to do so than to manufacture it for oneself. The Supply Company manufacture the current by means of a *Dynamo* in which rings of copper wire pass rapidly before the poles of powerful electro magnets. These rings of copper are wound on an iron core, and the whole is called an *armature*. The currents thus generated in the rings are led to a *commutator*, from which they are collected by brushes and taken away to the switchboard, and from thence to the supply mains. Currents are often generated at a very high pressure, so that the size of the copper cables may be kept as small as possible; the lower the pressure the larger must be the number of ampères, which, of course, require a larger cable. This high-pressure current, however, must not be delivered in this state; it is, of course, most dangerous to human life, therefore a *transformer* is used, which converts a small current of high pressure into a larger current at a lower pressure. Thus, 40 ampères at 2,000 volts could be transformed into 800 ampères at 100 volts, both being equal to 80,000 watts. These transformers are usually placed in suitable positions for the distribution of low pressure to the house mains. Dynamos are usually driven by steam engines when a large supply of current is required, dust refuse mixed with coal being sometimes used as fuel. Gas and oil engines are often used for small supplies. Where water-power can be obtained *turbines* should be used; they consist of vanes fitted to a wheel, which latter is made to revolve by the water impinging against the vanes. Where the water-power is small, storage batteries should be used, so that the dynamo can be worked continuously, and when lighting is required both dynamo and battery can supply the current. *Storage batteries* consist of a number of cells containing sulphuric acid, water, and lead plates. When the current is turned on a chemical change takes place until the battery is full; this will be indicated by bubbles of hydrogen gas rising in the fluid. When the battery is discharged on to the mains an exact reversal takes place and the current is given off. Batteries should be placed on racks, separated from the engine-room, as the gas they give off corrodes the machinery. They should also be used regularly, as they deteriorate if not worked. If well looked after, the deterioration should not exceed five per cent. per annum.

*Wiring.* — Two (or more) copper wires convey the current in any installation; one wire (the positive) conveying the outward current, and another the returning current (the negative) to the source of supply. These wires must be insulated for the whole of their distance, and this is accomplished by covering them with an insulating coating, such as vulcanised rubber; and the higher the pressure employed the thicker and more complete must be the covering. In fixing these insulated wires in houses, &c., many methods are in use:—

(*a*) *Wooden casing.*
(*b*) *Concentric wiring.*
(*c*) *Steel armoured insulating conduits.*

(*a*) This is the most common method, namely, to enclose them in a wooden casing as shown in fig. 273, which is either run along the external face of the plaster or is buried in the work; the latter is very objectionable on account of the difficulty of getting at any defect. The wood casing should always be covered with a solution of shellac to prevent dampness destroying the effectiveness of the installation. Wood casing should never be used where it can be avoided, and in Germany it is now prohibited, and for cheap work preference is now given to insulated conductors, which are run in sight, side by side, upon porcelain knobs. If immunity from disturbance can be assured, and if the wires are not concealed, this practice is satisfactory.

(*b*) In the better work *concentric wiring* is used. This consists of the positive copper wire being insulated with rubber or other material, and the negative wire being wound concentrically round such insulation, and the whole being enveloped in lead. An extra sheathing of steel wires may be used outside the lead envelope. In concentric wiring the negative conductor must be run to earth.

(*c*) There is no doubt, however, that the wires should, where possible, be run in a steel armoured insulating conduit. Iron piping has been extensively used, but, owing to the disastrous effects of short circuits thereon, and owing to the abrasion of the insulating surface from the wires, caused by the jagged nature of the jointing, and also owing to the liability of condensation therein, it is found that some insulating material should be coated on the inside of the pipe itself. The difference between a section of ordinary iron piping and a section of steel armoured insulating conduit is shown in figs. 274 and 275.

A *double pole* switch should be used at the point when the supply enters the house; this will allow of the negative and positive conductors being cut off from the main. A double pole fuse should be placed by this switch and on every branch service throughout the building. A fuse consists of a piece of lead or tin wire, so that if a greater current is passing along than the wire ought to carry, this fuse will melt and stop the supply. Any number of switches may be used in an installation, so that the light may be turned on and off as may be most convenient, and switches may also be placed on the fittings themselves. A switch should always be placed just inside or outside a room, so that a light may be obtained without groping about.

*Fittings.*—An endless variety of fittings of all descriptions for the incandescent light are now upon the market, from the flexible pendant (fig. 276) to the most costly and elaborate designs. The adjustable flexible pendant (see fig. 277) is a convenient form, and is much in use where a plain fitting is required. More elaborate fittings are shown in figs. 278, 279, 280, 281, and 282, the latter figure being a three-light burner fixed to the newel of a stair. In all sitting and reception rooms it is well to have a number of wall plugs, which are simply terminations to branch circuits from which current can be obtained, so that lamps may be moved to different positions in the rooms. They also allow of effective decorative lighting for receptions, may also be used for electric radiators. An effective scheme of illuminating a dinner table is to immerse the lamps in a table fountain.

Lavatories and water-closets may be lighted so that the switches are automatically turned on and off by the opening and shutting of the doors. Special water-tight fittings are sometimes used in stables to prevent the fumes arising therefrom corroding the metal parts of the lampholders. An ordinary incandescent lamp will last about 1,000 hours, and uses about 2½ watts per candle power. Higher efficiency lamps are made, but they do not last so long. The *arc* lamp (fig. 283) is used for street lighting, railway stations, public buildings, &c. The illumination is caused by the current leaping the space between two carbon pencils, which latter automatically approach each other as they are consumed. The carbons have to be renewed about every 100 hours. These lamps are made from 500-candle-power upwards, and their illuminating power is greater for the amount of current consumed than the incandescent. Technical Institutes sometimes have their studios and drawing offices lighted by illuminating the ceilings with the inverted arc lights; the reflected light thus obtained being very pleasant to work by, and all shadows are avoided.

*Cost.*—Electricity at 6d. per unit is roughly calculated to be equivalent to gas at slightly over 4s. per 1,000 cubic feet, assuming 4 watts per candle power. But it must be remembered that the electric light is more economical owing to the facility of switching it on and off, and also that gas is often left partially turned on to save the trouble of relighting. There is also a saving in the decorator's bill; books, pictures and curtains are better preserved, and the health of the occupants is more easily maintained. When it was introduced into the General Post Office in lieu of gas, 800*l.* was saved during the first year in employees' overtime, owing, so it was said, to the fact that more work could be done in the same time in the healthier atmosphere, and the sick list was also reduced by it.

The usual charges by the present day supply companies are 6d. per unit during the dark hours, and 3d. to 4d. per unit during the day time. This is done to encourage the use of electricity when the greater portion of the machinery would otherwise be idle. The Brighton Corporation charge 7d. per unit till a certain standard has been used, and then only 1½d. per unit is charged. The Westminster Electric Supply Corporation charge 6d. per unit with rebates of from 1 to 16 per cent. after a certain quantity has been used; 4d. per unit is charged for motors. In Edinburgh the cost of production is only just over 1d. per unit, and 4d. is the maximum and 3d. the minimum charged to the consumers for lighting purposes.

The cost of running the wires in casings as described previously must, of course, depend upon the different situation and circumstances of each case, but for anything over fifty lights, 1*l.* per light should cover everything except the fittings.

For country houses with between two and three hundred lamps the cost of supply ought not to exceed 120*l.* per annum where the dynamo is worked by a steam engine; the whole cost of the attendant should not be put down to the engine, as it should not take up more than half of his time. The cost of the installation and plant varies so considerably with the circumstances of each case that not even a rough estimate can be given for this.

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## XXIII.—SANITARY INSPECTION.

This is one of the most important duties that falls to the lot of the professional man, and one that is usually underrated. And yet the health and even the lives of one's clients depend upon the care and skill exercised in the practical branch of hygiene.

In making a report upon a particular house or property a system should be adopted, so as to obviate the omission of important points that may be of vital interest to one's clients. We will, therefore, discuss these points in the following order:—

1. *Nature of Site and Soil.*
2. *Description of House and Aspect.*
3. *Nature of Materials Used.*
4. *Means of Heating and Ventilation.*
5. *Water Supply.*
6. *Sewerage and Drainage.*
7. *Plumbing and Fittings.*
8. *Lighting.*
9. *Method of Disposal of Refuse.*
10. *Alterations, Improvements, and Repairs.*

### 1. NATURE OF SITE AND SOIL.

This has been discussed in Chapter III., and we need only refer our readers to this chapter. A few trial holes may be dug to find out the character of the soil, if any doubts exist.

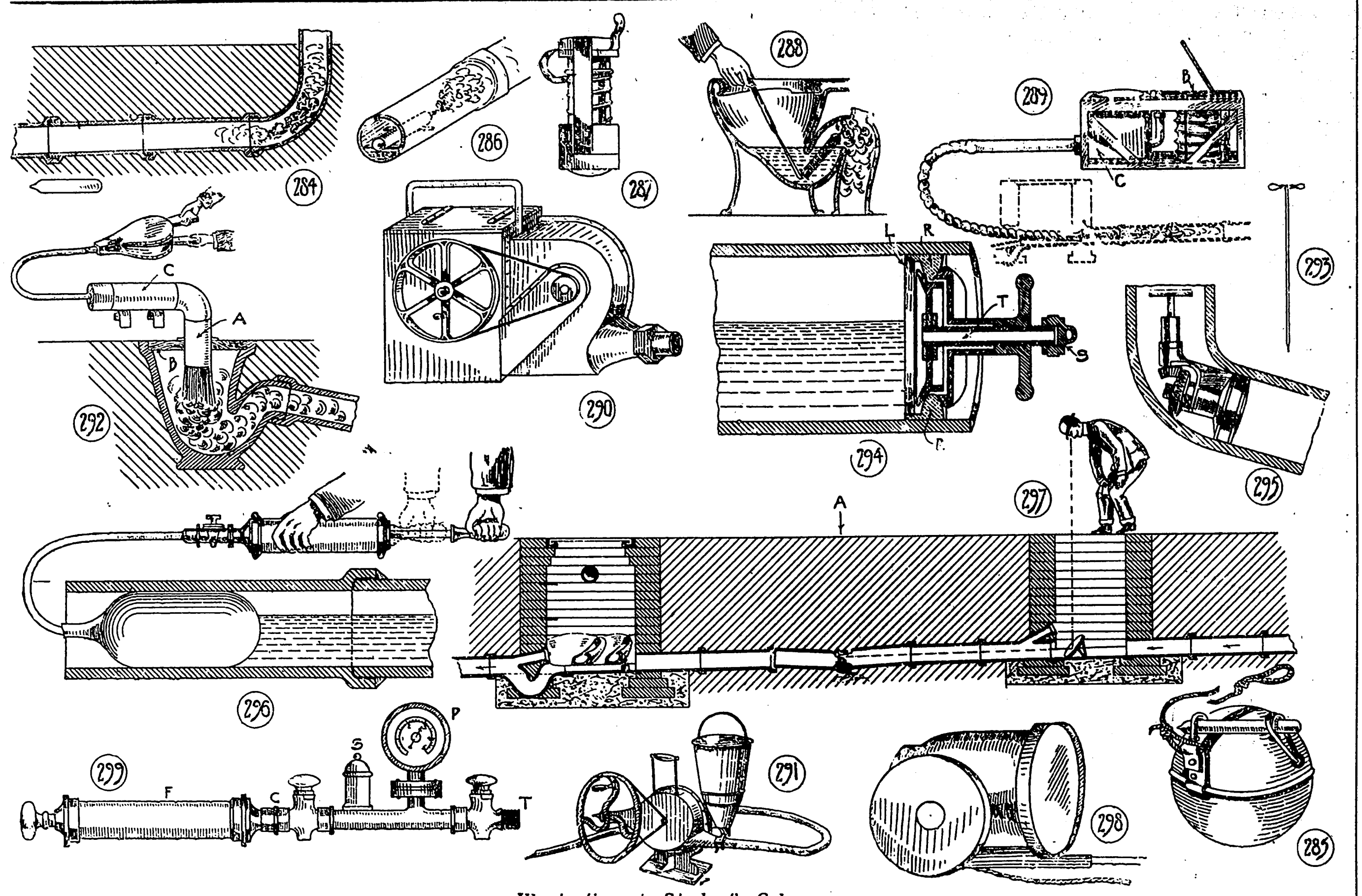
### 2. DESCRIPTION OF HOUSE AND ASPECT.

It is advisable to make a rough sketch-plan to a small scale, and to show thereon the points of the compass, so that the aspect and approximate size of the principal rooms, on the ground floor at least, may be readily discernible. Of course, the number of stories, and the number and the nature and size of the rooms in each, should be set out. The nature of the adjoining property should be also briefly noted.

### 3. NATURE OF THE MATERIALS USED.

This should be stated, and the condition and approximate age of the same should be mentioned as also their effectiveness. Particular notice should be taken of their suitability for resisting the weather and dampness.

A note should be made as to the material forming the damp-course, and its height above the ground level. In the case of basements it should be ascertained if there is a vertical damp course or dry area to keep off the water from the fabric. The internal face of such



*Illustrations to Student's Column.*

walls should be examined to see if there are any signs of dampness.

The floors should be examined to see if they are sound and not affected by dry rot; it should also be ascertained as to whether they are efficiently ventilated with air bricks, &c.

The roof should be examined and the nature of the external covering should be reported, and also as to whether felt or Willesden paper has been used between such covering and the boarding.

### 4. MEANS OF HEATING AND VENTILATION.

These should be described, and their efficiency should be tested if possible. The relation of the superficial area of window opening to the floor space may also be usefully noticed. The proximity of high buildings, &c., often effects the efficiency of the chimney flues. Fixed cowls are usually found to be more effective in curing this nuisance than revolving ones, and they have also the advantage of being less noisy.

### 5. WATER SUPPLY.

The source should be reported, and also the nature of the pipes and fittings and their suitability for the character of the water supplied. If supplied by a water company it should be ascertained as to whether the supply is constant or intermittent. If from a well or other source an examination should be made to see if there is any cause of pollution, and the structure of such well or other source should be examined.

The nature and sufficiency of the means of storage should be noted, and also the suitability of the nature of the materials used in such storage.

The filters should be examined and reported upon, and also as to whether they are supplied direct from the main supply pipe.

The information given in Chapters XIII. and XIV. should be consulted.

### 6. SEWERAGE AND DRAINAGE.

The method of the collection and disposal of the sewage should be ascertained. If this is accomplished by the Local Authority, the efficiency of the treatment and the nature thereof should be investigated. If the sewage has to be treated by the householder, a careful inspection should be made, and consideration of the system in use, and the practical working of the same, must be carefully examined. A note must also be made as to the proximity of the water-supply and its liability to pollution from this cause.

The course of the DRAINS should be traced and noted on the sketch plan, and the sufficiency of their fall and their ratio to the lengths of piping used should be marked thereon. The sizes of the various drains should be written on the plan; and it must be seen that the drains are effectively disconnected from the sewer by a proper intercepting trap.

The nature of the drain-pipes and their jointing must be ascertained, and also as to whether they are laid on a bed of concrete (and its depth) or whether imbedded in the same. The existence and efficiency of traps must be reported upon, as must also the proper inlet and outlet ventilation of the whole system. The means of access should be shown on the plan and the efficiency of the whole system must be tested.

The following are the tests that may be applied:—

*a. Olfactory test.*
*b. Smoke test.*
*c. Hydraulic test.*
*d. Pneumatic.*
*e. Mirror.*

*a.* The *olfactory* test is much used in testing existing drainage. It should be applied as follows:—

A tablespoonful of crude oil of peppermint or other chemical with a pungent odour should be placed in the highest water-closet, and a bucket of very hot water should be used to wash it through the trap. The assistant doing this part of the work should lock himself in and put a damp cloth at the bottom of the door, so as to avoid all risk of the smell penetrating into the rest of the house. He should remain therein until the test is complete, otherwise he may carry the smell about the premises. If the smell makes itself evident in the house or along the course of the drain outside, it, of course, indicates a defect in the drainage, which may be roughly traced to its source. All ventilating shafts, pipes, inlets, &c., should be closed by means of a damp cloth or clay. This test may also be repeated in the lower water-closets, so as to further test the traps, pipes, and fittings. A gulley outside the premises may also be used to test the earthenware drains.

The *Banner* drain grenade or ferret is often used instead of the essential oils for the olfactory test. Fig. 284 shows this useful appliance. It is manufactured of thin glass, and is charged with pungent and volatile chemicals. It breaks on being dropped into the trap, and there is consequently less risk of an ineffective test, as but little or no smell should be felt in the apartment if the grenade is well washed through the pipe.

Another method of using this grenade is shown in fig. 285. A grenade is placed under the staples, which is then made secure by stretching the rubber band over the grenade beyond the first staple.

When the line is jerked it will release a lever and bring it in contact with the grenade, which will be broken to pieces.

(*b.*) The *smoke* test is very often found to be the most convenient to use, and since the introduction of smoke machines it is considered by some to be a very fair test for drains that have not been recently laid. The simplest form of smoke test is accomplished by the *rocket*, which is illustrated in fig. 286, and it will be seen that it consists of a cylinder about 7 in. long by 2 in. in diameter, with a fuse at one end. When the latter is ignited a dense volume of smoke with a pungent odour is emitted and forced up the drain. Great care must be taken in applying the rocket in the manhole, as we have often seen men rendered unconscious through the fumes of the smoke. The strips of wood shown on the case are turned at right angles to it, and keep it off the invert of the pipe.

Fig. 287 shows a useful little invention. It is *Remp's Patent Drain Tester.* The cover is removed and the "tester" is lowered into the water-closet trap on a string, which should be secured. Hot water is then thrown down the fitting so as to wash the appliance into the drain. A strong odour and a large volume of smoke is the result, and defects can be readily detected thereby. The tester should be pulled up on the string, after the experiment, and examined to see that the contents have been discharged.

*Burnett & Groom's Tester* is shown in fig. 288. The trap should be flushed, and then the tester should be ignited and passed through the water by means of the loose handle, and should be left there for about ten minutes. The drain is thus charged with a dense and pungent smoke.

Of the *Smoke Machines*, fig. 289 represents the "Eclipse Smoke Generator" of Messrs. Burns & Baillie. It is composed (B) of a double-actioned bellows covered with prepared leather and a copper cylinder (C), which constitutes the fire-box. The latter is surrounded with a water-jacket. A copper "float" is placed over the cylinder, and an air-tight joint is thus formed. A specially-prepared india-rubber tube, made to withstand the heat, is connected with the outlet of the machine. By working the bellows the smoke is forced into the drain; all openings, such as ventilation-pipes, being, of course, plugged. The smoke is generated by burning "touch paper" or cotton waste, &c.

Fig. 290 shows the *Tyndale Asphyxiator*, which is compact and convenient, and possesses the advantage of not having any small parts likely to get lost.

A simple smoke machine called the "Asphyxiator" is shown in fig. 291.

The smoke is obtained by lighting sulphur, tar-paper, &c., in the bucket, which is provided with a cover, and by turning the wheels a fan is set in rapid motion causing the smoke to be driven into the drain by an india-rubber tubing.

Another form of smoke machine is shown in fig. 292. To test the drain you must remove the water seal from the trap, insert the hose piece A through a piece of board B, and make tight the joints with clay; a smoke cartridge is then placed in the cylinder C; and by lighting the end of the cartridge and blowing gently with the bellows a dense volume of smoke is ejected into the drain.

Fig. 293 illustrates a probing iron, which is used along the course of the drain being tested by the olfactory or smoke tests, which assists the smell or smoke to make itself apparent.

(*c*) The *Hydraulic Test* should invariably be insisted upon for all new drains, and, of course, no drain can be said to be in a really safe and satisfactory condition unless it is capable of withstanding this test.

The lower end of the length of drain-pipe to be tested should be plugged. This may be accomplished by means of a drain-plug or bag.

Fig. 294 shows a section of the *Addison patent plug*, which is a very convenient form. The rubber ring (RR) has a large surface to press against the inside of the pipe, and the lip (L) tends to make the joint very secure. The stopper is fitted with an inner tube (T) which is sealed by a screw-cap (S), which may be used to allow the water to escape after the test. This latter is also useful for filling the drain at the upper end, and by attaching a piece of india-rubber tubing the necessary head of water may be obtained. Fig. 295 represents Messrs. Burn's "Angle Plug," which is useful for stopping drains at bends, &c.

Fig. 296 represents *Jones's patent pipe stopper*. As will be seen, it consists of an india-rubber bag which is inflated by a small pump, until it entirely fills up the aperture. By turning the tap the air is released from the bag, and the latter collapses and may be drawn out.

When using the hydraulic test the lengths of drains should be tested between the various manholes; but where no such conveniences exist of course the drain must be taken up at various points, and plugged as previously described. The level of the water must be carefully noted, and any subsidence after a period of two or three hours indicates that there must be a defect somewhere in the length of pipe tested, or it may be that *tested* drain pipes have not been used, and that water exudes through the pores of the pipes.

(*e*) The *mirror test* is very useful for discovering sagged joints, &c., and localising them. Fig. 297 illustrates its application; a lighted candle is placed one end of the drain in the inspection chamber, and the mirror is placed at an angle at the other. By standing over the mirror the interior of the pipe is viewed, and any defect may be noted, and the number of the defective joint from either end should be written down in the note-book. In the example shown it will be noticed that two drain pipes have sagged, and in consequence have forced off the collar and spigot end of the pipe. This would be written in the note-book as the third and fourth drain pipe, and the earth would be excavated at A. The damage was evidently caused by no bed of concrete being placed under the pipes. It will be noticed that the sewage has oozed through the defective pipes and polluted the soil. *Doughty's Inspection Lantern* is shown in fig. 298, and it consists of a small carriage to which is attached an electric lamp. An automatic reflector is used in connexion therewith, and any irregularities in the drain may thus be detected. This instrument can be used for drains that are not in a straight line from point to point.

(*d*) *The pneumatic test* is now advocated by many, but it is not frequently used in practice. It consists of pumping air into the drains and their connexions by means of a pump or other mechanism. It may be applied by means of the *Eclipse Smoke Generator* shown in fig. 289. All openings to the drain must of course be plugged up, and then the bellows are put in motion. If after a few strokes the copper float rises and remains stationary it is clear that the drains are in good order. If otherwise it is evident that a leak exists, and its seriousness depends on the rapidity with which the float sinks. This apparatus is now fitted with an arrangement by which the pressure applied may be regulated. The *Jensen* pneumatic machine is shown in fig. 299. F is the force pump, P is the pressure gauge, and S is the safety valve. The pump is screwed on to the cock C, and the cock T is attached to the tube passing through the plug or bag. The safety valve is set at the pressure required and the pump is then worked, any excess over the required pressure being liberated through the safety valve. The cock C is then closed, and any leakage will be apparent on the pressure gauge.

### 7. Plumbing and Fittings.

We have discussed their construction and ventilation, &c., in Chapters VIII., IX., and X. The importance of the careful examination of these can scarcely be overestimated. In the first place, see if all fittings are efficiently trapped, whether anti-siphonage pipes have been used, and whether they are carried up above the topmost fitting in the down pipe. Note whether the pipes are in such positions as to be liable to be affected by frost. See that the soil pipe at the highest point from the sewer is carried up well above the roof and away from all window openings, &c.

The plumbing and connexions of fittings may be tested by the olfactory or smoke test, as before described. The hydraulic test is generally considered to be unfairly severe, more especially if the pipes are of any great height, as, of course, the pressure is very great.

The fittings should be examined to see that they are effective. As a rule, the simpler they are, the more efficient is their action. A good means of testing the self-cleansing properties of an apparatus is to cover the inside with lampblack, a few pieces of paper being dropped on to it in different places, the removal of which on flushing can be readily observed. When the fitting is flushed, the basin should be left perfectly clean.

Some of the water companies refuse to allow water-waste preventers of a greater capacity than two gallons to be used. In these cases we have found that a notice conspicuously placed near the fitting requesting the user to flush both *before* and after using conduces to the cleanliness of the fitting and the adjoining pipes. It has also been known to cause the water companies to consider whether it would not be more economical to have a three-gallon flush instead of the twofold two-gallon discharge.

Be certain that the smoke *does* come out of the top of the soil pipe, more especially if the latter be of iron, as we have often found that the interior is blocked up with oxide of iron. It may also have a sag or other defect which contains sufficient liquid to prevent the flush efficiently performing its work.

### 8. Lighting.

If gas is the lighting medium, it is well to employ a *gas escape detector* such as is made by Messrs. James Stott & Co. This is a governor attached to the gas service near the meter, to use as a detector. The taps should all be turned off. The main cock is then turned on, and the movement of the brass spindle is observed. When the spindle has risen the main cock is turned off. If the spindle remains in position it indicates that the work is in a satisfactory condition; if, however, it falls there must be a leak somewhere in the system. This detector also acts as a pressure regulator, and it is claimed that from 10 to 40 per cent. is saved in the consumption of the gas.

If *electricity* is the source of lighting, make a note as to the means employed of conducting the current. Of course, the best means is that of the armoured conduit mentioned in Chapter XXII. The wiring should also be tested to see if there is any leakage.

### 9. Method of Disposal of Refuse.

This should be mentioned in your report, with a note as to who collects the refuse and how often this occurs. The means of storage should be noted, and also the suitability of the construction of such receptacle. Also examine the kitchen range to see whether a firebox is provided to burn the garbage and vegetable matter.

### 10. Alterations, Improvements, and Repairs.

This portion of the report should give an epitome of the work required to be done. The same method should be observed as in the inspection itself, so that both portions of the report may be readily compared by looking at the distinctive numbers of each subdivision. An estimate of the cost may also be added. We now give two examples to illustrate the methods that we have enunciated.

## *GENERAL BUILDING NEWS.*

St. Colman's Cathedral, Queenstown, Ireland.—The work which is being carried out at this cathedral is being rapidly pushed forward. The architect is Mr. G. C. Ashlin, and the following are some of the contractors:—Messrs. Creedon, the groined ceilings of the nave and transepts, cleaning of the walls, and certain carving work, which they have sub-let to Mr. O'Connell, sculptor, of Cork; Messrs. Sharpe & Emery, of Dublin, the groining of the aisles and polishing the marble columns that support the nave arcade; Mr. Smyth, sculptor, Dublin, for marble and sculpture work; Mr. J. C. Edwards, Ruabon, ceramic mosaics; and the Wood-Block Paving Company, of London, for the floors of nave, aisles and transepts. The stained glass is being carried out by Messrs. Hardman, of Birmingham, and Mayer, of Munich. New revetment walls are being erected by Mr. J. J. Coffey, of Midleton.

Chapel and Schools, St. Ives, Cornwall.—A new chapel and Sunday-schools have just been opened in Bedford-street, St. Ives. The architect was Mr. J. W. Firth, of Oldham, and the builder was Mr. J. R. Sandry, of St. Ives.

Free Church, Oldbury.—The foundation stones of the new Providence Church at Churchbridge, Oldbury, were laid on the 5th inst. Messrs. Wood & Kendrick, of Birmingham, are the architects, and the builder is Mr. J. Dallow.

Wesleyan Mission Hall, Hasland, Chesterfield.—On the 7th inst. the foundation stones of a Wesleyan Mission Hall were laid at Hasland. The first floor will be devoted to school and class-rooms, and the second will consist of an assembly-room, with a seating capacity for 350. The architect is Mr. Cecil Jackson, Chesterfield, and the contractor, Mr. Peck.

Wesleyan Church, Sheffield.—On the 8th inst. the foundation stones were laid of a new Wesleyan chapel, to be erected at the corner of Stafford-road and Fitzwalter-road, in the Park. The new buildings consist of a church with two vestries, a church parlour, and a schoolroom with seven class-rooms. The entire structure will be of stone. The church is cruciform in plan, measuring 97 ft. interior extreme length, including chancel, 41 ft. 6 in. wide across the nave, and 59 ft. 6 in. wide across the transepts. It has an end gallery only. The church will seat 640 adults, or a mixed congregation of 850 persons. At the corner facing the junction of the roads is the tower, terminating with a spire 124 ft. high. The front of the church has three doorways, leading to the ground floor and gallery, and the centre doorway has over it a four-light traceried window. The schoolroom is built on the central hall plan, with class-rooms around it, some of them opening into the hall. The length of the room inside is 50 ft. by 29 ft. wide. The class-rooms are of varying sizes, there being two large ones for adult classes, and one large one for infants. The others are smaller. Accommodation is provided for 500 scholars. The architect is Mr. John Wills, Derby, and the builder is Mr. James Fidler, of Eckington.

Restoration of Parish Church, Edlingham, Northumberland.—The parish church of Edlingham is being restored from the plans of Messrs. Plummer & Burrell, of Newcastle-on-Tyne. The cost will be about 1,000*l*.

College Chapel, Drumcondra, Dublin.—The new chapel for St. Patrick's Training College, Drumcondra, was opened on the 11th inst. The chapel is built of red bricks with Portland stone dressings, and is 85 ft. long by 28 ft. broad and 36 ft. high. It is lighted by electricity. Mr. James Donovan, of Dublin, was the builder, and the architect was Mr G. C. Ashlin, also of Dublin.

Enlargement of Christ Church, Mountsorrel, Leicestershire.—The enlarged chancel and vestry, new organ, reredos, choir stalls and pulpit were dedicated recently. The chancel has been lengthened to 22 ft. to accommodate the choir and organ. A reredos of oak has been placed at the east end. The organ was built by Messrs. S. Taylors, of Leicester, and the choir stalls were executed by Mr. J. Dilks, of Mountsorrel. The pulpit is of old oak from the church at Spondon, Derby. The contractors for the chancel, organ-chamber, and reredos were Messrs. Scurr, Jowett, & Co., Barrow-on-Soar, and the architects were Messrs. Goddard & Co., Leicester.

Sunday Schools, Boston, Lincolnshire.—The foundation stone of the new Sunday schools which are being erected in connexion with the Zion Chapel at Boston, were laid on the 8th inst. The schools are being erected by Mr. Bradley, of Langrick, from plans by Mr. Talbot, of Batley.

SCHOOLS, ARUNDEL.—On the 8th inst. the foundation stone of new day schools at Arundel was laid. The architect is Mr. Gerald Horsley, of London.

DENTAL HOSPITAL FOR LONDON.—On the site between St. Martin's-street and Green-street, Leicester-square, the new hospital is being built by Messrs. G. Trollope & Sons, contractors; the architects are, we are informed, Messrs. Young & Hall.

ADDITIONS TO THE SCOTT HOSPITAL AT HUNTLY, ABERDEEN.—New wings have been added to this building. The work was designed by Mr. Marshall Mackenzie, architect, Aberdeen, and the contractors were:— Mason, Mr. Robert Mitchell; carpenter, Provost Pirie; slater, Mr. Thomas Henderson; plasterer, Mr. John Logie; painter, Mr. Alexander Robertson—all of Huntly; and plumbers, Messrs. Blaikie & Sons, Aberdeen.

BOARDING HOUSE, CROMER.—The Cliftonville Boarding House, which was built some few years ago, is being added to this season. A new entrance hall and a large dining hall, both 15 ft. high, together with new kitchens and numerous sitting and bedrooms, billiard-room, and lavatories go to make up an addition which will more than double the present accommodation. All this new part has a frontage to the sea. The dining hall has been finished in the old English manor house fashion, with a marble chimney-piece at one end and minstrels' gallery at the other, special care being bestowed on the coloured glass windows. The entrance is under the archway, 15 ft. wide, in a large square tower, with oriel window two floors high. There are balconies between bay windows and alcoved recesses inside. The architects of this work are Messrs. George J. & F. W. Skipper, and the general contractor is Mr. J. S. Smith, of Norwich.

ADDITIONS TO HOTEL, SOUTHWOLD.—A new wing has been added to the Centre Cliff Hotel, comprising a dining-hall 52 ft. long and 32 ft. wide, and about thirty new bedrooms over this. The style of the old hotel has been preserved in the new work, and hence it is finished in cement stucco. The new wing being two floors higher than the older part, a tower has been formed so as to break the sky-line where the new part joins the old. The architects for this new work are Messrs. George J. & F. W. Skipper, of Norwich; the general contractor is Mr. J. Youngs, also of Norwich; the plasterer's work being carried out by Mr. Crotch.

BIRMINGHAM LIBRARY.—New buildings for the Birmingham Library have been erected at the corner of Margaret-street and Cornwall-street. The architects are Messrs. Cossins, Peacock, & Bewlay. The elevations are in the English Renaissance style, carried out in Ruabon brick and white Hollington stone, with Westmoreland green slates for the roof. The building consists of two blocks at right angles the one to the other. On the Margaret-street side the façade of two stories is divided into three sections—a gabled portion at each end—and between them a slightly recessed division, further subdivided by piers between the windows. The porch is of stone. The entrance admits to a hall, upon the further side of which is the segmental counter of the book-issuing department. To the left is the main lending library apartment. In the block which has its windows to Cornwall-street are a series of rooms devoted respectively to the clerks, the librarian, and the committee. These, while *en suite*, have their separate doors to a corridor, upon the opposite side of which is the lady subscribers' room and lavatories. Ascending by a staircase to the upper floor, access is obtained to the general reading room, 54 ft. by 35 ft., and a conversation room, 38 ft. by 23 ft. These two rooms are divided from one another by sliding doors. The reading room has a portion of the ceiling coved, with exposed timbers ornamentally carved. Upon the Cornwall-street side of the upper floor has been arranged a room for rare books, and the smoke-room and ladies' retiring room, reserved for the special use of proprietors who pay the extra subscription. To each of these there is additional lavatory accommodation. Above these on the attic story are storage rooms for books. A basement contains a library for the books less in request, binding rooms, clerks' mess-room, caretaker's residence, and the heating appliances. In the yard approached by an inclined plane from Cornwall-street is a large shed for the storage of cycles. The internal woodwork is of pitch-pine, adamant plaster is used for the principal walls, and wood blocks are used for flooring. Electricity is used for lighting the whole establishment. The cost of the new library is about 10,000*l*., and the builders are Messrs. J. Barnsley & Sons.

OFFICES, TEES CONSERVANCY COMMISSION, MIDDLESBROUGH.—The foundation-stone of the new offices to be erected in Queen's-square for the Tees Conservancy, has just been laid. The building will have a frontage of 72 ft., and will be four stories high. In the basement will be cellarage, storing-rooms, and munition-rooms. The main floor, which will be raised about 3 ft. 6 in. from the level of the outside footpath, is given access to from the main entrance, which stands in the centre of the frontage, and from which a porch will project about 10 ft. forward from the main building. The main floor contains the offices of the secretary and his staff, and for the payers of dues, and also a committee-room and a waiting-room. These and the main staircase are approached through a wide corridor. On the first floor is a board-room, 50 ft. long and 27 ft. wide, and as high as two ordinary stories of the building, with an ante-room adjoining, and offices for the engineer and his staff. On the second floor will be the offices for the engineer's drawing staff, and for other purposes of a general character. The whole of the floors are fire-proof, and, with the exception of the main corridor, will be laid with wood blocks, in either oak or maple. The main corridor will be laid in mosaic, and the main staircase will be of stone. Each floor will have its own strong-rooms. On each floor is provided lavatory accommodation. At the rear of the building will be a caretaker's cottage. The building will be Renaissance in style, and it will be erected in red brick and terra-cotta. The plans were prepared by Mr. J. M. Bottomley and Mr. W. H. Whipham.

ALMSHOUSES, PUDSEY, YORKSHIRE.—The almshouses which have been erected with money left by the late Mr. Joseph Salter, are situated in Robin-lane. They consist of five houses, in one block, the centre house having a gable and bay window. Each house contains a front living-room, entering from an open porch, a bedroom, a small pantry, and a back entrance porch, containing sink, &c. The whole of the floors are on one level. The buildings have been carried out in stone, covered with dark Westmoreland slates, with red roll ridge tiles. At the back each house has its own outbuildings and yard. The bulk of the contracts were undertaken by local contractors, and the whole of the work has been carried out from the drawings and under the superintendence of the architect, Mr. C. S. Nelson, of Leeds and Pudsey.

ST. JOHN'S HOSPITAL, LEWISHAM.—The foundation-stone of the new buildings at St. John's Hospital, Lewisham, for the Nursing Sisters of St. John the Divine, was laid on Wednesday by the Duchess of Albany. The architects are Messrs. Barnes-Williams, Ford & Griffin. The buildings, which will provide for the reception of thirty-three additional patients, will be of red brick with Monks Park stone dressings and tiled roofs, and the contract has been let to Mr. H. L. Holloway at 5,370*l*. The clerk of works is Mr. J. J. Trimm.

## *SANITARY AND ENGINEERING NEWS.*

SEWAGE DISPOSAL, SWINTON, YORKS.—A Local Government Board inquiry into an application by the Swinton Urban District Council, for permission to borrow 2,450*l*. for the purchase of land in connexion with the disposal of the sewage of Swinton, was held by Mr. W. O. E. Meade-King on the 6th inst. The land, which consists of 12½ acres, is to be used for the deposit of refuse, night-soil, &c. Mr. R. Fowler, the surveyor, gave evidence of the desirability of obtaining the site.

SEWERAGE WORKS, GREAT AYTON.—The main sewerage and sewage disposal works for Great Ayton have just been completed. About three miles of sewers have been laid. The purification of the sewage will be effected by chemical precipitation, and the effluent will be distributed over land on the ridge-and-furrow system. Messrs. Crudas & Son, of Guisborough, have carried out the work at a cost of about 4,000*l*. Mr. Harry W. Taylor, of Newcastle and London, was the engineer, his plans having been selected in competition.

REBUILDING OF THE SEA WALL, WESTGATE, KENT.—This work is now completed. In the winter of 1897 nearly the whole of the sea wall and front promenade were swept away, leaving the cliffs for the greater part of the distance bare. Immediate steps were taken to protect what little of the sea wall and promenade remained, and in the early part of 1898 arrangements were made for the reconstruction of the destroyed portion, which practically extended along the whole front of St. Mildred's Bay. After the work was commenced it was pushed on so rapidly that by the end of July the wall and approaches had been built, the backing filled in, and the promenade so far completed as to allow of its consolidation by its being used temporarily during the rest of the year. The promenade has now been asphalted from end to end with Constable's tar asphalte. A wall has also been built against the cliff in such a manner as to provide shelter seats at intervals along the whole stretch of promenade. Approaches from the promenade to the roadway behind have been formed by slopes at an easy gradient, working through the front gardens to the top of the cliff. Step approaches have also been made and rustic bridges thrown over the various openings. The design and execution was the work of Messrs. A. McIntosh Valon & Son, engineers, London. Mr. William A. McIntosh Valon (Consulting Engineer to the Corporation of Ramsgate) is advising engineer to Messrs. Coutts & Co., who have borne the expense of the work.

LIVERPOOL SCHOOL OF ARCHITECTURE.—An exhibition of work done by students of the City of Liverpool School of Architecture and Applied Art during the past session will be held in the Walker Art Gallery, Liverpool, on Saturday, Monday, and Tuesday next, the 17th, 19th, and 20th. The exhibition will be open from 10 a.m. to 8.30 p.m.

## *FOREIGN.*

FRANCE.—The jury for the open competition for the building of a Hôtel de Ville and Law Courts for the town of Neuilly have awarded the first prize to MM. Defresne, architect, of Argenteuil, and Rousselet, architect, of Ermont. The second prize has been given to M. Colombier, architect, of Compiègne.—— The forty-fifth exhibition of the Société des Amis des Arts of Douai will be held from July 9 to August 6.——The town of Saint Die is shortly going to rebuild the Church of Saint Martin; the expense is estimated at 500,000 fr. ——The frieze in grey ceramique made at the Sèvres manufactory is now being placed in position on the façade at the back of the great palace which faces the Avenue d'Antin. The frieze, which runs the whole length of the building is from the designs of M. Joseph Blanc, and represents the history of art through all ages.——The death is announced of M. Louis Barré, at the age of seventy-two. He was an architect and engineer, and one of the veterans of the technical Press devoted to architecture. Since 1858 he had been on the staff of the *Revue de l'Architecture et des Travaux Publics* with the late M. César Daly, and he drew up the tables of resistance to stress for iron construction, which tables have been used ever since in France. He assisted for some time in the *Semaine de Constructeurs*, and published several important works. Architects frequently addressed themselves to him for the calculations of strains and the solution of various difficult questions in construction. For more than forty years he gave gratuitous lectures at the Association Polytechnique, and his valuable services were recognised by the award of the Cross of the Legion of Honour.

## *MISCELLANEOUS.*

PROFESSIONAL AND BUSINESS ANNOUNCEMENT.—Mr. William Vincent Vale, accountant, 16, Darlington-street, Wolverhampton, has been appointed Secretary to the Wolverhampton Branch of the National Association of Master Builders of Great Britain and Ireland, in place of Mr. George Gough, resigned.

MEMORIAL WINDOWS, ST. MATTHEW'S CHURCH, NEWCASTLE-ON-TYNE.—Two stained glass windows have been placed in this church. The windows were executed by Mr. G. J. Baguley, of Newcastle-on-Tyne.

THE INSTITUTE OF SANITARY ENGINEERS (INCORPORATED).—At a meeting of the Election Committee of this Institute, held on the 7th inst., the following members were elected:—Fellows: H. A. Chadwick, Durban, Natal; J. V. B. Collie, Cape Town; Associates: E. Box, Bexley Heath; W. Jenkinson, Worsley, Manchester; E. E. Rice, Teddington; H. T. Sidwell, Herne Bay; J. Whelan, Dublin.

THE SANITARY INSTITUTE. — The preliminary programme of the Eighteenth Congress, to be held in Southampton, from August 29 to September 2, has now been issued. The President of the Congress is Sir W. H. Preece, K.C.B., F.R.S., Pres.Inst.C.E. Mr. Malcolm Morris, F.R.C.S. Edin., M.R.C.S. Eng., will deliver the lecture to the Congress, and Bailie J. Dick, J.P., Chairman of the Health Committee, Glasgow, will deliver the popular lecture. Excursions to places of interest in connexion with sanitation will be arranged for those attending the Congress. A conversazione will be given by the Mayor (Councillor G. A. E. Hussey). More than 300 Authorities, including several County Councils, have already appointed delegates to the Congress, and, as there are also over 2,200 members and associates in the Institute, there will probably be a large attendance in addition to the local members of the Congress. In connexion with the Congress, a health exhibition of apparatus and appliances relating to health and domestic use will be held as a practical illustration of the application and carrying out of the principles and methods discussed at the meetings; it not only serves this purpose but also an important one in diffusing sanitary knowledge among a large class who do not attend the other meetings of the Congress. The Congress will include three general addresses and lectures: three sections meeting for two days each, dealing with (1) Sanitary Science and Preventive Medicine, presided over by Sir Joseph Ewart, M.D., F.R.C.P., J.P.; (2) Engineering and Architecture, presided over by Mr. James Lemon, M.Inst.C.E., F.R.I.B.A.; (3) Physics, Chemistry, and Biology, presided over by Professor Percy F. Frankland, Ph.D., B.Sc., F.R.S. Eight special conferences—viz., those of municipal representatives, presided over by Alderman T. Walton, J.P., Chairman of the Health Committee, Southampton; Port Sanitary Authorities, presided over by Mr. Millar Wilkinson, Chairman of Port of London Sanitary Authority; Medical Officers of Health, presided over by T. Orme Dudfield, M.D., L.R.C.P., M.R.C.S.; Medical Officers of Schools, presided over by C. G. Shelly, M.A., M.D.; Engineers and Surveyors to County and other Sanitary Authorities, presided over by Mr. E. Purnell Hooley, Assoc.M.Inst.C.E.; Veterinary Inspectors, presided over by Mr. W. Hunting, F.R.C.V.S.; Sanitary Inspectors, presided over by Mr. C. MacMahon, Chief Sanitary Inspector, Torquay; Domestic Hygiene, presided over by

Mrs. Patey. The local arrangements are in the hands of an influential local committee.

ELECTRIC LIGHTING, DARLINGTON. — At the Darlington Town Hall recently, Mr. W. O. E. Meade King, Local Government Board Inspector, held an inquiry into an application made by the Darlington Corporation for sanction to borrow 30,000*l.* for the purposes of electric lighting, and 593*l.* for the purchase of land in Haughton-road for the extension of the existing depot. Professor Kennedy prepared the report for the Corporation.

BRITISH FIRE PREVENTION COMMITTEE.—The testing station of the British Fire Prevention Committee was again the scene of an important series of investigations on Wednesday afternoon, which were attended by Sir John Taylor (H.M. Office of Works), Mr. Alexander Siemens (Institution of Electrical Engineers), and, on behalf of the Council, Mr. H. H. Statham, of the Members' Testing Sub-Committee, Mr. Edwin O. Sachs (chairman) for the Executive, and the usual delegation of ten members. The strictly limited number of visitors was this time chiefly representative of the London County Council; Mr. Waterlow and Mr. Yates, Chairmen of the Building Act and the Theatres Committees, attending, with Mr. Riley, the Superintending Architect, and several officials from his department, the third officer of the M.F.B., and a number of District Surveyors. The leading Government departments and some of the Insurance Offices were also again represented. The tests were conducted by Messrs. Max Clarke, F. R. Farrow, Ellis Marsland, F. Hammond, E. Woodthorpe, and G. Monckton on behalf of the executive, and comprised :—1. A two-and-a-half hours test with a concrete floor by the Columbian Fire-proofing Company, U.S.A., being the severest test so far applied by the committee to any floor. 2. A half-hour test with a skylight of electro-glazed prisms by the British Luxfer Prism Syndicate. 3. A three-quarters-of-an-hour test with plain electro-glazed clear glass casements by the same makers. 4. An hour (comparative) test with an iron door in an iron frame, and an armoured wood door with 3 in. overlaps. The reports describing the tests will be issued by the executive in due course.

## *CAPITAL AND LABOUR.*

LOWESTOFT BUILDING TRADE STRIKE SETTLED.—The strike in the Lowestoft building trade has been settled. The following understanding has been arrived at :—(1) The men (bricklayers, carpenters, and joiners) are to receive 7½d. an hour ; (2) there is to be one apprentice to four men, instead of one to six men, as the men desired ; (3) the first two hours of overtime to be paid ½d. an hour (instead of 1d., which the men asked), and after two hours the pay will be at the rate of time and a quarter overtime to the next hour, to be reckoned after the men had worked 56½ hours as a week ; (4) in winter the overtime hours are to be as per time sheets ; (5) the men have given an understanding not to object to working with non-union men, engaged with union men, and not to "black list" any firms who have employed non-union men or union labour during the strike ; (6) the rules to stand good for two years.

THE BUILDING TRADE DISPUTE : POSITION AT MIDDLESBROUGH.—A joint meeting of the Middlesbrough Master Builders' Association and a deputation from the workmen was held at the Albany Restaurant on the 8th inst. The meeting was of a protracted nature, and at the conclusion the master builders offered the men an advance of ½d. per hour, making a wage at the rate of 9½d. per hour for ordinary purposes, with a rate of 10d. per hour in the works, but without allowing walking time. They also suggested that a committee of masters and men should be formed to consider the question of working rules, and to act as a board of conciliation for the trade in the town. The men's representatives stated that they had no power to settle the matter, but would bring the offer before a meeting of their members.

ABERDEEN MASONS' WAGES.—The arbiter in the submission as to the payment of wages to masons in the monumental trade, Professor J. Dove Wilson, LLD., late Sheriff-substitute of Aberdeen, has decided that from and after Monday, July 31 next, wages must be paid weekly instead of fortnightly as hitherto. This award will, no doubt, regulate the same point as regards wages of masons in the building trade.

JOINERS' DISPUTE, SHIELDS.—The house-joiners of North and South Shields came out on strike on the 12th inst., in accordance with the decision previously arrived at on the masters refusing to concede an advance of from 9½d. to 10d. an hour. Upwards of 400 men are affected. They decline to submit the question to arbitration.

BRICKLAYERS' STRIKE, GRIMSBY.—The whole of the Grimsby bricklayers came out on strike on the 12th inst. for an advance in wages of 1d. per hour. The period is most favourable for the men, as there is a big demand for houses, and building operations were in full swing.

BARNSLEY BUILDERS' LABOURERS' STRIKE ENDED. — The strike of builders' labourers in Barnsley has been brought to an end on the basis of mutual concession, and work will be resumed forthwith. The labourers came out on strike on May 1, along with the masons. The employers sought alterations of working rules, so that they might have greater freedom in utilising the work of their labourers to advantage in various ways. There was no question of wages in the affair. The actual terms of settlement are not stated, but it seems that the employers have abated some of their demands, the men have made concessions on some points, and so have come to agreement. The masons are still out, the employers seeking some changes in their rules, especially in the provision which is aimed at preventing the use of machine-dressed stone, which works harshly in not a few cases, considerably increasing the cost of buildings, and, of course, the rents which tenants have to pay.

STONEMASONS' STRIKE, WIGAN. — The stonemasons' strike in Wigan, which has lasted six weeks, has come to an end. At a meeting of representatives of employers and operators, called on the 13th inst. by the editor of the *Wigan Observer*, who was asked to preside, terms were mutually agreed to, concessions being made by both sides. The wages are advanced to 9½d. per hour from July 1. Certain alterations were made in the rules and a conciliation board consisting of joint representatives was appointed to deal with minor disputes. In case of future proposed alteration in rules six months' notice is to be given terminable on May 1 in each year. The President of the Board of Trade was empowered to appoint an umpire, failing settlement by the joint arbitration board.

## *LEGAL.*

### ACTION AGAINST CONTRACTORS UNDER THE WORKMEN'S COMPENSATION ACT.

THE case of Appleby *v.* the Horseley Company, Limited, and Lovatt came before the Court of Appeal, composed of Lords Justices A. L. Smith, Rigby, and Vaughan Williams, on the 10th inst, on two appeals under the Workmen's Compensation Act, 1897, from the decision of the Judge of the Leicester County Court. The applicants in the case were the widow and children of a workman who had been killed by an accident in the course of his employment. The employers of the man were the Horseley Company, Limited, and the work on which he was engaged at the time of the accident was bridge work and iron work in connexion with alterations at Leicester Railway Station. The work of carrying out the alterations as a whole had been undertaken by Henry Lovatt, and the Company had entered into a sub-contract with him for the bridge work and iron work. The workman had originally been in the employment of the Company as a rivetter at wages at the rate of 2*l.* 10s. a week. In March, 1896, he met with an accident, in consequence of which he was unable to do any work for eleven months, but he was not dismissed from the service of his employers. In February, 1897, he again commenced work, being then employed as a timekeeper and storekeeper, earning wages at the rate of 30s. a week. In this sort of employment he continued to work till his death, in consequence of the accident, his death occurring on September 27, 1898. The County Court Judge awarded the applicants 269*l.* compensation under the Act. The first appeal was brought by the Horseley Company and the question in that appeal was the amount of compensation to which the applicants were entitled under Section 1 (a) (i) of the Act.

Mr. McCardie for the company contended that there had been no break in the employment of the deceased man, and that therefore the compensation ought to be assessed under the section at the amount of the actual earnings received by the workman during the three years preceding September 27, 1898, which was 177*l.* The employers were, however, willing, in order to give the applicants a somewhat larger sum, to treat the case as coming within the second part of the sub-section, and to take as the basis of the compensation the average weekly earnings of the deceased during the period from February, 1897, to the date of his death, viz., 30s., and multiply that by 156, which gave 234*l.*

Mr. McCurdy, for the applicants, contended that the County Court Judge was justified in basing his calculation on the average weekly earnings of the deceased "during the period of his actual employment," which meant during the time that he was actually at work, and in bringing into account the earlier period of work because the relationship of master and servant had continued throughout.

Lord Justice Smith, in giving judgment, said that, in his opinion, there had been a break of eleven months in the employment of the deceased man. He had met with an accident in March, 1896, and was away till February, 1897, when he asked his employers to take him on to work again. They did not give him the same work as he had before, but employed him in a different capacity and at different wages. In his opinion the amount of the award, therefore, ought to be 234*l.*, and not 269*l.*

Lord Justices Rigby and Vaughan Williams concurred, and this appeal was therefore allowed.

The second appeal was also brought by the company, the respondent being Henry Lovatt, and it was against an order contained in the award of the County Court Judge by which, in pursuance of Section 4 of the Act, he ordered the company to indemnify Lovatt against liability to pay the compensation and costs directed to be paid by the award. This order was asked for on Lovatts behalf at the hearing of the arbitration, no notice of intention to claim such indemnity having been previously given to the company.

Mr. McCardie argued that an order for indemity under Section 4 could not be made without notice.

Mr. T. Willis Chitty, for Lovatt, contended that, though where a respondent claimed indemnity against a person not a party to the arbitration notice was required, it was not necessary where the person asking for indemnity and the person from whom indemnity was sought were the undertaker and contractor, who were already before the County Court Judge as respondents to the arbitration.

Lord Justice Smith, in giving judgment, said that in his opinion on the true construction of the rules, it was necessary to give notice of intention to claim indemnity.

Lords Justices Rigby and Vaughan Williams concurred, and this appeal was also allowed.

### IMPROPER MORTAR.

AT West London Police-court on the 9th inst., Mr. William Marchment, a builder, appeared to answer adjourned summonses for using mortar in the construction of walls of three houses erected in Playfair-street, Fulham Palace-road, not composed of materials required by the by-laws of the London County Council. Mr. Seager Berry, solicitor, appeared to support the summonses, with Mr. John Haynes, solicitor, who represented Mr. F. W. Hamilton, District Surveyor for North Fulham ; and Mr. A. J. David was instructed for the defendant. Mr. Berry reminded the magistrate that he was asking for penalties and for orders to pull down portions of the walls. Expert witnesses were called and samples of the brickwork and mortar were produced. In support of the case it was stated that the mortar contained thirteen per cent. of earthy matter, and out of seven samples only one was found correct. For the defendant it was stated that the walls were well built for that class of work. Several samples taken on behalf of the defendant were described as very fair mortar, with the exception of two, which did not come up to the requirements of the by-law Mr. Rose came to the conclusion that it was not a case to order the walls to be taken down. Acting upon the candid opinion of the analyst for the defendant that two of the samples did not come up to the requirements, he imposed a penalty of 5*l.*, with ten guineas costs. The magistrate expressed an opinion that the County Council were justified in drawing attention to the mortar used in the construction of buildings.

### WORKMEN'S COMPENSATION CASE.

A CLAIM was heard in the Westminster County-court on Monday, when Judge Lumley Smith gave his award in the case of Lloyd *v.* Sugg, an action under the Workmen's Compensation Act. The applicant was George Lloyd, sixty-seven, a blacksmith, of North Kensington, and the respondents Messrs. Sugg & Co., gas engineers.

Applicant's case was that he was holding a tool by means of a piece of wood, and a boy who should have hit the tool with a hammer, missed it and hit the wood ; applicant's hand was "smashed" against the anvil, and bones broken. Two days after he was discharged.

Evidence for the respondents was that no bones were broken, and that Lloyd was suffering from gout, which was brought out by the jar. He was dismissed for bad work done prior to January. The boy missed because a spark went in his eye.

His Honor's view at the former hearing was that employers took the risk of employing a man with gout in his system, and if an injury was received which brought out the gout the employer would be liable to pay compensation. His Honour awarded applicant 15s. a week.

### POINT UNDER THE LONDON BUILDING ACT, 1894.

THE case of Elliott & Co. *v.* the London County Council came before a Divisional Court of Queen's Bench, composed of Justices Day and Lawrance, on the 12th inst., which raised a question as to setting up a wooden structure without the licence of the London County Council under the London Building Act, 1894. It appeared that the appellants, Messrs. Elliott & Co., were convicted of doing this by Mr. Curtis Bennett, the metropolitan police magistrate, and the only question to be determined on the appeal which came before the Court in the form of a special case was whether the structure came within Section 86 of the Act which exempts from its provisions as to licences for wooden structures, "structures or erections erected or set up upon the premises of any railway company, and used for the purposes of or in connexion with the traffic of such railway company." The structure in the present case was put up by the appellants, who are coal merchants in the habit of having coal consigned to them at their wharf in the Carlisle-street coalyard of the Great Central Railway Company, under the permission of the Company, and at their own expense. The structure was used by Messrs Elliott & Co. in connexion with their wharf for the purpose of receiving and executing orders for and distributing to dealers and consumers the coal consigned to the appellants at their wharf and was not used for the purposes of the railway company. The magistrate found that the structure did not come within the words and was, in point of fact, not used for the purposes of, or in connexion with, the traffic of the railway company, and was, therefore, not exempt from the necessity of a licence and convicted the appellants. Hence the present appeal.

At the conclusion of the arguments Mr. Justice Day, in giving judgment, said that he had no doubt the Magistrate was wrong. In his opinion the structure was "used for the purposes of or in connexion with the traffic" of the railway company, and was therefore within the exemption.

Mr. Justice Lawrance concurred, and the appeal was accordingly allowed.

Mr. C. A. Russell, Q.C., appeared for the appellants; and Mr. Horace Avory and Mr. Daldy for the respondents.

## ACTION FOR PERSONAL INJURIES.

AT the Clerkenwell County Court, on Friday last week, before his Honour Judge Edge, the case of Charles Beale, bricklayer, 43, North-street, Caledonian-road, *v.* George Maxwell, builder, 310, Brixton-road, was heard. This was a claim for 100*l.* (alternately 50*l.* at common law) damages for personal injuries.

Mr. Scarlett was counsel for the plaintiff, and Mr. Griffiths Jones for the defendant, the action being brought under the Employers' Liability Act, 1880. Plaintiff gave evidence to the effect that on February 21 last he was employed by the defendant at the "Rose and Crown" public-house, Broad-street, Bloomsbury, engaged in the building of a wall. There was scaffolding around it to the height of about 25 ft. He had mounted the scaffold by a ladder, but some scaffolders raised the wall 5 ft., and there was not a proper ladder provided when he was sent to another part of the building. Coming down by that ladder, there was no proper landing provided, and the plaintiff had to land on some old bricks, which gave way. He twisted his ankle and fell on his back.

Mr. Jones said it was not denied that the plaintiff sprained his ankle, but the defendant did not admit any negligence on his part.

The Judge, alluding to the contention that the defendant had not taken reasonable precautions for the safety of his workmen, said he was beginning to think that the British workman wanted to be dry nursed from the beginning of his work until the very end of it.

After a long hearing the Judge assessed the compensation due to the plaintiff at 20s. per week from fourteen days after the date of the accident, while the injury continues.

## POINT UNDER THE METROPOLIS MANAGEMENT ACT, 1855.

THE case of St. Margaret's and St. John's Vestries *v.* Hoskins came before a Divisional Court of Queen's Bench, composed of Justices Grantham and Lawrance, on the 13th inst., upon a special case stated by a Metropolitan Police magistrate upon a summons taken out on behalf of the appellants, the united Vestries of the two parishes, under Section 75 of the Metropolitan Management Act, 1855, alleging that the respondent, Mr. F. C. Hoskins, a builder, did in March last, at 13, Tufton-street, neglect to comply with an order ordering that the lowest floor of the building in course of construction should be kept at such a level as would allow it to be drained into the public sewer. It appeared that the premises in question consisted of a building in course of construction to be used as an armoury storehouse and drill-hall for a Volunteer battalion, and were in the usual way vested in the commanding officer, and intended for the use of the corps only. The complaint was that the floor of the basement, which is a long cellar running under the building, was beneath the level of the sewer. The magistrate decided that, as the premises were to be used exclusively for military purposes, the Act did not apply to them, and dismissed the summons. The rest of the premises was sufficiently drained. The basement being lower than the sewer, it could not be drained into the sewer, but the magistrate thought it did not require to be drained.

Mr. Danckwerts, for the appellants, said the question was whether the building ought not to comply with the Acts relating to the proper drainage of the Metropolis. Volunteer buildings did not belong to the Crown. Under the Volunteer Regulations the Volunteers were obliged to provide buildings for an armoury at their own expense, and he contended that the building did not come within any of the exemptions referred to in the Act of 1855.

Mr. Horace Avory, in support of the decision of the magistrate, contended that the building in question was vested in a servant of the Crown and for the purposes of the Crown, and that it was exempt from the regulation as to drainage.

Mr. Justice Grantham, in giving judgment, said that although it was true the building was used for military purposes, from the case stated there was nothing to show that property used for military purposes only was necessarily Crown property. On this narrow ground the matter must go back to the magistrate, though he (his lordship) would be very sorry if the magistrate should think it necessary under the circumstances to interfere.

Mr. Justice Lawrance concurred.

## MEETINGS.

### FRIDAY, JUNE 16.

*Carpenters' Company.*—Practical Examination at the Company's Schools, Great Titchfield-street. 9.30 to 5.30.

### SATURDAY, JUNE 17.

*Architectural Association.*—Second Summer Visit, to Gatton Park and Church.

*People's Palace Architectural Society.*—Visit to Drapers' Hall, E.C. 3 p.m.

*Carpenters' Company.*—Viva Voce Examination at the Hall. 12 noon.

*Incorporated Association of Municipal and County Engineers.*—Northern District Meeting at Whitehaven.

### WEDNESDAY, JUNE 21.

*Builders' Foremen and Clerks of Works' Institution.*—Ordinary meeting of the members. 8 p.m.

### THURSDAY, JUNE 22.

*Society of Antiquaries.*—8.30 p.m.

### SATURDAY, JUNE 24.

*People's Palace Architectural Society.*—Mr. S. Posenheim on "Defects in Plumbing Work." 7.30 p.m.

## RECENT PATENTS:

### ACCEPTED SPECIFICATIONS.

### *Open to Opposition until August 7.*

[1898] 5,038, Bamber, Heating Apparatus with Regulated Draught for Drying Gypsum, &c. 12,250, G. für Heiz und Beleuchtungs-wesen, and [1899] 7,303, Lewis and Others, Generation of Acetylene Gas. 12,725, Kuhne & Meeks, Gas Regulator and Economiser. 13,304, Arter, 17,591, C. de l'Industrie Électrique, and 27,074, Irish, Electrical Arc Lamps. 13,463, Bloxam, Apparatus for Supplying Liquids in Ratio to One Another. 13,919, Barr, Water Wheels and Turbines. 13,931, Clough, Turner, & Turner, Composition for Protecting and Preserving Metal and other Surfaces. 14,342, Ditchburn & Whitehead, Pickaxes and their Sockets. 14,476, Titchett, Gas Stoves. 14,496, Jones, Pipe Coupling. 15,004, Dawson, Domestic Fire Grates. 15,047, Ham & Beard, Automatical Apparatus to prevent Tidal or Storm Water, &c., from entering Sewers, Tanks, Drains, &c. 15,107, Bayliss, Droppers and Standards for Wire Fencing. 15,208, Gold, Electrical Heaters. 15,375, Adams, Water Closets and their Fittings. 15,796, Woollatt, Measuring Tap. 15,957, Kohl, Glow Bodies for Incandescence Burners. 16,184, Schneider & Smidth, Kilns for burning Portland Cement, &c. 16,416, Alexander, Brick-making and Pressing Machines. 16,433, Haigh, Wood Moulding and Planing Machines. 16,460, Verity's and Steele, Automatical Safety Device, especially for Three-wire or Balanced Systems of Electrical Distribution. 16,515, Carter, Lathe Chucks. 16,641, Stables, Seats. 16,651, Osborn, Hooks for Ladders, &c. 16,818, Fitch, Lock-casing and Mode of Fixing it on Doors. 17,000, Frampton, Nails. 17,361, Cartwright, Circular-Saw Guards. 17,442, Sanders, Wire. 19,684, James, Wallis, and Mackinnon, Non-conducting Fireproof Substance for Use in the Construction of Fireproof Buildings. 21,592, Lefèvre, Bending Pipes, Rolls, Beams, or Bars of any Section. 21,730, Clare and Others, Casement Windows. 21,911, Edwards, Window Fastener. 24,761, Bayldon & Armstrong, Instrument for Facilitating Trigonometrical Admeasurements and other Calculations. 26,177, Smith, Cocks and Valves. 26,407, Walker, Tool-holders. 26,432, Penney, Outside Stop Taps and Boxes for Water and Gas Service Pipes. 26,541, Shaffer, Gas and other Coin-freed Apparatus. 27,399, Thomas & Still, Gas Lamps. [1899.] 3,149, Höft, Grain Silo. 3,441, Böttcher, Automatical Grooving, Tenoning, and Bevelling Machine. 3,577, Lenner, Incandescence Lamp Burners for Liquid Combustibles. 3,884, Savelsberg, Lighting and Extinguishing Gas. 4,276, Tirrill Automatic Potential Regulator Company, Automatical Potential Regulators for Dynamos. 6,305, Hills, Vapour-burning Lamps. 6,490, Edmunds, Means of Extinguishing Fire, and of Protection from Fire. 6,778, Grigg, Automatical Water-tight Ventilation Valve. 6,918, Bachner, Lighting Gas and other Lamps, &c. 7,009, Senking, and 9,137, Hatcher, Gas Cooking Stoves. 7,505, Peerless Gas Lighter Company, Automatical Gas-lighting. 7,522, Hällgren, Apparatus for Use in Working Grindstones, Emery-wheels, &c., or for Working Hard Surfaces. 7,878, Rensing, Manufacture of Bricks, Building-blocks, and Ore Briquettes. 8,341, Gonsalves, Rocking-stops for French Windows, Louvre Blinds, &c. 8,361, Bell, Appliances for Cooling Air. 8,571, Glazier, Hinged or Casement Windows. 8,859, Geometric Drill Company, Lathe and other Tools. 8,997, Kürten, Warming and Cooking by Candles or Lamps. 9,121, Schilling and Others, Shutter Operators and Fasteners. 9,135, Ross & Smith, Window Sashes, &c. 9,262, Vereinigte Pinsel-Fabriken, Paint-brushes, &c.

### ABSTRACTS OF PATENTED INVENTIONS.

3,333. TREATMENT OF SEWAGE, &C.: *F. P. Candy.*—After treatment in anaërobic beds, the sewage or other impure matter is delivered into aërobic filter beds; the former beds have layers of gravel, limestone, coke, or clinkers, covered with layers of clay or marl and fine sand; a channel fitted with a vertical pipe, having an upper water-seal, enables gases to escape, discharge pipes along the bottom of the filter-bed convey the filtered sewage into a chamber furnished with an air-tight cover, a vent-pipe, and a flushing-valve, and flushing-valves may also be fitted to the outlets of the pipes that lead into the anaërobic filter-beds.

3,376.—BRICKS AND BUILDING-BLOCKS: *W. Wright.*—The blocks, composed of earthenware, cement, or concrete, are larger than ordinary bricks, and have handles or recesses by means of which they may be lifted; they are also fashioned with ribs, grooves, or frog, with metal-stripped handles, or with holes, in order that they may be easily handled and carried about.

3,445.—SPRAY DIFFUSERS: *S. Morris & G. B. Hamer.*—The rose is formed in a flat quadrant shape, having transverse bars and plates, or with two long, narrow slits; in another form it has a plate pierced with a number of spiral or concentrical slits, or holes, made by means of rings adjusted by a bolt.

3,447.—SYSTEMS OF LIGHTING, OIL LAMPS AND THEIR SUPPLY, &C.: *W. Reynolds & L. G. Astley.*—With the object of supplying many burners upon one level, the inventors put a main oil reservoir or tank above a secondary tank, which are connected by an air-pipe and an oil-pipe of determined relative sizes; around the lower ends of the two pipes is a tube, having at its lower end a valve connected to the lever of the cock by means of a spring, a bell-crank lever, and chains; when the tank is charged by opening the cock, the valve becomes closed and prevents the flow of oil into the lower tank; but when the cock is closed the opening of the valve admits oil into the lower tank until the lower end of the air-pipe is covered, whereupon oil ceases to flow into the upper tank, until the level of the oil falls low enough to uncover the air-pipe's lower end; for different levels a common supply-pipe may be connected to the main, or uppermost, oil-tank.

3,450.—TREATMENT OF SEWAGE: *F. M. & D. D. Spence.*—The sludge that results from treating alkaline sewage, &c., containing soapy or fatty matters, with sulphuric acid and aluminoferric or sulphate of alumina is separated, dried, and treated with ether, bisulphide of carbon, petroleum spirit, or other solvent, the fats and fatty acids are extracted from the solution, whilst the insoluble matter will serve as manure.

3,490.—SLIDING SASHES: *L. G. Bradshaw and S. J. Fell.*—For sliding sashes that turn inwards, hinges are made by means of a hook and a socket upon the lower sash which engage with a socket and a hook fixed to the frame; the sash descends as the hooks enter the sockets, and its own weight turns the sash inwards, sockets or clips let into the frame receive T-headed hooks which hold the beads in their place, the upper rails of the sashes can be fastened together by a pivotted catch, and the two sashes can be then turned inwards together upon the hinges of the lower one. When detached from the sashes the weight-cords are drawn underneath spring hooks which hang from a plate on the frame.

3,521.—REVOLVING CUTTERS FOR SQUARE-MOULDING AND SIMILAR WOOD-WORKING MACHINES: *J. H. Ollier and W. Brown.*—For fashioning square mouldings upon balusters, &c., the cutters are formed with their cutting edges set at an angle to the shank, in order that they may meet the timber diagonal-wise, and pass gradually into action.

3,522.—MOULDING WOODEN BALUSTERS, &C.: *J. H. Ollier & W. Brown.*—For fashioning balusters and similar articles to square, octagonal, or other shapes in cross-section, is devised a machine to whose sliding-table a squared piece of wood is clamped by two screw clamps, and if an octagonal section is required the wood may be also clamped at the corners. The table carrying the wood is fed by hand over revolving cutter-blocks, having cutters moulded to the shape desired, and with the V-cutting edges described in the inventors' No. 3,521 above. In order to relieve the strain upon the wood it is provided that each cutter-block shall form only a portion of total moulding. At one end of the table is fitted an L-shaped bracket, which fences and clamps the end of the wood.

3,525.—SIPHON-DISCHARGE AND WATER-WASTE PREVENTERS: *F. M. Sims & F. T. & J. H. Harrop.*—Over the discharge pipe, which is trapped at its lower end, is fitted a bell, formed with a globe-shaped enlargement. The raising of the bell rarifies the air and starts the siphonical action, which is further facilitated by means of a short tube open at each of its ends. The entrance of air through a pipe will arrest the siphonical action, and the trap of the discharge pipe may be fixed upon the cistern.

3,536.—RECIPROCATING SAWS: *J. Heyn.*—That it may cut in both directions, the saw is made with its rows of teeth set at a small angle to one another, so that the row of teeth which are not cutting are cleared from the wood, and a gap between the two rows of teeth allows the sawdust to fall out.

3,622.—TAPS AND OTHER FITTINGS FOR BATHS, LAVATORIES, &C.: *J Shanks.*—A cam or eccentric turned by a spindle is devised for opening the spring-pressed valves which control the hot and cold water inlets; the valves are separately lifted by cams or eccentrics upon one spindle, or more, if two or more delivery nozzles are used; in modifications, rotary sliding covers moved by projections that engage cams upon the main spindle are employed to close the outlets, or the hot and cold water inlets are provided with separate valves, the distribution of the water being regulated by a plug which has cavities in its surface, or the hot water inlet may be controlled by an annular valve and the cold water inlet by a disc.

3,641.—SUPPLY COCKS: *F. A. Small.*—On one side of the rocking-lever's fulcrum is a hanging hook that engages with the float-lever; on the other side of the fulcrum is a rod which by means of a detent engages with a pawl when the chain is pulled, and so locks the float-lever whilst the cistern is being emptied. The adjustable tail-piece of a second float-lever strikes an L-shaped lever when the water has fallen to a certain level and so releases the rod from engagement with the pawl, whilst allowing the lever to fall and close the outlet.

3,668.—SOLDERING ALUMINIUM: *H. W. Stilwell.*—After the metal has been cleaned and immersed in an alkali solution, it is plunged into a strong acid solution and coated with nickel or some other suitable metal in a strong bath and with a powerful electrical current; it is then coated or tinned with an alloy, preferably of mercury and lead, and may be soldered in the ordinary manner.

3,793.—REFINING ASPHALT: *W. S. Wilkinson.*—Crude asphalt is refined and prepared for paving and similar purposes by a process which drives off the water and mixes the mass, without over-heating it; by the agency of compressed air jets arranged amongst coiled pipes filled with steam, whose high pressure is regulated by the boiler's safety valve, the tank being brick lined and having an air space.

3,804.—VENEERS: *J. Landuyt.*—For cutting veneers in spiral sheets from a cylindrically shaped piece of wood, the machine is fitted with a presser-bar, which is forced against the rotating cylinder of wood by spiral springs, and so presses the wood in front of the knife; the wood is reciprocated lengthwise by a cam upon the mandril; to the bar, and advancing with it, are connected two racks, with a pinion, which feed markers or blades against the wood. The blades are mounted upon a horizontal bar at required intervals, in order to mark off lengths of the veneer.

3,841.—ELECTRICAL INCANDESCENT LAMP-HOLDERS: *F. Palm.*—Insulating clamps hold the bare main conductors upon which the lamps are placed. In one arrangement the lamp has a cap that carries two end-pins, which pass into sockets for engagement with curved springs bearing upon the conductors. In another arrangement two plate-springs are set in the cement by which the lamp is fixed in a cap, the springs gripping the conductors, and the surface of the cement being waxed.

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## PRICES CURRENT OF MATERIALS:

### WOOD.*

Per Petersburg standard hundred.

| | £ | s. | d. | £ | s. | d. |
|---|---|---|---|---|---|---|
| White Sea: first yellow deals | 17 | 5 | 0 | 18 | 5 | 0 |
| Second do. | 13 | 10 | 0 | 15 | 0 | 0 |
| Third do. | 11 | 0 | 0 | 11 | 10 | 0 |
| Battens, 40s., 30s., and 15s. less respectively. | | | | | | |
| Petersburg: first yellow deals | 12 | 0 | 0 | 14 | 10 | 0 |
| Second do. | 11 | 0 | 0 | 12 | 10 | 0 |
| Battens, 30s. and 20s. less respectively. | | | | | | |
| Petersburg, white deals | 10 | 0 | 0 | 12 | 0 | 0 |
| Do. white battens | 8 | 0 | 0 | 9 | 10 | 0 |
| Riga, white deals | 8 | 10 | 0 | 9 | 10 | 0 |
| Swedish mixed yellow deals | 13 | 10 | 0 | 17 | 0 | 0 |
| Third do. | 12 | 10 | 0 | 14 | 10 | 0 |
| Fourth do. | 11 | 0 | 0 | 12 | 0 | 0 |
| Fifth do. | 10 | 0 | 0 | 11 | 0 | 0 |
| Battens, 30s., 20s., and 10s. less respectively. | | | | | | |
| Whitewood, 10 to 20 per cent. less. | | | | | | |
| Finnish unsorted yellow deals | 10 | 0 | 0 | 10 | 10 | 0 |
| Battens, 10s. and 5s. less respectively. | | | | | | |
| Whitewood, 5 to 10 per cent. less. | | | | | | |
| Norwegian second yellow battens | 8 | 0 | 0 | 9 | 0 | 0 |
| Third do. | 7 | 10 | 0 | 8 | 10 | 0 |
| Fourth do. | 7 | 0 | 0 | 8 | 0 | 0 |
| Whitewood, 10s. less. | | | | | | |
| Danzig, Crown Deck deals, per 40 ft. 3 in. | 0 | 15 | 0 | 1 | 5 | 0 |
| Brack | 0 | 12 | 0 | 1 | 0 | 0 |
| St. Lawrence Pine deals, &c., per P.S.H.:— | | | | | | |
| 1st, Bright and Dry, regular sizes | 19 | 0 | 0 | 25 | 10 | 0 |
| ,, ,, oddments | 12 | 0 | 0 | 18 | 15 | 0 |
| 2nd ,, regular sizes | 14 | 0 | 0 | 17 | 5 | 0 |
| ,, ,, oddments | 9 | 10 | 0 | 13 | 0 | 0 |
| 3rd ,, regular sizes | 9 | 5 | 0 | 10 | 5 | 0 |
| ,, ,, oddments | 7 | 0 | 0 | 8 | 10 | 0 |
| 4th ,, regular sizes | 6 | 5 | 0 | 7 | 5 | 0 |
| ,, ,, oddments | 5 | 15 | 0 | 6 | 15 | 0 |
| St. Lawrence Spruce deals, &c. | | | | | | |
| First, regular sizes | 8 | 5 | 0 | 10 | 5 | 0 |
| Second ,, | 7 | 5 | 0 | 8 | 5 | 0 |
| Third ,, | 7 | 0 | 0 | 7 | 15 | 0 |
| Fourth ,, | 5 | 15 | 0 | 6 | 15 | 0 |
| Oddments and battens at 20s., 10s., 7s. 6d., and 5s. less respectively. | | | | | | |
| New Brunswick Spruce deals, &c. | 7 | 0 | 0 | 7 | 15 | 0 |
| Oddments, battens, and fourths | 6 | 5 | 0 | 7 | 5 | 0 |
| United States pitch pine planks and boards | 8 | 0 | 0 | 12 | 0 | 0 |
| Prepared Boards, per square | | | | | | |
| 1¼ by 6½ and 7 in. 1st yellow | | 11 | 6 | | 14 | 9 |
| ,, ,, 2nd ,, | | 10 | 0 | | 11 | 9 |
| 1 by 6½ and 7 in. 1st ,, | | 8 | 6 | | 10 | 9 |
| ,, ,, ,, white | | 8 | 0 | | 8 | 9 |
| ,, ,, 2nd yellow | | 8 | 0 | | 9 | 0 |
| ,, ,, ,, white | | 6 | 6 | | 7 | 3 |
| ⅞ by 6½ & 7 in. 1st & 2nd yellow | | 7 | 3 | | 8 | 0 |
| ,, ,, ,, white | | 6 | 9 | | 7 | 6 |
| ¾ by 6½ and 7 in. 1st yellow and white (grooved, tongued, and beaded) | | 6 | 3 | | 8 | 9 |
| ¾ by 6½ and 7 in. 2nd yellow and white (ditto) | | 5 | 3 | | 7 | 6 |
| ⅝ by 6½ and 7 in. 1st yellow and white (ditto) | | 5 | 3 | | 6 | 0 |
| ⅝ by 6½ and 7 in. 2nd yellow and white (ditto) | | 4 | 9 | | 5 | 6 |
| Narrower widths at 10 per cent. less. | | | | | | |
| 3rd quality at 15 per cent. less than 2nd. | | | | | | |
| Danzig and Memel Fir Timber— per load | | | | | | |
| Best middling | 2 | 10 | 0 | 3 | 10 | 0 |
| Good middling and Second | 2 | 0 | 0 | 3 | 5 | 0 |
| Common middling | 1 | 10 | 0 | 2 | 10 | 0 |
| Undersized | 1 | 10 | 0 | 1 | 15 | 0 |
| Swedish and Norwegian Balks | 1 | 5 | 0 | 1 | 15 | 0 |
| Baltic Oak Timber— | | | | | | |
| Danzig and Stettin—Large | 3 | 10 | 0 | 4 | 0 | 0 |
| Small | 2 | 0 | 0 | 2 | 5 | 0 |
| Quebec Timber per load | | | | | | |
| Yellow Pine | 4 | 12 | 6 | 6 | 5 | 0 |
| Oak | 4 | 7 | 6 | 6 | 10 | 0 |
| Elm | 3 | 17 | 6 | 4 | 17 | 6 |
| Ash | 3 | 2 | 6 | 4 | 7 | 6 |
| Birch | 3 | 10 | 0 | 5 | 10 | 0 |
| New Brunswick, &c., Birch | 2 | 5 | 0 | 3 | 0 | 0 |
| American Pitch Pine Timber | 2 | 17 | 6 | 3 | 10 | 0 |
| Wainscot, per log, 18 cubic ft.— | | | | | | |
| Crown (Eng. & Dutch) } nominal | 6 | 0 | 0 | 7 | 15 | 0 |
| Brack } nominal | 5 | 5 | 0 | 6 | 5 | 0 |
| Lathwood, per cubic fathom— | | | | | | |
| Petersburg | 4 | 0 | 0 | 6 | 10 | 0 |
| Riga and Danzig | 4 | 10 | 0 | 5 | 10 | 0 |
| Norway Poles, per ft. run | 0 | 0 | 1 | 0 | 0 | 1½ |
| Oak Staves, per mille full size pipe | | | | | | |
| Memel, Crown | 210 | 0 | 0 | 220 | 0 | 0 |
| Brack | 180 | 0 | 0 | 190 | 0 | 0 |
| Danzig | 165 | 0 | 0 | 175 | 0 | 0 |
| Bosnia, single Barrel (nominal) | 28 | 0 | 0 | 30 | 0 | 0 |
| United States, Pipe | 35 | 0 | 0 | 42 | 10 | 0 |
| Hogshead, extra heavy and double extra | 27 | 10 | 0 | 32 | 10 | 0 |
| Indian Teake per load | 11 | 5 | 0 | 16 | 5 | 0 |
| British Guiana Greenheart | 0 | 0 | 0 | 8 | 0 | 0 |
| Mahogany, per foot superficial— | | | | | | |
| Honduras, cargo average | 0 | 0 | 4½ | 0 | 0 | 6 |
| Nicaragua, do. | 0 | 0 | 4¾ | 0 | 0 | 5¼ |
| Tabasco, do. | 0 | 0 | 4 | 0 | 0 | 6½ |
| Mexican, do. | 0 | 0 | 3½ | 0 | 0 | 4 |
| Panama, do. | 0 | 0 | 3 | 0 | 0 | 4 |
| African, do. | 0 | 0 | 3½ | 0 | 0 | 5 |
| Cuba, do. | 0 | 0 | 5½ | 0 | 0 | 7½ |
| St. Domingo, do. | 0 | 0 | 5 | 0 | 0 | 7 |
| Do. Curls (good to prime) | 0 | 0 | 9 | 0 | 1 | 3 |
| Walnut, American (logs) | 0 | 2 | 3 | 0 | 4 | 6 |
| Do. do. (planks and boards) | 0 | 2 | 0 | 0 | 7 | 6 |
| Italian, per foot superficial | 0 | 0 | 3 | 0 | 0 | 7½ |
| Black Sea, per ton | 6 | 0 | 0 | 12 | 0 | 0 |
| Satin Walnut (logs) per foot cube | 0 | 1 | 0 | 0 | 1 | 3 |
| ,, (planks and boards) | 0 | 2 | 0 | 0 | 2 | 9 |
| Sequoia (Californian redwood), per foot cube | 0 | 1 | 9 | 0 | 2 | 0 |
| Whitewood, American (logs) | 0 | 1 | 3 | 0 | 1 | 6 |
| ,, ,, (planks and boards) | 0 | 1 | 6 | 0 | 2 | 9 |
| Quartered oak ,, ,, ,, | 0 | 2 | 3 | 0 | 4 | 0 |
| Kauri pine (logs) | 0 | 1 | 9 | 0 | 2 | 0 |
| ,, ,, (planks) | 0 | 2 | 3 | 0 | 2 | 9 |
| Jarrah (planks) | 0 | 2 | 3 | 0 | 2 | 6 |
| Lancewood spars each, fresh and large | 0 | 6 | 0 | 0 | 10 | 0 |
| Lancewood spars, ordinary to fair | 0 | 4 | 0 | 0 | 6 | 0 |
| Degame spars | 0 | 8 | 0 | 0 | 12 | 6 |

### METALS.

| | £ | s. | d. | £ | s. | d. |
|---|---|---|---|---|---|---|
| IRON—Pig, in Scotland ton | 3 | 5 | 9 | 0 | 0 | 0 |
| Bar, Welsh, in London | 6 | 0 | 0 | 6 | 5 | 0 |
| Do. do. at works in Wales | 5 | 15 | 0 | 5 | 17 | 6 |
| Do. Staffordshire, in London | 6 | 5 | 0 | 7 | 10 | 0 |
| COPPER—British cake and ingot | 80 | 5 | 0 | 80 | 15 | 0 |
| Best selected | 80 | 15 | 0 | 81 | 5 | 0 |
| Sheets, strong | 82 | 0 | 0 | 85 | 0 | 0 |
| Chili bars | 76 | 2 | 6 | 0 | 0 | 0 |
| YELLOW METAL lb. | | 7d. | | | 7½d. | |
| LEAD—Pig | | | | | | |
| Spanish ton | 14 | 5 | 0 | 0 | 0 | 0 |
| English Com. Brands | 14 | 10 | 0 | 0 | 0 | 0 |
| Sheet, English, 6 lbs. per sq. ft. and upwards | 15 | 10 | 0 | 0 | 0 | 0 |
| Pipe | 16 | 0 | 0 | 0 | 0 | 0 |
| ZINC—English sheet ton | 31 | 0 | 0 | 0 | 0 | 0 |
| Vieille Montagne | 31 | 10 | 0 | 0 | 0 | 0 |
| Spelter | 27 | 0 | 0 | 27 | 5 | 0 |
| TIN—Straits | 117 | 2 | 6 | 0 | 0 | 0 |
| Australian | 117 | 5 | 0 | 117 | 15 | 0 |
| English Ingots | 120 | 0 | 0 | 121 | 0 | 0 |
| Banca | 114 | 0 | 0 | 0 | 0 | 0 |
| Billiton | 113 | 0 | 0 | 0 | 0 | 0 |

### OILS.

| | £ | s. | d. | £ | s. | d. |
|---|---|---|---|---|---|---|
| Linseed ton | 20 | 5 | 0 | 0 | 0 | 0 |
| Cocoanut, Cochin | 29 | 5 | 0 | 0 | 0 | 0 |
| Do. Ceylon | 25 | 15 | 0 | 0 | 0 | 0 |
| Palm, Lagos | 24 | 0 | 0 | 0 | 0 | 0 |
| Rapeseed, English, pale | 23 | 5 | 0 | 0 | 0 | 0 |
| Do. Brown | 21 | 15 | 0 | 22 | 0 | 0 |
| Cottonseed ref. | 16 | 5 | 0 | 17 | 0 | 0 |
| Oleine | 17 | 0 | 0 | 19 | 0 | 0 |
| Lubricating U.S. | 0 | 5 | 6 | 0 | 7 | 6 |
| Do. Black | 0 | 5 | 0 | 0 | 6 | 0 |
| TAR—Stockholm barrel | 1 | 6 | 6 | 0 | 0 | 0 |
| Archangel | 1 | 0 | 0 | 0 | 0 | 0 |
| Turpentine | 34 | 10 | 0 | 0 | 0 | 0 |

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* The prices named are for the wood as imported and landed in the docks. Ten per cent., approximately, should be added in order to arrive at the current trade prices.

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## SOME RECENT SALES OF PROPERTY:

### ESTATE EXCHANGE REPORT.

| | |
|---|---|
| May 29.—By H. DUKE & SON (at Dorchester). | |
| Leigh, Dorset.—Church Farm, 74 a., f. | £2,800 |
| May 30.—By Messrs. SPELMAN (at King's Lynn). | |
| King's Lynn, Norfolk.—South Everard-st., "The Sonemasons' Arms" p.-h., f. | 1,510 |
| May 31.—By N. EASTON & SON (at Hull). | |
| Ottringham, Yorks.—Coate's House Farm, 159 a. 2 r. 6 p., f. | 3,335 |
| June 1.—By BOYTON, PEGRAM, & BUCKMASTER (at Walham Green). | |
| Hammersmith.—13, Greyhound-rd., u.t. 79½ yrs., g.r. 8l., e.r. 40l. | 250 |
| Fulham.—52, Bishop's-rd., u.t. 77½ yrs., g.r. 7l. 10s. | 280 |
| 62, 64, and 66, Chesilton-rd., u.t. 81 yrs., g.r. 24l., r. 118l. | 1,145 |
| 47, Waldemar-av., u.t. 87 yrs., g.r. 6l. 10s., e.r. 40l. | 350 |
| By ELGOOD & FULLER (at Bournemouth). | |
| Bournemouth, Hants.—Poole-rd., Chadwell House, u.t. 76 yrs., g.r. 11l. 11s. | 2,120 |
| By W. LUDLOW & BRISCOE (at Birmingham). | |
| Solihull, Warwick.—The Widney Estates (part of), area about 74 a., f. (in lots) | 7,319 |
| By WALTER BRIERLEY (at Preston). | |
| Samlesbury, Lancs.—Fleetwood Hall and Higher Barn Farms, 228 a. 0 r. 2 p., f. | 10,000 |
| Thornton, Lancs.—Thornton Hall Estate, 88 a. 3 r. 8 p., f. | 6,900 |
| Broughton, &c., Lancs.—Scott's Farm, 84 a. 1 r. 36 p., f. | 5,200 |
| By DAVID PRICE (at Hay). | |
| Hay, Brecon.—Broad-st., Poplar House, f., r. 24l. | 490 |
| 29 and 30, Broad-st., f., r. 16l. | 400 |
| Escley, Hereford.—The Blayney Farm, 83 a. 1 r. 27 p., f. | 1,325 |
| Twyn-y-Gwint Farm, 34 a. 2 r. 35 p., f. | 655 |
| By T. G. WHARTON. | |
| Kilburn.—102, 104, and 110, Canterbury-rd., u.t. 993 yrs., g.r. 24l., r. 99l. | 955 |
| Poplar.—211 and 213, Manchester-rd., u.t. 52 yrs., g.r. nil | 405 |
| Stebbondale-st., i.g.r.'s 69l. 12s., u.t. 57 yrs., g.r. nil | 1,280 |
| Stebbondale-st., &c., i.g.r.'s 101l. 4s., u.t. 51 yrs., g.r. nil | 1,880 |
| June 2.—By S. & G. KINGSTON (at Long Sutton). | |
| Sutton St. James, Lincs.—A farmhouse and 4 a. 0 r. 21 p., f. | 490 |
| Various enclosures, 70 a. 2 r. 22 p., f. and c. | 2,675 |
| Long Sutton, Lincs.—Enclosures of land, 5 a. 3 r. 26 p., f. | 180 |
| Tydd St. Mary, Lincs.—Enclosures of land, 3 a. 2 r. 21 p., f. | 165 |
| By INMAN & CO. | |
| Brondesbury.—15, Cavendish-rd., u.t. 67 yrs., g.r. 15l. 11s., e.r. 100l. | £1,225 |
| By JAMES MAY. | |
| Ilford.—63 and 67, St. Alban's-rd., u.t. 997 yrs., g.r. 10l. 2s., r. 56l. | 600 |
| 24, Cambridge-rd., u.t. 997 yrs., g.r. 7l. 14s., r. 36l. | 390 |
| 49 and 53, Elgin-rd., u.t. 997 yrs., g.r. 14l. 9s., r. 70l. | 740 |
| 22, Alborough-gardens, u.t. 997 yrs., g.r. 11l. 5s., r. 45l. | 490 |
| By CHARLES HALL. | |
| Clapham Common.—9, Victoria-rd., f., e.r. 100l. | 1,170 |
| By MARK HUBBARD. | |
| Camden Town.—1 and 3, Torriano-gardens, u.t. 45 yrs., g.r. 9l., r. 76l. | 64 |
| 38, Rochester-rd., u.t. 45 yrs., g.r. 5l., r. 36l. | 400 |
| Kentish Town.—36 and 38, Castle-rd, u.t. 36 yrs., g.r. 10l., r. 72l. | 670 |
| 35, Willis-rd., u.t. 22 yrs., g.r. 3l., r. 40l. | 275 |
| By KNIGHT, FRANK, & RUTLEY. | |
| Holborn Circus.—13, Bartlett's-buildings, f., r. 190l | 2,900 |
| Hampstead.—25, Steele's-rd., u.t. 65 yrs., g.r. 10l., e.r. 75l. | 600 |
| Potters Bar, Middlesex.—Little Heath, Oak Lodge, f., r. 55l. | 1,075 |
| By PRICKETT & ELLIS. | |
| Bayswater.—66, Gloucester-ter., u.t. 40¾ yrs., g.r. 10l., r. 120l. | 1,400 |
| By W. SUTHERLAND. | |
| Marylebone.—27, Manchester-st., u.t. 14 yrs., g.r. 40l. | 600 |
| 15 and 16, Great Quebec-st., u.t. 14 yrs., g.r. 80l. | 360 |
| June 3.—By W. H. SHINER & WINTER (at Bath). | |
| South Stoke, &c., Som.—A freehold meadow, 5 a. 2 r. 3 p. | 290 |
| Wellow, Som.—A close of meadow land, 12 a. 2 r. 9 p., f. | 950 |
| June 5.—By ALLAN BOOTH. | |
| Holloway.—17, Anson-rd., u.t. 66¾ yrs., g.r. 6l. 6s., e.r. 65l. | 560 |
| By NOKES & NOKES. | |
| Gray's Inn-rd.—11 and 12, Wells-st., u.t. 43 yrs., g.r. 10l., r. 97l. | 870 |
| By ERNEST OWERS. | |
| St. John's Wood.—66, Finchley-rd., u.t. 38½ yrs., g.r. 13l. 2s. 6d., r. 130l. | 1,410 |
| Hampstead.—57, Burrard-rd., f., r. 50l. | 1,000 |
| By W. W. READ & CO. | |
| Wood Green.—51, Truro-rd., f., e.r. 65l. | 750 |
| By A. SAVILL & SON. | |
| New Bond-st.—Nos. 157a, 157b, and 158, area 3,480 ft., f., r. 1,000l. | 30,300 |
| Wickford, Essex.—Wick Farm, 211 a. 2 r. 18 p., f. | 2,950 |
| Two enclosures of land, 9 a. 2 r. 37 p., f. | 380 |
| By WEATHERALL & GREEN. | |
| Fulham.—Fulham Palace-rd., Colehill Cottage, and nearly 2 a., f. | 7,000 |
| South Kensington.—24, Gilston-rd., u.t. 32 yrs., g.r. 10l., r. 120l. | 1,400 |
| St. John's Wood.—16, Henry-st., u.t. 18 yrs., g.r. 3l. 10s., r. 40l. | 340 |
| West Brompton.—4, 5, and 6, South-st., u.t. 44 yrs., g.r. 14l. 10s., r. 78l. | 530 |
| By W. R. NICHOLAS & CO. | |
| Farnborough, Hants.—Alexander-rd., three plots of building land, f. | 580 |
| By WHITTLE & ATTENBOROUGH (at Sileby). | |
| Sileby, Leics.—Peas Hill Farm, 62 a. 3 r. 29 p., f. | 3,965 |
| June 6.—By BATCHELAR & SON. | |
| Caterham, Surrey.—Underwood-rd., Fairlawn, and 5 a., 2 r. 10 p., f. | 6,250 |
| By BOYTON, PEGRAM, & BUCKMASTER. | |
| Fulham.—Ismailia-rd., &c., f.g.r., 37l., reversion in 83 yrs. | 900 |
| By WALTER PARISH. | |
| Erith, Kent.—Lesney-pk-rd., Lesney House, and 8 a. 1 r. 8 p., f. | 3,000 |
| Bromley-by-Bow.—Dewberry-st., &c., f.g.r. 10l., reversion in 40 yrs. | 400 |
| St. Leonard's-rd., &c., f.g.r. 9l., reversion in 40 yrs. | 380 |
| Burcham-st., f.g.r. 6l. 6s., reversion in 40 yrs. | 280 |
| By A. ROBERTSON. | |
| Clerkenwell.—Chadwell-st., i.g.r. 30l., u.t. 12 yrs., g.r. 10l. | 140 |
| Paddington.—Woodfield-rd., i.g.r. 32l., u.t. 45 yrs., g.r. 15l. | 310 |
| Clapham.—Clayland's-rd., i.g.r. 67l., u.t. 24 yrs., g.r. 25l. | 570 |
| Peckham.—76, Talfourd-rd., f., r. 36l. | 710 |
| Camberwell.—298, Southampton-st., f., r. 40l. | 890 |
| Southampton-st., f.g.r. 19l. 10s., reversion in 51 yrs. | 690 |
| By C. SPARROW & SON. | |
| Finchley.—10, Alexandra Grove, f., r. 62l. 10. | 1,030 |
| Market-pl., two freehold shops, r. 55l. | 835 |
| By CHINNOCK, GALSWORTHY, & CHINNOCK. | |
| Curr, &c., Co. Londonderry.—The Estate of Desertmartin, 662 a. 3 r. 6 p., f. | 5,300 |
| By W. HOUGHTON. | |
| Walthamstow.—6 and 8, Beulah-rd., f., r. 60l. | 800 |
| Wanstead.—Grove House, Stafford House, f. | 1,210 |
| By MARK LIELL & SON. | |
| Bromley-by-Bow.—9 to 15 (odd), Ireton-st., u.t. 74 yrs., g.r. 12l. | 525 |
| Stratford.—19 to 22, Maryland-st., u.t. 66 yrs., g.r. 15l. | 380 |
| 262 and 264, High-st., and 2 and 2A, Ward-rd., u.t. 63½ yrs., g.r. 200l., r. 273l. 16s. | 300 |
| By TUCKETT & SON. | |
| Barbican.—King's Head Court, freehold factory premises | 1,650 |
| Cranford, Middx.—Harlington-rd., The Red House, and 1 a. 2 r. 32 p., f. | 1,145 |
| By WALTON & LEE. | |
| Gerrard's Cross, &c., Bucks.—The Chalfont Park Estate, 974 a. 2 r. 25 p., f. | 43,500 |
| Stowe, Bucks.—The Boycott Manor Estate, 541 a. 2 r. 22 p., f. | 11,500 |
| By DEBENHAM, TEWSON, & CO. | |
| Charing Cross.—31, Cockspur-st., area 525 ft. f., r. 420l. | 11,100 |
| City of London.—10, Gresham-st., area 750 ft., f., r. 445l. | 6,300 |
| Aldgate.—Nos. 6 and 7, area 2,280 ft., f., r. 335l., also f.g.r. 85l., reversion in 56 yrs. | 10,100 |
| Clapham.—296, 298, and 300, Clapham-rd., f., r. 230l. | 5,490 |

# COMPETITIONS, CONTRACTS, AND PUBLIC APPOINTMENTS.

## COMPETITIONS.

| Nature of Work. | By whom Advertised. | Premiums. | Designs to be delivered. |
|---|---|---|---|
| *Isolation Hospital | Wharfedale Union Hos. Com. | 30l. and 15l. | Sept. 1 |

## CONTRACTS.

| Nature of Work or Materials. | By whom Required. | Forms of Tender, &c. Supplied by | Tenders to be delivered. |
|---|---|---|---|
| Alterations to Schools, Albert-road | Penarth Sch. Bd. | Seddon & Carter, Archt. Bank-bldgs. Cardiff | June 20 |
| Additions to Warehouse, 17, North Maine-street, Cork | | W. H. Hill & Son, Archt. 28, South Mall, Cork | do. |
| Kerbing, Upper Greetland | Halifax R.D.C. | T. Gordon, Surv. Clifton, Brighouse | do. |
| Repairs to Church Spire, Rathkeale, Ireland | | J. Horan, C.E. 50, George-st. Limerick | do. |
| Sewers, Grassendale, Lancs. | Garstang U.D.C. | F. W. Bowden, C.E. Public Offices, Grassendale | do. |
| Sewers | Eston U.D.C | O. McDermid, Surv. Grangetown, R.S.O. Yorks. | do. |
| Market, &c. | Bradford Corp. | J. H. Cox, City Surv. Town Hall, Bradford | do. |
| Storage Reservoir, Ruabon | ........ | Dennie & Son, Engr. Ruabon | do. |
| Sewers, Western-road | Tring U.D.C. | B. Asquith, C.E. Tring | do. |
| Paving, Ramsgate-street, Broughton | Salford Corp. | L. C. Evans, Town Hall, Salford | do. |
| Drainage Works, &c. | Matlock U.D.C. | A. M. Clarke, Town Hall | do. |
| Paving, &c. Edge-lane | Droylsden U.D.C. | W. Curry, Surv. Droylsden | do. |
| Paving, East Hill | Dartford U.D.C. | W. Harston, C.E. High-st. Dartford | do. |
| Billiard Room at Institute, Denholme | | G. H. Knowles, Archt. Keighley | June 21 |
| House, Plank-lane | Abram U.D.C. | Heaton, Ralph & Heaton, Engr. Wigan | do. |
| Sewers, &c. Union-street | Wallsend Corp. | Boro Surv. Town Hall | do. |
| Granite (600 tons) | Braintree U.D.C. | H. H. Nankivell, Surv. Waterworks, Braintree | do. |
| Cottage Homes, Manstone | Isle of Thanet Union | L. Grant, Archt. High-st. Sittingbourne | do. |
| Houses, Grant-street, Elgin | ........ | Reid & Wittel, Archt. Elgin | do. |
| Houses, Bridlington Quay | T. H. Harrison | S. Dyer, Archt. Bridlington Quay | do. |
| House, North-street, Rothes, N.B. | ........ | The Archt. 10, Seafield-square, Rothes | do. |
| Vicarage, Cowbridge, Glam. | Rev. J. O. Evans | G. E. Halliday, Archt. Cardiff | do. |
| Pumping Station, Smallbrook Mill | Warminster U.D.C. | A. F. Long, Engr. Council's Offices, Warminster | do. |
| Repairs, &c. to St. Andrew's Presbyterian Church, Southampton | ...... | M. Smith, 30, Bellevue-rd. Southampton | do. |
| *Hospital | Basingstoke U.D.C. | J. Gibson, 3, New-st. Basingstoke | do. |
| Alterations to 23, Church-road, Harrington | ........ | J. S. Moffat, Archt. Whitehaven | do. |
| Bridge, Hellingly | Hailsham (Sussex) R.D.C. | J. Huxley, Surv. Winster House, Hailsham | do. |
| Laying Water Mains, &c. Wargrave | Wokingham R.D.C. | Mr. Berriss, Waterworks, Wargrave | do. |
| Tar Paving Works | Clacton-on-Sea U.D.C. | A. R Robinson, Surv. Town Hall, Clacton | do. |
| Kerbing, Channelling, &c. Chantry Drive | Ilkley U.D.C. | Surveyor, 14, The Grove, Ilkley | do. |
| *Laying York Paving | Tottenham U.D.C. | P. E. Murphy, 712, High-rd. Tottenham | June 20 |
| *Pipe Sewers, and Roadmaking and Paving Works | Fulham Vestry | C. Botterill, Town Hall, Walham Green | June 21 |
| *Construction of Covered Service Reservoir at Pyecombe | Cuckfield R.D.C. | J. Johnston, 12, Bond-st. Brighton | June 22 |
| Artisans' Dwellings, Willow Holme | Carlisle Corp. | H. C. Marks, C.E. 36, Fisher-st. Carlisle | do. |
| Road Repairs (5 years) | Castlecomer (Ireland) R.D.C. | T. Mahoney, Council Offices, Castlecomer | do |
| Sewers, &c. Rectory-road | Sutton Coldfield Corp. | W. A. Clarty, C.E. Town Hall | do. |
| Surveyor's Materials | Grays Thurrock U.D.C. | A. C. James, Surv. High-st. Grays | do. |
| *Six Houses, Little Ilford Estate | Stratford Co-op. Indus. Soc. | Office, 54, Maryland-street, Stratford, E. | June 23 |
| Bridge, Buttertons-lane, Crewe | Nantwich R.D.C. | J. Bebbington, Dist. Surv. Nantwich | do. |
| Road Works, Victoria-avenue, &c. | Surbiton U.D.C. | S. Mather, C.E. Surbiton | do. |
| Sinking Well, Denton, Northampton | Hardingstone R.D.C. | J. Haviland, 2, St. Giles-square, Northampton | do. |
| Private Street Works, Cater-street | Kempston U.D.C. | W. Payne, Bedford-road, Kempston | June 24 |
| Additions to Constabulary Buildings, Bodmin | Cornwall C.C. | H. J. Snell, Archt. Plymouth | do. |
| Alterations to Police Court, Wigmore | Hereford C.C. | A. Dryland, Cnty. Surv. Shire Hall, Hereford | do. |
| Schools, Blaina, Mon. | ........ | W. S. James, 77, High-st. Blaina | June 25 |
| Two Cottages, Box Farm, Awre, Glos. | Endowed Schools Governors | T. Cadle, Surv. Denmark-rd. Gloucester | June 26 |
| Workhouse | Hursley Union | Cancellor & Hill, Archt. 12, Jewry-st. Winchester | do. |
| Additions to Infirmary, Pontcarreg, Carmarthenshire | ........ | H. Howell, Infirmary, Pontcarry | do. |
| Three New Roads, Cheriton, Kent | ........ | H. B. Bradley, 52, Sandgate-rd. Folkestone | do. |

## CONTRACTS—*Continued.*

| Nature of Work or Materials. | By whom Required. | Forms of Tender, &c. Supplied by | Tenders to be delivered. |
|---|---|---|---|
| Bridge Works | Guildford R.D.C. | N. Lailey, C.E. 16, Great George-st. S.W. | June 26 |
| Drainage Works, Vale Terrace | Tredegar (Mon.) U.D.C. | W. C. Widdowson, Surv. Town Hall, Tredegar | do. |
| Sewerage Works, Bridgend | Penybont Main Sewerage Bd. | E. Cousins & Son, Engr. Palace-chambers, Westminster, S.W. | do. |
| Extension of Water Mains, Head's Nook | Carlisle R.D.C. | G. Armstrong, Surv. 24, Bank-st. Carlisle | do. |
| Reservoir, Gotham | Basford R.D.C. | G. & F. W. Hodson, Engr. Public Offices, Basford | do. |
| Laying C I. Pipes (2¾ miles) | do. | do. | do. |
| Eleven Houses, Ovenden Wood | S. Webster & Son, Ltd. | Jackson & Fox, Archts. Dewsbury | June 27 |
| Shop, High-st. Great Horton | ........ | S. Spencer, Archt. Great Horton-road, Bradford | do. |
| *Oak Fence, &c. Bruce Grove | Tottenham U.D.C. | P. E. Murphy, 712, High-rd. Tottenham | do. |
| *Painting, &c. Lambeth Infirmary | Lambeth Guardians | Guardian's Offices, Brook-street, S.E. | June 28 |
| *Broken Granite | Thame U.D.C. | D. W. Slocombe, 27, Park-st. Thame | do. |
| Floral Hall, &c. Walton-on-the-Naze | Coast Development Co. Ltd. | C. H. M. Mileham, Archt. 1, Lincoln's Inn-fields, W.C. | do. |
| Extensions to Sewage Pumping Station, Salthouse | Barrow-in-Furness Corp. | Boro. Engr. Town Hall, Barrow-in-Furness | do. |
| Restoration of Tower, St. Odulph's Church, Pillaton, Cornwall | ........ | H. G. Luff, Archt. 64, Chapel-st Devonport | do. |
| Villa, Greenroyd Estate, Halifax | ........ | M. Hall, Archt. 29, Northgate, Halifax | do. |
| *Barges for Wharf, East-lane Stairs, Bermondsey Wall | Parish of St. Mary Magdalen, Bermondsey | Town Hall, Spa-rd. Bermondsey | do. |
| Granite (350 tons) | N. Walsham U.D.C. | J. S. Empson, North Walsham | do. |
| Water Supply Works | do. | J. C. Melliss, C.E. 264, Gresham House, Old Broad-st. E.C. | June 29 |
| *Baths in James' Yard, Wandsworth | Parish of Wandsworth | Spalding & Cross, 15, Queen-st. Cheapside, E.C. | do. |
| Culvert, Fallowfield | Withington (Lancs.) U.D.C. | A. H. Mountain, C.E. Town Hall | June 30 |
| *Post Office, Chatham | Commrs. H.M. Works | Office, Storey's Gate, S.W. | do. |
| *Work in Erection of Hospital, also Heating, &c. Apparatus | Sheffield Corp. | Flockton, Gibbs, & Flockton, 15, St. James-row, Sheffield | July 3 |
| *Wrot Iron Shingle Bins | Islington Vestry | J. P. Barber, Vestry Hall, Islington | do. |
| *Painting, Decorating, &c. Town Hall | Overseers, All Saints, Poplar | W. Clarkson, 136, High-st. Poplar | do. |
| *Sundry Works and Repairs, Upland Schools, Bexley Heath | Bexley Sch. Bd. | Offices, Upland Schools, Bexley Heath | July 4 |
| *Paving, Kerbing, and Channeling | Acton U.D.C. | Council Offices | do. |
| *Sewer and Wood Paving Works | Westminster Vestry | Surveyor to Vestry | July 5 |
| *New Depot—Substructure | Derby Corp. | Boro. Engr. Babington-lane, Derby | July 6 |
| *Construction of Reservoir at Moorhouses, Tynemouth | Tynemouth Corp. | James Mansergh, 5, Victoria-st. Westminster, S.W. | July 10 |
| *Sewerage Works, Potter's Bar | South Mimms R.D.C. | W. H. Mansbridge, 40, High-st. Barnet | July 11 |
| *Workhouse | Stamford Union | J. H. Horton, 50, King-st. South Shields | July 17 |
| *Public Baths, Latimer-rd. Wimbledon | Wimbledon U.D.C. | R. J. Thompson, 47, Hill-rd. Wimbledon | do. |
| Additions to Library, Art Gallery, &c. Pavilion Estate | Brighton Corp. | F. J. C. May, C.E. Town Hall, Brighton | July 27 |
| Laundry, &c. New Benwell | | J. P. Bennett, Archt. 32, Ridley-pl. Newcastle | No date |
| House, Sandylands, Morecambe | ........ | Walker & Collinson, Archt. Market-st. Morecambe | do. |
| Additions to Schools, Eccleshill, Yorks. | ........ | J. Crawshaw, Archt. Eccleshill | do. |
| House, Stabling, &c. Clacton-on-Sea | ........ | G. Gardiner, Archt. Clacton-on-Sea | do. |
| Wooden Pier, Portaferry Harbour, co. Down | ........ | J. H. Muir, Engr. 140, Bath-st. Glasgow | do. |
| Two Houses, Hucknall Torkard | ........ | F. Gratton, Archt. Hucknall Torkard | do. |
| Additions to Premises, Lower Tweedale-st. Rochdale | ........ | Smith & Cross, Archt. Town Hall-chmbrs. Rochdale | do. |
| Schools, Scunthorpe, Lincs. | Wesleyan Church Trustees | J. M. Dossor, Archt. 2, Manor-st. Hull | do |
| House, Trebanog, nr. Porth | Cilely Colliery Co. | Veall & Sant, Archt. Cardiff | do. |
| Roofing, &c. 1 to 6, Henry-pl. Limerick | ........ | H. Fogarthy, Archt. Limerick | do. |
| Villa, Ashton-under-Lyne | ........ | T. D. Lindley, Archt. Market-avenue, Ashton-under-Lyne | do. |
| Construction of Wesley-rd. Staningley | ........ | Jackson & Priestman, Exchange, Bradford | do. |

## PUBLIC APPOINTMENTS.

| Nature of Appointment. | By whom Advertised. | Salary. | Application to be in. |
|---|---|---|---|
| *Clerks of Works (2) | Beckenham U.D.C. | 4l. 4s. & 3l. 13s. 6d. per week | June 19 |
| *Surveyor | Bermondsey Vestry | 300l. per annum, residence, coal, gas, &c. | June 21 |
| *General Foreman | Vestry, St. Matthew, Bethnal Green | 2l. 10s. per week | June 29 |

*Those marked with an asterisk (*) are advertised in this Number. Competitions, p.* iv. *Contracts, pp.* iv. vi. viii. x. & xxi. *Public Appointments, pp.* xviii. & xxi.

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| | |
|---|---|
| 1 a, Paradise-rd., f., r. 45l. | £760 |
| — Paradise-rd., f.g.r. 40l., reversion in 12 yrs. | 1,320 |
| Paddington.—Harrow-rd., f.g.r. 30l., reversion in 51 yrs. | 1,210 |
| Westbury-rd., f.g.r. 32l. 10s., reversion in 51 yrs. | 1,000 |
| Westbourne-ter., North, f.g.r.'s 114l. 12s., reversion in 51 yrs. | 3,470 |
| Hanover-sq.—12, George-st., area 1,580 ft., f. | 6,600 |
| Regent's-Pk.—29, York-ter., u.t. 22 yrs., g.r. 8l., r. 150l. | 1,400 |
| Maida Vale.—No. 201, u.t. 36 yrs., g.r. 21l. | 1.000 |
| By Douglas Young & Co. (at Ilford). | |
| Ilford, Essex.—Ilford-lane, &c., sixty-five plots of building land, the Uphall Estate, f. (in lots) | 4,457 |
| By Thornton & Newman (at Masons' Hall Tavern). | |
| Newington Butts.—"The Waggon and Horses" p.h., u.t. 38 yrs., r. 130l., with goodwill | 17,000 |
| By Whetherly & Haslett (at Masons' Hall Tavern). | |
| Brixton.—Vassall-rd., "The Union" p.-h., u.t. 78 yrs., r. 120l., with goodwill | 18,000 |
| By A. J. Burrows (at Ashford). | |
| Kennington, Kent.—The Holmlea Estate, 56 a. 0 r. 9 p., f. | 4,375 |
| Bilsington Kent.—Frith Lees, and 17 a., f. | 100 |
| By J. H. North & Co. (at Dublin). | |
| Cork, Ireland.—The Cork Palace of Varieties, u.t. 97 yrs., r. 420l | £1,000 |
| June 7.—By Anstey & Son. | |
| Upton Pk.—14 to 36 (even), Harold-rd., u.t. 60 yrs., g.r. 25l. 4s., r. 306l. | 2,025 |
| By Arthur Barton. | |
| Lewisham.—8, Queen's-gardens, u.t. 995 yrs., g.r. 11l. 4s. 6d. | 800 |
| By Browett & Taylor. | |
| Piccadilly.—Stafford-st., f.g.r. 100l., reversion in 69 yrs. | 3,650 |
| 23, Dover-st., f., r. 440l. | 11,600 |
| By Harman Bros. | |
| Dalston.—67, Sandringham-rd., u.t. 67 yrs., g.r. 9l., e.r. 70l. | 590 |
| Stoke Newington.—69, Lordship-rd., u.t. 55½ yrs., g.r. 20l. 8s. | 1,975 |
| By Southon & Robinson. | |
| Canning Town.—Bidder-st., f.g.r. 31l. 10s., reversion in 89½ yrs. | 720 |
| Hendon.—1, Leyton Cottages, f. | 395 |
| By Humbert & Flint. | |
| Chelsea.—50, Lower Sloane-st., u.t. 74 yrs., g.r., &c., 63l. 3s., e.r. 320l. | 4,300 |
| Cricklewood.—7, 8, 11, 13, and 14, Avenue Villas, u.t. 79½ yrs., g.r. 31l. 10s., r. 196l. | 2,200 |
| Great Waltham, &c., Essex.—Graveley's and Mabb's Farms, 238 a. 2 r. 35 p., f. | £2,700 |
| By Wagstaff & Sons. | |
| King's Cross.—5, 9, and 13, Great Percy-st., r. 180l.; also l.g.r. 12l., u.t. 33 yrs. g.r. 30l. | 1,550 |
| By William Stevens. | |
| Dalston.—14a, St. Mark's Villas, u.t. 66 yrs., g.r. 25l., e.r. 75l. | 500 |
| Tottenham.—74 to 88 (even), Gloucester-rd., u.t. 98½ yrs., g.r. 48l., r. 224l. | 2,000 |
| By F. G. Wheatley. | |
| Holborn.—3, Warwick-ct., f., r. 120l. | 2,200 |
| By Douglas Young & Co. | |
| Clapham.—42 and 44, Union-rd., u.t. 63 yrs., g.r. 12l., r. 80l. | 770 |
| 23, Rosebery-rd., u.t. 82 yrs., g.r. 6l., r. 32l. | 325 |
| 8, Thorncliffe-rd., u.t. 82 yrs., g.r. 6l. 10s., r. 38l. | 370 |
| 27, 28, 33, 35, 36, and 38, Lansdowne-gdns., u.t. 43 yrs., g.r. 56l. 14s., r. 300l. (in lots) | 2,670 |

*Contractions used in these lists.*—F.g.r. for freehold ground-rent; l.g.r. for leasehold ground-rent; i.g.r. for improved ground-rent; g.r. for ground-rent; r. for rent; f. for freehold; c. for copyhold; l. for leasehold; e.r. for estimated rental; u.t. for unexpired term; p.a. for per annum; yrs. for years; st. for street; rd. for road; sq. for square; pl. for place; ter. for terrace; cres. for crescent; yd. for yard, &c.

## TO CORRESPONDENTS.

W. H. B. (Amounts should have been stated).—F. A. C. Below our limit).—A. H. (Amounts should have been stated).

NOTE.—The responsibility of signed articles, letters, and papers read at public meetings, rests, of course, with the authors.

*We cannot undertake to return rejected communications.*

Letters or communications (beyond mere news items) which have been duplicated for other journals are NOT DESIRED.

We are compelled to decline pointing out books and giving addresses.

Any commission to a contributor to write an article is given subject to the approval of the article, when written, by the Editor, who retains the right to reject it if unsatisfactory. The receipt by the author of a proof of an article in type does not necessarily imply its acceptance.

All communications regarding literary and artistic matters should be addressed to THE EDITOR; those relating to advertisements and other exclusively business matters should be addressed to THE PUBLISHER, and *not* to the Editor.

## TENDERS.

[Communications for insertion under this heading should be addressed to "The Editor," and must reach us *not later than* 10 *a.m. on Thursdays.* N.B.—We cannot publish Tenders unless authenticated by the name and address of the sender; and we cannot publish announcements of Tenders accepted unless the amount of the Tender is given, nor any list in which the lowest Tender is under £100, unless in some exceptional cases and for special reasons.]

* Denotes *accepted.* † Denotes *provisionally accepted.*

ALTON (Hants).—For rebuilding the "White Hart Inn," Holybourne, for Messrs. Crowley & Co. Mr. R. A. Crowley, architect, 22, High-street, Croydon:—

| | | | |
|---|---|---|---|
| B. E. Nightingale .. | £2,475 | J. H. & E. Dyer.... | £1,947 |
| Tompsett & Co. .... | 2,055 | | |

BARRY (Wales).—For the erection of refuse destructor buildings, for the Barry Urban District Council. Mr. J. C. Pardoe, C.E., Barry:—

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| J. Prout...... | £3,318 | 8 | 6 | Jones Bros. .. | £2,970 | 0 | 0 |
| Price Bros. .. | 3,150 | 0 | 0 | Alban Richards | 2,950 | 7 | 2 |
| C. H. Hirst .. | 3,150 | 19 | 7 | W. Britton.... | 2,911 | 1 | 9 |
| Geo. Rutter .. | 3,121 | 12 | 1 | Lloyd & Tape* | 2,848 | 0 | 0 |

*Refuse Destructor Chimney Stack.*

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Price Bros. .. | £2,395 | 0 | 0 | C. H. Hurst .. | £1,958 | 2 | 9 |
| Lloyd & Tape | 2,242 | 0 | 0 | W. Britton.... | 1,920 | 19 | 2 |
| Geo. Rutter .. | 2,013 | 14 | 10 | Alban Richards | 1,849 | 11 | 6 |
| Jones Bros. .. | 1,980 | 0 | 0 | J. Prout* .... | 1,805 | 0 | 0 |

BOAT-OF-GARTEN (N.B.)—For the erection of a villa. Mr. James Gilbert, architect and surveyor:—

| | | | |
|---|---|---|---|
| *Masonry.*—James Grant, Grantown.. | £740 | 0 | 0 |
| *Carpentry.*—Evan Mackintosh, Boat-of-Garten | 533 | 0 | 0 |
| *Plumbing.*—F. H. Wink, Nairn...... | 99 | 17 | 0 |
| *Slating.*—Robert Bain. Grantown .... | 91 | 15 | 0 |
| *Plastering.*—Wm. Duffer, Grantown.. | 287 | 17 | 6 |
| *Painting.*—Dixon & Bain, Grantown | 109 | 0 | 0 |

BRIDLINGTON QUAY.—For the erection of a pair of villas, Spring-street, for Mr. F. G. Purdon. Mr. J. Earnshaw, architect, Wellington-road, Bridlington Quay:—

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Blackburn & Son ........ | £1,499 | 0 | 0 | J. H. Hudson. | £1,328 | 13 | 0 |
| E. Corner .... | 1,385 | 0 | 0 | W. Moody .. | 1,318 | 10 | 0 |
| W. Barnes.... | 1,360 | 0 | 0 | A. Gardam .. | 1,158 | 14 | 6 |
| T. Blackburn.. | 1,329 | 0 | 0 | E. Wilson* .. | 1,137 | 14 | 5 |
| | | | | [All of Bridlington Quay]. | | | |

BRISTOL.—For extensions and alterations to boot factory, Kingswood, near Bristol, for Messrs. E. W. Pratt & Co. Mr. J. Mackay, architect, Kingswood, near Bristol:—

| | | | |
|---|---|---|---|
| E. Walters ........ | £3,300 | S. Williams Redfield. | £2,995 |
| W. Hatherly ...... | 3,253 | W. G. Bindon, Avonmouth* .. ........ | 2,688 |
| Cowlin & Son ...... | 3,185 | Milsom ............ | 2,370 |
| G. Humphreys...... | 3,163 | Wiltshire .......... | 2,300 |
| Edward Bros. ...... | 3,050 | | |

BRISTOL.—For the erection of school buildings, Moorfields, St. George, for the Bristol School Board. Mr. J. Mackay, architect, Kingswood, near Bristol:—

| | | | |
|---|---|---|---|
| W. Church........ | £13,960 | E. Walters........ | £12,700 |
| Kraus & Son ...... | 13,637 | G. Humphreys .... | 12,571 |
| C. A. Hayes ...... | 13,250 | A. J. Beaven, Bristol* | 12,400 |
| Forse & Sons...... | 13,100 | W. G. Bindon .... | 11,953 |

*Plumber's Work.*

| | | | |
|---|---|---|---|
| John Wilkins ........ | £438 | A. S. Scull .......... | £419 |
| G. F. Tuckey ........ | 427 | S. H. Povey, Bristol* | 415 |

BURNLEY.—For the construction of a storage reservoir, Briercliffe, for the Rural District Council. Mr. S. Edmondson, surveyor, 16, Nicholas-street, Burnley:—

| | | |
|---|---|---|
| Whitam Sutcliffe, Burnley .............. | £678 | 12 |

DOVER.—For the erection of house and shop at Cherry Tree-avenue, Dover, for Messrs. Clarett & Young:—

| | |
|---|---|
| Albert J. Dawkins ...................... | £700 |

GORLESTON.—For shelter hall, Gorleston, for the Great Yarmouth Town Council. Mr. J. W. Cockrill, Borough Surveyor. Quantities by Borough Surveyor:—

| | | | | | |
|---|---|---|---|---|---|
| Merridew & Wort | £7,400 | 0 | J. F. W. Bray.... | £5,963 | 0 |
| W. Cork ........ | 6,464 | 0 | Beckett, Southtown, Yarmouth* | 5,895 | 14 |
| Carter & Wright | 6,051 | 0 | | | |
| A. E. Bond...... | 6,050 | 0 | | | |

GREAT YARMOUTH.—For destructor and chimney shaft, for the Great Yarmouth Town Council. Mr. J. W. Cockrill, Borough Surveyor. Quantities by the Borough Surveyor:—

| | | | | | |
|---|---|---|---|---|---|
| Merridew & Wort | £5,570 | 0 | J. F. W. Bray .. | £4,233 | 17 |
| A. E. Bond .... | 5,299 | 0 | R. Eastoe........ | 4,204 | 15 |
| Manlove, Alliot, & Co. ........ | 4,486 | 0 | Wyles & Warner | 4,197 | 9 |
| | | | Cork, Yarmouth* | 4,134 | 0 |

GUISELEY.—For the erection of a meeting room for Mr. G. Barker. Mr. A. E. Dixon, architect, 5, Park-lane, Leeds:—

| | | | |
|---|---|---|---|
| *Masonry, Bricklaying, and Slating.*—J. Hobson, Guiseley* .......... | £147 | 10 | 0 |
| *Carpentry and Joinery.*—J. J. Atkinson, Guiseley*.................... | 75 | 19 | 0 |
| *Plumbing.*—J. Lockwood, Guiseley* | 18 | 11 | 0 |
| *Plastering.*—J. F. Walsh, Guiseley* | 11 | 7 | 0 |
| *Painting.*—S. Bowden, Guiseley* .. | 7 | 10 | 0 |
| *Heating.*—W. Bruce, Leeds* ...... | 23 | 11 | 0 |

HAMPTON HILL.—For erecting a pair of semi-detached villas at Hampton Hill, for Mr. James. Mr. F. G. Hughes, architect, Marling Park:—

| | | |
|---|---|---|
| J. Hebblethwaite, Twickenham (late of Pimlico)*.......................... | £535 | 15 |

HAMPTON-ON-THAMES. — For five shops at Hampton-on-Thames, for Mr. Lawrence. Mr. F. G. Hughes, architect:—

| | |
|---|---|
| J. Hebblethwaite, Twickenham*.......... | £1,600 |

HASTINGS.—For the erection of a kiosk, Alexandra Park, for the Corporation. Mr. P. H. Palmer, C.E., Town Hall, Hastings:—

| | | |
|---|---|---|
| G. Miller, Gensing-road, St. Leonards*.. | £194 | 10 |

HEYWOOD (Lancs.).—For the erection of stables, Green-lane, for the Phœnix Brewery Company, Limited. Mr. C. H. Openshaw, C.E., Fleet-street, Bury. Quantities by architect:—

| | | | |
|---|---|---|---|
| Flewher Bros. ...... | £2,650 | Daniel Diggle ...... | £2,380 |
| Chas. Brierley ...... | 2,450 | Blakeley & Wild, Heywood* ...... | 2,368 |
| John Tinline........ | 2,390 | | |

HISTON (Cambs.).—For the erection of a Baptist church. Mr. G. Baines, architect, 5, Clement's Inn, Strand, W.C.:—

| | | | | |
|---|---|---|---|---|
| J. G. Cowell .... | £3,490 | 0 | Scales & Robins .... | £2,850 |
| W. Pamphilon .. | 3,093 | 0 | Coulson & Lofts .... | 2,820 |
| W. Wade ...... | 2,929 | 0 | Thoday & Co., Ltd. | 2,679 |
| The Cambridge Builders' Co., Ltd. .......... | 2,894 | 7 | J. Feast............ | 2,530 |
| | | | Page & Son, Buckden, Hunts.* .......... | 2,380 |

ILFORD (Essex).—For the erection of business premises in Ilford-lane, for Mr. Geo. Summers. Messrs. Paxon & Witt, architects, Manor Park, Essex:—

| | | | |
|---|---|---|---|
| W. Downs.......... | £3,095 | R. L. Pridmore...... | £2,748 |
| T. Ravey .......... | 2,952 | F. Willmott ........ | 2,743 |

[Architects' estimate, £2,758.]

LANCHESTER.—For the erection of a stone bridge, Donley Ford, for the Rural District Council. Mr. W. Cumming, surveyor, Lanchester:—

| | | | |
|---|---|---|---|
| J. Atkinson .......................... | £358 | 0 | 0 |
| W. Whitfield, Elm Park, Shotley Bridge* .......................... | 354 | 3 | 6 |

[Surveyor's estimate, £350.]

LONDON.—For decorations and sanitary alterations at 13, Hamilton-terrace, N.W.:—

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Callow & Wright | £710 | 19 | 3 | W. Melbourne.. | £549 | 0 | 0 |
| Ashby Bros..... | 602 | 0 | 0 | | | | |

LONDON.—For alterations to offices, for Messrs. Barr & Son, King-street:—

| | |
|---|---|
| W. Vanstone * .......................... | £136 |

LONDON.—For Mission Church at Chatsworth-road, Lower Clapton. Mr. F. Farrow, architect:—

| | | | |
|---|---|---|---|
| Roome & Co. ...... | £1,754 | W. Shurmur........ | £1,692 |

LONDON.—For Mission Hall at Dove-row, Haggerston. Mr. J. Hamilton, architect:—

| | | | |
|---|---|---|---|
| Snewin Bros......... | £2,111 | Jarvis.............. | £1,922 |
| Chessum & Son .... | 2,076 | Goodall & Son...... | 1,901 |
| Godfrey ............ | 1,977 | W. Shurmur........ | 1,899 |
| Beal............... | 1,945 | | |

LONDON.—For alterations and additions at the "Shipwrights' Arms" public-house, Tooley-street, S.E. Mr. R. Willock, architect. Quantities by Mr. E. J. Gee:—

| | | | |
|---|---|---|---|
| Toms .............. | £2,478 | Stimpson & Co. .... | £2,154 |
| Patman & Fotheringham.............. | 2,331 | Sheffield Bros....... | 2,124 |
| | | Pritchard & Renwick | 1,994 |

ILFORD.—For providing and fixing about 19,000 ft. lineal of Norway kerb; 8,500 yards super. of Patent Victoria, Adamant, or Victoria Indurated stone paving; and 750 yards super. of pitched crossings, &c., at Ilford, for the Essex County Council. Mr. Percy J. Sheldon, Chief Surveyor, County Offices, Chelmsford:—

| — | Victoria Stone. | Adamant Stone. | Indurated Stone. | Imperial Stone. |
|---|---|---|---|---|
| J. W. Moran & Sons, Harwich | £6,878 | £6,407 | £6,106 | — |
| William Iles, Southend | 6,462 | 6,123 | 5,802 | — |
| Wm. Gibbs & Co., Ilford | 6,413 | 6,074 | 5,735 | — |
| William Griffiths, London | 5,882 | 5 882 | 5,429 | — |
| B. W. Glenny, Colchester | 6,099 | 5,759 | 5,415 | — |
| W. & C. French, Buckhurst Hill | 6,020 | — | 5,567 | £5,643 |
| R. A. Bonnett & Co., Chelmsford | 5,895 | 5,513 | 5,206 | 5,513 |
| G. J. Anderson, Poplar, E. | 5,907 | 5,455 | 5,304 | — |
| D. T. Jackson, Barking | 5,740 | 5,439* | 5,099 | 5,401 |

LONDON.—For additions and alterations to Paddington Chapel, Marylebone-road, W. Mr. Alfred Conder, architect, 9, Bridge-street, Westminster. Quantities by Mr. E. J. Paine, F.S.I., of 11, Great James-street, Bedford-row, W.C.:—

| | | Extra for Ancaster Stone. |
|---|---|---|
| Higgs & Hill............ | £10,760 | £300 |
| G. H. & A. Bywaters.... | 10,566 | 364 |
| L. H. & R. Roberts...... | 10,295 | 300 |
| Grover & Son............ | 10,175 | 397 |
| John Greenwood ........ | 10,119 | 430 |
| Holloway Bros. ........ | 10,037 | 405 |
| Smith & Sons .......... | 9,739 | 350 |
| Akers & Co. ............ | 9,533 | 280 |
| Edmund Toms ........ | 9,300 | 530 |
| Stimpson & Co. ........ | 9,100 | 486 |
| Kingerlee & Sons........ | 8,990 | 500 |

LONDON.—For new wing and sundry additions to South Western Polytechnic, Manresa-road, Chelsea. Mr. F. G. Knight, architect. Quantities by Mr. F. R. Smith:—

| | | | |
|---|---|---|---|
| Scrivener & Co. .... | £6,448 | Messum ............ | £6,229 |
| Faulkner .......... | 6,383 | Holliday & Greenwood ............ | £6,077 |
| Bywaters .......... | 6,277 | | |
| Stimpson & Co. .... | 6,230 | | |

LONDON.—For new Mission Church in St. Stephen's District, Wandsworth. Messrs. Crickmay & Sons, architects. Quantities by Messrs. Raven & Crickmay:—

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Roffey........ | £6,351 | 0 | 0 | Holloway Bros | £5,900 | 0 | 0 |
| Parsons ...... | 6,130 | 8 | 7 | Carmichael .. | 5,900 | 0 | 0 |
| Higgs & Hill | 6,038 | 0 | 0 | Gregory & Co. | 5,745 | 0 | 0 |
| Lawrence & Sons ...... | 5,958 | 0 | 0 | Stimpson & Co. | 5,646 | 0 | 0 |
| Dove Bros. .. | 5,935 | 0 | 0 | Johnson & Co., Ltd......... | 5,380 | 0 | 0 |

LONDON.—For painting and decorating the Strand Union Offices:—

| | | | | | |
|---|---|---|---|---|---|
| Harnett .......... | £290 | 0 | Lave & Co.......... | £275 | 0 |
| Wright............ | 285 | 10 | W. Vanstone* .... | 265 | 0 |

LOUGHBOROUGH.—For making new streets, Park-road, for Mr. T. S. Messenger. Mr. A. E. King, architect, Baxter-gate, Loughborough:—

| | | | | | |
|---|---|---|---|---|---|
| Moss & Son........ | £687 | 15 | Tomlinson ........ | £445 | 0 |
| Orton ............ | 579 | 0 | J. T. Ball, Barrow-on-Soar* ........ | 445 | 0 |
| Main, Kendal, & Main .......... | 449 | 0 | | | |

LURGAN (Ireland).—For the erection of a masonic hall for the trustees. Mr. Godfrey W. Ferguson, architect. Quantities by Mr. Samuel Hunter:—

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Burns & Prentice ........ | £1,534 | 19 | 0 | Collin Bros. .. | £1,400 | 0 | 0 |
| Bright Bros... | 1,530 | 15 | 9 | T. M. Millard, Belfast* .... | 1,239 | 7 | 5 |
| T. Collin .... | 1,445 | 0 | 0 | | | | |

LYMINGTON.—For the execution of drainage works at the cemetery. Mr. J. Pym Jones, Borough Surveyor, 70, High-street, Lymington:—

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Wilson, Border, & Co......... | £495 | 9 | 4 | H. Preston, Lymington* ...... | £486 | 0 | 0 |

MANCHESTER.—For the erection of new offices and works for Saville's, Limited, Brewers' Manufacturers, Chorlton-road, Old Trafford. Mr. T. W. Hudson, architect, Manchester:—

| | | | |
|---|---|---|---|
| Henry Matthews.... | £2,050 | Peter Hodkinson .. | £1,899 |
| Wm. Henry Thorpe | 2,015 | Burgess & Galt .... | 1,890 |
| Wilson & Toft ...... | 1,933 | Robt. Carlyle, Jun.* | 1,878 |

MANSFIELD.—For additions to villa, Nottingham-road, and erection of six houses, Berry Hill-lane, for Mr. E. Taylor. Messrs. Vallance & Westwick, architects, White Hart-chambers, Mansfield:—

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| J. Keeling...... | £628 | 10 | 0 | C. G. Bradder.. | £340 | 5 | 6 |
| J. Greenwood.. | 455 | 0 | 0 | Vallance & Blythe, Mansfield* ........ | 329 | 12 | 6 |
| S. B. Frisby.... | 430 | 0 | 0 | | | | |
| C. G. Percival.. | 414 | 0 | 0 | | | | |
| J. Wignall .... | 346 | 0 | 0 | | | | |

MANSFIELD.—For six cottages off Nottingham-road, Mansfield, for Mr. E. Taylor. Messrs. Vallance & Westwick, architects, Mansfield:—

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| S. B. Frisby .. | £1,717 | 10 | 0 | F. H. & J. W. Moore ...... | £1,436 | 8 | 6 |
| J. Keeling.... | 1,689 | 0 | 0 | F. L. Parsons | 1,426 | 0 | 0 |
| J. Greenwood | 1,580 | 0 | 0 | Vallance & Blythe, Mansfield* ...... | 1,396 | 0 | 0 |
| J. Wignall.... | 1,495 | 0 | 0 | | | | |
| Brailsford & Son | 1,490 | 17 | 8 | | | | |
| C. G. Bradder | 1,439 | 8 | 6 | | | | |

MELROSE.—For alterations to Roxburgh District Asylum. Messrs. S. Mitchell & Wilson, architects, 13, Young-street, Edinburgh. Quantities by Messrs. A. Hay & Co.:—

| | | |
|---|---|---|
| R. Hall & Co., Galashiels*............ | £2,390 | 10 |

MITCHAM (Surrey).—For new roads and outfall sewer, Ravensbury Park Estate, for the Mitcham Land Company, Limited. Messrs. Pooley & Follett, architects and surveyors, 21, John-st., Adelphi, W.C.:—

| | | | | | |
|---|---|---|---|---|---|
| Chafen & Newman | £2,852 | 0 | Neave & Son.... | £2,480 | 0 |
| Thomas Adams .. | 2,745 | 0 | Stephen Kavanagh, Surbiton†...... | 2,298 | 15 |
| Killingback & Co. | 2,510 | 0 | | | |
| William Langridge | 2,505 | 0 | | | |

† Accepted subject to the approval of the plans by the Local Authority.

[Surveyors' Estimate, £2,400.]

MORECAMBE.—For the erection of a house and shop, Cross-street, for Mr. T. Baxter. Messrs. Marshall Bros., architects, Back-crescent, Morecambe:—

| | |
|---|---|
| F. G. Burscough, Lancaster-road, Morecambe .............................. | £396 |

NEWBURY.—For rebuilding the "Cock Inn," Shaw Village, for the Newbury Brewery Company. Mr. J. H. Money, architect, Newbury. Quantities by Messrs. R. L. Curtis & Sons, 119 and 120, London-wall, E.C.:—

| | | | | | |
|---|---|---|---|---|---|
| McCarthy E. Fitt.. | £897 | 0 | C. W. Adey ...... | £887 | 0 |
| A. H. Houghton .. | 896 | 10 | Pope & Co., Newbury* .......... | 819 | 0 |
| E. & H. James .... | 895 | 10 | | | |

PINNER.—For the erection of two detached villas, for Mr. F. D. Thomas. Mr. T. S. Stephens, architect, 37, Davisville-road, Shepherd's Bush, W.:—

| | |
|---|---|
| J. W. Baber* ............................ | £1,100 |

[*See also next page.*

PLYMOUTH.—For the construction of a stoneware pipe sewer, &c., Pennycross, for the Corporation. Mr. Jas. Paton, Borough Engineer, Town Hall, Plymouth :—

| | | | |
|---|---|---|---|
| Pethick Bros. | £8,964 | 0 | 0 |
| Shellabeer & Son | 7,200 | 0 | 0 |
| J. Shaddock | 7,134 | 17 | 0 |
| W. C. Shaddock | 6,612 | 3 | 9 |
| T. Shaddock | 6,348 | 7 | 7 |
| R. H. B. Neal | £6,250 | 0 | 0 |
| H. G. Skinner | 6,198 | 13 | 4 |
| J. Fisher | 5,976 | 13 | 10 |
| R. T. Hortop | 5,884 | 17 | 4 |
| A. N. Coles, Plymouth* | 5,592 | 16 | 10 |

PLYMOUTH.—For making up and completing Salisbury-road and other roads, for the Corporation. Mr. James Paton, Borough Surveyor, Town Hall, Plymouth :—

*Doidges Court.*

| | | | |
|---|---|---|---|
| E. Duke | £162 | 10 | 3 |
| H. E. Skinner | 144 | 7 | 11 |
| A. N. Coles* | 121 | 16 | 5 |

*Channel View Terrace.*

| | | | |
|---|---|---|---|
| A. N. Coles | £375 | 19 | 2 |
| E. Duke | 323 | 5 | 8 |
| H. E. Skinner | 313 | 15 | 6 |
| R. T. Hortop* | 309 | 19 | 6 |

*Sea View Avenue.*

| | | | |
|---|---|---|---|
| A. N. Coles | £448 | 3 | 6 |
| E. Duke | 386 | 4 | 9 |
| H. E. Skinner* | 385 | 19 | 11 |

*Salisbury-road, Section IV.*

| | | | |
|---|---|---|---|
| A. N. Coles | £709 | 11 | 4 |
| E. Duke | 686 | 4 | 9 |
| H. E. Skinner | 679 | 4 | 5 |
| R. T. Hortop* | 674 | 5 | 3 |

*Sea View Avenue Lane, W.*

| | | | |
|---|---|---|---|
| A. N. Coles | £653 | 19 | 6 |
| E. Duke | 574 | 16 | 5 |
| H. E. Skinner* | 542 | 13 | 7 |

[All of Plymouth]

ROCHDALE.—For the erection of new premises, for the Rochdale Carriage Company, Limited. Messrs. Smith & Cross, architects, Rochdale :—

*Whole of the Works.*

| | | | |
|---|---|---|---|
| Endersby & Mutch | £4,145 | 7 | 6 |
| J. & J. Coates | 4,100 | 0 | 0 |
| Cropper & Howarth | 4,068 | 0 | 0 |
| Ashworth & Woolfenden* | 3,979 | 0 | 0 |

*Excavating, Draining, and Brickwork.*

| | |
|---|---|
| Berry & Sykes | £1,467 |
| Endersby & Mutch | 1,400 |
| Cropper & Howarth | £1,385 |
| Ashworth & Woolfenden | 1,199 |

*Mason Work.*

| | |
|---|---|
| Berry & Sykes | £1,300 |
| S. Nicholl & Son | 1,160 |
| Thos. Turner | £1,160 |
| J. Nicholl & Son | 1,100 |

*Carpentry & Joinery.*

| | | |
|---|---|---|
| Ashworth & Woolfenden | £1,109 | 0 |
| Robert Kay | 1,080 | 0 |
| Endersby & Mutch | 1,050 | 0 |
| Peters & Sons | 1,038 | 0 |
| Thos. Crabtree | £1,022 | 0 |
| Henry Simpson | 1,000 | 0 |
| Thos. Wilkinson | 990 | 0 |
| Schofield & Jones | 980 | 6 |

*Slating.*

| | |
|---|---|
| Robert Woolfenden | £210 |
| Alfred Haigh | £181 |

*Plastering and Painting.*

| | | | |
|---|---|---|---|
| F. S. Ross | £224 | 10 | 0 |
| Robert Kean | 213 | 0 | 0 |
| Ashworth & Woolfenden | £188 | 0 | 0 |
| Joseph Purdy | 182 | 7 | 6 |

*Plumbing and Glazing.*

| | | |
|---|---|---|
| Scotson Bros. | £220 | |
| A. Holroyd | 204 | |
| Peters & Sons | 202 | |
| J. Tonge | 200 | |
| Hornby & Holt | £200 | 0 |
| I. Butterworth | 199 | 10 |
| Hewerdine & Dawson | 199 | 0 |

SOUTHALL (Middlesex). — For alterations, repairs, and painting at the St. Marylebone Schools, Southall, for the Guardians of St. Marylebone :—

| | | |
|---|---|---|
| J. J. Richards, 9, Shannon-grove, Brixton, S.W.* | £505 | 13 |

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SIDCUP.—For erecting St. John's Church, Sidcup. Mr. Geo. H. Fellowes Prynne, architect :—

| | |
|---|---|
| Lawrence & Sons | £13,150 |
| Rider & Sons | 13,075 |
| Dover Bros. | 12,070 |
| Stimpson & Co. | 11,285 |
| Holloway Bros. | 11,097 |
| Otway | 11,033 |
| Stephens, Bastow, & Co. | 10,954 |
| Adamson & Sons | £10,886 |
| Lowe | 10,876 |
| Holliday & Greenwood | 10,744 |
| Knight | 10,481 |
| Porter | 10,337 |
| Goddard & Sons | 9,847 |

WINSLOW (Bucks).—For oak seating in nave and aisles, St. Lawrence Church. Mr. J. Oldrid Scott, F.S.A., architect, Spring-gardens, S.W. :—

| | |
|---|---|
| Robinson | £658 |
| Harry Hems & Sons | 510 |
| Matthew Bros. | £465 |
| Webster & Cannon | 458 |

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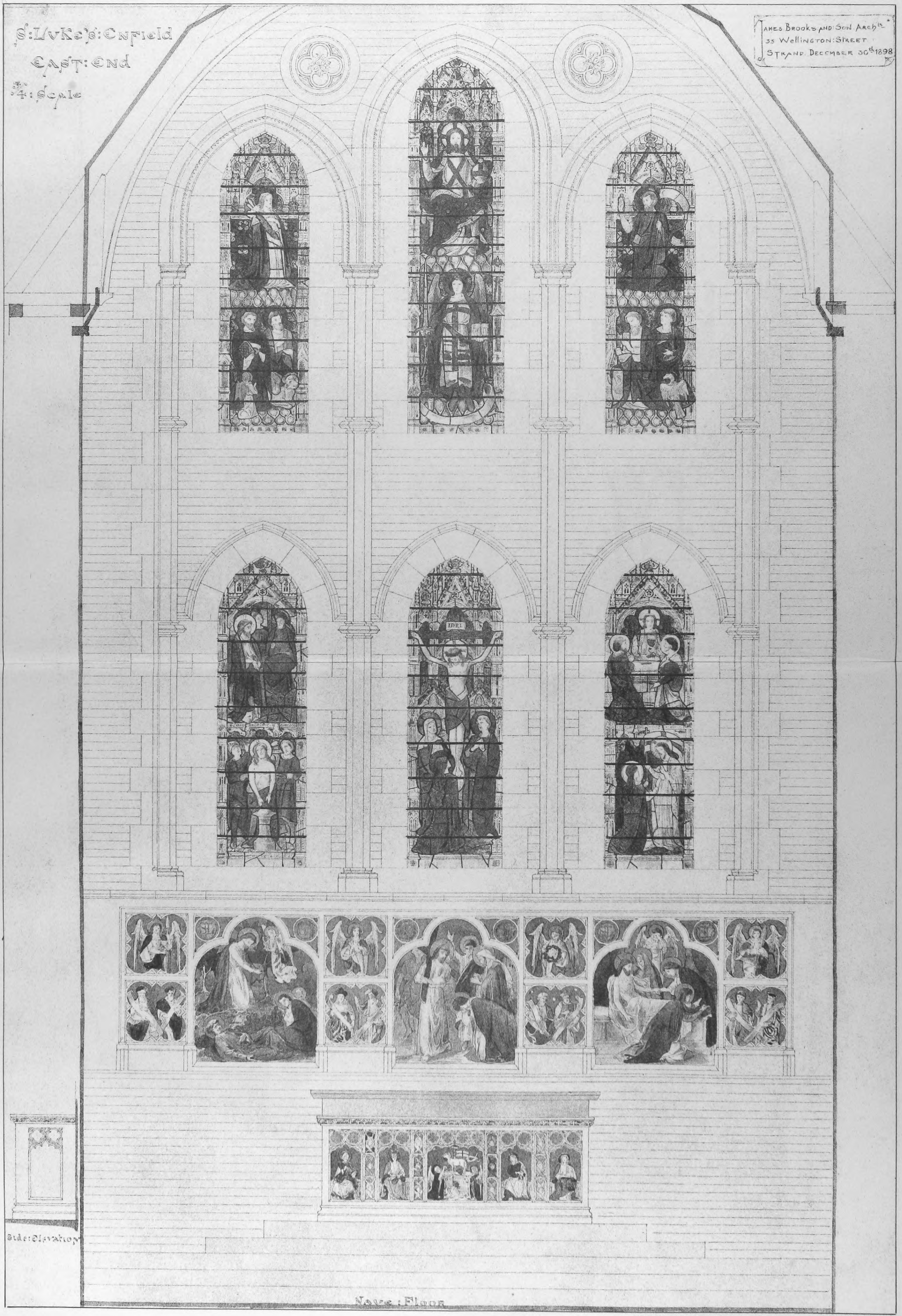
S: Luke's: Enfield
East: End
¾: Scale
James Brooks and Son Archts
35 Wellington: Street
Strand December 30th 1898
INRI
Side: Elevation
Nave: Floor

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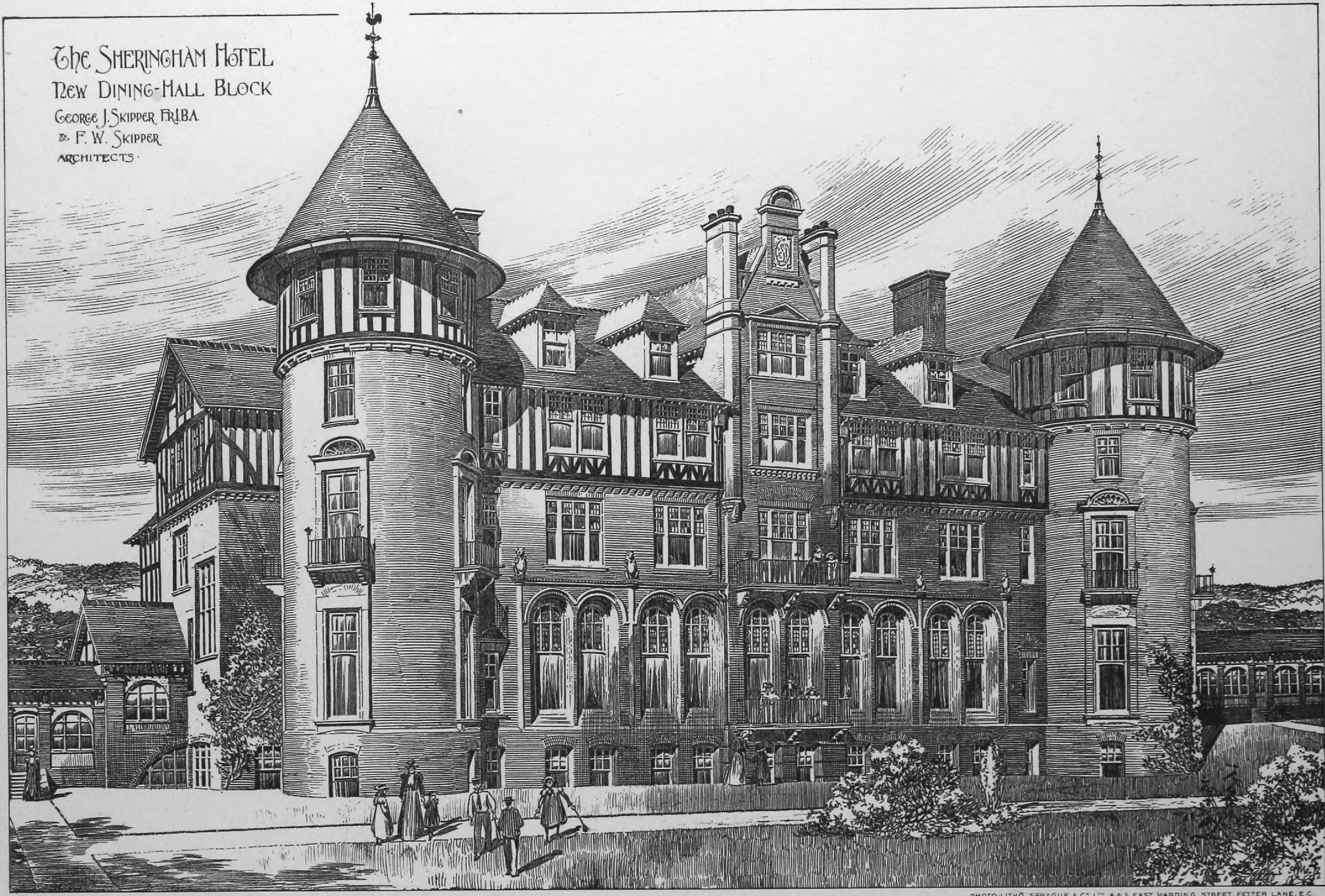

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New Dining-Hall Block
George J. Skipper F.R.I.B.A.
& F. W. Skipper
Architects.

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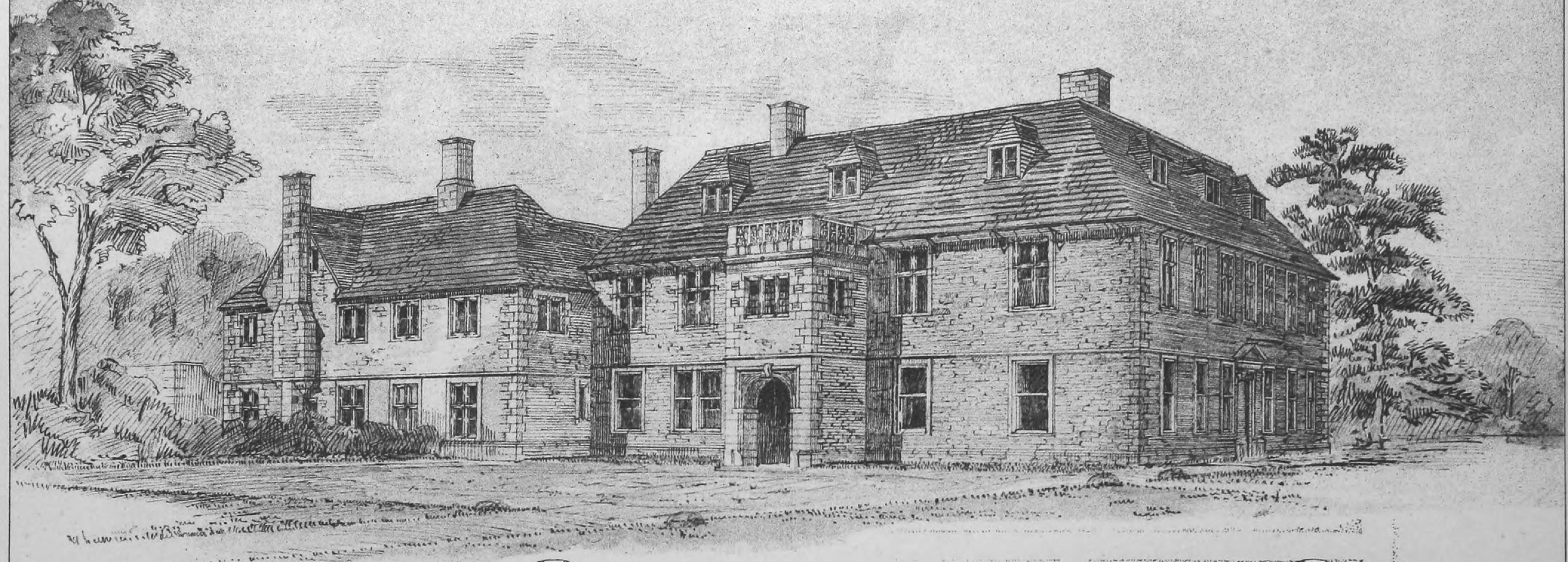

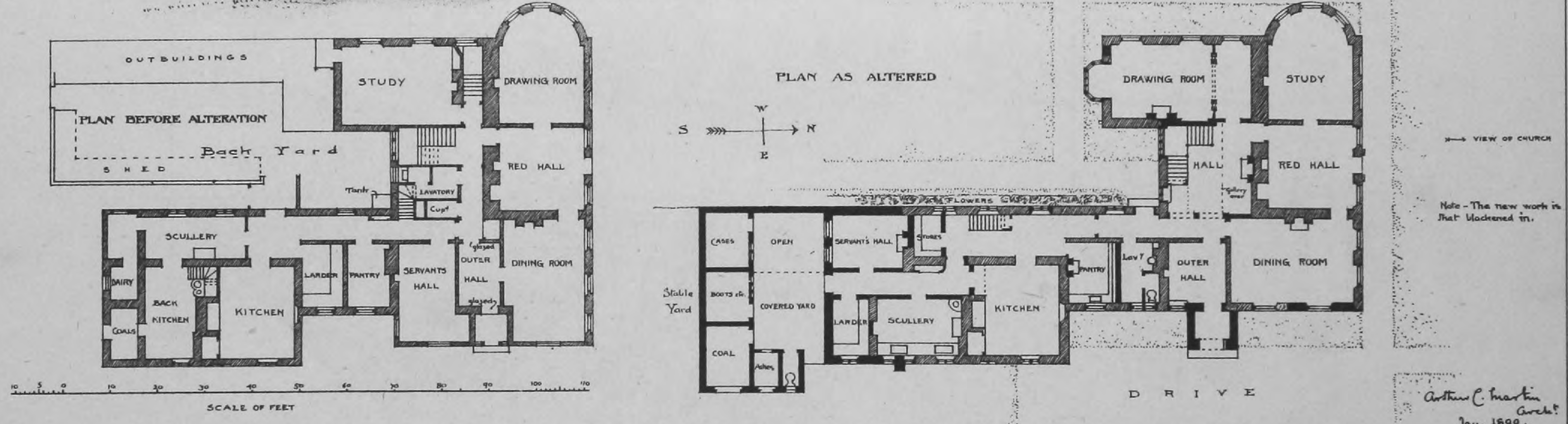
OUTBUILDINGS
PLAN BEFORE ALTERATION
Back Yard
SHED
STUDY
DRAWING ROOM
RED HALL
Tank
LAVATORY
Cupd
SCULLERY
DAIRY
BACK KITCHEN
COALS
KITCHEN
LARDER
PANTRY
SERVANTS HALL
glazed
OUTER HALL
glazed
DINING ROOM
10 5 0 10 20 30 40 50 60 70 80 90 100 110
SCALE OF FEET
PLAN AS ALTERED
W
S
N
E
DRAWING ROOM
STUDY
HALL
RED HALL
Gallery over
FLOWERS
CASES
OPEN
SERVANT'S HALL
Stores
Stable Yard
BOOTS &c.
COVERED YARD
COAL
Ashes
LARDER
SCULLERY
KITCHEN
PANTRY
Lavy
OUTER HALL
DINING ROOM
DRIVE
VIEW OF CHURCH

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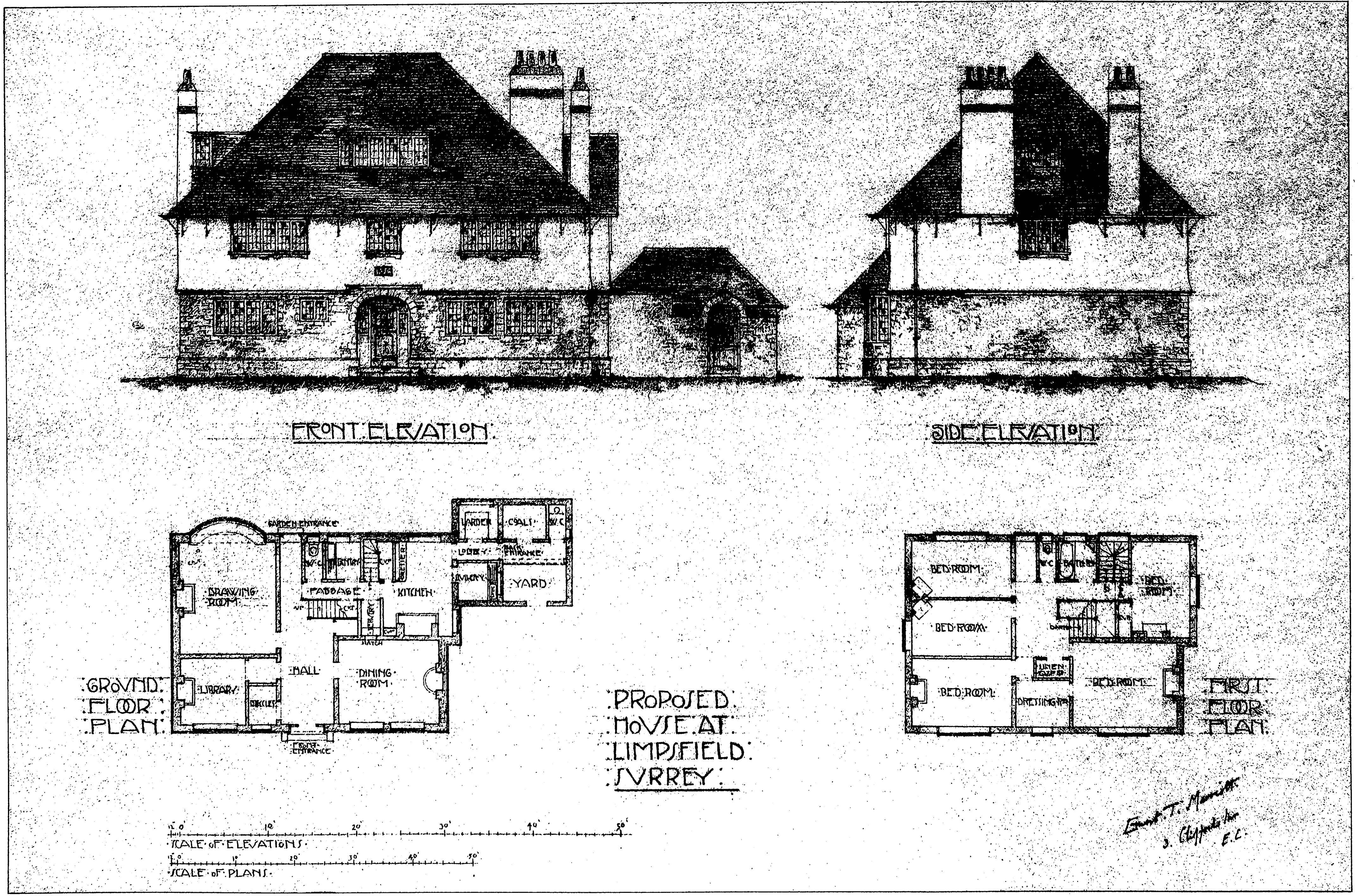
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GROUND. FLOOR. PLAN.
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LARDER
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W.C.
LAVATORY
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DRESSER
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Ernest T. Marriott
3. Clifford's Inn
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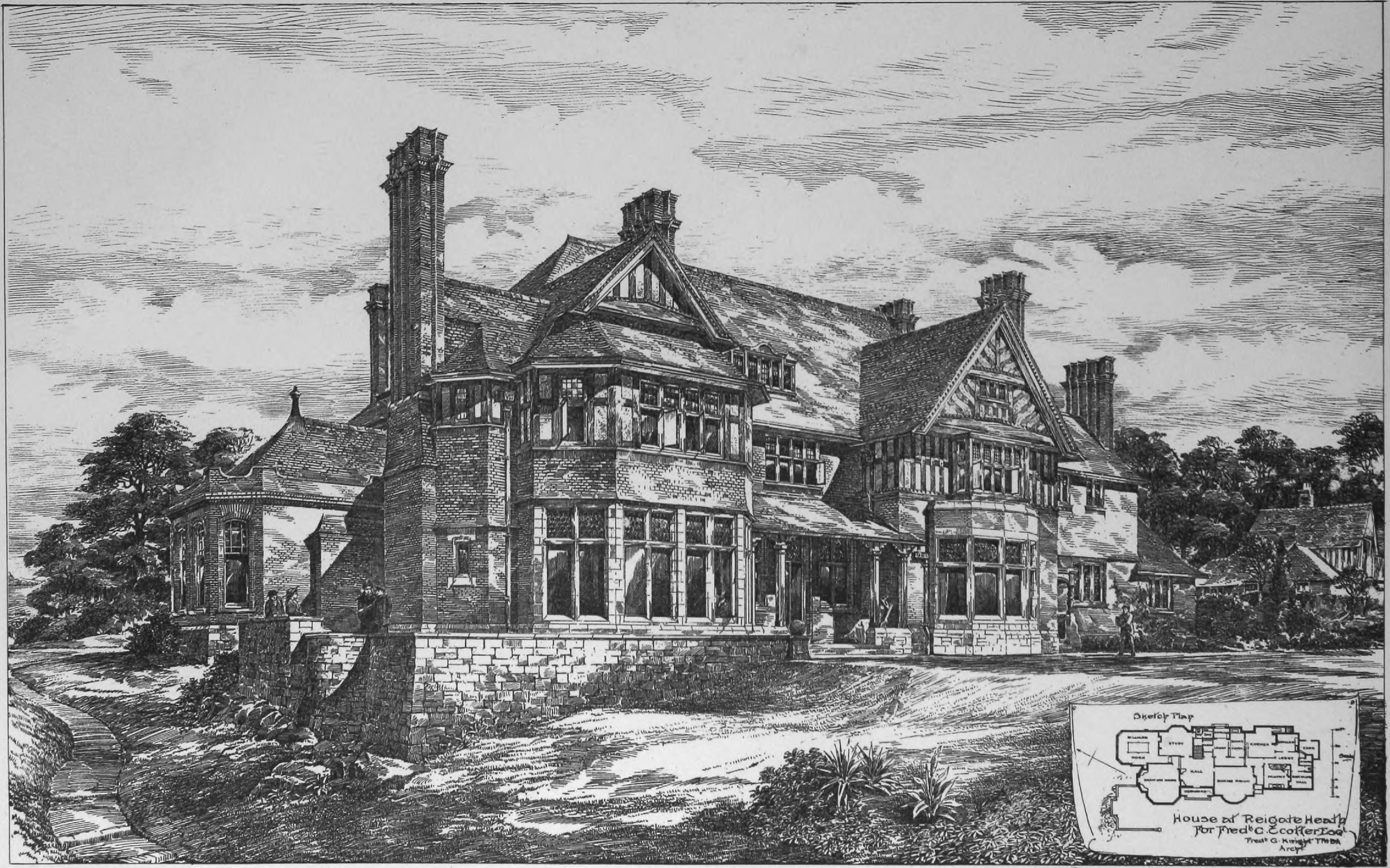
Sketch Plan
BILLIARD ROOM
STUDY
HALL
DRAWING ROOM
VERANDAH
DINING ROOM
KITCHEN
LOBBY
PANTRY
SERVANTS HALL
YARD
House at Reigate Heath
For Fred^k C. Scotter Esq^r
Fred^k G. Knight FRIBA
Arch^t

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# CAVENHAM . HALL . SUFFOLK

## GARDEN . FRONT.

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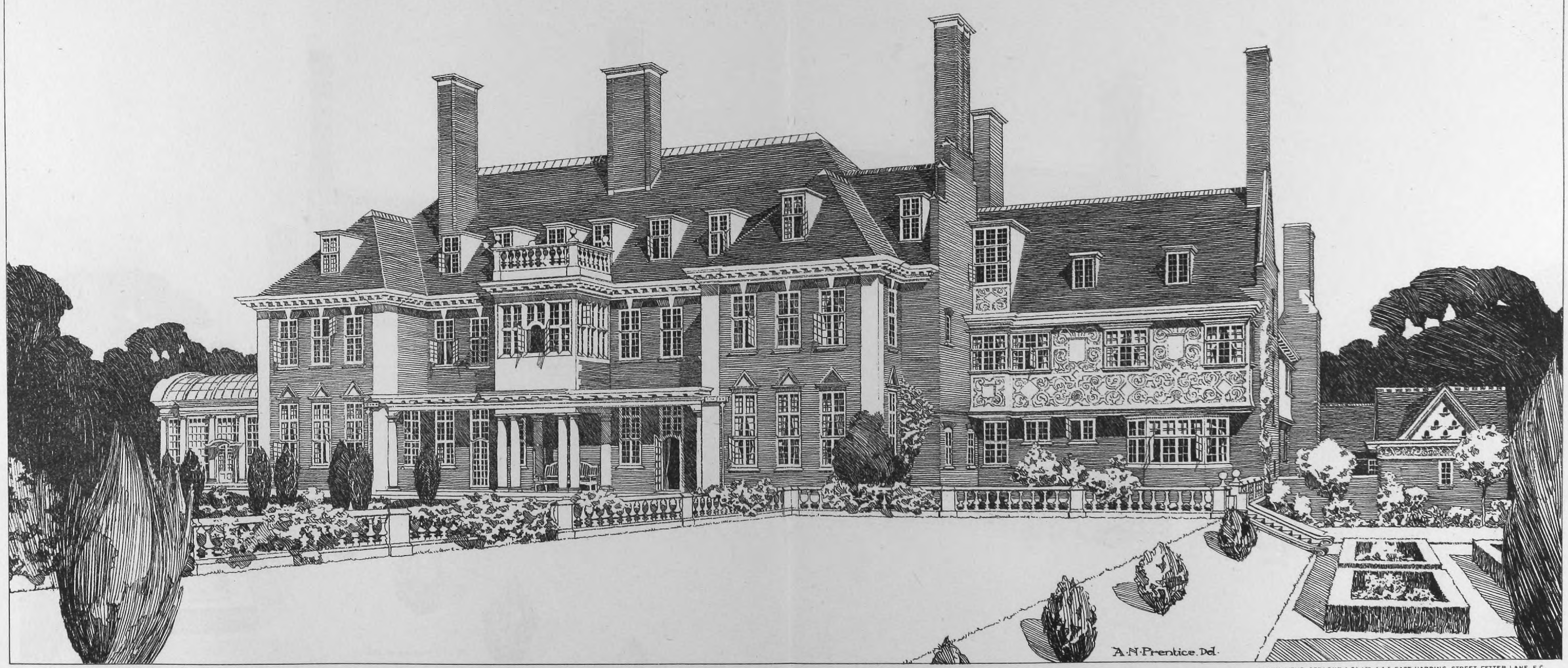
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# The Builder.

VOL. LXXVI. No. 2942 JUNE 24, 1899.

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New Buildings, School of Art Needlework.—Mr. Fairfax B. Wade, F.R.I.B.A., Architect ........ *Double Page Ink-Photo.*
Sculpture at the Royal Academy:—
  "Rescued" (Mr. C. J. Allen), "La Paimpolaise:" bust in carved wood and wrought-tin (Mr. F. Derwent Wood), "The Potter" (Mr. F. W. Pomeroy), "Dante at Ravenna" (Mr. F. Derwent Wood) ........ *Double-Page Ink-Photo.*
  Sun-dial: "The Four Winds" (Mr. Conrad Dressler), "Sir Lancelot and the Nestling" (Mr. W. Reynolds-Stephens), Silver and Enamel Casket (Nelson and Edith Dawson), "Aurora Vitæ" (Miss Esther M. Moore), Electric Lamp Standard (Miss Esther M. Moore), Bronze Door-plates (Miss E. M. Rope) ........ *Double-Page Ink-Photo.*

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## *Education for the Building Trades.*

A REPORT made by a Special Sub-Committee on the Building Trades, to the Technical Education Board of the London County Council, has been recently published, along with the evidence on which it is founded. The special object of the Committee was to obtain evidence and make suggestions in regard to the existing facilities for enabling artisans in the building trades to obtain a good technical instruction in their craft.

The occasion for such an inquiry arises of course mainly from the general abandonment, in recent times, of the apprenticeship system; but some passages in the Report throw rather an unexpected light on the causes of this decline. We have heard from time to time expressions of regret, on the part of large employers of labour in the building trade, in regard to the decline of the apprenticeship system, and the consequent difficulty of obtaining thoroughly trained artisans. Yet repeated evidence is given in this Report to the effect that the decline in the number of apprentices, or the practical abandonment of the system of apprenticeship, is due more especially to the reluctance of employers themselves to take apprentices. Mr. Henry Holloway says that "apprenticeship has greatly declined in the building trades of late years, the reason being the indifference on the part of employers, who were of opinion that apprentices did not pay." Mr. Robert Mitchell stated that in his opinion "the objection by the masters to apprentices far exceeds any obstacles placed by the men or their trade unions." In another passage in the Report we read that in the case of joiner's work especially, "the very great establishment expenses connected with a builder's workshop in London necessitates that every bench should be employed in producing the most valuable output, and consequently none but men capable of earning full wages can be allowed to work in the shops." Another reason given by Mr. Robert Mitchell, the educational director of the Regent-street Polytechnic, lies in what he calls, rather awkwardly, the "distributing nature" of the building trade, by which expression he refers, we suppose, to the tendency towards general contracting in place of contracting for special trades. He observes that "in trades such as silversmiths, where the work was always executed in the same workshops, the system of apprenticeship was not appreciably decreasing." The contractor is becoming more and more an *entrepreneur*, a kind of accountant in building trades, and less of a builder, and his object is to work his shops so as to secure a profit under a system of keen competition. Hence even the premiums which may be paid with apprentices are not regarded as compensating for the trouble of looking after them and the loss in productive labour while they are in training.

The fierce competition in the London building trade, in fact, seems to leave no time for either teaching or learning; and one significant fact which comes out in the evidence is that by far the largest proportion of hands in many building shops have come from the country. Mr. Mitchell said that "the building trades were mostly supplied from the country, and mentioned that on one large building on which about 200 men were employed the clerk of works assured him that not more than ten could be strictly called Londoners." Country youths are desirous to be apprenticed to building trades, and country masters are willing to take them; there is time to teach and time to learn. Having learned, they come to London to get a better market for their labour.

The question how far the training which may be obtained in polytechnic and other classes is a substitute for shop apprenticeship is a good deal discussed in the evidence. Mr. Holloway did not attach much importance to the practical instruction given in classes. They should aim at theoretical and scientific instruction; the practical instruction could only be efficiently given in the workshop; and in regard to the instructors he mentions one case in which a young man, employed by his firm in the capacity of joiner's improver, showed so little aptitude that the foreman told him to look out for employment elsewhere. "This man subsequently got a position as instructor at one of the technical classes." Mr. Holloway thinks good foremen make the best practical instructors; on the other hand, another witness, Mr. Carpenter, says that in cases within his knowledge where the learners are in charge of the foreman, and a fee is charged by the foreman (with the knowledge of the employer), frequently the foreman will find some fault with his learner, and he is discharged to make room for another learner who pays a fresh fee to the foreman. These "learners," he observes, ought to be "apprentices," and apprenticed to the employer; they do not get the training of an apprentice in consequence of their insecure tenure. But the same witness mentions another cause (also touched on by other witnesses) for the want of thorough training in the craft, viz.: the increasing use of machinery. "It stands to reason, a lad in a shop where machinery is used would not get the training he would in a hand shop." And this, we take it, may be another reason why the best hands, as seems to be admitted, come from the country, where, owing to the competition being less, and time not so important, there is less machinery and more hand work.

The evidence as to the practical value of polytechnic training varies a good deal. Mr. Phillips Fletcher, the Director of the Trades Training School in Great Titchfield-street, said the men had a great objection to going from a workshop to a class-room, and one reason for this may be gathered from another witness, "A. B.," a builder's foreman, who said "one of the chief reasons why bricklayers did not take up drawing and building construction to qualify as foremen was that their work made their hands too rough to manipulate drawing instruments," which is probably only one phase of the fact that a man accustomed principally to work with his hands, and regarding materials only from that point of view, feels out of place in a lecture room. Mr. Fletcher added that he considered that better work could be done by explaining the necessary science and geometry to a craftsman as he was working with his tools, such practical demonstration having a more lasting effect. Another witness, however, "E. F.," a builder's foreman, says the class teaching did not make them better workmen, "but they did not require so much attention as others, and could do their own setting out." Mr. Barter, organiser of manual instruction under the London School Board, in reply to the question, in regard to boys who have entered for the Technical Education Board's competitions in Science and Technology, "Do you think that these boys pick up trades quicker than others?" replies, "Yes, certainly, and they work more accurately. They understand the meaning of drawings though they may not be able to make doors"—meaning, we presume, before they have learned the actual handling of the materials. Mr. Ellis, teacher of building construction at the Camberwell Green Evening Classes, in answer to the question "Do you find much difference between those who have attended the classes and those who have not?" replies, "Yes; those who have attended the classes can receive their instructions from the foremen more easily than others."

It seems to be considered that there is a great difference between the intelligence of bricklayers and of carpenters over their work. A builder's foreman, "E. F.," says:—

> "The bricklayers were not, as a rule, good workmen. They did not understand their work, and did not attend classes. Every effort had been made to persuade them to attend, but without effect. They gave no reason for not attending. Carpenters as a rule served an apprenticeship for four or five years, but this was not the case with bricklayers. Bricklayers gave more trouble than carpenters through want of intelligence and care. In carrying out a piece of work, an intelligent bricklayer was placed at each end of the work to keep a watch on the less skilled men working between. The difficulty of getting good bricklayers increased. This was largely owing to the absence of apprenticeship in London."

Mr. Howard Colls, the well-known contractor, speaks to the same effect:—

> "The technical workshop was the means of attracting men to classes, but when used as a producing shop was valueless. Generally speaking carpenters were better able to read drawings than bricklayers, and they also made better foremen of works, which pointed to the fact that drawing was a good subject to teach bricklayers. Bricklayers might, however, be good men without being able to read drawings. Carpentry was a more highly skilled trade than bricklaying, except in some of the higher developments, such as groining, &c. Carpenters had more opportunity of becoming foremen, as they invariably remained from the beginning to the end of a large piece of work, whereas bricklayers were constantly changed. A carpenter was able to set out a bricklayer's work, but nine out of ten bricklayers never looked at a drawing. The carpenter was a superior kind of workman and had a better chance of becoming a master."

No doubt this superior intelligence on the part of the carpenter is due not only to the fact mentioned by Mr. Colls, that a man keeps at the same work till it is finished, and therefore learns more of the setting out of work as a whole, but also to the more educational character of the work, and to the fact that it is not so rough as ordinary bricklayer's work. The general conclusion seems to be that the bricklayer requires some general and theoretical education more than any other of the building craftsmen, and is unfortunately more averse to it than any other. And it is difficult to see how this is to be overcome until superior skill and knowledge bring their own reward in higher wages. As long as employers are compelled to pay the stupid workman as much as the enlightened one, there is practically a premium on stupidity.

This important point is touched on several times in the course of the evidence. In regard to the Plasterers' Association, of which so much has been heard lately, Mr. Holloway observed that "The Plasterers' Association insisted on apprentices commencing not later than seventeen years of age. The object of the plasterers in so doing was to limit the number of plasterers. No other trade imposed such a restriction as far as he knew." Mr. Howard Colls tells the same story in regard to the bricklayers. "The bricklayers attended classes with the intention of learning brick-cutting. The object in limiting the number of workmen at classes was to decrease the number in the trade so as to make work last longer." Suppose the Institute of Architects endeavoured to make some similar restriction on the number of pupils an architect might have, and the Architectural Association to restrict the numbers in its classes, in order to limit the number of the profession, what an outcry we should have, and what indignant articles in newspapers of all shades of opinion! But the building trades may pursue this policy without a word being said against it. One may reverse Shakspeare's couplet and say—

> "That in the soldier's but a choleric word,
> Which in the captain is rank blasphemy."

In regard to the forced equality of wages, again, one of the builder's foremen witnesses puts the common sense of the matter in plain English:—

> "In all cases the workmen should be divided into two classes, and two rates of wages should be paid—the higher to the superior and the lower to the other workmen. The trade unions demand a minimum wage to be paid to all workmen, whether good or bad, and the employers were bound to pay them the full wages. The reason why there were not more good workmen was that the men were not properly trained. Until workmen were thoroughly qualified they should not be allowed to draw full wages. At the present time some of the workmen admitted into the society had little training. The societies might divide their members into two classes, according to skill; this division would be an advantage to the employers as well as to the skilled workmen. It is by no means fair to compel employers to pay full wages to incompetent workmen. In case of slackness of work the incompetent men would be the first to be discharged. A man's ability could not be ascertained until he had been actually put to work, as he had no credentials as to his qualifications. In France a good system of obtaining information as to a workman's ability was in vogue. An apprentice was provided with a book, and on his term of apprenticeship expiring, the employer's name, time of service, and qualifications were entered. In entering upon further employment his book of credentials was shown, and on leaving, the employer's name, time of service, and qualifications were again entered, and so on from firm to firm. It would be possible for the societies in England to establish some similar method of recording workmen's qualifications."

Mr. Rowland Plumbe, who gave evidence before the Committee, speaks strong on the same point.

> "As far as I can see there is no great incentive with regard to a young workman acquiring a scientific knowledge of his trade, as he is paid just the same rate of wages as the other men. This I think a very important point to consider. Special skill and knowledge should command a special wage. No doubt some men learn for the pleasure of doing so, but only a very few. There may be an incentive in a young man's hoping in time to become a foreman if he is better qualified than others."

It is not surprising that along with this we find criticisms on the indolence of the men and their want of interest in their work. One witness (Mr. Ellis), in reply to a question whether the deterioration in the workman was not due to the fact that machines now perform so much of the work formerly done by the men, answers, "Yes, partly so, but also to the fact that they do not take so much interest in their work." Another witness says:—

> "Most of the men had technical classes in the neighbourhood, but did not trouble to attend them. A qualified builder should be able to do archwork, brick-cutting, gauged work and glazed brickwork. A bricklayer years ago sometimes laid nearly 2,000 bricks a day, whereas now he only laid about 500 or 600. This reduction in the quantity of work done was brought about by the workmen themselves, and not by any action of the trade union."

It would surely be more correct to say that in this respect the men faithfully second the teaching of the trade union. While average human nature remains what it is, the gospel of doing as little work as possible for as much pay as possible is one that stands little in need of preaching.

In our opinion, it is this monstrous and unnatural state of things in modern building trade, whereby the bad workman has to be paid at the same rate as the good, which is more than anything else at the bottom of the whole difficulty with which the Report of the Sub-Committee is concerned. It is really perfectly absurd, if one comes to take a broad view of the whole evidence given here. We have put before us, on the one hand, a system whereby superior training on the part of a workman is rendered null and void so far as any advantage to himself is concerned, and on the other hand a medley of suggestions for compelling him to educate himself and inducing others to educate him. The cream of the joke is reached in the evidence of Mr. King, of the Amalgamated Society of Carpenters and Joiners. He thinks that the County Council might carry out their own buildings, and make them an apprenticeship school, throwing the cost on the ratepayers.

> "The County Council have a grand opportunity at the present time. They are going to build workmen's dwellings, and they might do the work themselves. After the boys had finished two or three years at college working at their trade, the County Council might take them to work in the shops One reason why the employers do not take apprentices is because of the bother, and the room is of value. The apprentices do not pay them. They want men to do the work. I think that it would be a great advantage if the County Council carried out such a scheme.
>
> Mr. Roberts: You think it does not pay, then?—No.
>
> Mr. Roberts: *Would you throw the loss on the rates?—Yes.*"

So that, having allowed a system to be forced upon us by which the artisan is deprived of all benefit from superior training or superior industry, we are now to give him, at the public cost, a training which he has no inducement to seek for himself!

People may depend upon it that the real mischief, to which the Sub-Committee have given but partial and passing attention, lies in this fact—that under the trade-union system the artisan has lost the advantages which ought to accrue to him from superior training, and therefore has no inducement to try to obtain it except that desire to learn and to do the best work, for its own sake, which operates only on a few exceptional natures. There are other obstacles to good training now—the introduction of machinery, and the hurry and close-cutting brought about by keen competition, in the capital at all events; but the system of the same pay for the good workman and the bad is what is at the bottom of the whole thing. Let a building artisan discover that he will command better situations and higher wages by obtaining a better training in his craft, and he will be pretty sure to obtain it.

After this main point, the most important question is that of technical class training as against workshop training. The general weight of the evidence before this Committee goes to show (what logically there could have been little doubt of) that while the technical class training will not in itself make a workman, it is a most important preparation for enabling him to take an intelligent view of his work, to know why a thing is done in this or that way, and to understand better the drawings he sees and the direction he receives. The only doubtful point, perhaps, is as to the time and place for each class of training. The view which we think the evidence in this Report tends to support, is that the workshop and technical class cannot very well be carried on simultaneously; the worker with his hands all day is not in the fittest state to attend evening classes afterwards. What seems, on the whole, the best method, is that the learner should get general knowledge of the subject of his craft, and of the geometrical or other science which bears upon it, first, by going through a technical school, where he would also get some practice in the handling of tools, though not such as he would get at the workshop. Then he would come to the workshop with a mind better able to take in and understand his work, and would probably be much better worth taking as an apprentice than a boy straight from primary education alone. But the great thing is that he should be able to feel that in getting this superior knowledge in the technical class he is laying the foundation of his own advancement as a workman, which at present is not the case. He may look to become a foreman, but otherwise he will find himself no better off than the less skilled workman; a state of things which is an anomaly.

◆

## SCULPTURE AT THE ROYAL ACADEMY.

THE proportion of interest in the sculpture of this year, in comparison with that of the pictures, is really remarkable. Among the sculpture exhibits it may be said that there are few things that have not some interest, while with the pictures it is the other way about; it is only a minority of the works that are of interest.

The largest and most prominent works in the Octagon Room, unfortunately, belong to that class of realistic portrait sculpture for which there is a demand in England, but which are in reality out of keeping with the art of sculpture, as the sculptors probably themselves feel; they have to make the best of an almost hopeless task. In place of a work of poetic sculpture for the central position of the octagon, we have only Mr. Thornycroft's "buff-jerkin business" of the Cromwell statue, and the principal side positions are occupied by Mr. Longmaid's statue of Watt, Mr. Drury's of Priestley, and Mr. Brock's of Sir William T. Lewis, the last the most unhappy of all, as being clad in the modern trowser. We may speak of all these with the respect due to their authors, but we do not call them sculpture, and have no wish to see them again. The first work of sculpture proper is Mr. C. J. Allen's "Rescued" * (1,879), a nearly nude group of father, mother, and infant, treated with much feeling, and which has the merit of forming a harmonious composition from every point of view, though we may observe that, as seen directly in front, the right leg of the man strikes one as being a little too large and too long for the other limb, but it may be an effect of position only. Omitting for the present the works which may be called decorative, we may pause next before Mr. Lucchesi's very clever and thoughtful though rather puzzling work "The Myrtle's Altar" (1,894), showing a nude female figure of much character and very cleverly modelled, reclined on the stump of a tree with a metal myrtle wreath over her head; various articles—a crucifix, a sword, a crown, a heap of money—are dropped around, emblems apparently of all that is given up for the sake of the myrtle wreath. This is at all events a work of real originality. Mr. Pomeroy's "The Potter"* (1,903) is one of the interesting class of nude figures representing a simple *motif* of human action, with no ideal meaning; the potter's countenance, as he considers his work intently, is a keen and interesting one; the whole attitude of the figure has a Greek simplicity and repose. Among the smaller works is Miss Esther Moore's "Aurora Vitæ"* (1,888), two busts of girls whose expressions form a charming contrast, and Miss Kathleen Shaw's exceedingly clever statue of Kipling's remarkable creation "Mowgli" (1,901), which was seen in plaster here in 1897, and is now exhibited in bronze; as a realisation of Kipling's ideal it shows ordinary imaginative power. We regret, however, that in the bronze version a mistaken fit of prudery (perhaps on the part of an intending purchaser) has induced the artist to interfere with the frank nudity of the figure, and to that extent spoil its character as a personification of the child of nature. Mr. Cowell's boy riding on a colossal snail (1,908) is what we should call a bad joke.

Among the prominent works occupying the centre of the floor in the Lecture-room a melancholy interest attaches to the group in ivory and bronze by the late Mr. Harry Bates (2,050), to which no name is given in the catalogue, though the title, "Mors Janua Vitæ," is conspicuous on the front of the pedestal. This is a small work in ivory and bronze, which looks as if it owed its inspiration to Mr. Gilbert. The nude ivory figure represents the Soul, which is led onward by a bronze figure of Death, whose spread wings partially surround it; below is a kind of symbolism of the earth she is leaving—a miniature city, in which the simulacrum of St. Paul's Cathedral is prominent, while around the pedestal are small symbolical groups in ivory and bronze, the ivory ones representing apparently happy souls, the bronze ones "the spirits in prison." The whole work is singularly beautiful and interesting, though this use of different materials for different figures, or for the body and the raiment of a figure, is in doubtful taste from a sculpturesque point of view; and we observe that it is rather on the increase. At the Paris Salon were to be seen two or three life-size statues in built-up polychromy of this kind, and these we can only regard introducing a false and sensational element at variance with the highest aims of sculpture. On a small scale and where metal is employed it is less objectionable, and we do not know that Mr. Bates's conception just referred to is spoiled by it, but on a larger scale it would be. The tendency in such works, however, is for the decorative effect to override the sculptural expression, as in Mr. Frampton's "St. George" (1,932) a statuette with a base of tortoiseshell supporting an agate globe on which is a metal figure of St. George in gilt armour, with a background of mother-of-pearl plaques; the whole effect is very pretty, but it is only a kind of large ornament; the expression of the knight, which should be the principal point, is about the last thing one thinks of. Mr. Reynolds-Stephens's "Sir Lancelot and the Nestling"* (2,037), a work of the same kind on a rather larger scale, is redeemed from being merely decorative by the fine character of the head; the symbolical treatment of the base is interesting too. But we fear that Mr. Gilbert's brilliant example is tending to encourage this class of work rather too much, in which material and execution attract the attention more than the sculpturesque ideal of the work. Mr. Derwent Wood's "La Paimpolaise"* (1,998) is an experiment of the same kind on a life-size scale; the bust of a Breton peasant woman in three materials—a dark wood for the dress, a lighter wood for the face, and wrought tin for the cap. As this may be considered only as a character sketch, it may be accepted as an interesting experiment.

Among some of the cleverest sculptors of the day there seems to be a tendency to seek for originality and character in a work even at the expense of beauty. We see this in Mr. Goscombe John's remarkable conception "The Elf" (2,047) seen in plaster last year, now in marble; a work certainly more curious than beautiful, yet which is a really imaginative conception, and moreover most admirably modelled. Mr. Colton's "The Girdle" (2,056), a seated nude figure trying on a girdle, is original but ungraceful in attitude and line; his "Image Finder" (2,048), a very powerfully designed figure, is also devoid of beauty, though more decorative in general line than "The Girdle." Both these works were exhibited in plaster last year; we are glad to see "The Image Finder," which is a remarkable work, in more durable material; we could well have spared a re-appearance of the lady of the girdle. Whether character without beauty in sculpture is or is not better than beauty without character may of course be a legitimate subject of question; but why not try for both qualities? It is dangerous in sculpture to begin to leave beauty out of sight. Mr. Roscoe Mullins's "My Punishment is Greater than I Can Bear" (2,054), a marble which also has appeared before in plaster, has less distinctive character, certainly, than either of the three last named, but it has the repose of expression and decorative line which are among the best attributes of sculpture. Among the larger works in the sculpture-room one placed against the wall claims notice, Mr. Reynolds-Stephens's "Dante at Ravenna"* (1,942), showing a remarkable seated figure of Dante bending forward in deep thought; below one sees the portions of two figures representing Paolo and Francesca. We should add that our illustration is from a photograph of the clay model, not of the finished bronze, which is an improvement in some respects on the model.

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* Those marked with an asterisk are illustrated in the plates in this issue.

Decorative sculpture is considerably represented this year. We see it in two of the largest works in the octagon—Mr. Drury's base and pedestal for a street electric light, of which a separate special illustration is given, and which is referred to under the head of "Illustrations," and Mr. Dressler's very original pillar for a sundial*, with high relief figures at the top representing the four winds. We are certainly in want of some new and original suggestions for the pillars of sundials; the only objection, perhaps, in this case is that the sundial itself is rather too subordinate. In front of this stands Mr. Simonds's pretty and fanciful design for a fountain, "Song and Dance" (1,905), in which a female figure plays and sings on the central base, and three flamingoes practice dance-steps at three corners of a triangle below. The one thing that spoils it is the naturalistic rockwork forming the centre pedestal; this should have been conventionally and symmetrically designed in harmony with the decorative intention of the work. In the lecture-room is Mr. Herkomer's very elaborate design for a shield, "The Triumph of the Hour" (2,016), with pictures in enamel; a work rather suggestive than entirely successful in effect, and in which the symbolical meaning is not very clearly expressed. Among smaller decorative works in metal are some well worth attention; a casket* (1,926) by Nelson and Edith Dawson; another by Mr. Alexander Fisher (1,966), with a tree worked on the surface in low relief, winged figures at the angles and another as if entering a doorway above—a little work of great charm; Miss Florence Steele's christening-cup (1,986), with four winged figures in low relief representing special graces; Miss Moore's "Electric Lamp"* (2,008) spirited, but a little too ragged in line; Mr. Alexander Fisher's "Crucifix" (2,014) in cast silver; and Miss Mercer's well-designed and classical-looking silver bowl (2,031). The time has come when the Academy ought to set apart a separate room for this class of work.

Among other works specially worth notice, and which we have only space to mention, are "Leopard Running" (192) by Mr. J. M. Swan; "Miss Elspeth Campbell" (1,935), a tiny silver portrait medallion by Mr. H. Bruce Joy; Miss Casella's "Laura and Petrarca" in coloured wax (1,949); Mr. Goscombe John's "Portrait of a Lady" (1,936), a relief in copper gilt; Mr. Pomeroy's very fine bust of Miss Wackerman (1,956); Miss Rope's silvered bronze panel of children dancing (1,974); Mr. Sargent's "Design for Part of a Mural Decoration" (1,987); Mr. Armstead's two fine portrait medallions in bronze, 2,004 and 2,018—the latter a portrait of the late G. P. Boyce, the artist; M. Cazin's frame of silver medals (2,034); and Miss Rope's two bronze door-plates * (2,046). Let us not forget also, as one of the prominent objects in the centre of the Lecture Room, the marble bust of the Queen by Mr. Onslow Ford—a masterpiece of fine and forcible work.

## NOTES.

**Gold Medal Night at the Institute.** WE hope, and indeed we have very little doubt, that there will be a large attendance at the Institute on Monday night to do honour to the occasion of the presentation of the Royal Gold Medal to Mr. Bodley. The fact that Mr. Bodley has shown his appreciation of the honour by joining the Institute, after having stood apart from it for many years, should be an extra inducement to give him a hearty welcome. Mr. Bodley, as a church architect, represents the best traditions of the Gothic revival, and has carried out churches which, in their refinement of treatment, have in some cases almost the interest of original Mediæval work; while in various secular buildings he has handled what is called Free Classic with equal refinement. In awarding the Gold Medal to him the Institute will have the sympathy, we imagine, of all parties in the profession (" or art ") of architecture.

**South Kensington Museum.** THE question put to the First Commissioner of Works on Tuesday by Captain Norton, as to the proposed one-story gallery across the inner quadrangle of South Kensington Museum, which, he said, "would greatly detract from the architectural beauty of the buildings," entirely ignores the real point of the matter, which has a most important bearing on the plan of the completed building. Without this corridor, the internal lines of communication of the plan will be very circuitous and rather bewildering to visitors. The proposed corridor will furnish a central route from the front entrance to the central point of the existing buildings, and it will, moreover, give an internal effect which will more than compensate for breaking the unity of the lower story (only) of the quadrangle. The objectors have evidently not studied the plan, and do not understand the importance of the central corridor in regard to plan. The request to the First Commissioner "to consult with other authorities on architecture as to the effect which this gallery would have on the quadrangle" seems rather an impertinence to Mr. Aston Webb, who understands the requirements of the plan better than any one else, and who would be the last person to wish to introduce any disturbing feature into the existing building except to gain a more important improvement. If the central corridor is not allowed to be added now, it will probably be found that it will have to be added later on, for the convenience of the public.

**The Boscoreale "Treasure."** THE volume of the Monuments et Mémoires (Fondation Eugène Piot) just issued (Vol v., 1899) should interest an unusually wide circle of artists and connoisseurs. It publishes in full the magnificent collection of silver cups, plates, &c., already famous under the name of the Boscoreale treasure. The Boscoreale silver plate is now safely enshrined in the museum of the Louvre, thanks to the munificence of a patriotic millionaire, M. le Baron Edmond de Rothschild. It was on Easter Eve, April 13, of 1895, that the treasure came to light at Boscoreale. The excavations there had been practically concluded, the workmen had just been paid for the week, and the following week were to be dismissed. The plan of the cellar had been fully made out, but just before leaving they decided to clear out a well full of débris. One of the men went down the well and came up hastily, pretending to be ill from the bad air. The fact was he had lighted on the treasure and desired to keep it secret. It is owing to his presence of mind that the "treasure" was safely smuggled out of Italy and reached the Louvre. On May 23 it was offered for purchase to the Louvre at a price of 500,000 fr. (20,000*l.*). The Conseil des Musées could only offer 10,000*l.*, and gave up all hope. On June 22 a telegram was received stating that M. Edmond de Rothschild had bought the "treasure" and presented it to the Louvre. The "treasure" is now exposed in a special case in the centre of the Salle des Bijoux antiques. Baron Edmond de Rothschild's example was happily followed by other amateurs into whose hands scattered specimens of the Boscoreale treasure had come. Mr. E. P. Warren, an American collector, Count Tysykiewicz and two Italian antiquaries generously gave up specimens they had obtained. The only missing fragment is now the head of a woman which had been violently wrenched from a phiale in ancient times. This head is in the British Museum. For particulars of this unique collection of silver plate we must refer our readers to the thirty fine plates of the "Monuments et Mémoires." The plates are accompanied by a full commentary, which will not, however, be complete till the next number.

**St. Dunstan-in-the-West.** IT is to be hoped that the proposed building up of this church, which forms so conspicuous and interesting an object in Fleet-street, will be prevented. There can be no doubt that the present aspect of the tower, seen standing out from the church and with an open space on each side of it, will be entirely spoiled by building up close against it so as to leave only its front exposed. Its present appearance forms one of those picturesque incidents which here and there relieve the London streets, and which seem to be regarded by many people only as waste space which might be remuneratively filled up. At this rate all the picturesque element remaining in London will soon be wiped out.

**Our Manufacturing Trade with China.** IT is interesting to hear that Sir Chih Chen, the Chinese Minister, is proposing to make a tour of the English manufacturing districts, with the intention of writing a book on the subject, in order to assist in bringing China into closer industrial relations with England. There is likely to be an increasing demand for European manufactured goods in China, and we ought to welcome any action which seems to tend towards assistance in opening the door wider for the employment of English firms.

**Electric Lighting in the City.** THE granting of a Provisional Order by the Board of Trade giving the Charing Cross and Strand Electricity Supply Corporation powers to commence a competitive supply in the City is in the interest both of consumers and of ratepayers. The City Company has neither managed to keep up with the demands made on it nor given its consumers the benefit of the economies effected by improved apparatus and systems of distribution. At times of heavy load the plant was overloaded and all the lamps burned dimly. The charge, too, of eightpence a unit was excessive. When competition was threatened the price was reduced, and a further reduction to sixpence a unit was promised from January 1 next. Their promises, however, came too late, and the Board of Trade has sanctioned competition. The Charing Cross and Strand Company has power to charge up to fivepence per unit for general lighting purposes, which is reducible by a sliding scale to nearly fourpence per unit. For power threepence per unit will be charged until a certain amount has been consumed, and then twopence per unit will be charged for all consumed in excess of this amount. Sir Courtenay Boyle has invented a new method of stating a sliding scale, which, whatever its merits, may well puzzle even electricians. He says that the charge per quarter will be fivepence per unit for any amount up to the number obtained by dividing the number of watts in the maximum power demanded by ten, and fourpence per unit above this. We work out that this means that the charge will be fivepence a unit up to the number that would be consumed by the maximum number of lamps ever burning at one time, if they were alight on an average for sixty-six minutes every day in the quarter, and fourpence per unit above this. The Charing Cross Company is bound to erect a generating station in the City within two years, and at the end of fourteen years the City Corporation will have the option of purchasing it. There is plenty of work for both companies to do in the City, and the older company has the advantage of being already connected on to the most profitable consumers.

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**Austrian Cement Tests.** THE results of a number of tests carried out during the year 1898 in Austria have been published by K. Berger. Most of the tests were made in accordance with the directions issued by the Architects' and Engineers' Union of Austria. Of twenty-six Portland cements, only two failed to satisfy the tensile strength test at seven days after gauging, and only one the compression test. More than half of the nineteen Roman cements, however, failed to satisfy the conditions of the tensile strength test at seven days, although after four weeks only one-fourth failed in tensile strength, and one-third in resistance to compression.

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**The London Gas Inquiry.** THE inquiry into the powers of charge by the metropolitan gas companies by a Select Committee of the House of Commons is nearing its conclusion, for the witness who followed Mr. Livesey is Mr. W. J. Field, the secretary and general manager to the Gas Light and Coke Company. Mr. Field admitted that, owing to the clause which compels the Gas Light and Coke Company to sell gas in their district south of the Thames at the same price as the South Metropolitan Company, the former company sold their gas last year on the south side at nearly 1½d. per 1,000 cubic feet below cost price, the total loss amounting to 5,759*l.* As, however, his company sells only 953 million cubic feet on the south side, and sells 20,000 million cubic feet on the north side of the Thames, the loss of 5,759*l.*, added to the price of gas on the north side, represents an increase of only 0·07d. per 1,000 cubic feet. But this district on the south, which is apparently of little value in the unskilful hands of the Gas Light and Coke Company, would yield a handsome profit if given to the South Metropolitan Company, and under the circumstances it is not surprising that some of the members of the Committee pointed out to Mr. Field that it would evidently be an advantage to the Gas Light and Coke Company if they were relieved from the necessity of supplying gas south of the Thames. The suggested transfer might enable South Metropolitan prices to be reduced still lower, but would not cause a reduction of ¼d. per 1,000 cubic feet in the price of gas north of the Thames.

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**Martlet-court, Bow-street.** THE London County Council have made an order agreeing to the formation of a new thoroughfare for foot-traffic between Bow-street and Drury-lane, which will absorb Martlet-court, most of the occupiers wherein are already served with "notices to quit." Martlet-court, formerly Martlet's-row, had been a favourite quarter of actors in the last century, and could boast of many celebrated residents. Amongst them we may mention John Mills, who died there in December, 1736, and was buried in the St. Martin-in-the-Fields graveyard, Quin, the two Cibbers, and others supporting his pall;* Hull, stage manager at Covent Garden Theatre, and founder of the Theatrical Fund; Suett, the comedian, who on the stage was the very personification of fatuous whimsicality; Shuter, at No. 2, in 1756; Thomas Dibdin; O'Keefe, the dramatic author, in or about 1780; and, it is said, Harriet Mellon, who afterwards married Thomas Coutts, the banker. The adjacent Crown-court, upon the Bedford Estate, is to be extended, for foot-traffic, in a similar way.

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**The Sheldonian Theatre, Oxford.** THE annual Report of the Curator of the Sheldonian Theatre embodies a statement, made upon Professor A. H. Church's authority, which goes to show that the pictures upon canvas, in the ceiling, are in a very sorry condition, and need speedy attention. They were painted by Robert Streater (1624-1680), appointed serjeant-painter at the Restoration, who also executed some paintings for the chapel at All Souls' College. Pepys records in his diary, February 1, 1668-9, his visit, with Danckers, to Streater's studio in London, where, he says:—

> "I found him and Dr. Wren and several virtuosos looking upon the paintings which he is making for the new theatre at Oxford . . . . they will certainly be very noble; and I am mightily pleased to have the fortune to see this man and his work, which is very famous. And he a very civil little man, and lame, but lives very handsomely."

The paintings, which have been thrice restored since, were set up in readiness for the opening of the theatre—one of Wren's first public buildings—in July, 1669. The theatre was begun in 1664, at the charges of Archbishop Sheldon, who defrayed the cost of the fabric, 12,470*l.*, and endowed it with a maintenance fund of 2,000*l.*, the surplus to be applied to the building of a printing-house. The work of the University Press was carried on in the space beneath the roof until the completion of Sir John Vanbrugh's printing offices, erected (1711-3) with the profits of the sale of Lord Clarendon's "History of the Rebellion," of which his son had presented the copyright to the University. The roof, by Wren, having become decayed in 1800 was replaced with another of different design and without the oval dormer windows shown in old prints, and in the books issued therefrom by the University Press. It is said that Wren based his plans upon those of Julius Cæsar's Theatre at Rome which Augustus dedicated to the memory of his nephew, Marcellus, and which had a capacity of more than twenty thousand spectators. Dallaway states in his "Anecdotes" that Wren owed the idea of the roof, 70 ft. by 80 ft., to Serlio, and Dr. Wallis, whose plan was given to the Royal Society.

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**Portraits by M. Benjamin-Constant.** THE portraits by M. Benjamin-Constant, now on view at the Society of Fine Arts Gallery, are of peculiar interest not only as examples of the work of one of the first French painters of the day, but also as showing a system of giving special treatment to a portrait in consonance with the character and individuality of the sitter. The style is in general somewhat hard, and there is rather an *ad captandum* glitter about some of them which we do not like, but the speciality of treatment is very remarkable. The bust portrait of the Duchess of Mecklenburg, a bright-looking blonde, is set amid a scheme of bright colour, with a classic marble colonnade, indicated rather than painted, forming part of the background. The full-length of M. Paul Sohège (which we have seen before in the Salon) is a prosaic representation of a society man—a likeness simply, and nothing more; while the intellectual head of the Comte Henri Delaborde, in the green-sprigged uniform of the Académie, is treated in a totally different style, much softer and broader in manner; this is one of the finest works in the room. In quite a different way again is that of Mdme. Emma Calvé; essentially a theatrical portrait, representing a splendid-looking dark-haired woman in a sumptuous dress of crimson velvet; the whole rather after the manner of Carolus-Duran. Then we have in others what may be called the portrait *de luxe*, where rich costume is an important element, such as those of Mdme. Tourton and Princesse Radziwild, the former bespangled with gold braid and jewellery, the latter in a rich black dress with a pearl necklace—and by the way, an almost impossible waist, approaching to that of the conventional fashion plate. We do not like either of these two last, though they represent probably what the sitters or their friends valued most. But the collection as a whole is one that all who are interested in portraits should visit.

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**Drawings of the Holy Land.** THE collection of drawings of Jerusalem and Holy Land, by Mr. H. A. Harper, exhibited in the new room which the Fine Art Society have added to their gallery, may be said to be rather of topographical and religious interest than artistic; that is to say, the drawings as a set are remarkable not so much for effect and the treatment of landscape as for the obvious intention to give a correct representation of the scenes portrayed. This has its own interest, no doubt, but it is not exactly what one goes to an art exhibition for. The large view of "Jerusalem" at sunrise, however, is a fine and effective picture; the curious pile of houses representing Jaffa is characteristically treated, and it is interesting to see the sketch of the recently discovered cistern (rather than pool) between stone walls, which Jerusalem archæologists have no doubt in identifying as the Pool of Bethesda. Generally speaking, the style of the drawings is superior to what one often sees in topographical collections of sketches; but the topographical interest nevertheless predominates.

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* See the London Evening Post, *passim.*

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## TIMBER AND TIMBER STRUCTURES.*

### Part I.—The Material of Carpentry and Joinery.

The decay of an organised body is familiar to us. By an organised body, I mean one that has been alive. In an animal vitality prevents decay, except as a disease, but as soon as the animal is dead decay sets in, and proceeds, rapidly in some parts, slowly in others. The flesh of an animal decays in a few days, the bones last centuries. There are means of retarding the decay of the flesh, as you know, and means of hastening it. In a plant the vitality is lower, and decay during the life of the plant more often occurs, but in the main the condition of a tree is similar to that of an animal. There are parts in a piece of timber newly felled which are easily acted upon by the agencies that make for decay, and others that offer a long resistance, but these are intimately mixed together in the log of wood, and not so distinct as the flesh and the bones of a dead ox.

The trunk of a tree may be compared to a great bundle of tubes, which make up the entire log. Within those tubes, which lie near the outside, the circulation of the juice known as the sap, which rises in the spring and descends in the autumn, takes place. Those tubes nearer the heart of the tree have been squeezed together, and partly filled with resin and similar matter, and form a more or less compact mass which does not decay easily. The outer part, accordingly (the sap-wood), contains the part most ready to decay, and is not fit for use for many building purposes; but the whole of the timber—sap and heart—is liable to decay if the conditions are sufficiently bad.

The compound material known as vegetable albumen abounds in the sap and is present in the sap-wood, and it is easily affected by damp and heat.

The albumen in the sap-wood is, perhaps, not the only material liable to decay, but it is the most prominent. When a tree is cut down in spring or autumn its pores are full of moisture; if felled in winter, and, I believe, in midsummer, it is less moist, but there is always a good deal of moisture. If the timber is exposed to the atmosphere the air will gradually dry up the moisture; if it is exposed to water the water will gradually dissolve out the albumen; and each of these processes is called *seasoning*. The smaller the scantling of the timber, the more readily will it part with its moisture; and for purposes where well-seasoned timber is required, the timber, after being squared, is stored in sheds protected from the direct rays of the sun (which promote cracks) and protected from rain, and yet open to the air, the logs not lying absolutely on one another, but separated by fillets of wood to allow the air free access all round. This is called natural seasoning. It is a slow process, but it has to be used for all timber intended for joiners' work, and for some of that intended for carpentry.

A good deal of the timber intended for carpentry is kept in water, and though it is not dried the albumen is more or less washed out of it. Sometimes, indeed, for this purpose logs are chained down under water. When actually brought on to the job or taken into the yard, timber out of a timber pond wants drying. The proper thing to do is to cut it as soon as possible into the scantlings and lengths required, and then to stack in the way I have described that the air may season it.

Seasoning is not merely drying. If that were so the wood could be baked and the end accomplished quickly; but though drying is no doubt part of the process it seems pretty certain that in order to be seasoned the timber must part with some of the material in its pores, or else that material must solidify, or else some antiseptic material must be introduced.

"The most effectual way to preserve good timber," says Mr. Laslett in his valuable book on timber, "is to partially season it in as natural a way as possible before working it up, and to give it that protection when brought into use which all other materials require to keep them from perishing. It should not be too soon varnished, painted, or coated with any preservative compound whatever, but be allowed to undergo after conversion a further short process of natural seasoning before this is done. Its durability will thus be ensured much more effectually than if desiccating, charring, or some other rapid process of seasoning has been resorted to for the sake of bringing it into earlier use after being fitted."

Mr. Laslett estimates the time required for natural seasoning as follows:—

|  | sq. in. |  | sq. in. | Fir. months. | Oak. months. |
|---|---|---|---|---|---|
| Pieces under | 8 | to | 4 | 3 | 6 |
|  | 12 |  | 8 | 5 | 10 |
|  | 16 |  | 12 | 7 | 14 |
|  | 20 |  | 16 | 9 | 18 |
|  | 24 |  | 20 | 11 | 22 |
| over | 24 |  |  | 13 | 26 |

Artificial methods of seasoning are in use, and McNeil's method I have seen in use at Messrs. Cubitt's, in Gray's Inn-road. Here the timber is enclosed in a cylinder; a furnace is kept burning at one end and the chimney is at the other, so that hot air and smoke are constantly passing over the timber from end to end, and there is water on the floor of the chamber which is constantly passing off in steam. The timber is thus in an atmosphere of hot, damp, smoky air, and three weeks of this treatment is said to suffice for timber of considerable scantling. The authorities state that all timber seasoned in these artificial ways becomes softer, which makes it easier to work but probably is accompanied by a loss of strength.

The air seasoning of deals and battens is to be seen going on in timber-yards everywhere. They are generally stacked level with fillets between the boards. Sometimes they are stacked sloping against a horizontal bar, but in any case it is essential that the air have free play all round them and very desirable that they be shielded from sunshine and from rain.

Pray remember that it is never safe to attempt to season sap-wood in any of these ways. For the construction of good buildings the sap-wood must be removed and the heart only made use of.

The result of seasoning is that the timber shrinks slightly, that it becomes lighter, that it increases very markedly in strength, and that, under reasonably favourable circumstances, it is safe not to decay.

Artificial modes of seasoning are employed on timber intended for railway sleepers which are not available for building timber. Sleepers which have to lie on the earth are often treated with creosote, a material distilled from coal tar, very antiseptic—that is to say, decay-resisting—smelling very strongly of tar, black in colour. In various ways it is attempted to force this into the pores of the timber, and though it does not seem easy to send it through the whole log, it is easy to fill the outside pores. This is generally done by putting the timber into a great iron cylinder, pumping out the air, and then letting the creosote in when the empty pores admit it.

The smell, of course, makes creosoting improper for timber used in a building, so other materials, such as a solution of corrosive sublimate, are occasionally employed, and among the methods which depend upon injecting chemicals into the pores of the timber attention has been directed to the one employed by the *Non-Flammable Wood Company*, which is said to render timber so far incombustible that it will not flame, though the company do not claim that it will not char if exposed to a flame. If it turn out that this treatment will make deal and pine wood, which is so convenient a material for the purposes of the builder, a fire-resisting material, and at moderate cost, it will be an immense boon; but the matter has hardly got, in England at least, far beyond the experimental stage yet, though it is claimed that the material is in actual use in America. We have, however, by the courtesy of the company, some specimens in the room, and can test their behaviour here and now.*

Timber, even though seasoned and put into a damp place, is liable to absorb moisture, which causes it to swell and twist, and if it is kept exposed to damp for a sufficeint time decay will follow. But, short of decay, the effect of moisture on well-seasoned wood, especially on joinery, is bad. The surface of wood that is likely to be exposed to changes of damp and dry air is accordingly protected by paint to keep the damp air from getting access to the pores of the wood; and if we desire not to paint, oiling, varnishing, treating with French polish, or rendering with pitch or tar are methods of closing up the cut surface of the wood more or less effectually; and this is the chief reason for painting joiners' work. The same object is proposed in the American preparation now before you. In extremely dry climates—for example, in Switzerland—you will find that it is not customary to paint or varnish woodwork to protect it, experience having shown that it is not needful, and much of the unpainted joinery has been exposed for many years, and is in good condition.

There are situations where timber is specially exposed. The butts of the posts in a timber fence are examples. It is customary to char these in a fire, and something of an impervious layer of carbonised wood is in this way secured to protect the timber from the effects of the moisture. It is possible also that charring may be of use in another way, to which I will direct attention immediately, by actually killing the seeds of fungus.

Suppose a piece of timber decays. What happens? I have already referred to the decomposition of any albumen there may be, and it is pretty certain that this becomes at once the soil in which low forms of life begin to flourish. They may be fungi of some sort. They may be bacteria. They will probably be both. But they will slowly appropriate to themselves not only the albumen most suitable for them, but almost everything else in the pores of the timber, leaving the bundle of empty tubes. In other words, the wood becomes light, spongy, and even will ultimately fall into powder, while it has lost all its strength. Old bond-timber taken out of walls shows this condition very markedly. The process seems in many cases to go on very slowly. It is prevented by a moderate circulation of air, and it can be checked and delayed by letting in air. This, which is most properly called decay, is commonly known as wet rot, and inasmuch as it is started by dampness more than by anything else, the term is not inappropriate.

### Dry Rot.

There is, however, a different aspect of decay in timber which is very formidable indeed, and is known by the name of dry rot. This name is not appropriate, for the dry rot appears, just as ordinary decay does, in positions when the timber is damp and no air gets to it. Dry rot is not a gradual decay, but a galloping consumption. It is rapid, it is complete, and it is apparently irresistible. It mostly begins in sap-wood, occurs in unventilated floors, is sometimes set up in boarded floors under kamptulicons and floorcloth, occurs in wood that has been painted when green, has been known to be started by pugging, and will, in any case, when once started, spread with frightful rapidity.

Dry rot is distinguished by the presence of a malignant fungus, which does the mischief. Signs of its presence are rusty rings round nail-heads, cracks in timber across the grain, a blistered appearance in the paint, mildew, fine long fibres forming a kind of network; then a thick, smooth fungus like the back of a mushroom of various colours, as white, greyish-white, violet, yellowish-brown, or rich brown; disagreeable acrid smell; till the timber loses all solidity and is rapidly destroyed.

Dry rot spreads with great speed, like a fire. When it occurs all wood affected must be cut out at once; all liable to be tainted or suspicious should be washed repeatedly with a solution of corrosive sublimate—1 oz. to a gallon of water—and air must be admitted freely. There does not seem to be any difference traceable between the conditions that produce dry rot and those that produce the slower and less malignant decay or wet rot, and one may conclude that the accidental presence of the seeds of one of the sorts of fungus which appear when an attack of dry rot takes place is the principal, perhaps the only, reason why this scourge shows itself in one place and not in another.

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* A lecture delivered by Professor T. Roger Smith at Carpenters' Hall, June 1. Being the last of a short course on carpentry and joinery, intended for candidates preparing for the midsummer examination in these subjects established by the Carpenters' Company.

* Some simple experiments were tried with success in the lecture-room.

### PART II.—TIMBER BUILDING.

If now we suppose some such fabric as a stout quarter partition, well framed and braced, but without the studding, to be set up as the framework of an external wall, and to be boarded, or weather boarded, or covered with wood shingles outside, we have arrived at a suitable wall for a plain specimen of what forms the subject of the second part of our programme.—(Wooden Buildings).

Persons whose experience is chiefly in London have few opportunities of seeing wooden buildings, because they are contrary to the provisions of the Building Act; but I should remind you that the various railway companies who are exempt from those provisions which refer to the erection of buildings, make use of wooden buildings frequently, and in the country even more freely than in London.

At Reading I lately witnessed the demolition of part of the old Great Western station there, built of wood, and now replaced by a stone and brick building, on a different site. These wooden buildings must have been standing for more than fifty years, and did not seem, as they were being pulled down, by any means worn out.

In country places, in the Colonies, and wherever the laws or by-laws in force permit, I am of opinion that wooden buildings are better for temporary purposes than the very flimsy structures which we call iron buildings. These are mostly weak wooden frames covered with corrugated iron, and after a very few years are found to be beginning to need repairs and renewals, and a well-built wooden building, if kept painted outside, may be expected to outlast two—if not three—corrugated iron ones.

The liability to destruction by fire is pretty much the same in both cases. An iron building blazes up if it is set on fire as much as a wooden one does, and I am not sure that the frank confession which a wooden building makes of its being combustible is not useful as a warning to the people who make use of it.

Wooden houses of this sort are very much used and are liked in North America, where timber is very plentiful. A Mr. Moore, in a clever little book on "The House Practical," gives an account from which, and from other sources I will give some account of these buildings.

Mr. Moore says that it is the generally accepted opinion that the healthiest dwelling-house for the climate of America is a timber house and especially if near the sea shore. The summer temperature in America is, it is understood, higher than in England, and the winters are severe, so that if this good opinion is generally entertained it shows that a wooden house can be made tolerably weather-proof. It ought, however, to be added that it is the invariable practice to employ a heating apparatus to warm the house (usually by hot air) in addition to fireplaces in the rooms.

The structure of the outer walls of these houses is framed with corner posts extending from the sill or plate which is bedded on a brick or masonry dwarf wall to a plate at the top of the building. There are two modes of completing the framework, the best is what they call a braced frame; the other, a balloon frame. In a braced frame, a plate to which the name of girt is given is framed into the corner posts at the level of each floor. Some of those plates or girts, namely, those upon which the floor-joists are to rest, are placed at a rather lower level than those parallel to such joists, and to these the name of "dropped girts" is given, on account of their being fixed lower. At each angle made between the corner post and a floor-plate, short braces are introduced above and below to stiffen the angle, some diagonal braces are added in the longer lengths of framing, and then the remaining spaces are filled with upright studding, much as in an English quarter partition. The framing and studding of each story is thus, in effect, distinct. The chief difference between this and what it would be customary to do in England is in the insistence upon angle-ties, which are to be mortised and tenoned and pinned with hard wood pins. The timbers are to be "draw-bored" to receive the pins, which means that the hole bored through the tenon and the cheeks of the mortise do not quite coincide, and in consequence driving the pin home tends to draw the timbers tight together at the joint.

The other, and less strong, method is to form what they call a balloon frame. In this framing there are angle posts as before, but not girts, and all the studs are long timbers extending from cill to roof-plate. Timbers to perform the office of plates carrying joists are then spiked to the studs on the inside, or else are let into sinkings cut in the posts and studs, and the floor joists bear upon these plates. The framework is to be braced by long struts and interties, which, in the absence of precise information, I must presume are planted on the back or inner side of the studding.

It will be obvious that the first method provides for framing up to each floor, the second erects the walls from cill to plate, and then picks up the floors almost as if they were an afterthought.

The framework, whichever method has been followed, is now to be covered with its outer covering, and for this purpose it is first boarded with boarding in narrow widths (preferably not over 6 in. wide), grooved and tongued and wrought on one side; sometimes this boarding, which they term the sheathing, is fixed horizontally, sometimes diagonally. "On this outer sheathing should be fastened," says my authority, "a heavy quality of building-paper nailed with tin washers." I presume this building-paper is something the same as our Willesden paper. It is otherwise described as heavy "rosin-sized" building-paper—"not tar-paper"—and tin washers not less than ¾ in. in diameter are specified to be used with the fasteners.

Portions of the exterior may be faced with weather-boarding—here called clap-boards—but all the important part is to be covered with shingles, the thin slabs of hard wood which we sometimes employ for spires. The American writer recommends cedar to be used for the shingles; they are to be 16 in., of uniform size, "plane butts," clear of knots and cross-grain, and nailed with two galvanised nails in each shingle, "5 in. to the weather." This would, I believe, correspond to what we should call a lap of 6 in.

The roof may also be a shingle roof, with a sheathing of boarding covered with paper, like that on the walls, only that the roof shingles are specified to be nailed to fillets corresponding to our slate battens, in order to get a circulation of air between the shingles and the boarding behind them. The roofs otherwise may be slated on the boarding. The shingles may be either sawn or split. If sawn, they are most uniform in thickness; if split, most durable.

The finish of the internal face of both walls and ceilings is to be lathing and plastering, but it is recommended that either the spaces between the studs be filled with broken brick in mortar—like our brick-nogged partitions—or that a layer of rough plastering on laths on fillets be introduced in the middle of the partition. The American name for this, which in England is known as "deafening," appears to be "back-plastering." Mr. Moore very strongly deprecates the use of boarded ceilings, which it appears are customary, as dangerous in case of fire. The use of woodwork, in the shape of boarding and panelling, as an internal finish in place of plastering, is not even alluded to by him. It is common in wooden houses in Switzerland.

The scantlings of a good many of these timbers are given in the specification, and, on the whole, they are what we should consider rather light for timber in similar situations.

My American authority is fully alive to the risk of fire in a building of this nature, and not a few wholesome precautions are suggested and specified. The fireplaces, chimney stacks, and chimneys are of brickwork, and the timber are to be trimmed so as to avoid all contact with them, and all the flues are to be enclosed in 9 in. of brickwork. Precautions with regard to the hot-air apparatus, furnace-tubes, inlets, &c., I hardly need go into.

At each story the space opposite the joists, and for a short distance up each external wall, is to be filled in solid between all timbers with brickwork or mortar, or with mortar with a portion of plaster of Paris to harden it, and this filling in is to be plastered on both faces. This is for a fire-stop. Metallic lathing is suggested for the ceilings, and some description of fire-proof pugging between the floor and the ceilings.

It is also directed that the landings of the staircases are to have solid pugging between the joists that carry them, and that the spaces between the carriages of the same be closed at intervals of 3 ft. by fire-stops of some incombustible material, so as to prevent the possibility of the space between the back of the plastered soffits and the treads and risers acting as a flue to convey flames.

It appears to be intended that all external woodwork except the shingles shall be painted and the shingles either left with the actual surface and colour or stained.

Much such a construction as I have been describing, only more simple, would be of great use for the erection of agricultural cottages, stabling, and other buildings in parts of England where timber is cheap, and stone or brick not readily accessible. I am afraid that the by-laws of almost all the sanitary authorities created now in the country will prevent this being much done in the future, but here and there an opportunity of building wooden structures of this class occurs.

I now propose to say something about other kinds of wooden structures, those, in fact, which begin from the *log hut*.

In all countries where pines and cedars grow plentifully—that is to say, where trees which produce a timber that is straight and is easily worked, abound (in other words, in Switzerland, Norway, Sweden, and other parts of North Europe, and in the Himalayas and elsewhere in India)—timber is a favourite material for building, and what one may call *log walls* constantly occur. In Japan timber is largely used on account of the frequency of earthquakes, which throw down stone walls more readily than timber ones, but without attempting to describe the buildings in those remote countries I must say a word or two about those of Switzerland, a country which, thanks to excursions and Cook's tickets, is within easy reach.

No small part of the pleasure of a walk through the Bernese Oberland of Switzerland, for any one with an eye to good buildings, is due to the picturesque beauty of the timber-built houses known as chalets. They stand mostly on a foundation of rough masonry, and their walls are formed of logs of fir dressed so as to lie close one atop of another, and halved at the angles. The buildings are wide and low. The roofs overhang the walls at the sides a long way, and are thrown forward at the gables also on corbels of great strength, so as to shelter the walls; and charming balconies or verandahs are thrown out at the front and sides. The colour of the woodwork is generally very beautiful—a rich reddish amber is what is mostly seen, though some old houses become in time very dark indeed in colour. In these buildings, the art of building as practised in Europe long ago still lingers.

The enrichments and ornaments of these houses are often of great beauty. Bands of delicately-carved ornament, pierced panels, pretty balconies, with good carving in the brackets and the balustrades, abound, and the barge-boards of the great gables are often very well ornamented. Not infrequently an inscription records, the date of the building and the name of the worthy who caused it to be put up and that of his wife. Sometimes a text of Scripture, or a short prayer, or a quaint adage accompanies these, and I remember one in very crabbed German, the sense of which may be given in English much as follows:

> "Who builds upon the public way
> Must let the public say their say.
> I have built myself to please,
> And you can blame me at your ease."

The joints of these log-walls are carefully caulked with moss, and there is an inner lining of wood panelling or boarding. In Sweden, where the same sort of walling is largely employed, they slightly hollow the under side of each timber, and leave the natural curve of the wood on the upper side, so as to lodge them more tightly on each other, the timber being adzed down to a thickness of about 5 in.

In the Swiss timber houses when a cross-wall occurs the ends of the timber project in the front, as the logs forming the external walls are halved where it occurs. In Sweden this sometimes occurs. At other times timbers are halved at the angles of the building, and connected together by pegs of wood, and the broad end of one log is placed under the narrow end of the other, alternately. They sometimes set up stout angle posts with deep grooves in them, and form the walls of horizontal timbers, thinner than would be used for an ordinary log-wall, and carefully thinned at the ends to run in the grooves. They also sometimes use timbers placed vertically instead of horizontally. This seems to have been the case in Great Britain also (as Sir Gilbert Scott in his lectures describes). According to him a timber church, of considerable age, still stands, or stood a few years ago, at Greenstead, in Essex, of which the walls are built of stout logs, fixed vertically, with the original round face outside, though squared inside, and where they touch each other.

In Switzerland a very flat pitch and a surface unbroken by dormers and not disturbed by hips always occurs. The effect is one of breadth, not of height. In those Swedish and Norwegian buildings which aim at architectural effect—in the timber churches, for example—it is worth noting that exactly the opposite principle is adopted. The buildings are lofty, and are made to look lofty by the employment of steep sloping roofs and hips, and no better illustration can be given of the possibility of arriving at architectural success in the use of the same material by methods diametrically opposed to one another.

The kind of house which I have been describing is not, however, the only sort into which the employment of timber enters. Throughout our own country, France, Germany, and some other European countries, the kind of structure known as a half-timbered building was for many centuries universal, and it is largely in use now. By this title is meant a framework of timber filled in with plastering or masonry, or even tile work.

Very few English half-timbered buildings of great age remain. There are a few very old ones in French remote towns, and very picturesque they are. The early houses usually had side-walls of masonry and a gable to the street. Some of them are represented and described in the remarkable dictionary of Viollet le Duc. In some cases the scantlings are given by him. They do not seem very heavy, plates and posts being about 7 in. by 7 in.; but the total amount of timber is very great, as the timbers are very close together. The first floor overhung the ground floor considerably, but the joists ran parallel to the line of the front and are supported on the two party-walls and on one bressummer running from back to front and supported at the front by a stout post and by a carved bracket. The second floor, when there was one, might or might not overhang the first floor, but the roof almost always overhangs considerably.

Viollet le Duc gives in some detail the mortises and tenons and other joints employed in the example he illustrates. They are very elaborate, and, as he remarks, resemble those of a piece of joinery or shipbuilding.

Soon more skilful construction, and with more economy of material, came to be adopted, and the joists were often carried from front to back, instead of from side to side; but as far as my own observation goes, even when this is done, and when a story overhangs, the French builders did not show the joists as English carpenters, I think, preferred to do. The lower story post was framed into a deep head. The joists rested on this and were tenoned into a timber, which forms the plate for the upper framing, but the soffit of the joists is often covered by a third piece introduced more for ornament than use. The salient angle of all these is stop-chamfered or stop-moulded, and the effect is extremely rich and good. This method is not perhaps always pursued, but I have seen a good many examples of it, and it results in an effect so different from the appearance of English buildings which overhang that I feel it ought to be pointed out. During and after the fourteenth century the framing of timber houses was done with timber of comparatively light scantling and became very ornamental. As a rule the gable was turned to the street. The stories generally overhang, sometimes to a considerable extent, and in the best examples the prominent timbers are carved or enriched, sometimes with little pedestals and canopies and statues. The gable is often treated very skilfully with an ornamental barge-board; and where there is no gable a large and often beautiful dormer window takes its place as an architectural feature. In the fifteenth century, as people became more luxurious, these timber houses had wider frontages and several stories. It then became the custom to make the windows numerous and small, for it is impossible to avoid a certain amount of play under the alternations of hot and cold and the pressure of high winds in these great framings. This play, distributed among a number of small frames and casements, is less sensible than where there are only a small number of windows of greater dimension. Frequent cross-bracing and excellently-executed joints were also relied upon to keep the structure stiff.

Almost throughout the French examples the timbers employed are straight, with the exception of corbels and brackets and sometimes barge-boards. In England, on the other hand, frequent use is made of curved timber. Our habits as ship-builders may have to do with this, but I am inclined to attribute it to the quality of the timber available—chestnut—and especially the timber of *small* trees, which were chiefly employed in France for this sort of work, runs tolerably straight. Oak, which was the chief English timber, furnishes, with its gnarled and twisted branches, a great deal of curved timber not available for many purposes, but excellently fitted to form the curved struts which so often add to the beauty of our comparatively simple English framing, less often enriched with mouldings, carving, and statues than in France.

Among English examples, the halls in Cheshire and Lancashire were some of them important country houses, and the interiors, or, at any rate, parts of them, are extremely good; but I have thought it sufficient for our present purpose to confine myself to the exteriors.

There is no room to doubt that timber-framed buildings were in use—in common use—in this country in very early times. Ancient descriptions of buildings and pictures in early books show this. Of the many buildings of Saxon and Early Norman times, only the most sturdy have survived to the present day; in other words, only the best built stone ones. But some even of these give indirect evidence of the prevalence of timber construction. The famous Saxon tower of Earls Barton Church is covered with projecting strips, some vertical, like posts, some sloping, like struts, which precisely imitate the ornamentation of a timber-framing.

There are, however, a few examples of very respectable antiquity, and a great many that go back to the seventeenth, the sixteenth, and the fifteenth centuries. This kind of building was, no doubt, common in all towns. Specimens remain in most of those towns which were early established and have not undergone a complete and radical rebuilding. I have seen such, for example, in Chester, in Gloucester, in Worcester, in Tewkesbury, in Coventry, in Exeter, in Norwich, in Shrewsbury, and in Ipswich—and it would be easy to add to this list of towns. At a time when great forests of oak covered many parts of England which are now cultivated, timber was very available in many districts, and accordingly great country houses, manor houses, farm-houses—and now and then a church—were timber-built. Lancashire and Cheshire in the north are famous for their old halls, and it is only a small portion of these that are in masonry.

In the great forest-covered plains the houses were usually built in the picturesque black and white, half-timbered, style, oak being commonly used, not merely for walls and roofs, but also for the furniture and fittings.

In the older houses, as instanced by Tabley, Baguley, Smithells, and Samlesbury Halls, the timbers are generally of enormous size. A low stone wall usually carries the timber framing, which is often thrown into fantastic geometrical patterns. The panels so formed are filled in with a basket-work osier foundation, which is then daubed over with clay, strengthened with straw or stringy weeds. The finishing coat is of plaster on both sides, richly matted with hair, and frequently set back ½ in. or more from the face of the woodwork.

As an illustration of what is here said, the dimensions of some of the timbers at Baguley —dating apparently from the fourteenth century —may be cited. The head of the east doorway was cut out of a piece of oak nearly 3 ft. wide, many of the main posts out of pieces 2 ft. 6 in. wide, and others in proportion. These great timbers, it is added, are in excellent condition.

Such enormous timbers are, however, exceptional, and though the timbering is always heavy, the scantlings are not surprisingly stout; but the timbers usually stand very near together. The general arrangement was that the posts of a piece of framing, by which I mean all the upright timbers, were framed to a cill and a head, and that horizontal pieces like interties were framed into them, and that in some of the numerous rectangular panels so formed naturally curved timbers were added to enrich the panel, or else raking struts were used for that purpose. Occasionally an air of great ornament was given by the panels being filled with quatrefoils or other simple tracery. All this timbering is now black and may be supposed to have always been so, and the surface of the plastering is kept very white so that the ornamental parts stand out very vividly.

The gables commonly display a heavy tie-beam and a stout king-post standing on it with two heavy main rafters, while the two triangles so formed are filled by raking timbers. The roof-covering overhangs this, and there is often a barge board, while the face of the gable frequently overhangs that of the story below.

A curious variety exists at Tewkesbury, where the ornamental gables of two or three of the old houses are set rating forward. Of course, it is possible that on close examination this, like the famous twisted and leaning spire of Chesterfield Church, Derbyshire, might prove to be the result of decay; but as seen from below it has very much the air of being thus designed.

In some English town houses standing at the corner of a street a very stout corner-post of timber, of which the upper part is bent, was sometimes used, and caught the overhanging upper story. Some of these remain (at Ipswich, for example), though the house to which they belong has been entirely changed. Illustrations may be found in Parker's "Domestic Architecture."

There is a good deal of difference in respect of overhanging. In towns there was a great inducement to make the upper stories overhang so as to give more space. In country buildings it was sometimes done and sometimes not—and very often the upper stories of the gables overhang and the sides do not. It may have been the wish of the old builders to secure their gables to the main mass of the building by running the heavy joists, which they made use of, from front to back of each block of their buildings. When this was done you can quite understand that it is easy to make each story of the gable end overhang by simply letting the joists project beyond the plate on which they are supported and placing the cill of the next story on them; but that it would be less simple and secure to throw out the enclosing framework sideways and, accordingly, this constantly occurs.

A very pleasing arrangement of bay-windows in fronts of which the upper part overhangs sometimes occurs. There is a projecting square-faced bay on the lowest story, and on the next floor the entire front is thrown forward as much as the bay had projected, so that the general face of the first floor is a continuation of the face of the ground-floor bay. Sometimes this is repeated at a higher level, and with very good effect in tall fronts.

The most vigorous overhanging is that when the entire upper story of a town house is thrown out on posts, so as to cover over the whole footpath. This, which has a very quaint effect, is best seen at Chester, where, in addition, there is a second public footpath on the level of the first floor, reached by stairs at intervals. This peculiar disposition gives two stories of shops, and, of course, could hardly exist except where houses were timber-built. The name locally given to these overhanging buildings and the two stories of footpaths which they overshadow is The Rows.

In such examples as still remain in towns we rarely see such heavy and clumsy timbers as in the early country examples. The timbers are often lightened by being carved, or by having some sort of carved ornament added to them.

We have in London two remaining timber and half-timber buildings that show what the old build was. The front of Crosby Hall, Bishopsgate-street, has been very much renewed, but it shows in the main what the exterior of an ambitious and rather ornate

London building was. The other building, Staple Inn, on the south side of Holborn, nearly facing Gray's Inn-road, is happily almost untouched. It is very simple but very dignified, and is a most interesting example of considerable extent.

I spoke in the earlier part of this lecture about the use of whole timber buildings at the present day. A few words about the modern use of half-timbered work may be useful. It is unquestionably extremely pleasing in its effect, and the architects who build country houses are extremely glad to introduce a piece of half-timbered work here and there as a relief. We are, of course, anxious in modern houses to keep everything warm and dry, and I believe many architects now adopt the precaution, when they introduce a half-timbered external wall, of putting a thin brick wall behind it, and I judge this precaution to be wise. It gives two distinct walls, with something of an air space, and, in fact, has the same advantages to recommend it that a hollow wall has.

When this is not done, and even when it is done, there is great advantage (if the expense does not prohibit its use) in employing oak. It stands exposure to weather well, and does not decay or warp. Usually this will be out of the question, and the next best material is as resinous a sort of fir as possible, such as pitch pine, or what is known in the North of England as red pine.

It is important to groove the timber deeply, so that the plastering may go well into the groove, and behind this groove a fillet is nailed on to receive the laths.

Let me add that whenever you introduce half-timber walls for architectural effect, you must not be sparing of the timber. Your beams must be of large scantling, and not far apart, if you wish to obtain an effect at all resembling that got by the old builders.

When the work oversails, or where it is wanted to avoid weight, the brick backing may be inadmissible, and in that case I prefer lathing and plastering to boarding as a lining for the inside. If the inner face of the framing is boarded, I recommend two thicknesses of boarding, with Willesden paper between the two, as much more likely to stop the wind that may get through crevices than anything single.

If there is not a backing it would be very desirable to fill the spaces of the framing with some light non-conducting material. In Sweden I believe that dry moss is used for this purpose, but it is hardly safe to attempt its use in England. We have an admirable and perfectly unexceptionable material in slag-wool (otherwise silicate cotton), but unfortunately it is not cheap, and could only occasionally be used. Probably the best thing to use would be deafening, such is often used in internal partitions, and though I have no experience of its employment in such a position, I should not hesitate to use it were the occasion to arise.

In conclusion, I make no apology for directing your attention in parts of this lecture—one of a course intended for practical men—to buildings on the Continent and in America, as well as in England. We seek after *novelty* in building as in other arts, and we are more likely to find what is new if we ask what the builders in other countries, and with different climates and surroundings, do than if we look only at home. We also seek for *improvement* and if we are only willing to learn, we sometimes can get a valuable lesson from the mere fact that the thing we are about is done in a different way by other people. I trust, therefore, that you will always keep your eyes and ears open to the work being done by our American brethren and by the many clever men on the Continent, whose architecture and construction has been in the past, and is often now, of the very greatest excellence.

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INFIRMARY, &c., CAMBERWELL.—At a meeting of the Camberwell Guardians on Friday, last week, plans, prepared by Mr. Edwin T. Hall, architect, Moorgate-street, E.C., were approved for the infirmary, Guardians' offices, and relief station at an estimated cost of 208,000*l*.

LEEDS ARCHITECTS AND THE BUILDERS.—A resolution has been passed by the Council of the Leeds and Yorkshire Architectural Society approving the action of the Leeds Masters' Federation in the building trade dispute, and promising to urge upon their members the desirability of recommending clients not to put pressure on employers to fulfil their contracts, during the continuance of the dispute, or to let further contracts.

## THE ARCHITECTURAL ASSOCIATION SUMMER VISITS.

THE second summer visit of the Architectural Association was to have been to Gatton Park, in Sussex, on Saturday last, the 17th inst., but it was abandoned, and as only nine members had expressed a wish to attend, it was decided to make an informal visit elsewhere.

A small party of six in all went down to Lingfield Station, on the L.B. and S.C. Railway. The large and interesting church—mainly Perpendicular—was first inspected. The two gables at the east end are without copings, the roofs projecting as at the eaves where the stout plate and ends of rafters are visible, grouping well with the shingled spire on the low tower, which breaks on plan into the west end of the south aisle. The windows, on the north especially, are high from the floor, which is of stone except in the choir and chapels, where the old red bricks, 9 in. by 9 in., remain. The oak screens are good, but not elaborate; against the central one are returned choir stalls with carved misereres, the church having been made collegiate in 1431 by Lord Cobham, whose tomb exists, with his recumbent effigy, and a Moor at his feet. There is also a larger tomb to another Lord Cobham and his wife; they have at their feet a griffin and a wyvern. Both these tombs have their ends and sides carried up above the top about 3 in., and are battlemented; there is also a fine altar tomb with moulded purbeck marble slab with a brass of a knight in plate armour, and inscription dated 1403. The old oak lectern carries a seventeenth century Bible. The walls are whitewashed and the roofs are of the waggon type of dark oak.

Near the church is a fine old timber-framed house with half-timbered cove between wings which project beyond the wall of the ground floor, also an early Georgian house of brick with plain wooden mullions and transomes. On the village green is a diminutive mutilated chapel or shrine known as "St. Peter's Cross," which until recently has done duty as a lock-up.

An adjournment was then made to Crowhurst-place, an old Tudor house of very great interest. A portion of the moat still remains; the house and adjacent buildings—for it is now a farm—form as picturesque a group as can well be imagined. Through the kindness of Mr. Hooper, the members were allowed to go all over the house, a courtesy which was much appreciated by them. The hall has an open timber roof of solid construction, which was inspected from the ceiling joists of the three bedrooms which have been inserted. The spacious fireplace still contains its original fittings and fire dogs, as also a cast iron fire back of the seventeenth century, and the walls are wainscoted. The screen has disappeared; the parlour is now used as a lumber-room; its walls are covered with fine linen-fold panels in oak. The ceiling has heavy moulded beams and rafters, the boards between being painted in red and white checkers, these colours being repeated on the beams, and the hollow member in blue, enriched with small lead stars originally gilt; the colours are faded but perfectly distinct. The cornice has disappeared; it was described in 1858 as still existing, "A Gothic G alternating with grapples in blue and gold on a crimson ground." This was the badge of the Gaynesfords, the original owners, and occurs on the quarries in one of the windows. The outer doors are richly moulded, and good hinges are to be noted both here and upstairs; notably two pairs, of small fleurs-de-lys patterns.

The next move was to Crowhurst Church, St. George's, with a very old yew tree in the churchyard. Here the members of the party were met by the Vicar, who kindly conducted them over the church, which is small, of the Early English and Perpendicular periods; it contains two altar-tombs, and brasses to members of the Gaynesford family 1450-60. The stout oak posts that carry the belfry come down to the nave floor at the west end. A wooden battlemented cornice on the north wall of the chancel, below the sill of the window, is supposed to have formed the capping to wainscoting now missing. A cast-iron grave slab on the chancel floor, dated 1591, also attracted notice. The members then adjourned to a farmhouse close by, dating from the sixteenth century and once belonging to the Angell family; it is now in the possession of Mr. and Mrs. Williams, who most hospitably entertained the party with an excellent tea. The deeply recessed open fireplace and huge chimney has *in situ* a very fine mechanical appliance of wrought iron worked by a weight for turning the spit. Returning to Lingfield Station and by rail to London brought this impromptu and highly successful visit to a close.

We may here mention that in the account of the visit of the Association to Cobham Hall, the statement that the house was illustrated in Messrs. Belcher & Macartney's "Later Renaissance" was incorrect; it is in Mr. Gotch's "Renaissance in England" that the illustrations referred to are to be found.

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## THE ASSOCIATION OF MUNICIPAL AND COUNTY ENGINEERS.

A NORTHERN COUNTIES district meeting of the members of this Association was held at Whitehaven on Saturday last. Mr. R. H. Dorman, of Armagh, presided in the absence of the President (Mr. Robson), and amongst those present were Messrs. E. J. Silcock, Leeds; J. F. Smillie, Tynemouth; R. Pickering, Whitehaven; J. S. Brodie, Whitehaven; J. P. Dalton, Ryton-on-Tyne; J. T. Redfern, Carlisle; and J. B. Wilson, Cockermouth.

The Mayor (Alderman J. R. Musgrave), in welcoming the members to Whitehaven, remarked that they might have been attracted there by the knowledge that, although a small borough, it had led the way in a great many notable matters which affected the welfare and health of the community. It was the first town in England that ever adapted a natural reservoir to the purpose of a water supply, and they could claim to be the first borough in England to light their streets and attempt private lighting by electricity. Those matters had been eminently satisfactory to them in Whitehaven. Although an old town, with a dense population aggregated on a small area, they could hold their own with any part of the country in respect of the public health.

Mr. Dorman thanked the Mayor for his reception of the Association and for the use of the Town Hall for their meeting.

On the proposition of Mr. Brodie, seconded by Mr. Pickering, Mr. J. P. Dalton, Ryton-on-Tyne, was re-elected hon. sec. for the district.

Mr. R. Pickering, Whitehaven, read a paper on "Water Supplies to the Incorporated Boroughs and the Urban and Rural Districts of West Cumberland." He said the rainfalls in the mountain ranges of Cumberland were enormous, reaching in one part and in some years to 250 in., and toning down to 58 in. on the margins of the mountain district. The waters of the western mountains, in their passage through the lakes and rivers, contributed of their stores, and almost entirely supplied the population on the western seaboard, and they were without exception uniformly very soft and very pure. The Whitehaven supply was obtained from Ennerdale Lake, from which the town was authorised to draw one million gallons a day and at the present time a Bill was before Parliament to increase the daily draw from the lake to 2,000,000 gallons. Up to the present time the sum of 93,000*l*. had been authorised to be borrowed by the various Acts, and 78,000*l*. had been expended. In 1866 the Maryport Authorities obtained Parliamentary powers to take water from a mill race at Cockermouth, which was fed exclusively from the waters of the River Derwent. The source was not at present first class, yet it was of such quality that the inhabitants of scores of towns would be very glad indeed to be supplied from it. A series of filter beds had been made in Bridekirk, at an elevation of about 368 ft. above O.D., and a covered service reservoir in Ellenborough. The works supplied a total population of about 18,000, and the capital expenditure was 33,450*l*. The Willow water supply was from the head waters of Whicham Beck, where the watershed area had only about two or three dwelling houses within its area. The reservoir capacity was 28,000,000 gallons. The daily consumption was 650,000 gallons, or 65 gallons per head. The main pipe from the reservoir to the town was laid in 1875, of 8 in. diameter; in fifteen years it was found to be so crusted with peroxide of iron that the district could not get enough water through it, and in consequence of this about two-thirds of the 8-in. main was taken up and replaced by a new 12-in. main with a breeches piece; then there were two 8-in. mains at the Willow end. The old 8-in. pipes, after being scraped, were relaid, besides the one-third of the length which was not disturbed, but was scraped *in situ*. The capital expenditure amounted to about 30,000*l*. The gathering ground of the water supply of the Cleator Moor district was on the slope of the Dent mountain, closely contiguous to the district, on which two reservoirs were constructed, but subsequently the district went further afield on the mountain country betwixt the old gathering ground and the Kinniside mountains, taking the water from sundry springs and making a new service reservoir. The expenditure had been about 23,000*l*., and the Council was carrying out the laudable principle of paying off the debt rapidly. The district of Arliedon and Frizington, soon after its formation into a Local Board in 1876, constructed water works in Cogra Valley at the level of about 700 ft. above O.D. There was a very strong spring in this valley of peat moss of good quality water, but varying with the seasons. Instead of making provision for storing this pure spring water, they made a storage reservoir in a swamp, to about 20 ft. in depth of peat below it, and in dry weather drew on this bog reservoir. In the years 1878-9 the Arliedon Local Board tempted the Egremont Board with an offer that they would supply them from their works at Cogra Moss with water at 1½d. per thousand gallons, and an agreement was entered into. In 1879 the Egremont Local Board applied for an Act of Parliament to make an impounding reservoir in Uldale. This reservoir was to do duty also as a service reservoir, the site being only 1¾ miles from the edge of the Egremont district. The site chosen for the dam had slate rock at both edges and rock below, but the narrow neck of the valley had about 60 ft. depth of dèbris on the rock. It was an ideal water-shed, without any pollution present or likely. A fierce battle took place before a Parliamentary Committee on the petition of a lord of the manor of about one-half of the water-shed area. He was worsted in his contentions, and the Act was obtained containing the most important provisions. By the tempting offer of the Arliedon Local Board to supply Egremont with water at 1½d. per thousand gallons, the latter Authority actually threw overboard the important privileges they had obtained in the Uldale valley by authority of Parliament. This was one of the many instances where committees make sad mistakes. The individual members often fancy they are competent to deal with every question under the sun. At a public inquiry before a Local Government Board Inspector on the application by the Egremont Board for a loan to lay pipes seven miles to bring the Cogra water from Lamplugh and the other necessary service mains, as well as to erect a small service reservoir, one of the witnesses in opposition contended that the large reservoir in Cogra was a perfect "*muck hole*." This evidence gave much offence, but the loan was sanctioned by the Local Government Board. The works have been carried out, and now for the last three or four years the Egremont Board would be glad to be set free from their engagements with the Arliedon Council on the ground they say that the water is "*cheap and nasty*." In the Bootle Rural District three small waterworks had been carried out for Bootle parish, Whicham and Hill-on-Millom respectively. On each of these installations a principle had been adopted to have the works so constructed as to be nearly self-supporting by water-rents, without taking outlying property where owners and occupiers would not derive any direct benefit. A joint scheme for the Cockermouth Urban and Rural Districts and Workington was carried out by a Joint Committee of the three Authorities, who, after several abortive schemes were considered, turned their attention to the Crumwick Lake watershed of 15,600 acres with annual rainfall of from 55 in. to 120 in. per annum and having regard to its wide expanse, the water was found to be relatively free from impurity. The salient points of the scheme which was adopted were power to lower the bed of the Cocker below its exit from the lake and to erect weirs across the two arms of the river Cocker as it issued from the lake, but so as not to raise the normal level of the water in the lake; to draw off 2,000,000 gallons of water per day, and in the event of a 15-in. diameter pipe being laid down to draw from the lake to give 3,000,000 gallons per day as compensation to the river, and in the event of a larger pipe than 15 in. in diameter then the compensation water to the river was to be increased to 4,000,000 gallons. The capital cost of the works was about 32,000*l*. Workington's population had so increased that it had this Session a Bill in Parliament, the object of which was to raise Lake Crummock 2 ft. and to lay a new main pipe of 21 in. diameter as a service main, as well as the probable construction of two service reservoirs. In summing up Mr. Pickering expressed the opinion that considerable reform was necessary in the procedure of the Local Government Board. They were so opinionated and dogmatic in their requirements that instead of helping on the sanitation of a district, they obstructed and delayed, giving no credit to country opinion.

Mr. J. S. Brodie, Borough Engineer, read a paper on some public works at Whitehaven. With reference to the waterworks, he said the supply was one of the purest and softest in the Kingdom, and was practically inexhaustible. The Corporation were this year promoting a Bill in Parliament which sought to increase the limits of supply up to 2,000,000 gals. per day, as it was found, in the absence of large storage reservoirs, that the maximum of 1,000,000 gals. was insufficient to meet the demands for all purposes during a long-continued drought. The electric lighting order was obtained in 1891, and there were now the equivalent of 8,727 eight-candle-power lamps connected for public and private lighting. The average selling price was 4d. per unit. From the very commencement the electric lighting undertaking had been financially successful, while the unbroken continuity of the supply had left nothing to be desired. The harbour works were under a separate Board of Commissioners. The west and north piers were completed in 1830 and 1843, and the wet dock, known as the Queen's Dock, with an area of 4½ acres and a depth on sill of 22 ft. at high water of spring tides, in 1876. The sewerage works were carried out by the late Mr. Hawksley, and the sewage discharged into the sea about 650 yards south of the harbour. The outfall sewer was provided with double-flap valves, so that the flow tide, which set northward towards the harbour entrance, closed the valves and prevented the sewage from discharging, and the ebb tide, which set southward towards St. Bee's Head, allowed the valves to open, releasing and discharging the sewage into the sea at low-water mark.

Mr. Dalton, Ryton-on-Tyne, moved a vote of thanks to the readers of the papers, which, he said, would be of great value and useful as works of reference in the future.

Mr. Smillie, Tynemouth, who seconded, said he had been struck by the contrast which the towns on the north-west coast presented to his district on the north-east coast. Here the inhabitants had to go only a short distance for a copious supply of water, drawn from a natural reservoir, and the cost had been comparatively low, say 50,000*l*. for 1,000,000*l* gallons. In Tynemouth they had been reduced almost to the state of a water famine, and now that they had broken the bonds which held them to a company, they had to go twenty-five miles distant for their water, and the cost would be from 100,000*l*. to 150,000*l*. Whitehaven was also to be congratulated upon the favourable position of the electric lighting undertaking, because, although Mr. Brodie had not told them what it was yielding, he was assured it was relieving the rates to the extent of 600*l*. per annum. The position of Whitehaven with respect to water supply and electric lighting said much for the enterprise of the Corporation and the efficiency of the officials.

Mr. E. J. Silcock, Leeds, said that with experience in Yorkshire, where watersheds were so taken up as to be getting very scarce, it was refreshing to visit Cumberland, and to find the people could use sixty-five gallons of water per head per day. It struck him that, with a supply of 1,000,000 gallons per day, Whitehaven ought not to have to seek a further supply of water.

Mr. Pickering and Mr. Brodie having replied, the vote of thanks was accorded.

The Mayor entertained the members to luncheon, and the afternoon was devoted to a round of visits to the electric light works, the reservoir, and the harbour.

## METROPOLITAN ASYLUMS BOARD.

Sir Edwin H. Galsworthy, the chairman, presided on Saturday at the fortnightly meeting of the Managers of the Metropolitan Asylum District, at the County Hall, Spring-gardens.

*North-Eastern Hospital.*—The amended plans prepared by Messrs. A. & C. Harston, architects, for the erection of a new laundry, with temporary boiler and engine-house and rain-water reservoir, at the North-Eastern Hospital, were approved and adopted. The matter was dealt with in our report a fortnight ago.

*Millfield Homes.*—Mr. H. Howard, Surveyor to the Urban District Council of Littlehampton, was appointed to prepare plans and specification for the protection of the sea-front of the Board's property at Rustington and to supervise the execution of the work.

## THE LONDON COUNTY COUNCIL.

The usual weekly meeting of the London County Council was held on Tuesday at the County Hall, Spring Gardens, Lord Welby, Chairman, presiding.

*Loans.*—On the recommendation of the Finance Committee it was agreed to lend the Fulham Vestry 25,000*l*. for electric lighting purposes; the Lee District Board 2,480*l*. for paving works; the Limehouse District Board 4,120*l*. for street improvements; the St. James's, Westminster, Vestry 3,200*l*. for paving works; the St. Margaret and St. John, Westminster, Vestry 12,700*l*. for paving works; and the Central London Sick Asylum District Managers 27,440*l*. for provision of an asylum at Hendon.

*List of Rates of Wages and Hours of Labour.*—The same committee reported as follows, the recommendation being agreed to:—

"The rate of wages inserted in the Council's list for slaters is 9d. per hour, and the hours are stated as fifty in summer and forty-seven and forty-four in winter, but the London Slaters' and Tilers' Union state that the rate should be 10d. per hour and the hours fifty-three all the year round. We have ascertained that there is no agreement between employers and employed on the subject, and we think that in view of this, and of the fact that slaters are not directly employed by the Works department, the better course would be to omit all mention of slaters from the Council's list. If this were done the regulation would come into operation under which contractors for the Council have to pay the rates and observe the hours in practice obtained in London. We recommend that the trade of slaters be omitted from the Council's list of rates of wages and hours of labour."

*Chief Assistant Architect.*—The following urgency report of the Establishment Committee was then considered:—

"The consideration of the paragraph in our report presented to the Council on the 13th inst., with reference to the retirement of Mr. Hebb, was adjourned so that we might have an opportunity of discussing the matter with the Building Act Committee so far as the recommendations affect the work of that Committee. We stated in our previous report that Mr. Hebb entered the service of the Metropolitan Board of Works in February, 1877, at the age of forty-two, as assistant architect and surveyor in the Building Act office. His work has therefore been intimately connected with that of the Building Act Committee, and that Committee are strongly of opinion that having regard to the fact that the superintending architect has only been in office a few months, Mr. Hebb's retirement at the present time would cause serious inconvenience to the public service. We concur in the views of the Building Act Committee, and accordingly recommend—

(*a*) That as the retirement of Mr. J. Hebb would cause inconvenience to the service, he do continue to hold his appointment for another year as from August 20, 1899.

In the event of the above recommendation being adopted there is still the question referred to in our report of the 8th inst. of the appointment of an assistant architect for general duties. The Architect has pointed out the great increase of work in the department, and he feels that as the duties of Mr. Hebb are practically confined to the Building Act work, which we may add has nearly doubled since 1897, it is desirable that he should have the advantage of a chief assistant, who should not be engaged for the work of one particular branch. Although recommending the retention of Mr. Hebb for another year, we feel justified, having regard to the large increase generally of the work of the department, in still asking the Council to at once take steps for the appointment of a new assistant architect, at a salary of 800*l*. a year. We accordingly recommend—

(*b*) That an advertisement be issued inviting applications for the appointment of an assistant architect, and that the salary attached to such position be 800*l.* a year."

Recommendation (*a*) having been agreed to,

Lieut.-Colonel Ford moved that recommendation (*b*) be adjourned until after the summer vacation. It was, he said, scandalous that such a proposal should be made.

Mr. Balian seconded.

Mr. Corbett, Chairman of the Committee, quoted figures to show how largely the work of the Architect's Department had increased in recent years, and how great was the need for further assistance.

The amendment having been lost,

Mr. Parker moved, and Mr. Howell J. Williams seconded, that the recommendation be referred back for further consideration and report.

This amendment was also defeated by a large majority, and subsequently the recommendation of the committee was carried.

*Fire Station, Islington.*—On the recommendation of the Fire Brigade Committee it was agreed that the estimate of 14,400*l.* submitted by the Finance Committee in respect of the erection of the new Islington station in Upper-street be approved; that the Council do sanction an expenditure for the work of erecting the station of 14,033*l.* 14s. 3d., in addition to 95*l.* for stoves; that the work be executed by the Council without the intervention of a contractor; and that the drawings and specification be referred to the Manager of Works for that purpose.

*Delay in Obtaining Approval of Plans of Working-Class Dwellings.*—The Housing of the Working Classes Committee recommended, and it was agreed, that a communication be addressed to the Local Government Board pointing out the grave inconvenience caused to the Council in securing the erection of dwellings under the Housing of the Working Classes Act, 1890, by delays that occur in obtaining the decisions of the Board upon plans of such dwellings submitted to them.

*Brook-street, Limehouse, Scheme.*—The same Committee also recommended, and it was agreed, that the amended tender of Messrs. Leslie & Co., amounting to 4,423*l.*, for the erection of cottages on plot II., Brook-street, Limehouse, scheme, be accepted; and that standing order No. 195 be suspended so that advances to the extent of 80 per cent. of the value of the work done by Messrs. Leslie & Co. in erecting the cottages may be made.

*Battersea Park Lakes.*—The Parks and Open Spaces Committee reported that by the present system of supplying the Battersea Park lakes with water from the Thames too much mud accumulated, which necessitated frequent cleansing at considerable cost. They proposed now to use a well and pumping apparatus, and recommended "That the Council authorise an expenditure of 3,654*l.* for carrying out a scheme to supply water to the lakes in Battersea Park, by pumping the same from the well in the park, in accordance with the specification prepared by the Engineer; and that the work be carried out by the Council without the intervention of a contractor, and that the quantities and specification be referred to the Manager of Works for that purpose."—This was agreed to.

*Nelson Recreation Ground: Railings, &c.*—The same Committee also reported that the Council, having, on July 5, 1898, authorised the expenditure necessary for completing the work of laying out the Nelson recreation ground, and the Works Manager having reported that he was not satisfied with the estimate for the erection of new boundary railings and gates, they in due course advertised for tenders. The following tenders were received:—Faulkner & Sons, 437*l.* 15s. 8d.; General Builders, Limited, 526*l.*; G. Munday & Sons, 585*l.*; Fane & Co., 623*l.* 17s. 4d.; E. J. Raybould & Co., Limited, 624*l.* 3s.; E. Coules & Son, 688*l.* 7s. They recommended that the Council do accept the tender of Messrs. L. Faulkner & Son to erect for the sum of 437*l.* 15s. 8d. certain boundary railings, gates, &c., at Nelson recreation ground, in accordance with the specification prepared by the architect. This was agreed to.

*Technical Education.*—On the motion of the Chairman of the Technical Education Board, it was resolved: "That the Council do accept the offer of the Trustees of the Sydenham Public Lecture Hall and Institute of the building and adjacent property with the view of a Technical Institute and a day-school for girls being established on the premises; that steps be taken to vest the property in the Council on the terms of the trust; and that the matter do stand referred to the Technical Education Board, with instructions to carry out the trust as part of its work under the Technical Instruction Acts, 1889 and 1891."

*St. James's Hall.*—The Theatres and Music Halls Committee reported:—"For a long time past our attention has been drawn to the desirability of requiring considerable alterations to be made at St. James's Hall, Piccadilly, in order to render the large hall, minor hall, and banqueting room at these premises suitable for the public entertainments that take place in them. In 1885 the Metropolitan Board of Works served a sealed notice containing thirty requirements on the owners, and these were complied with in 1886. After very careful deliberation we some time ago drew up a list of matters which in our opinion required attention in order to remedy the existing defects in the building. We forwarded a copy of them to the owners of the premises for their information, and we have since conferred with their architect on the subject, and we now submit a list of requirements which we think should be complied with as soon as possible, having regard to the public safety. It has been urged on behalf of the owners of the hall that the widening of Piccadilly, which the Improvements Committee have under consideration, will affect these premises, and that the suggested requirements should therefore remain in abeyance until the question of the improvement is settled by the Council. This improvement was not included in the list presented to the Council on Tuesday last, and it is possible, therefore, that a long time may elapse before any definite action is taken in regard to it. We recommend "that a notice under the Metropolis Management and Building Acts Amendment Act, 1878, containing the following requirements in regard to St. James's Hall, Piccadilly, be prepared by the solicitor."

This was agreed to. There are twenty-nine requirements.

*St. James's Theatre.*—Eight plans in regard to certain alterations at this theatre were also approved.

The Council adjourned at 6.30 o'clock.

## *ARCHÆOLOGICAL SOCIETIES.*

Anthropological Institute.—At the meeting of this Institute held on the 13th inst. Mr. George Clinch, F.G.S., read a paper on "Prehistoric Man in the Neighbourhood of the Kent and Surrey Border: Neolithic Age," in which he detailed a number of discoveries he had made during the past twenty years or so in the parishes of Hayes, West Wickham, Keston, Addington, Croydon, and Sanderstead. The remarkable series of neolithic settlements he has discovered have a special importance, from the fact that the hut-floors he has uncovered may be considered to be the very first efforts of pre-historic man in the direction of building an entirely artificial shelter for himself and his family. Particulars were given of several different neolithic settlements, indicated by the occurrence of circular dish-shaped depressions—the floors of dwellings—and several cooking hearths. The dwellings had been somewhat like the bee-hive huts of Cornwall. They show, as might be expected, great simplicity of plan and a very elementary domestic arrangement.

## *COMPETITIONS.*

Technical School and Free Library, Leamington.—Nine sets of plans have been received from competing architects. The committee have unanimously recommended—(1) That the plans marked "A" be awarded first premium; (2) that the plans marked "C" be awarded second premium; (3) that the author of the accepted plans "A" be requested to modify the exterior design by the substitution of face brick and stone to the satisfaction of the Council; (4) that the plans marked "D" and "E" receive honourable mention.

Concert Pavilion, Dover Pier.—In the recent competition for designs for a concert pavilion to be erected on Dover Promenade Pier, the directors have selected the joint design of Mr. M. Noel Ridley, A.M.Inst.C.E., and Mr. Robert J. Beale, A.R.I.B.A., of Westminster. The directors have also adopted a report by the same authors on the strengthening of the pier, and given instructions for the working drawings, &c., to be proceeded with.

Congregational Church, Seacombe.—In a recent limited competition for a Congregational Church to be built at Seacombe, Birkenhead, at a cost of 2,700*l.*, the plans of Mr. F. W. Dixon, of Trevelyan-buildings, Manchester, have been accepted, and he has been instructed to proceed with the work at once.

## APPLICATIONS UNDER THE LONDON BUILDING ACT, 1894.

At the meeting of the London County Council on Tuesday, the following applications under the London Building Act, 1894, were considered. Those applications to which consent has been given are granted on certain conditions. Names of applicants are given in brackets. Buildings are new erections unless otherwise stated.

### *Formation of Streets at Plumstead Common.*

*Woolwich.*—That the resolution of the Building Act Committee of July 25, 1898, acting on behalf of the Council, sanctioning, on the application of Mr. A. Dwyer, on behalf of Mr. H. N. Grenside and the Rev. J. McAllister, the formation of new streets to be named Timbercroft-lane (in continuation), Flaxton-road, Melling-street, Malton-street, Kirkham-street, and Pedlar-street, respectively, to lead out of Swingate-lane and Timbercroft-lane, Plumstead Common, be rescinded so far as it relates to the proposed street marked Pedlar-street (Messrs. McAllister and Grenside).—Agreed.

### *Lines of Frontage.*

*Fulham.*—One-story shops upon part of the forecourts of Nos. 83, 85, and 87, North End-road and No. 1, Beaumont-crescent, Fulham, and the erection of a block of flats, with one-story shops in front, on a site between No. 83, North End-road and Beaumont Mansions (Mr. J. P. Flew, jun.).—Consent.

*St. Pancras, West.*—A building on the north side of Hawley-crescent, St. Pancras, at the corner of Kentish Town-road (Messrs. W. Bradford & Sons for the Camden Brewery Company, Limited).—Consent.

*St. George, Hanover-square.*†—The retention of two wood and glass showcases attached to the projecting stone columns placed on each side of the entrance to No. 23a, Old Bond-street, St. George, Hanover-square (Mr. W. Wallace, for Messrs. Langfier, Limited).—Refused.

*Westminster.*—Three oriel windows in front of a proposed block of buildings on the site of King's Head-court, and Nos. 5 to 10, Broadway, Westminster (Mr. J. A. J. Keynes for Mr. W. Bramley).—Refused.

### *Width of Way.*

*Strand.*—Dwelling-houses, to be inhabited by persons of the working class, on the south side of Drury-lane, St. Martin-in-the-Fields, with the east wall at less than the prescribed distance from the centre, and to exceed in height the width, of a proposed extension of Martlett-court (Mr. W. E. Riley, for the Housing of the Working Classes Committee of the Council).—Consent.

*Stepney.*†—Dwellings on the site of Nos. 1, 2, 3, 4, 5, and 6, Union-street, Mile End-road, to an advanced line of frontage (Messrs. J. Hood & Sons for Messrs. D. & M. Cohen).—Refused.

### *Formation of Streets.*

*Wandsworth.*†—That an order be issued to Mr. C. Dunch refusing to sanction the formation or laying out for carriage traffic of a new street to lead from Streatham High-road to Streatham Common South, Streatham (for Mr. M. H. Voss).—Agreed.

### *Width of Way, Cubical Extent, and Construction of Building.*

*Deptford.*—An addition to an iron building on the north side of Blackhorse-road, Deptford, with the boundary or fence in front of such addition at less than the prescribed distance from the centre of the road (Messrs. Humphreys, Tennant, & Co., Limited).—Consent.

### *Line of Frontage, Width of Way, and Space at Rear.*

*Walworth.*—That the Council, in the exercise of its powers under Sections 13 and 22 of the London Building Act, 1894, do consent to the position and frontage of a building, with two oriel windows, to be used as a working men's club, on the east side of Walworth-road, Walworth, at the corner of York-street, and that the Council, under Section 41 of that Act, do permit the erection of such building with an open space at the rear (Messrs. Spalding & Cross for Mr. Arnold Pye-Smith, J.P., and the Committee of the Robert Browning settlement.—Agreed.

### *Deviation from Certified Plan.*

*Whitechapel.*—Certain deviations from the plan certified by the district surveyor, under Section 43 of the London Building Act, 1894, so far as relates to the proposed re-building of No. 83, Whitechapel High-street (Mr. J. Hamilton for Mr. W. R. Sutton).—Consent.

### *Buildings for the Supply of Electricity.*

*Bow and Bromley.*—A deviation from the plans sanctioned on April 25, 1899, for the construction of an electric lighting station and works on a site at the corner of Glaucus-street and Yeo-street, Bromley, so far as relates to the erection of the chimney-shaft (Mr. O. E. Winter for the Poplar District Board of Works).—Consent.

### *Means of Escape from Top of High Buildings.*

*Strand.*—That Messrs. H. L. Florence & L. H. Isaac be informed that the Council, in the exercise of its powers under Section 63 of the London Building Act, 1894, is prepared to grant a certificate in respect of the means of escape in case of fire to be provided for the persons dwelling or employed on the fifth and sixth floors of the Carlton Hotel, Pall Mall, St. James's (for the Law Guarantee and Trust Society).—Agreed.

*The recommendations marked † are contrary to the views of the Local Authorities.*

## THE BUILDING TRADE DISPUTE.

THE members of the National Association of Operative Plasterers resumed work throughout the country on Monday. The dispute began in February, so that it had been in existence about four months. It is stated that the terms of settlement have given satisfaction to both sides, and there is every reason to hope and believe that as soon as matters are got into working order general peace will reign in the plastering trade for a considerable time to come.

At a meeting of the Northern Centre of the Master Builders' Federation, held in Leeds on the 14th inst., a resolution was passed approving the suggested National Conciliation Board for the building trade, but declaring that steps must first be taken to clear up the matters contained in the Yorkshire Masters' manifesto. It was proposed that a conference of the Yorkshire masters and trades-union representatives be arranged for, in which case the lock-out of twenty-five per cent. would be withdrawn.

A meeting of representatives of the trades-unions chiefly affected by the present dispute was held on the 19th inst. in Manchester. A week previously these representatives met and drew up a basis for a joint conference in the establishment of district boards of conciliation, with a central board to which appeal could be made if necessary. During the week the scheme has been submitted to and has received the sanction of the executive committees of the unions concerned, the result being reported to the gathering on the 19th inst., over which Mr. W. T. Wilson, of Bolton, Chairman of the Amalgamated Society of Carpenters and Joiners, presided. The trades-unions have unanimously sanctioned the scheme, details of which have been sent to Mr. Hassal, of Liverpool, secretary of the National Association of Master Builders. It is understood that the offer of the Yorkshire masters put forward at their meeting last week to meet the men in conference was scarcely touched upon, the desire of the men being that they should deal with the masters as a whole, and not sectionally. At the same time the feeling was expressed that the withdrawal of the Yorkshire lock-out should be made a condition of the conference.

## THE READING AND DISTRICT BUILDING TRADE.

THE first annual dinner of the Reading and District Building Trades Association was held recently at the Great Western Hotel. Mr. Thomas F. Rider (past President of the National Association of Master Builders) presided.

The loyal toasts having been honoured, Mr. W. E. Collier gave the toast of the "Town and Trade of Reading," to which Mr. W. Galt Millar responded.

The Chairman, in proposing "The Association," remarked that at the present time almost every trade had its association. So far as the building trade was concerned, there were three ample and sufficient reasons for an association. The first was that they might meet together and by that means get to know each other better, that they might interchange feelings of amity, and interchange information, and generally derive from each others company much solid good. That they might also by that combination be able to fight where they were called upon to do what was unfair or unreasonable, and as an association they could do that better than as single individuals. In these days of combination amongst workmen—combination which, so long as it was properly conducted and confined to legitimate ends, they ought to be the last to object to—it seemed to him that what was sauce for the goose must be sauce for the gander. At the present time trades-unionism was stronger than it had ever been before. But what was the serious and sad side to the question was that the aggressive policy of the unions was increasing to an enormous extent. There was no need for him to give examples; they all knew of cases which came within their own experience, and it was a most inherent necessity that the builders should in every district throughout the land combine together, not for any oppression on the men, but to stand up for those rights which belonged to masters as well as to men, and insist that as a man received a fair day's wage, so the master should expect and should have a fair day's work; in a word, that they as well as the men should have what was fairly due and belonging to them. The hope of the National Association was that in every town and village there should be a masters' association; that those associations should be divided into four great centres, that those centres should be united to the National Association, and that when serious trouble arose in one part of the country, if that part of the country could not successfully deal with it, it should be taken up by the Federation for that part of the country in which the town or village was situated, and, finally, should the Federation be unable to effect a settlement, by the whole National Association of the country. The little trouble they had had with the plasterers was now smoothed over, and the terms of settlement were such as the master builders could justly pride themselves on.

Mr. Catley, the President of the Association, briefly referred to previous efforts which had been made to establish a Builders' Association in Reading. It was not revived in any way until during the bricklayers' strike. That was followed by the carpenters' strike, which still further welded them together, and then the old association was revived, or, rather, it had a new birth. He hoped and believed that the Association was going to be educational in its best sense. The Association found great difficulty in dealing with the great labour questions, and a Conciliation Board had been formed from which some of them hoped great things. He was happy to say that it had been taken up by the trades-unions in a very proper and just way. They had already dealt with the question of wages, and they had avoided that barbarous method of settling disputes—a strike. They were looking to the Board to help them over any difficulties which might occur in the future. He declared most emphatically that as an association they were not opposed to trades-unionism; they welcomed trades-unionism, they copied its best essentials, they welcomed the co-operation of the trades-unions, and they wished labour to have its rights, but co-equal with that they wished labour to perform its duties, and to allow them to perform their duties unrestricted. One of the most pressing problems, and one in which he hoped they would have the co-operation of the trades-unions, was how to get efficient workmen. The trades-unions said: "You shall give us a certain standard of wages." They had a right to say to the trades-unions: "You shall give us a certain standard of value." The conditions had altered since the time when an employer could judge what his workman was worth. They had now an equal rate of pay, and, therefore, they had a right to demand equal value in quantity and in quality. He believed he was expressing the feelings of every builder when he said that they did not find among the young men of the day that quality which they had a right to expect for the wages which they demanded. That was recognised by trades-unions themselves, who said they were almost powerless to remedy it. Whether a change was to be brought about by a revival of the old system of apprenticeship, or in whatever way it was thought best, it was a problem which had to be faced. It might be that young men wished to enjoy the full wages earlier, and were not willing to stay the necessary time to master their trade; but the facts were patent to all, and this was one of the things in which that Association, in combination with the trades-unions, might do exceedingly good work.

Mr. Bottrill proposed "The Architects and Surveyors," and emphasised the fact that the Association was not formed in hostility to the architects or any other profession or class. He touched upon the large amount of power placed in the hands of architects, and said it spoke volumes for the profession as a whole that such a custom should have obtained a footing without its becoming intolerably irksome. Mr. Bottrill deprecated the practice which prevailed among certain architects—generally young architects—of employing their own workmen, and remarked that such a practice would cure itself in no very long time.

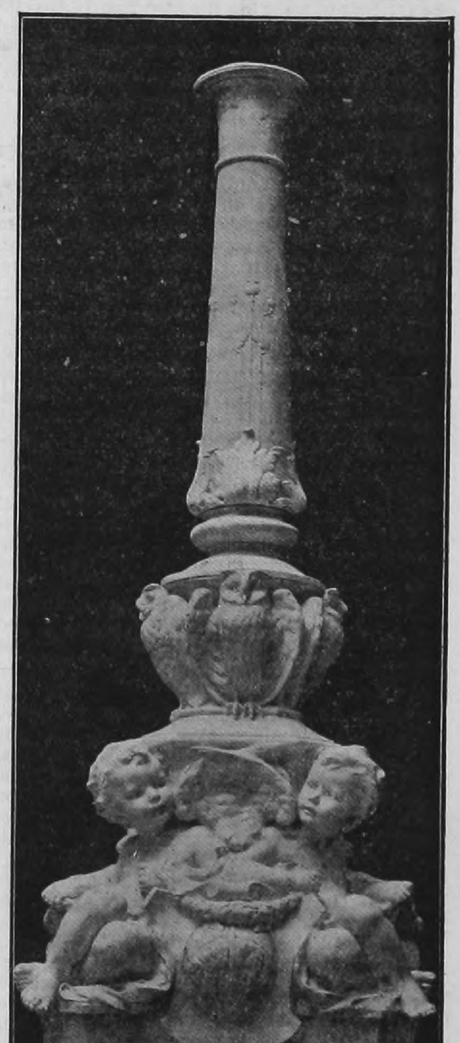
Mr. Ravenscroft, in reply, referred to the change which had come over the relations between builders and architects from the time when they stood face to face, practically as antagonists. The architects were coming to feel that in the main they had to deal with men who cared for the honour of their trade—men whose intention was to do the right thing as between man and man. Personally, he had hoped that such associations as that would have been absolutely unnecessary. He would like to have seen the continuance of the old system, when the master and his men in their workshops stood shoulder to shoulder as against all comers, when the honour of the master was the honour of the men, and when the well-being of the men was the care of the master. Unfortunately, those days were past; that being so he was more than pleased to hear the remarks which fell from Mr. Catley. Let these unions be defensive, if they liked, not defiant, and certainly not offensive, and then, out of what to some of them had seemed an evil, might ultimately come to a great deal of good. With respect to two of the most important articles of the Association, which affected them as architects, viz., with reference to the arbitration clause and the question of quantities, Mr. Ravenscroft expressed his personal approval of what the Association had done, remarking, with respect to the first, that he failed to see why any architect should object to an arbitration clause. He wished the Association every prosperity, on the lines which their President had laid down

# Illustrations.

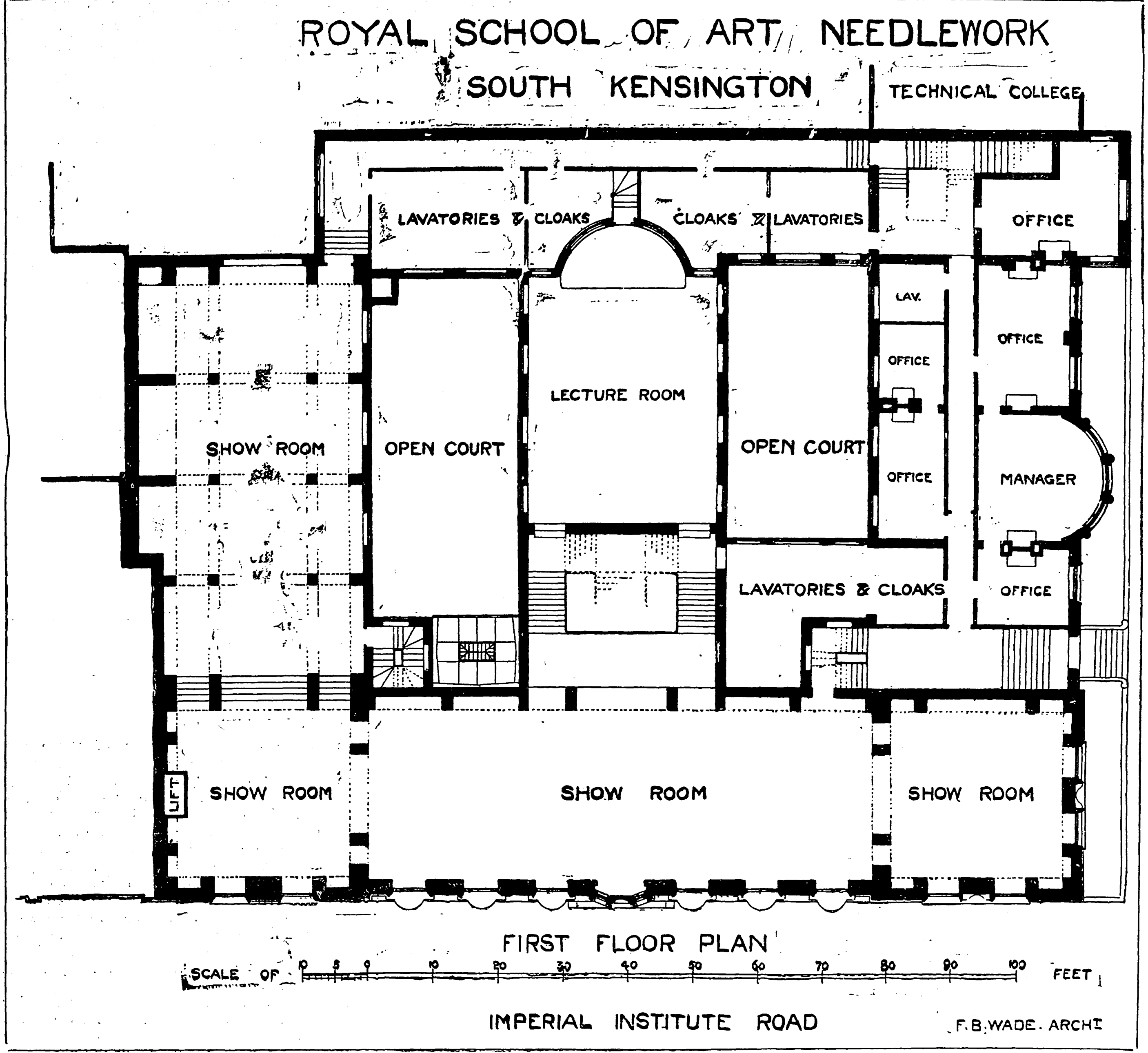
## BASE FOR ELECTRIC LAMP STANDARDS, LEEDS.

THIS piece of bronze sculpture, modelled by Mr. Alfred Drury, forms the base for six large electric lamp standards which are to be set up in the City Square at Leeds, and is exhibited this year among the sculpture in the octagon room at the Royal Academy. The proportions and design of the whole standard are shown in the accompanying illustration on a smaller scale.

We give prominence to the design for the base, not only for its intrinsic quality, but because it marks what we may hope is a new departure in this country, in the employment of high-class sculptural design for a lamp base, instead of the ordinary decorative castings, designed by no one in particular, which we are accustomed to see. The lamp stands 7 ft. high to the top of the cap; the base is 12 ft.



*Electric Lamp Standard for City Square, Leeds. Designed by Mr. Alfred Drury.*



ROYAL SCHOOL OF ART NEEDLEWORK
SOUTH KENSINGTON

FIRST FLOOR PLAN

4 in. wide; the figures of the children are life size. The owls, and the golden fleece on the cartouche, are taken from the city arms of Leeds.

The lamps, which will carry arc lights, are the special gift of the Lord Mayor, Col. Walter Harding.

## THE ROYAL SCHOOL OF ART NEEDLEWORK.

THE Royal School of Art Needlework has for some twenty-five years past occupied temporary premises in the Exhibition-road, next the Technical College. The new building, the foundation-stone of which was laid on Friday, the 23rd inst., by the Prince of Wales, is intended not only for the permanent housing of the R.S.A.N., but the school is making arrangements to establish classes for teaching and practising other forms of applied arts.

The building consists of large show-rooms, work-rooms, studios, and a quantity of moderate-sized class-rooms and the necessary offices for management.

Externally the materials are Portland stone and blue pennant for the lower story, 2-in. Bracknell bricks for the walling of the principal story, and Portland stone for the upper part.

Messrs. G. H. & A. Bywaters and Sons are the contractors, and Mr. Fairfax B. Wade is the architect.

## SCULPTURE AT THE ROYAL ACADEMY.

THE works represented in these two plates are introduced as illustrations to the article on "Sculpture at the Royal Academy" on another page of this issue, and are all referred to in that article.

# Correspondence.

*To the Editor of* THE BUILDER.

## EARLY REMAINS FOUND AT THE TOWER.

SIR,—Adverting to the "Note" in your paper of the 10th inst. (pages 564-5 *ante*), I venture to suggest that the iron and stone shot recently dug up in the Tower are relics of a manufacture formerly carried on there. Mr. E. Wyndham Hulme, Librarian of the Patent Office, kindly gives me the following references.

Office of Gunstone-maker of iron: the precise period of the creation of that office is not known; a grant of 1 Elizabeth to Ralph Hogge as iron gunstone-maker within the Tower of London, at 6d. *per diem*, recites that the grant was formerly held by [Sir] William Levet, lately deceased; a warrant of August 5, 1540, authorises payment of 80*l.* to Sir William Levet for 15 tons of shot of iron; the grant to Hogge was re-issued, 30 Elizabeth, to Thomas Johnson, and again, 38 Elizabeth, to Thomas Browne, to whom succeeded, 13 James I., his son John—the latter three being well-known gunfounders, having foundries in Kent.

Office of Gunstone-maker of stone: on August 18, 43 Elizabeth, the office of making stone shot for the ordnance is granted to Andrew Kirwin, *vice* Robert Gooer, deceased, at 8d. *per diem*, a re-issue of the patent in 11 James I., describes the office as being within the Tower of London.

W. E. D.—M.

## WANDSWORTH BOARD-ROOM COMPETITION.

SIR,—As a competitor, I can sympathise with your correspondents, Messrs. Clark & Hutchinson. The competition was, in my opinion, most incompetently managed.

The plan of site was not correct, the figures differing from the scale. Upon pointing these errors out to the secretary, I was treated with scant courtesy, and told to go and measure them for myself, as I was responsible for the measurements.

One clause in the particulars stated that the board-room was to be lighted from the roof, and a notice was subsequently sent round to say the clause was intended to apply to the gas or electric light. The clause as to the staircases was so ambiguous that no one could say whether they required two or three. As to the judging, something must be radically wrong. The cubic contents, giving all accommodation asked for, amounted to 305,041 cubic ft., at 1s. per ft. = 15,500*l.* The successful candidate prices the building at 11d., and makes it 18,000*l.*, thus giving 41,712 cubic ft. accommodation, which was not required; and, probably, if all the competitors had worked on the same basis, the result would have been different.

HUGH T. PORTER, A.R.I.B.A.

## THE MAISON DIEU, DOVER.

SIR,—In reference to your Note in the *Builder* of June 17 respecting the Maison Dieu, the forthcoming sale of the Maison Dieu property does *not* include the building known as the "Maison Dieu," as that is the present Dover Town Hall. The interesting Elizabethan mansion which is for sale is known as "Maison Dieu House."

JOHN BAVINGTON JONES.

⁂ We were misled by the terms of the advertisement, which cites, "The estate known as Maison Dieu. . . . adjoining the Town Hall." Knowing that the old Maison Dieu was until lately the Town Hall, we purposely mentioned the new Town Hall (by Burges), opened in 1883. It appears from our correspondent's letter that the present Dover Town Hall is now known as the "Maison Dieu"—a source of confusion.—ED.

◆

PROPOSED CHURCH AND HALL, TAYPORT, N.B.—It is proposed to erect a new Episcopal church and hall at Tayport. The church will be seated for 200 and the hall for 130. Mr. T. Martin Cappon is the architect.

# The Student's Column.

## ARCHITECTURAL HYGIENE.

### XXIV.—REPORTS

WE give here an imaginary Report, as an example that may be useful. Of course every case will have its own peculiarities, which must be carefully studied, but perhaps the following may serve as a useful guide, and may act as a reminder of points that might otherwise perhaps be overlooked.

The Report is supposed to refer to a country house which is to be altered and improved :—

SIR,—In accordance with your instructions of the        and your letter of the        we have surveyed the above property with the object of advising you as to its general condition from a structural and sanitary point of view.

### 1. THE HOUSE.

The house is situated in the parish of ——, and is on the high road between Hickley and Bexbroom, in the county of Downshire. It is therefore comparatively easy of access by road, but it is some three miles from the nearest railway station, which being on the London and Wreckham Railway has a very poor service of trains. It is some 600 ft. above the sea level, and is built upon a sandy soil, and is considered to be very healthy, and well adapted for the purpose you require. The death-rate for the locality is returned as averaging only 18 per 1,000. The rainfall is estimated at 32 in. per annum.

With regard to the general plan and convenience of the house and its structural condition there are several points upon which we should like to draw your attention. We will take these seriatim, making the drains and sanitary work the subject of a separate report. We enclose a plan of the house as at present with suggested alterations marked thereon (fig. 300).

The house appears to have been built about the end of the seventeenth century, and to have been very little altered since that time. It contains a fairly large hall, drawing-room, library, dining-room, morning-room, water-closet under stairs and entered directly from hall, butler's pantry, kitchen, scullery, and the usual offices.

The library is at present a thoroughfare room leading to the drawing-room ; this is, of course, very inconvenient. We would suggest that a wall be placed across the northern end of the room, and a passage thus formed which will give privacy to the library. This room is also quite insufficiently lighted for its purpose. We would suggest that the present window be made into a doorway, and that a window 2 ft. wide be opened out on either side, which will greatly improve the room. The living rooms are all rightly placed on the south side of the house, but the sun's glare would perhaps be rather much for the library, and we would therefore suggest, in order to make the drawing and dining-rooms more convenient, that bay windows be placed as shown, and that the roof should be continued between the two so as to form a covered verandah. The entrance is on the north, and in order to protect the house from the cold north winds which blow across the rather damp meadow land in this direction, we would suggest that a second set of glazed doors be placed as shown, and that a *porte-cochère* be added. The hall is also somewhat gloomy, and windows should be inserted on either side of the entrance door.

At present the service to the dining-room is along the staircase and across the front hall ; this is, of course, very objectionable. We would suggest that a service hatch be placed as indicated, so that the front hall need not be entered. This is, of course, not an ideal arrangement, but it will, we think, answer satisfactorily.

Taking next the inner hall, the water-closet, as mentioned previously, is entered directly from this hall. We would suggest that this be removed entirely, and that a sanitary wing be built out as shown, with proper cross ventilation, the ventilating lobby being used as cloak-room, which is much required.

The kitchen is somewhat badly lighted. We should suggest that a small side window be inserted so that light may be thrown on the kitchen range from the left side, thus enabling the cook to see what she is about. The servants' water-closet is too close to the larder to be at all healthy or pleasant. It would be better to pull this down and thus give better light and ventilation to the larder by the insertion of a new window. The servants' water-closet should be re-erected in the backyard, as shown, and access should be provided by a covered way. Off this covered way should be placed a boot-room, a knife-room, and a small coal-store.

We consider that a billiard-room should be added to a house of this character, and we have shown where this could be conveniently built.

*Upper Floor.*—There are no servants' stairs to this floor, which and we suggest that this is absolutely necessary in a house of this character. These can start from below where the old water-closet and lobby now are, and land on the upper floor in a passage to the north of the scullery, giving access to the two servants' bedrooms over the kitchen and scullery. There is no bath-room, water-closet, or housemaids' closet on this floor. These can all be placed in the new sanitary wing. The westernmost bedroom has no window on the south front, and as this would cost very little, we would suggest that one be provided there.

### 2. WALLS.

The walls are of stone, which have weathered very well, and we do not suggest that anything should be done except that some necessary pointing must be executed near the top of the walls.

The most serious thing which we discovered is that there is apparently no damp-course, and that in consequence the damp has risen, especially in the north-east corner near the well. Of course a damp-course should be put. We do not think that this need be a very expensive matter. We should advise that a perforated stoneware damp-course be inserted all round the house 6 in. above the ground level, and that this should be done in small pieces at a time (say in 2-ft. lengths) so as not to endanger the fabric. In many cases we noticed that the level of the ground had in course of years risen above the level of the floor joists. We would therefore suggest that this be carefully removed so as to be 6 in. below the level of the damp-course, the latter being inserted under the ground floor timbers.

As to the walling generally, this is sound, with the exception of an old crack in the lintel above one of the ground-floor windows, but on examination this does not appear to have extended for some considerable time. We should therefore merely point this up in cement.

### 3. FLOORS.

The floors, as is to be expected in such an old house, are in many places very dilapidated. The timbers to the ground floor have been attacked by dry rot through want of sufficient ventilation. In the library this is specially noticeable, as in one place the flooring has completely collapsed. New joists and boarding will have to be fixed here. The joints between the boarding in the other rooms are very wide, and when the underside is ventilated will cause the rooms to be very draughty, besides harbouring dust. We would, therefore, suggest that $\frac{1}{4}$-in. parquet be laid round the edges of all the sitting-rooms and over the entire hall, and that the central part of each room, over which the carpet will come, should have the joints caulked with beeswax, the cleaning in future to be done with beeswax and turpentine, this being much preferable to washing. The upper floors are comparatively sound, but the edges (for about 2 ft.) of all rooms on the first floor should be stained and varnished, so that central carpets may be laid down.

### 4. CEILINGS.

The ceilings will require whitewashing throughout. Those to the drawing-room and dining-room are of an ornamental description of the Adam's type and will require making good in parts and picking out in party colours.

### 5. WINDOWS.

These are principally casements of iron and filled with leaded lights in small squares. They obstruct the view to a certain extent, but would very much detract from the character of the house if they were removed. We would, however, suggest that one of the lower lights in each room might be replaced with plate glass.

The pointing to the frames will require making good in cement, several of the fastenings will require repair.

### 6. ROOFS.

We thoroughly explored these with the caretaker, and find the original tiling will in many require stripping off and new tiles to be laid. In other cases the oak pins, which were used in fixing them to the laths, have rotted, although the tiles are quite good. Roughly speaking, about one-quarter of the roof will have to be relaid. The flashings and gutters will have to be relaid, though everywhere the lead is comparatively good. The various settlements which have taken place have seriously affected the fall of the gutters. Cement filleting has been employed where the roof meets the gables. This is defective, and should be stripped off, and "lead soakers" used instead.

The chimneystacks are very exposed, and have been partly blown down. They will require carefully reinstating, with new chimney-pots and flaunching in cement and pointing. The woodwork to the trap-door to roof has rotted away, and does not keep out the rain. It will require a new door and lining.

### 7. DECORATION.

Beyond the whitening to the ceilings already mentioned, the house will want papering throughout, the present paper being entirely stripped and the walls made good. The ground-floor rooms are mostly panelled, but have been painted white. We find that this is all oak-panelling, and it will be well to consider whether you would prefer the paint being carefully removed so as to leave the original oak visible. All the rest of the woodwork throughout the house will require rubbing down, preparing and painting two coats of good oil colour.

The ironwork, internal and external, will also require painting.

The mantelpieces are of good design with marble borders, and will merely require painting, pickling, and cleaning.

### 8. HEATING AND VENTILATION.

As to the fire-places, many of these are of old and obsolete pattern, with very little heating capacity. We should advise that these be taken, and new ones of improved Pridgin Teale or other approved pattern be inserted. Some form of heating apparatus will certainly be required, as the house is in a very exposed position. The passages especially should have radiators of the ventilating type fixed on a low-pressure flow and return apparatus. We should advise on the ground floor—two in the outer hall, one in the passage leading to drawing-room, and one in the inner hall ; and, on the first floor, at least four will be required.

There is room for a small boiler-house under the kitchen, which has been used as a beer-cellar, a window with open area could be put to this, and a new flue made, or the hot-water supply system might be continued to be worked from the kitchen fireplace, but a new kitchener will be required in place of the antiquated one now in use, so that the opportunity of improving the supply can be taken in hand at the same time.

The ventilation will be materially improved by the suggested alterations.

*Lighting.*—No gas or electric mains are at hand, so that oil and candles are the only illuminants available. The present fittings are of the poorest description, and new ones will be required throughout.

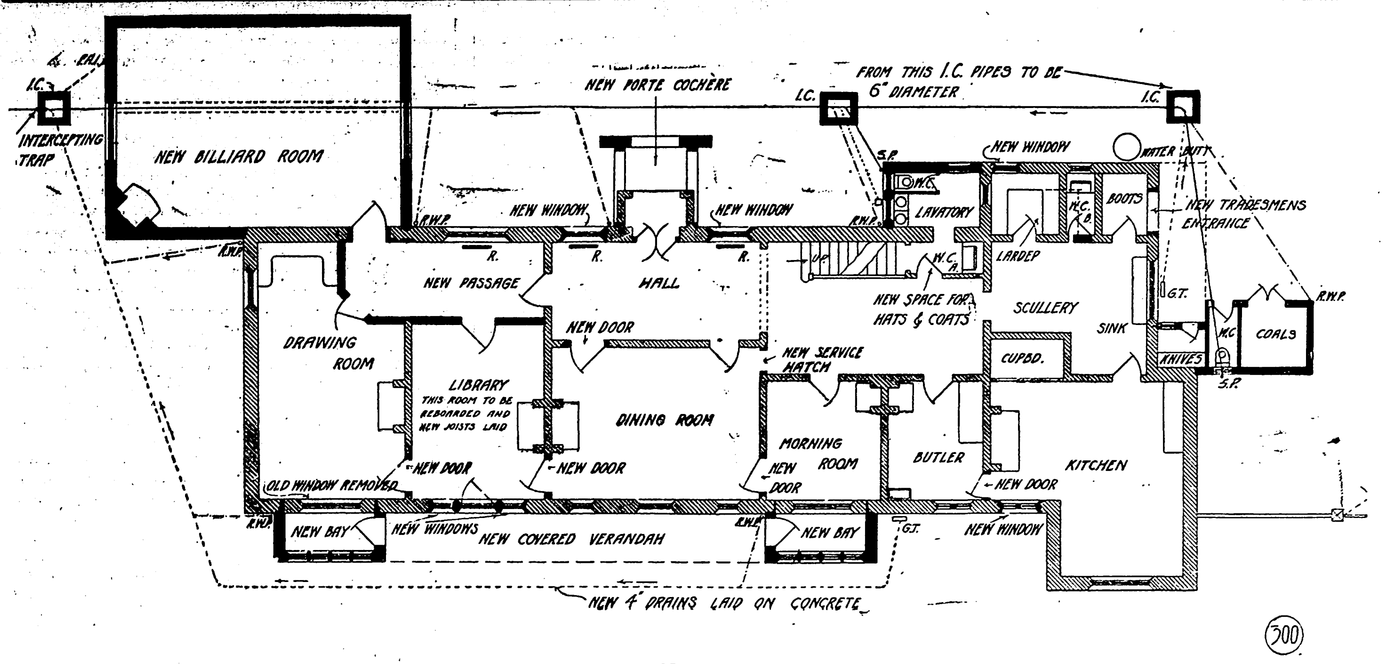
### 8. SANITARY WORK.

This may be conveniently detailed under the headings of

*a. Sanitary Fittings.*
*b. Drainage.*
*c. Water Supply.*

*a. Sanitary Fittings.*—These are throughout the house of the most obsolete kind, and should all be removed. This will be the more easy to do because the new sanitary wing, which we suggest should be built, will give the opportunity. For example, the present water-closet on ground-floor is of the old D-trap and container, and from use for so many years has become almost eaten through with the acids from sewage.

The servants' water-closet, which is to be removed to the yard, is of the obsolete "hopper" pattern. We would suggest that the ground-floor water-closet should be of the "wash-down" type of any suitable make, and should be provided with "lift-up" seat so as to be used as a urinal. No "casings" should be employed in the new fittings. The upstairs water-closet may also be of the "wash-down" type or of the "siphonic type." The *bath* on the first floor should stand on legs and have no



NOTES.

Water-closet marked *a* removed and space used for hats and coats.
Water-closet marked *b* removed for extension of larder.
Pipes under billiard-room to be embedded in concrete.
Drain pipes marked thus ——— indicate soil.
" " - - - - - " sink and lavatory wastes.
" " — - — - — " rain water.
Walls blackened indicate new work.

Walls hatched indicate old work.
"F.A.I."—Fresh air inlet.
"G.T."—Grease trap.
"I.C."—Inspection chamber.
"R.W.P."—Rain-water pipe.
"S.P."—Soil pipe.

*Illustration to Student's Column.*

"casings," so that the floor, &c., can be easily cleaned. A *housemaid's sink* may be provided for the emptying of slops, but I would strongly advise that the water-closet pan be used for the purpose, as the multiplication of sanitary fittings is not a good thing. The supply to the water-closets must be by means of siphon flushing cisterns. The *soil-pipes* are defective in many parts, they are of lead, but are made of the old type with a seam in them, they are not taken up and ventilated as they should be.

New soil-pipes of *drawn lead* should be inserted and secured to the wall by three tacks in every 10 ft. and taken up 6 ft. above the highest window and covered with a wire cage.

The *scullery sink* is at present of stone and is soaked through and through with accumulated grease. There is an antiquated "bell" trap fixed in it. A new glazed stoneware sink should be provided with proper 2-in. anti D lead-trap with screw inspection eye. This waste should discharge over an open *slipper-pipe* 18 in. long with gully trap at end.

*b. Drainage.*—We had the drainage opened up in several parts and find that it is of the most primitive description. It consists of 6-in. pipes, unglazed, butted against each other. They have been laid merely in the ground, on no proper foundation, and the consequence is that, owing to settlements, there is no proper fall, and the sewage has for many years been soaking into the ground surrounding the house.

These old drains must all be taken up and proper 4-in. glazed stoneware socketted drain-pipes, jointed in neat cement, and laid on a 6-in. bed of Portland cement concrete, properly flaunched to top of pipe, laid in their stead.

New gulley traps must be placed at the foot of all rainwater pipes, bath wastes, &c., all set on a proper bed of concrete 6 in. thick.

The general setting out of the drains is sketched on the plans. The present cesspools must be emptied out and thoroughly disinfected and filled in with lime-concrete. The new drains will empty into the main sewer now in the road and there should be inspection chambers as sketched. A fresh air inlet should be provided at the lower end of the drainage system and the house drains would be disconnected from the main sewer by a disconnecting trap with inspection eye as sketched on the plan.

### 9. WATER SUPPLY.

The present water supply is quite unfit for domestic use. We brought away a quart bottle and tested as to colour, taste, smell, with distilled water, and it does not pass the test in any of these particulars.

This is partly accounted for by the fact that the water supply is pumped from a well near the scullery. This well is of the "shallow" kind. Although we cannot find that any of the sewage has actually penetrated into it, yet, as the soil round the house is thoroughly impregnated with fæcal matter, we expect that it may have contaminated it. We suggest, therefore, that the well may be kept for irrigation purposes, but that the house supply should be taken from the new water main in the public road. This will not be a costly matter. The old lead cistern in the roof should be taken away, and a new galvanised iron cistern for 1,000 gallons be fixed in its place, fitted with proper ball-cock and overflow pipe. The cistern-room should be perfectly light and well ventilated, so that all dirt can be seen to be removed, and we would suggest that a small dormer window be inserted in the roof to effect this purpose. As to drinking-water we would suggest that this be taken direct from the main by a tap at the scullery sink. If desired a "Berkfield" filter can be fixed to the tap, and the drinking water supply thus rendered safe.

### 10. DISPOSAL OF REFUSE.

All the vegetable matter and garbage should be burnt in the fire-box of the new kitchen range. There is no collection by the Local Authority so that this devolves upon the occupier.

### 11. APPROXIMATE ESTIMATES.

We understand the lessor is willing to expend 500*l.* on repairs, renovations, and improvements. This we do not consider to be sufficient. Our estimate is as follows :—

| | |
|---|---|
| Repairs to walls, floors, roofs, including papering and painting throughout (including erection of new billiard room), we estimate as follows :— | £650 0 0 |
| The erection of the new sanitary wing and the whole of the work comprised in our report of the sanitary condition of house ... | £350 0 0 |
| | £1,000 0 0 |

We think the lessor should be asked to expend 600*l.* in order to put the house into an habitable and sanitary condition.

We understand that you, as the lessee, are willing to expend 400*l.* on the alterations and additions, &c., affecting your convenience. We think that this sum may cover cost of the building of the billiard-room, the *porte cochère*, the insertion of bay windows in drawing-room or dining-room, the formation of passage behind library, and the new stoves and chimney-pieces mentioned in my report. It should also include the necessary heating apparatus. If the lessor agrees to expend the sum as above we think you would be justified in taking the house on a twenty-one years' lease with the usual covenants. Provided the lessor agrees to do this, an architect should be appointed by you to guard your interests in the matter, and the whole of the work should be done to his satisfaction.

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## BOOKS RECEIVED.

PRINCIPLES AND PRACTICE OF MODERN HOUSE CONSTRUCTION. Vol. V. Edited by G. Lister Sutcliffe. (Blackie & Son.)

THE STUDENTS' PRACTICAL GUIDE TO MEASURING AND VALUING. Edited by E. Wyndham Tarn. Seventh Edition. (Crosby Lockwood & Son.)

BACTERIA. By George Newman, M.D., F.R.S. (John Murray.)

HANDBOOK FOR SOMERSETSHIRE. (John Murray.)

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## *GENERAL BUILDING NEWS.*

PARISH CHURCH, CRAIGLOCKHART, EDINBURGH.—The Parish Church at Craiglockhart has just been dedicated after alteration. The roof has been reconstructed, the walls decorated, and a stone tower and spire has been erected at the south-west corner adjoining the porch, with which the tower is connected by a staircase. The first stage of the tower rises 45 ft. from the ground, and is 17 ft. square—carried up without buttresses—above this, and recessed back a little, is the belfry, a height of 62 ft. from ground to parapet. The corners of the tower are continued above this with buttresses resting on carved gargoyles at the parapet, and finished in crocketted pinnacles. Above this rises the spire to a height of 98 ft. from the ground. The pinnacles are connected to the spire with flying buttresses, each finished with the carved figure of a griffin. The upper stage of the tower has a two-light tracery window on each face, and the belfry has a three-light window on each face. The grounds have also been enclosed with stone walls and iron railings. The work was carried through by Messrs. Hay & Henderson, architects, from whose design the church was built in 1889-90.

PRESBYTERIAN CHURCH, TOOTING.—A new Presbyterian Church has just been opened at Tooting. The church has been built of red brick with stone dressings, from plans prepared by Mr. Thos. Arnold. It is capable of seating 750. The pulpit is in one corner in front of an organ built by Messrs. Mybrea & Cartwright, of Holloway. The seating of the church has been carried out by the Bennet Furnishing Company, whilst the system of heating adopted is hot water low pressure with Gurney's heater and radiators, and the work has been carried out by the Anglo-Canadian Heating and Ventilating Company. The whole of the work has been carried out under the superintendence of Mr. J. Stevenson, clerk of works, the builders being Messrs. Johnson & Co., Limited.

CONGREGATIONAL CHURCH, LEEDS.—A Congregational Church is about to be erected in Harehills-road, Leeds, from designs prepared by Mr. T.

Dyer. The church is planned to seat 750 persons. It will have nave and transepts, and a gallery at the end over the main entrance. Vestries for the pastor and choir, and ladies' and gentlemen's cloak-rooms, will be provided. The building will be of brick, with stone dressings, and the tower will rise to a height of about 100 ft.

Congregational Church, Morpeth. — The new church and premises for Sunday school and social purposes, built by the Congregationalists of Morpeth, were opened recently. The new church and schools occupy a position in Dacre-street, Morpeth. The buildings are Early English in style, and the plans, which were prepared by Mr. J. Walton Taylor, of Newcastle-on-Tyne, are for a church to seat 350 persons, lecture hall to accommodate 250, large infants' class-room, fitted up with tea boiler, &c. The cost of the whole, including land, was about 2,700*l*.

Church, St. Barnabas, Birmingham.—On the 14th inst. Lady Holder laid the foundation stone of the new Church of St. Barnabas, at Ladypool-road. When completed the church will take the place of a small iron building which has accommodation for only about 600 persons. The plans, prepared by Mr. T. Frederick Proud, the architect, provide at present only for the erection of a chancel, with organ chamber and vestries, but when complete the church will consist of a wide nave, aisles, transepts, and morning chapel. The chancel will be 24 ft. wide, with apsidal end, the morning chapel and organ chamber being separated by richly-moulded arches. At the corner of Ladypool and Clifton roads a tower will be erected, under which is the main entrance. A projecting octagonal baptistry adjoins, and above rises the end of the nave with a group of traceried windows. The south side shows a range of traceried clearstory windows and buttresses. The building will be constructed of red brick, with moulded terra-cotta arches and tracery, and covered by an open timber roof and green slates. The church will hold 900 people, and the cost, exclusive of the tower, will be 6,000*l*. The builders are Messrs. E. Giles & Son, of Camp Hill.

Free Church, Carnock, Fife.—The new Free Church at Carnock has just been opened. The church was built from plans prepared by Mr. A. Scobie, architect, Dunfermline. It is a Gothic structure, with accommodation for 300 worshippers, and there is a small hall at the back for Sunday school and other meetings, besides a vestry and closet accommodation. The contractors for the work were :—Mason, Wm. Templeman, Cairneyhill; joiner, David Graham; slaters and plasterers, M'Gregor & M'Owan; plumbers, Muir & Gillan; glazier, Alex. Lowe; painter, Henry Hoggan; heating engineers, D. Lorne & Sons, Edinburgh; iron work, gates, and railings, Charles Wilson, Carnock.

Church, Colton, Yorkshire.—A small church, to be known as St. Paul's, has just been consecrated at Colton, a hamlet situated about four miles from Tadcaster. The edifice is of brick. The roof is panelled internally, and on the outside is covered with red tiles, with a bell cot. The nave is seated with stained deal open benches. The plans were prepared by Mr. C. Hodgson Fowler, F.S.A., of Durham; Mr. A. Barnes, of Malton, was the general contractor; Mr. John Nicholson, of Barton-le-Willows, provided the seating accommodation; and Mr. T. Bolton was the clerk of works. The structure provides sitting accommodation for eighty persons

Free Church, Elderslie, Glasgow.—The memorial stone has just been laid of the Free Church which is being erected in Elderslie at the corner of Glenpatrick-road and the lane leading to Eldersley Public Hall. The building, designed by Mr. W. D. M'Lennan, Paisley, will seat 430 worshippers.

Primitive Methodist Chapel, Northampton.—The Kettering-road Primitive Methodist Chapel was reopened on the 11th inst. after renovation and improvement. The interior of the building has been redecorated, the electric light has been installed, and certain alterations have been made to the vestibule and the lobbies leading to the galleries, together with other minor structural improvements. The painting work has been carried out by Mr. H. M. Goy; the installation of the electric light was by Mr. A. C. Dickens; and the carpentering work has been carried out by Messrs. Wilson and Alright. The whole has been executed under the superintendence of Mr. H. H. Dyer, architect, Northampton.

National Schools, Normanton. — The Archbishop of York recently opened new Church schools at Normanton. The establishment is for both boys and girls, and is so adapted as to provide two large open apartments, or be shut off into seven classrooms. It is built of brick with stone dressings, and the total cost is about 3,100*l*. The contract has been carried out by Messrs. R. L. Leak & Sons, of Normanton, from the designs of Mr. Arthur Hartley, architect, of Castleford.

Hotel, Caister-on-Sea.—The Manor House Hotel at this retired watering-place having proved inadequate to accommodate the number of would-be visitors, is about to be enlarged, and Messrs. George J. & F. W. Skipper, architects, of Norwich, are now preparing plans with a view to the work being carried out immediately after the season is over. With the new rooms the hotel, whilst losing none of its quietude, will become much more commodius and comfortable; a large lounge or central hall will be a special feature, and all the new bedrooms will be of ample size and with sea views. Just beyond the hotel new houses are being erected, and a new building estate is being laid out by the owners of the hotel.

House, Edgbaston, Birmingham.—A visit of the Birmingham Architectural Association was recently made to the new house of Mr. Percy Jones, Woodbourne-road, Edgbaston, recently erected from the designs of Messrs. Bateman & Bateman.

Hotel, Beeston, Notts. — The new Victoria Hotel in course of erection upon the site of the old house of the same name adjoining the station premises will occupy less in area than its predecessor by close upon 200 square yards, which amount of land the owners have transferred to the Beeston Urban Authority for the purposes of widening Ryland-road at that point to 29 ft. The elevation will be faced with pressed bricks and stone dressings. Mr. Enoch Hind is the contractor, and Mr. W. H. Tarrand, of York, the architect.

Convent, Ballymacarrett, Belfast.—On the 13th inst., the foundation-stone of a new convent and home in Ballymacarrett was laid. Messrs. John Courtney & Co. are the builders, and Messrs. E. & J. Byrne the architects. The total cost will be nearly 5,000*l*.

Shooting Lodge, Glenfarquhar Estate, N.B.—A new shooting lodge is in course of erection on the estate of Glenfarquhar, on the west side of Hershaw Hill, near the site of the old castle of Glenfarquhar, which is now demolished. The floor space is 87 ft. in length by 60 ft. in width, and in addition to the usual number of public rooms, a large number of bedrooms, and servants' accommodation will be provided. The lower portion of the lodge is built of stones from a local quarry and dressed stones from Aberdeen; while the upper portion is of half timber work, filled with concrete, "harled" with lime. The roof will be covered with red tiles from the Coalbrookdale Company's works. The lodge has been designed by Mr. George Bennett Mitchell, architect, and the following are the contractors :—Mason work: Mr. George Hall, Aberdeen; carpenters: Messrs. A. & J. Tindal, Fordoun; roof-tiling, Messrs. J. Lindsay & Son, Montrose; floor tiles and grates, Messrs. J. Bannochie, Aberdeen; plaster work, Messrs J. & C. Thomson, Brechin; plumber and water supply, Messrs. C. Wood & Co., Montrose; painting, Messrs. J. Mason & Sons, Queen-street, Aberdeen.

Hospital, Govan, N.B. — The new hospital which has been acquired by the Govan Parish Council at Merryflats, Govan, was opened on the 15th inst. This hospital extension has been carried out within the Merryflats grounds to the westward of the old hospital, and connected with it by a continuation in a direct line of the central corridor, which is the east and west axis of the buildings. A connecting wing lying along line of corridor has a single ward of sixteen beds on the ground floor. The upper floor of this block is divided into twelve bedrooms for nurses. The main block of double wards is placed north and south, with a frontage of 145 ft., and two stories in height, each of 13 ft. ceilings. In the centre are placed two convalescents' day rooms, with porches opening upon airing grounds. On the first floor there has been provided maternity rooms, including bath-room and nurses' room. In the main block are four double-breadth wards, 95 ft. by 24 ft., each for twenty-eight beds. The closets and bath-rooms are placed in angle pavilions, having ventilated cut-off lobbies. The buildings have been heated and ventilated on the plenum system. To enable the same modern system of heating and ventilation to be applied to the old hospital, subways have been excavated under the old buildings. The works have been planned by Messrs. H. & D. Barclay, architects, and carried out under their superintendence, they being assisted by the master of works, Mr. Peter M'Auslan. The contractors were :—Masons, Messrs. Horne & Stewart; wright, Mr. Robert Rogerson; plumbers, Messrs. John Paterson & Co.; slaters, Messrs. John M'Ouat & Son; plasterers, Messrs. William Halley & Co.; glaziers, Messrs. C. & J. Malloch; ironmongers, Messrs. Wm. M'Geoch & Co.; painter, Mr. George W. Sellars; steam boiler, Messrs. Wm. Wilson & Sons; engineer, Mr. John Cochrane; steam fittings, Mr. J. M'Callum.

New Goods Warehouse, Broad-street.—Messrs. Kirk & Randall, the well-known contractors of Woolwich, have just completed the erection of a large goods warehouse at Broad-street, City, for the London and North-Western Railway Company, from the designs of Mr. Francis Stevenson, Chief Engineer, Euston Station, assisted by Mr. E. B. Thornhill, with Mr. Keyte as resident engineer. The building covers an area of 50,000 square feet, and consists of four floors and two basements, and its cost was rather more than 100,000*l*. It is lighted throughout by electricity.

Business Premises, Belfast.—A new restaurant has recently been opened in Castle-place, Belfast. The building includes, besides the dining accommodation, private dining-rooms, ladies'-rooms, smoking, reading, and billiard-rooms, and a ball-room. The kitchen, bakery, &c., occupy the rear portion of the second floor, the front portion consisting of the smoking, reading, and three of the private dining-rooms. The ball-room is on the third floor. The building was erected by Messrs. M'Laughlin & Harvey, of Belfast, from the designs of Messrs. J. J. Phillips & Son, also of Belfast.

Building in Leeds.—The report of the Plans Committee of Leeds Corporation, shows that during the year ended March 25 last no less than 2,800 plans for new buildings or for extensions or alterations passed through the hands of the Committee. During the preceding year the number of plans submitted for approval was 2,400. At the last meeting plans for the erection of no less than 237 buildings were submitted. Mr. Towers, the chief building inspector, states that the dispute in the building trade has not yet appeared to have had the slighest effect on the number of plans, which go on increasing almost week by week. In every suburb of Leeds scores of buildings are in course of—or, as a result of the lock-out, awaiting—erection. In the neighbourhood of Harehills-road, Harehills-lane, and Burmantofts hundreds of new houses have made their appearance during the last couple of years, whilst scores of others are now being erected or are in contemplation. In Holbeck, Hunslet, Headingley, Beeston Hill, and Bramley the builders have of late been equally active. Indeed, never have the builders of Leeds had such a prosperous period as during the past two years. What is, perhaps, an even more satisfactory feature of the report than the large increase in the number of dwellings erected is the large increase of late in the number of plans for extensions of works. Within the last few months plans have been approved for large extensions at Messrs. Taylor's forge, Clarence-road, Hunslet; Messrs. Fitton Bros., engineers, of Bramley; Messrs. Tannett & Walker, Hunslet; the Leeds Fireclay Company, Wortley; Messrs. Berry & Co., of the Croydon Engineering Works; and Messrs. Greenwood & Batley, of Armley, have also recently extended their works, or are about to do so. At Horsforth, Messrs. Whittaker Bros., the contractors, are likewise making large additions to their engineering department.—*Leeds Mercury.*

Reconstruction of Queen's Restaurant, Aberdeen.—This building—formerly the Hall and Library of the Aberdeen Society of Advocates—situated at the junction of Union-street and Back-wynd, has been converted into shops on the ground floor and high-class restaurant for the Cabin Tea Company, Glasgow, on the upper stories. The restaurant entrance is from Union-street by a marble stair, the staircase walls being also lined with marble. On the first floor the large hall—60 ft. long by 35 ft. wide—with domed ceiling, has been fitted up as a dining-room. The floor is of pitch pine polished for dancing. Screened off from this room by a movable mahogany screen is a tea-room, 42 ft. long by 22 ft. wide, and on occasion of a ball both rooms can be thrown into one. Above the tea-room are smoking-room and billiard-room, and entering off Back-wynd is a bar. A suite of billiard-room and two dining-rooms open off the bar, and opening off the tea-room to Union-street is a stone balcony. Stained glass has been introduced at various parts, and the total cost of reconstruction will exceed 6,000*l*. Mr. A. Marshall Mackenzie, A.R.S.A., Aberdeen, is architect.

Club Premises, Sheffield.—The old Athenæum in George-street, Sheffield, is now being pulled down to make way for the new premises, which will occupy a much larger site. The architects for the new club buildings are Messrs. Flockton, Gibbs, & Flockton, of Sheffield.

Infectious Hospital, Kingsthorpe, Northampton.—The new infectious diseases hospital for the Urban District of Kingsthorpe was opened recently. There are two wards. The one on the north-east side is 24 ft. by 26 ft., and in it there is accommodation for eight beds. The other, on the south-east side, is 24 ft. by 18 ft., and is built on the pavilion style, and will accommodate four patients. In both wards provisions have been made for the nurses, whose room is placed in the centre of the buildings. There are also bath-rooms. At the rear are the out-buildings, which comprise disinfecting apparatus, a laundry, a coach-house for the ambulance van, and a mortuary. In the front is the administrative cottage for the caretaker and the matron. There is a dispensing-room for the medical officer, and rooms for both night and day nurses. The buildings are of local brick, with tile roofing and Bath stone dressing. The plans were prepared by Mr. J. T. Ingman, the Surveyor to the Council, and the building has been carried out by Mr. G. J. Fisher, of Northampton, the contractor.

Proposed New Joint Hospital for the Isle of Thanet.—An enquiry was held at the Town Hall, Ramsgate, on the 7th inst. by Mr. R. Deane Sweeting, Local Government Board Inspector, relative to an application by the Isle of Thanet Joint Hospital Board for sanction to borrow a sum of 40,000*l*. for the purpose of erecting a new hospital. It was explained that the new hospital would be erected on a site situated on the Sandwich-road, just off the main road between Ramsgate and Margate. The plans have been prepared by Messrs. Langham & Osborn.

Public Baths, Plaistow.—The foundation stone has just been laid of public baths, Plaistow. The buildings will be erected on part of the Balaam-street site, with a frontage of 126 ft. to the road. The following accommodation is provided, viz :—First-class men's swimming bath, with water area of

100 ft. by 27 ft., and from 6 ft. 6 in. to 3 ft. 6 in. in depth. Second-class men's swimming bath with water area of 60 ft. by 20 ft., and from 6 ft. to 3 ft. in depth. Two club rooms, one to each bath. Five first-class men's warm baths; twelve second-class men's warm baths; five first-class women's warm baths; five second-class women's warm baths. Committee-room; ticket office; superintendent's office; superintendent's apartments with two sitting and three bedrooms, and a kitchen and bath-room, &c.; towel laundry and towel store; boiler house; engine-room; coal stores; waiting-room to each department; entrance hall. The architect is Mr. A. Saxon Snell. The building was illustrated and described in our issue for March 11 last.

Proposed New Fever Hospital, Leeds.—At a meeting of the Leeds Sanitary Committee on the 18th ult., the scheme of Mr. Edwin T. Hall, architect, London, for the extension and completion of the Manston Infectious Hospital was adopted, and he was instructed to prepare detailed plans and specifications. The present mansion on the estate will be demolished, and a building erected on the site to form the official administrative block. This, together with the residence and offices for the assistant medical officers, the matron, and single men, are shown in the plan at the staff entrance to the hospital. Passing through the covered way, the residences for nurses and female servants are on the right and left, the kitchen, steward's stores, dispensary, and bakehouse being grouped on tne main covered way, which runs east and west. At the extreme north-east the existing pavilion is set apart for scarlet fever convalescents, with playing grounds attached. It is proposed to convert the adjacent staff block into a club-house for all the men employed in the hospital. The porter's lodge remains as at present. The position of the mortuary is retained, but the building will be increased in size and otherwise re-planned. An ambulance station, with stabling, is placed to the south of the mortuary. Opposite to the lodge will be placed the discharge block, with separate sets of rooms for scarlet fever and diphtheria, with waiting-rooms for visitors attached. A corresponding block to the east of the administrative block will contain accommodation for students, &c. The residence for the medical superintendent is placed in the outer zone, not far from the entrance gates. Owing to the difficulty of housing married men in this locality, at so great a distance from Leeds, a provision of sixteen cottages for married employés has been made in the locality. The present laundry is inadequate for the service of the completed hospital, and now that it is proposed to generate their own electricity, they will require a much larger engine-house and another boiler. Owing to the close proximity of other buildings, it is not practicable to enlarge the present laundry. The architect therefore proposes to take out all the interior of the present disinfecting block, and make it part of the laundry. All the pavilions are separated by a minimum distance of 100 ft. Each pavilion will be only one story high. The hospital, when completed, will provide the following accommodation:—Scarlet fever, in eight new pavilions, 240 beds; diphtheria, in two new pavilions, sixty beds; enteric diseases, in four existing pavilions, eighty-eight beds; isolation accommodation is provided in five pavilions (one existing, four new) for forty-eight; total, 436. The administration block will contain the committee-room, the offices of the medical superintendent, clerk, and matron's waiting-room, one large office for the assistant medical officers, chaplain's room; the residences of the matron, assistant medical officers, and of the six unmarried male servants. In this block it is also proposed to put a large room available for lectures, or for services for the staff. Each scarlet-fever pavilion will contain a vestibule, a hall, two wards of fourteen beds each, two wards of one bed each. The ward kitchen will be in the centre, entered from the hall, and having observation windows commanding all the four wards. On the opposite side of the hall will be a small store for linen and one for cooked meats. Each ward will be 26 ft. wide by 84 ft. long, and 13 ft. high. The windows will be carried right up to the ceiling. In the centre of each ward will be placed a faïence stack, with two fireplaces and aspirating flues placed near the ceiling. There will be open basements under the wards, from which the flues will be swept. The wards will be principally heated by means of low-pressure hot-water radiators. The small isolation pavilions will each consist of one four-bed ward, one two-bed ward, and one single-bed ward, with ward kitchen, larder, linen-room, a bath-room, with one fixed bath and one copper moveable bath for use in the separate wards. The existing typhoid pavilions each contain two ten-bed wards and two single-bed wards, with central ward kitchen opening into each large ward and to the hall, having observation windows looking into the small wards. The hospital will be connected throughout by covered ways of the same type as those already erected, but underneath these the architect proposes to put subways, high enough for a man to work in. These subways will contain the steam and electric mains, and steam heaters for the various blocks, cold-water pipes for general supply and for fire mains, telephone, and fire-alarm mains, &c. The hospital is to be erected of brick, with local stone dressings. The roofs will be slated. Internally the walls of the wards will be finished with cement, painted, and varnished. Lavatories, bath-rooms, &c., will have glazed-brick dadoes and divisions.

Fire and Police Station, Westbar, Sheffield.—This building is now being erected for the Corporation of Sheffield on a corner site at the junction of Westbar and Westbar Green. No portion of the building is less than three stories high, and the length of frontage is 175 ft. Welsh bricks are used for the facings, and Scotch stone for the dressings. The tower, the upper part of which is fitted up as a look-out, the lower part being used for drying hose pipes up to a 100 ft. in length, rises to a height of 80 ft. The police department is to the left of the tower. The fire department, to the right of the tower, will have the engines and one escape, stable for four horses, and a house for the superintendent. The whole of the upper floor is arranged as bedrooms, with lavatory and bath-rooms, for twenty single men, and the first floor has kitchen, dining, and recreation rooms for their daily use. White glazed bricks have been used for the walls of fire-engine-house, police-offices, and cells, and the floors will be of smooth-surfaced concrete. The general contract is in the hands of Messrs. Ash, Son, & Biggin; Messrs. Charles Chadwick & Sons have the slating and plastering, Messrs. Braithwaite & Co. the plumbing and glazing, Mr. Frank Tory the carving, Messrs. Bright Brothers the heating, the Gas Light Company is laying on the gas, and the building will also be fitted up with the electric light. The clerk of works is Mr. Walter Davison, and the architect Mr. Joseph Norton, of Sheffield.

Dewsbury District Infectious Hospital.—Plans for a Joint Infectious Hospital for Dewsbury, Heckmondwike, Ravensthorpe, Soothill Upper, and Soothill Nether have been prepared by Mr. Fox, architect, of Westgate, Dewsbury, and have been approved by the Joint Hospital Board. It is the intention of the Board not to proceed with the whole scheme at once, but only a portion of it. A site at Chickeney Wood has been secured. The hospital will consist of an entrance lodge, an administrative block, four pavilions (two for fever cases, one for diphtheria, and one as an isolation block), with washhouse and laundry, and a boiler and engine-house, containing disinfecting plant. There is also to be a mortuary. The buildings will be lighted by electricity, and will cost about 21,000*l*.

## *SANITARY AND ENGINEERING NEWS.*

Waterworks, Corley, Warwickshire.—The first stage of the scheme for providing the district of Foleshill, Exhall, Sowe, Wyken, Stoke, Binley, Keresley, and Corley with a new water supply has just been completed. Hitherto the area in question has derived its water supply from wells. The new supply is drawn from the Corley rock, a red sandstone formation. At Burrow Hill-lane a well of 10 ft. diameter has been sunk to a depth of 99 ft., and on an eminence near at hand a temporary reservoir has been constructed. Mr. J. Quick is the engineer.

Sewerage Works, Acton.—Colonel A. G. Durnford, R.E., Local Government Board Inspector, held an inquiry at the District Council Offices on the 16th inst., in reference to the application of the District Council for sanction to borrow 2,681*l*. for works of sewerage and surface-water drainage. Mr. D. J. Ebbetts is the surveyor.

Sewage Works, Barrhead, Renfrew.—The sewage purification works at Bowerwalls, Barrhead, were opened on the 15th inst. The works consist of two grit chambers, four septic tanks, and eight aërating bacterial filters, all of which are built in concrete. Each of the septic tanks is 100 ft. long by 18 ft. wide by 7 ft. deep at low water, and is entirely covered with concrete arches, carried by rolled steel joists and brick piers. The four tanks when filled to low-water level contain about 312,500 gallons. Each filter is 55 ft. long and 54 ft. wide, and is filled to a depth of 4 ft. with broken furnace clinker. The total filtering area is about 2,540 square yards. Six of the filters ordinarily form the working set, the other two being held in reserve. The engineers are Messrs. Cameron, Commin, & Martin, Exeter and Westminster.

## *FOREIGN.*

France.—One hundred and nine artists have taken part in the competition opened by the Government for designs for the diplomas for the awards in the 1900 Exhibition. The designs, on view in the Galerie des Machines, are all of a very mediocre character, and recall the exhibition of designs for postage-stamps, held about two years ago, which resulted in nothing. It is useful to remember this, for at the 1889 Exhibition the diploma was designed by Galland.——An interesting exhibition of pictures, drawings, and sketches by Puvis de Chavannes has been opened in the Galerie Durand Ruel. This exhibition, which closes on July 13, will be followed by a public sale.——The municipal administration are now restoring the façade of the Chapelle de la Sorbonne, which contains the tomb of Cardinal Richelieu.——A block of very large houses is now being built on the site of the old reservoirs, at the angle of the Rue de Constantinople and the Boulevard des Batignolles. These houses are being built from designs by M. Charles Lefebvre, architect, and they present a fine façade of 60 mètres in length, the monotony of which is broken by the bow windows thrown out, with columns, and cupolas over.——M. Falguière is to execute four decorative figures to ornament the pedestal for the monument for Victor Hugo, the principal figure being the work of M. Barrias. The four figures symbolise Tragedy, Comedy, Lyrical Poetry, and Satire.——The exhibition of the Beaux-Arts de Valenciennes will be held from September 24 to October 15. The exhibition of the "Union Artistique des Ardennes," which has just been opened at Charleville, will close on July 16; that of the Société des Amis des Arts of Douai will open its forty-fifth exhibition on July 9, to close on August 6. The similar Société at Grenoble will open its exhibition on July 15, to remain open till August 30.——An exhibition of the paintings of M. Fantin-Latour is being arranged at the Luxembourg.——We have to announce the decease, at the age of seventy-five, of the painter, Charles Julien de la Rochenoire. He was a pupil of Léon Cogniet, Gleyre, and Troyon. He devoted his talent to painting the pasture lands of Normandy, and exhibited at the Salon, from 1857 to 1879, landscape and cattle pictures which were much valued.

United States.—The list of names of the architects chosen to compete for the New York Custom House is of much interest, as showing the idea entertained at Washington of the professional rank of Eastern architects, or, at least, of the architects of New York and two other cities, which have, as yet, had no large Federal building erected under the new system. Of the New York architects, those invited are Messrs. McKim, Mead & White, George B. Post, Bruce Price, Carrère & Hastings, Francis H. Kimball, James B. Baker, Cady, Berg & See, Clinton & Russell, Robert W. Gibson, Israel & Harder, Babb, Cook & Willard, Henry J. Hardenbergh, Cass Gilbert, Trowbridge & Livingston, George Martin Huss, and Howard, Cauldwell, & Morgan; from Boston, Messrs. Peabody & Stearns and Shepley, Rutan & Coolidge are invited; and Messrs. D. H. Burnham & Co., and Henry Ives Cobb, from Chicago. It is evident that this selection is the work of one very well acquainted with professional matters, and it was probably left mainly to Mr. James Knox Taylor, the Supervising Architect of the Treasury. However this may be, the contrast between such a list and that which would have been made up in Washington not many years ago is instructive. All experienced members of the profession remember the nondescript creatures who, in the good old times, used to make their appearance as architects whenever a public building was in question. As a rule, no one in the profession had ever heard of them before, and after their public employment terminated they were not heard of again until a new State-house, or court-house, or asylum, or gaol had to be built at the taxpayers' expense; but, for some mysterious reason, they were always awarded the public work. Now, however, an officer of the Government is allowed, without protest, to think of artistic harmony in the erection of public buildings, instead of political harmony, and to make up his list of competitors in such a way as to endeavour to secure the former rather than the latter.——The new monument to Lafayette, which is to be presented to the French Government by the school children of the United States, is to be executed by Mr. Paul W. Bartlett and Mr. George G. Barnard, Mr. Bartlett carrying out the bronze equestrian statue of Lafayette, and Mr. Barnard undertaking the two groups in granite which adorn the pedestal. The architectural part has been entrusted to Mr. Henry F. Hornbostel, of New York. The presentation is to be made on July 1, 1900, but as it will be impossible to complete the bronze statue by that time, a model of it only will be unveiled. Messrs. Bartlett, Barnard, and Hornbostel were all students in Paris at the same time, and were regarded by the Art Committee of the Lafayette Memorial Commission as peculiarly qualified for their work.—*American Architect.*

## *MISCELLANEOUS.*

Professional and Business Announcements.—The partnership between Messrs. Spalding & Cross, architects, is terminated, and Mr. Cross has removed his office to 58, Conduit-street, Regent-street. Buildings still in course of erection from the designs of Messrs. Spalding & Cross will be completed under the joint supervision of Mr. Spalding and Mr. Cross.——Mr. George E. Withers and Mr. Percy W. Meredith, A.R.I.B.A., of Finsbury-pavement, have entered into partnership, and have arranged to carry on the practice of the late Mr. Charles Bell, F.R.I.B.A., architect and surveyor, at 3, Salters' Hall-court, Cannon-street, E.C.

Tamworth Castle.—Having been bought by the town as a memorial of the Queen's reign, for 3,000*l*., Tamworth Castle and its grounds—about three acres in area—were recently opened to the public. The original stronghold of the Mercian Kings Offa, Cenwulf, Beornwulf, and their successors, was rebuilt by Alfred the Great's daughter, Ethelfleda, last Queen of Mercia, and during two centuries after the Conquest the castle was held by the Marmions, descendants of Robert de Marmion, Lord of Fontenay, from whom it passed in succession to the de Freville, Ferrers, and Compton families, and ultimately to George, first Marquis of Townshend, who married the Lady Charlotte Compton, upon whom had devolved *jure matris* the baronies of Ferrers of Chartley, Lovaine, &c. Three rooms of Tamworth Castle will be used as a museum and picture gallery, and for the collection made by the local Natural History Society.

Appointment of Sanitary Inspectors.—The Local Government Board has sanctioned the appointment of Mr. E. Martin as a sanitary inspector in Greenwich, and the re-appointment of Mr. G. W. McQuinn as a sanitary inspector in Holborn.

Altar and Reredos, Church of Our Lady, Birkenhead.—On the 11th inst. a new high altar and reredos were dedicated in this church. The high altar is executed in Caen stone, and is approached by steps of Walplaquet marble. The altar-stone is supported on four columns of Labrador granite. The reredos is placed against the three walls of the apse. The whole of the work has been designed by Messrs. Pugin & Pugin, of London. The structural work has been carried out by Mr. Fogarty, Liverpool; the new altar by Messrs. Boulton & Sons, of Cheltenham; whilst the painted panels—three of which only have been done—are from the studios of Messrs. Hardman & Co., Birmingham.

Metropolitan Improvements.—In the list framed by the Improvements Committee of the London County Council, in respect of which they recommended that legislative action shall be taken in the course of the Session, 1900, are comprised the following projects:—(*a*) An extension of the riverside embankment between Lambeth Bridge and the Victoria Tower, with the improvement of the Smith-square and Millbank district, and the laying-out of a new street, 70 ft. wide, southwards from Old Palace-yard, and of a riverside garden; the net cost is estimated at 530,000*l.*, including the cost (74,000*l.*) of the works, towards which the St. Margaret and St. John Vestry will be asked to contribute 100,000*l.*, and the Committee propose that the Government shall undertake, at a calculated net cost of 130,300*l.*, the alteration of the Abingdon-street block; in respect of this project we may refer our readers to the *Builder* of January 29, 1898, which contains a leading article upon the somewhat similar scheme of a private body of "promoters," illustrated by various plans, including two prepared by the Editor;—(*b*) to widen Mare-street, Hackney, to 70 ft. between the Triangle and the North London Railway, the Vestry contributing 125,000*l.* to the net cost of about 577,000*l.*; (*c*) to widen Goswell-road to 60 ft. between Great Sutton and Upper Ashby streets, provided the Clerkenwell and St. Luke Vestries will jointly contribute 20,000*l.* towards the net cost, 209,500*l.*; (*d*) to widen Camberwell New-road between the Green and Warner-road at a cost of 52,000*l.*, towards which the Vestry of St. Giles, Camberwell, will be asked to contribute 5,000*l.*; and (*e*) to widen Nine Elms-lane to 60 ft. between Battersea Park-road and Southampton-street West, at a computed net cost of 136,400*l.*, subject to a contribution of 15,000*l.* from Battersea Vestry.

British Archæological Association.—The annual Congress will be held this year at Buxton, from Monday, July 17, to Saturday, July 22. On the Monday members and visitors will assemble at the town hall for the opening meeting at 4 p.m., and a conversazione will be given at the town hall at 8.30 p.m. On the Tuesday the party will leave Buxton for Bakewell, where the Vicar, the Rev. C. T. Abraham, will give some particulars of the recent discovery of old foundations at the west end of the church. Afterwards Chatsworth House will be visited, and Haddon Hall, returning to Buxton for the evening meeting at 8.30. On the Wednesday members will visit Tideswell, Eyam, and Stony Middleton. On the Thursday visits will be made to Arbor-low, where Dr. Brushfield and others will point out the chief features, and offer explanatory remarks upon the stone circles; Hartington, where the church will be described by the Rev. W. Fyldes, M.A.; and Alstonfield. On the Friday they will visit Castleton, and the Roman Camp at Brough will be visited on the way to Hathersage. The churches will be described by Mr. Blashill. On the Saturday some of the members will proceed to Ashford Church, thence to Taddington and to Chelmorton. The second party will visit the Roman roads and Roman camps at Dove Holes, and at the top of Coombs Moss, &c. Closing meeting at the town hall at 3 p.m. Arrangements will be made for extra days and excursions to Dove Dale, Ham, Poole's Cavern, Deepdale Cavern, &c., if members signify their wishes in this respect to the hon. sec. in good time during the Congress week. Meetings will be held in the town hall at 8.30 p.m. each evening (as far as practicable) from Tuesday, July 18, to Friday, July 21, inclusive, for the reading of papers and discussions. The following papers have already been promised: "On the Roman Remains of Buxton and the Neighbourhood," by Professor Boyd Dawkins, F.R.S.; "On the Roman Roads," by Rev. W. Fyldes, M.A.; "On Ashford Church," by Dr. Brushfield; "On the Archæological Discoveries of Micah Salt, Esq.," by Mr. John Ward; "On Castleton and the Castle of the Peverils," by Mr. Thomas Blashill; "On Rownesley Church," by Mrs. Collier; "On Bakewell Church," by Rev. Dr. Cox, F.S.A.; "The Family and Record History of Haddon," by Mr. W. A. Carrington; "The Architecture of Haddon Hall," by Mr. J. Alfred Gotch, F.S.A.; "On Tideswell Church," by the Rev. Canon Andrew; "On the Ancient Lead Mines of Derbyshire," by Dr. W. de Gray Birch, F.S.A.; "On the Pre-Norman Crosses of Bakewell, Eyam, and Hope," by Mr. Charles Lynam, F.S.A.; and "On Derbyshire Brasses," by Mr. Andrew Oliver. Those intending to join the excursion should communicate with the hon. secretary, Mr. G. Patrick, 16, Red Lion-square, W.C.

Master Builders' Association, Coalville.—A master builders' association has been formed for Coalville and district. A meeting was held recently, when this step was decided upon, and the combination has arranged to join the Midland Association, which is affiliated to the National Federation.

A Safety Casement Window.—The cleaning of the exterior of casement windows is an even more awkward matter than with sash windows, as, except with very small sashes, it is almost impossible to get the hand round to the back of it when open, or to the window next it on that side. The Crittall Manufacturing Company, of Braintree, have brought before us a model of an exceedingly simple contrivance for getting over this difficulty in iron casements. The casement frame is made in two parts, the portion holding the glass fitting within the outer frame. When the window is opened, a small clamp on the hinge side of the frame is loosened, and the inner portion with the glass can then be turned on a pivot working in the outer portion of the frame; not only bringing the outside of the glass round, but also enabling the hand to be passed through to clean the outside of the adjoining sash, if it should be a fixed one. There is nothing in the fitting of the double frame to interfere with its weather-tight quality, and nothing intricate or liable to get out of order; it is a contrivance at once simple and ingenious, and can be safely recommended to the attention of architects.

Institute of Sanitary Engineers.—At the half-yearly general meeting, held on the 15th inst., the following resolutions were unanimously carried:—1. That the minutes of the meeting held December 15, 1898, be confirmed. 2. That the balance-sheet and reports of the Governing Body and Auditor for 1898 as presented be adopted. 3. That, in addition to the present classes of "Fellows" and "Associates," a class of "Members" be established. 4. That for all Fellows, Members, or Associates joining after June 30, 1899, the entrance fees and annual subscriptions be uniform, irrespective of locality, as follows, viz.:—Fellows—entrance fee, 2*l.* 2s.; annual subscription, 2*l.* 2s. Members—entrance fee, 1*l.* 11s. 6d.; annual subscription, 1*l.* 11s. 6d.; Associates—entrance fee, 1*l.* 1s.; annual subscription, 1*l.* 1s. 5. That all belonging to or joining the Institute during the present year, whether Fellows, Members, or Associates, have the privilege of becoming Life Fellows, Life Members, or Life Associates, on the payment of ten guineas—five guineas before the end of the present month, or, in the case of new Members, within fourteen days of receiving notice of election, and five guineas on or before January 1, 1900. Life Members to be exempt from all further calls for subscriptions during their membership. The fees for Life Members after the expiration of the present year to be as follows, viz.:—Life Fellows, twenty guineas; Life Members, fifteen guineas; Life Associates, ten guineas.

The Carpenters' Company's Examination in Carpentry and Joinery.—This has been a record year in regard both to the numbers attending the series of lectures delivered to candidates previously to the examination and the number of entries for the examination itself. The lectures are intended primarily for the candidates for the examination; and, although, of course, purely technical, have attracted audiences of over a hundred. The examination took place, as usual, at the Company's Hall, and at their schools in Great Titchfield-street, last week. The number of candidates sitting this year exceeded that of all previous years by at least a third, and the number of successes is more than proportionately higher. The examiners included among their number Sir Alexander Binnie, Professors Banister Fletcher and T. Roger Smith, and Mr. Randall, President of the Institute of Builders. The names of the successful candidates in order of merit are:—*First Class.*—Wm. Bevan and F. J. Griffiths (silver medal); George Ellis, W. H. Richardson Jones, and Jno. Lawrence (bronze medals); W. O. Brown, Arthur Norton, J. E. Poynter, J. W. Appleyard, G. H. Griffiths, E. R. Livermore, W. H. Morrish, I. S. Knight, and Tom Pilgrim. *Second Class.*—S. W. Hayward, T. C. Noble, E. W. F. Martin, H. T. Barnes, A. D. Trendall, J. H. Sills, F. Tompkins, F. J. Allman, S. J. Stevens, D. Hunter, E. W. Bell, G. J. Boog, J. R. Heatley, F. Batten, F. C. Brown, A. E. Davis, C. H Hayward, E. J. Martin, R. H. Griffith, A. D. White, Thos. Tanton, W. Pither, and Jno. Perrin. Candidates already holding the Company's certificate, who came up to improve their position and failed to do so, do not appear in this list, although they may have maintained their former position.

Collapse of a Building in Mayfair.—A large building, which was formerly the residence of Lord Spencer, and which stands at the corner of Hay-hill, Grafton-street, and Dover-street, is in process of demolition, the intention being to erect flats upon the site. Two gangs of men, the house-breakers and the builder's workmen, were engaged at the scene, the latter being at work in the basement laying the foundations for the fresh building. While the other men were at work above pulling the old building down, suddenly, at half-past five, on the 19th inst., the upper floors of the structure collapsed, and there was a great uprising of dust, which for a time completely hid the scene from view. It was subsequently found that, while a couple of dozen men had had marvellous escapes, two others were missing. At ten minutes past seven one of the men was got out. He was terribly injured, and was at once removed to the St. George's Hospital. The dead body of the second man was discovered later on.

Surveyorship Appointment.—Mr. George Spalding Fleetwood, A.S.I., of New-court, Carey-street, has been appointed surveyor to the Corporation of the Orphan Working School, in place of the late Mr. George Fleetwood.

## *CAPITAL AND LABOUR.*

The Building Trade Dispute at Middlesbrough.—A joint meeting of the Middlesbrough Master Builders' Association and the Federated Builders' Labourers' Union was held on the 15th inst. at the office of Mr. Calvert Griffiths, the Master Builders' secretary. The following agreement was signed: "The men to return to work at the old rate of wages, which the masters undertake to pay for the next twelve months. The masters agree not to victimise any member of the union, and the men agree to work amicably with non-union men." It was also agreed to appoint a standing joint committee to consider and decide on working rules, and to settle any dispute which may occur in the future, work being proceeded with in the meantime. This agreement was arrived at on the understanding that the rules of the labourers are brought into harmony with those of the bricklayers.

Dumfries Masons' Strike.—Dumfries masons' strike, which had entered on its fourteenth week, has been settled by an agreement of the masters to give an advance of a halfpenny per hour instead of the penny demanded. The standard wage will now be 8½d., and employers are to be at liberty to pay a lower rate, not less than 7d., to men who are not fully competent tradesmen.

The Tunbridge Wells Building Trade.—The labourers of the Tunbridge Wells building trade, who ceased work until 6d. per hour instead of 5½d. was paid, have now resumed work, the increase having been conceded by the master builders.

Bricklayers' Strike in Germany.—Berlin bricklayers demand a further rise in their wages from 60 pfennige (sevenpence) to 65 pfennige an hour. Some of the employers have granted this but the Employers' Association opposes the demand, and to make their refusal more effective the members have locked out their workmen, even the not inconsiderable number—the so-called "localists"—who have not asked for more wages. The employers declare that they must put an end once and for all to the coercion exercised by the men, in order to remain masters on their own ground. As an answer to the general lock-out a general strike has been proclaimed by the leaders of the Bricklayers' Union, even including shops where the men's demands have been conceded. On account of the very mild winter and the consequent long period of uninterrupted work, the funds of the Union are in a very good condition. The Employers' Association, however, is well-prepared, and it appears as if the struggle might be a hard one. The employers think it lies in their interest that the scene of action should not be restricted to Berlin, and are trying to bring about a lock-out throughout the country. They have, therefore, issued the following circular to the Guild-masters all over Germany: "The movement to raise wages to 60 pfennige being scarcely over, the new demands prove to be a regular challenge to the employers, and a test of the power of the Social Democratic leaders, and they must be refused with all energy. As the workmen decided yesterday at their meeting that all unmarried bricklayers should leave Berlin and the suburbs, and give up their places to married comrades, we beg all our colleagues not to employ bricklayers from Berlin." A second circular has been addressed to purveyors of building material, who are asked not to supply builders who have not joined the Employers' Association, nor members of it who continue work on their buildings. Many employers have refused to be bound by the Association, and have declared themselves willing to pay the wages demanded. Several architects have also cancelled their contracts with employers who cannot fulfil their obligations owing to the lock-out. The struggle will, therefore, most probably end in the victory of the men.—*Daily News.*

Paisley Builders' Dispute Settled.—In connexion with the dispute between the labourers and master builders in Paisley, a joint conference was held recently between the President of the Building Trades' Federation and the secretary of the National Labourers' Union and a deputation from Paisley labourers. After discussion, it was decided that the men's wages should be increased to 5¾d., and that the plasterers' labourers have theirs raised to 6d. per hour six weeks hence. A suggestion that this agreement should regulate the wages for one year from July 1, and that no changes be made except annually, and then on three months' notice on either side, was remitted for consideration to a joint committee.

## *LEGAL.*

### ALLEGED INTERFERENCE WITH ANCIENT LIGHTS.

IN the Chancery Division of the High Court of Justice, on the 16th inst., before Mr. Justice Byrne, the case of Axford *v.* Fruen came on for hearing as a motion by the plaintiff for an injunction to restrain the defendant from an alleged interference with plaintiff's ancient lights.

Mr. Farwell, Q.C., and Mr. Carpmael appeared for the plaintiff, and Mr. Levett, Q.C., and Mr. Stone for the defendant.

Mr. Farwell said the plaintiff was tenant of a shop at 96a, Victoria-street, in which he sold curiosities and furniture. The defendant was his landlord. The plaintiff was tenant until December, 1902, of the premises in question. The frontage of the premises was 24 ft. 9 in.; the shop front was 10 ft. by 9 ft. 6 in.; and the shop stood back 11 ft. 6 in. from the road. The defendant had been building so as to put the plaintiff's shop into a well, as it were; he was building out on each side and raising walls on each side; and he was also building in front. Of course this materially interfered with the plaintiff's enjoyment of the premises. The defendant had suggested that the plaintiff had agreed to allow him to do what he had done. That was a question of fact, but on the evidence it appeared to him (counsel) to be perfectly plain that this was not agreed to by the plaintiff. The defendant suggested he had had a number of verbal conversations with the plaintiff and he had to get the permission of the London County Council. He applied to the plaintiff to get his consent as the London County Council asked for it, and the plaintiff had a letter written by him to the County Council refusing to give that consent. How in the face of that letter the defendant could say the plaintiff gave his consent he (counsel) could not really make out.

Mr. Stone said that one of the defendant's points was consent, and that the plaintiff thereby acquiesced in what was done. Whether this was a binding legal agreement or not, he submitted, did not affect the question. Beyond that, the plaintiff saw the defendant building up these two walls, waited until the work was practically finished, and it was not until the defendant had practically finished the work, and until he had pulled down a staircase, that the plaintiff took action. These were his (counsel's) points on the facts, and there were also points of law.

After some further discussion the motion stood over for a few days to enable the parties to try to arrange matters.

### THE WORKMEN'S COMPENSATION ACT, 1897.

MEADS *v.* HAWKINS.

THIS was a case (tried at the Reading County Court recently) under the Workmen's Compensation Act, in which John Meads, a painter, sued Mr. Hawkins, builder, of Reading, for 50 per cent. of his wages, in consequence of injuries received while engaged at his work. Mr. A. H. Spokes (instructed by Messrs. Brain & Brain) appeared for the applicant, and Mr. Powell (instructed by Messrs. Sarjeant & Gosling) for the respondent.

Mr. Spokes said the action was brought under Section 7.

Mr. Powell, in answer to his Honour, said the point he should raise was that the case did not come within the Act. There was a question as to the scaffolding, though he did not agree also as to the statement of the facts.

John Meads, the applicant, stated that the accident occurred on December 19. His average wages were 1*l.* 8s. per week. The building on which he was employed was the Swansea-road Board School, and Mr. Hawkins was the contractor for it. The height of the building was over 30 ft. Witness was engaged in painting an iron girder over the south staircase when the accident happened. The staircase was on the top floor. Witness was standing on the ladder with a man at the foot. There were two ladders spliced together; they had been spliced by the foreman painter. A rung of the ladder gave way with him, and he fell against a fanlight, which gave way, and he then fell on to the landing. Witness had been unable to do any work since, and could not stand now without the assistance of a stick. Witness had seen scaffolding on the centre staircase. There was scaffolding outside the building to the height of about 13 ft. There had also been scaffolding on the staircase on which he was engaged. Had the scaffolding remained there, it would have been easier and safer for him to do his work.

Cross-examined: The scaffolding was on the south staircase when the men were pointing the brick work and building the wall up. There was scaffolding in most of the rooms. The scaffolding, of which he had spoken, as being outside the building, was not outside that against which he was working. There was also scaffolding in the big room on the ground floor the week previous to his accident. The scaffolding he spoke of consisted of planks and trestles, and long poles for ledgers.

Evidence having been given by Dr. Guilding, Alfred Annetts, a painter, said he had been engaged on the same work as Meads. There had been a plasterer's scaffolding on the very staircase on which Meads had been employed, about 2 ft. 6 in. high. There was also scaffolding at other parts of the building. On the same day that Meads met with his accident some of this scaffolding was in use.

William Hawkins, the contractor for the buildings, said he saw the building on the day the accident occurred. There was no work of construction going on on that day at all, and there was no scaffolding outside or inside the main building.

Cross-examined: For the purpose of the building he had used scaffolding, but it had been taken down. There was no scaffolding on the centre staircase on the day the accident happened. It would not have been possible, nor would it have paid to have put scaffolding on the staircase on which Meads was working.

W. H. Hancock, the general foreman, stated that on December 19 there was no scaffolding outside or inside the building. There was a plasterers' stage on the centre staircase.

Cross-examined: The plasterers' stage was composed of scaffold boards, but it was only a temporary erection.

George White said he was clerk of works in the employ of the Reading School Board. The scaffolding was all removed from the main building on November 2. It was not proper to call plasterers' staging scaffolding.

Mr. Spokes contended that what Parliament intended was that if there were an important building, 30 ft. high, being erected, by means of scaffolding, that then the Act should apply. This building was being constructed by means of scaffolding. Before the plastering and painting work was finished, it could not be said that the construction was completed. Mr. Spokes also contended that the staging was scaffolding, and that the "building" included all the buildings within the curtilage.

His Honour, in giving judgment, said he need not remind them of the peculiarities of the Act. He also expressed his sorrow for the applicant, and his hearty wish that greater care was taken for the safety of the lives and limbs of workmen. The first point to consider was whether the "building" here was not merely the main building, but included the subsidiary buildings, and especially the cookery school. He held that the main building was to be considered separate; it was separate in point of fact; it was separate physically, and it also belonged to a different contract from the one under which the cookery school and metal shop had been constructed. The next was a very important question, whether this main building was "being constructed." He had to decide on the meaning of the word "construction," and he had to do so by the light of the judgment of the Lords Justices in the appeal in the case of Wood, recently decided. What they held was that painting was not "repairs," and not "construction." He did not mean to say that the judgment he was giving was not open to fair criticism and argument, and he dared say it might receive it, but that judgment was law to him. Mr. Spokes had pointed out that in the case quoted the operation was painting only, while here there was a contract for construction, and that the construction could not be considered complete until the plastering and painting was all done. There was a good deal to be said for that argument, but he was unable to say that this building was "being constructed," because there was practically only the painting work to be done. With regard to the plasterer's stage being "scaffolding," his opinion would probably be against the plaintiff, but on that point he did not now decide positively. His Honour also held that though machinery driven by steam had been used in the construction of the building, it was not "being used," as the construction was finished. The result was that the unfortunate plaintiff was not within the purview of the Act, and he must give judgment for the defendant with costs.

Mr. Spokes urged that the case was very near the line, but his Honour said that he always let costs follow the event.

Mr. Powell said that compensation was offered, but declined.

### CLAIM AGAINST CONTRACTORS UNDER THE WORKMEN'S COMPENSATION ACT, 1897.

THE case of Skeggs *v.* Keen came before the Court of Appeal, composed of Lord Justice A. L. Smith, Lord Justice Rigby, and Lord Justice Vaughan-Williams, on the 17th inst., on the appeal of the plaintiff from an award of Judge Addison, Q.C., sitting at the Southwark County Court, under the Workmen's Compensation Act, 1897. It appeared that Skeggs was in the employment of Messrs. A. & P. Keen, contractors, and was injured while in the course of his employment by falling off a ladder. Skeggs first brought an action against the respondents under the Employer's Liability Act, 1880, in the Southwark County Court, alleging that the ladder was defective, but the jury on December 13, 1898, found that the ladder was not defective and returned a verdict for the respondents and the action was dismissed with costs. At the request of the appellant the Judge thereupon proceeded to assess compensation under Section I, Sub-Section 4, of the Workmen's Compensation Act, 1897. The Judge assessed the compensation at the request of both parties, at a lump sum instead of a weekly payment, and he awarded the appellant Skeggs 23*l.* 4s. No application was then made by Skeggs for costs but his solicitor carried in a bill of costs. There were applications made in respect both of this bill of costs and of the respondents' bill of costs in the action, and on April 10, last, the Judge, after stating that the respondents were willing to and did admit their liability under the Workmen's Compensation Act, 1897, but refused to make an offer under the Employers' Liability Acts, 1880, as they considered that the appellant had no case under that Act, but the action was brought instead, said he found as a fact that all the costs with one immaterial exception which the defendants had incurred had been occasioned by the plaintiff bringing his action under the Act of 1880. He also decided that there was no jurisdiction to give the plaintiff any costs.

In the result their Lordships upheld the decision of the County Court Judge, and dismissed the appeal with costs.

Mr. Cyril Dodd, Q.C., and Mr. Moyses appeared for the plaintiff (appellant); and Mr. Lawson Walton, Q.C., and Mr. Ellis Hill for the defendants.

### THE HULL LIGHT DISPUTE.

THE case of Jordeson *v.* the Sutton, Southcoates, & Drypool Gas Company and Others came before the Court of Appeal, composed of the Master of the Rolls, the President of the Probate Division, and Lord Justice Romer, on the 21st inst., on the application of the defendant company for a stay of execution pending their appeal to the House of Lords. It will be remembered that the action was brought by the plaintiff in respect of injury to some small houses belonging to him in Hull during the construction by the defendants of a large gas-holder and of prospective obstruction of access of light to the windows of such houses, Messrs. Holme & King, the contractors, being joined with the company as defendants. Mr. Justice North awarded the plaintiff 340*l.* damages for the injury actually done, his judgment being affirmed in the Court of Appeal.

Their Lordships granted a stay of execution as to costs only, the damages having been paid.

### ACTION AGAINST THE LONDON COUNTY COUNCIL BY A DEPTFORD TRADESMAN.

THE case of Martin *v.* the London County Council came before the Court of Appeal, composed of Lord Justices A. L. Smith, Rigby, and Vaughan Williams, on the 20th and 21st insts., on the appeal of the plaintiff from the decision of Mr. Justice Kennedy giving judgment for the defendants.

The action was brought against the defendants for unnecessarily and negligently blocking and obstructing Wellington-street, Deptford and other thoroughfares leading to that street, in which the plaintiff resided as a leaseholder. It was alleged that in 1897, whilst making a new road cutting Wellington-street diagonally under their statutory powers the County Council were guilty of unreasonable delay, and of obstructing the approaches to the street at more points and in greater degree than was necessary, with the result that the receipts of the plaintiff in his business fell off to such an extent that he had to surrender his lease and lost his interest therein, and the goodwill of his business as a greengrocer, after incurring extra expense and labour in getting his goods to his shop and from his shop to his customers. It was asserted that for some months the High-street ends of Watergate-street and Wellington-street were blocked up entirely (save for a narrow gangway) and a board put up marked "no thoroughfare"; that at the other end Wellington-street was blocked up as far as Armada-street and a similar board placed there; that the gangway which had been left for foot-passengers was almost impassable owing to piles of sand and rubbish which had been heaped up close to it; and that the whole roadway was needlessly blocked by road-making material. The learned Judge left to the jury the questions whether there had been unnecessary delay and obstruction, and the amount of the damage to the plaintiff, if any. The jury being unable to agree, were discharged. The defendants then moved that judgment might be entered for them on the following points:—(1) That even assuming defendants had been guilty of unreasonable delay or obstruction and damage had resulted to the plaintiff no action would lie. (2) That the plaintiff had not shown any substantial damage attributable solely to these acts. (3) That if there was any evidence of special damage, it was not so particular to the plaintiff as to give him a cause of action. The plaintiff submitted that the undertakers of all public works authorised by statute were responsible for injuries peculiar to the person, or the limited section of persons aggrieved by injuries which had been inflicted by an improper or unreasonable exercise of the powers conferred upon them. Mr. Justice Kennedy held that the circumstances were not such as would give the plaintiff a right of action, and entered judgment for the defendants with costs, except the costs of the special jury.

Their Lordships, without calling upon counsel for the respondents, dismissed the appeal with costs.

Mr. Atherley Jones, Q.C., and Mr. W. M. Thompson appeared for the appellant, and Mr. H. F. Dickins, Q.C., and Mr. Daldy for the defendants.

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## MEETINGS.

### SATURDAY, JUNE 24.

*People's Palace Architectural Society.*—Mr. S. Posenheim on "Defects in Plumbing Work." 7.30 p.m.

*London and Provincial Builders' Foremen's Association (Memorial Hall Farringdon-street).*—Monthly Meeting.

### MONDAY, JUNE 26.

*Royal Institute of British Architects.*—Presentation of the Royal Gold Medal to Mr. G. F. Bodley, A.R.A. 8 p.m.

### TUESDAY, JUNE 27.

*Royal Institute of British Architects.* — Annual Dinner, at the Whitehall Rooms, Hôtel Métropole. 7.15 for 7.30 p.m.

### WEDNESDAY, JUNE 28.

*Builders' Foremen and Clerks of Works' Institution.*—Half-yearly meeting of the directors. 8 p.m.

### THURSDAY, JUNE 29.

*Incorporated Association of Municipal and County Engineers.*—Annual meeting at Cardiff.

### FRIDAY, JUNE 30.

*Incorporated Association of Municipal and County Engineers.*—Annual meeting (continued).

### SATURDAY, JULY 1.

*Incorporated Association of Municipal and County Engineers.*—Annual meeting (concluded).

*Northern Architectural Association.*—Annual Excursion. Members to assemble at the Central Station, Newcastle, at 10.30 a.m. They will then drive to Belsay, where, by permission of Sir Arthur Middleton, Belsay Castle and Hall will be inspected. Whalton Church will be next visited, and the party will return to Newcastle viâ Ogle and Kirkley, and will dine together at the Central Station Hotel, at 7 p.m.

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## RECENT PATENTS:

### ACCEPTED SPECIFICATIONS.

### *Open to Opposition until August 14.*

[1898] 12,511, Riebensham and others, Incandescent Electrical Lamps. 12,967, Kurfu Metal Syndicate & Fullerton, Ball and Float Valves. 13,048, Ljungman & Unden, a Grinding Tool. 13,677, Cox, Appliances for Boring the Earth and Removing the Excavated Material from the Bore. 13,942, Thomson, Combined Standard and Portable Electrical Light. 14,222, Cory & Reynolds, and 16,918, Andrews, Circular-saw Guard. 14,997, Wild, Purification of Sewage, &c. 15,083, Simmance & Abady, Gas Regulators. 15,256, Renbold, Securing Instruments to Tripod Stands, &c. 15,958, Kohl, Glow-bodies for Incandesence Burners. 16,005, Green, Cooling Air and its Supply in Cellars, Chambers, &c. 16,164, Sinclair & Aitken, Telephone Exchange Systems. 16,417, Burridge, Kilns or Ovens for Firing Bricks, &c. 16,421, Muirhead, Manhole, Sludge, Mudhole, and similar Doors. 16,457, Berger, 17,088, Schumacher, 27,252, Gossweiler, and [1899] 8,339, Küppers & Schroeder, Generation of Acetylene Gas. 16,665, Smidth & Rüsager, and [1899] 5,477, von Krottnaurer, Kilns for Burning Cement, &c. 16,989, Daw & Daw, Feed Mechanism for Percussive Rock Drills. 17,360, Osborn, Manufacture and Hanging of Wall-Papers. 17,433, Howell & Attwood, Sinking-Pumps for Mines and other Services. 17,556, Aspinalls, Safety Gear for Hoists and Lifts. 17,997, Millers, and [1899] 6,602, Hedgeland, Acetylene Gas Lamps. 19,307, Von Vietinghoff-Scheel, Gas Lighter. 20,350, Wegener, Furnaces for Household Refuse, &c. 20,489, Pilcher, Accommodation Ladders. 21,644, Craws, Fire Screens, Draught Regulators, and Fire Guards. 22,722, Kinnell, Fittings for Hot-Water Circulation Pipes. 25,046, Cope, Heating Apparatus for Floors, Kilns, or Ovens. [1899] 645, Sturt, Means for Producing Designs for Mosaics, Carpets, Wall Papers, &c. 2,215, Langley, Chimney Cowls. 3,548, Aisbitt, Miller, & Jones, and 5,019, Pocock, Bishop, & Smith, Oil Lamps and Lanterns. 4,834, Schlesinger, Adjustable Pendants for Lamps, &c. 4,998, Wood, Gin Saw Filing Machines. 5,262, Hall, Electrical Tumbler and other Switches. 5,527, Bennett, Saw-Setting Devices. 5,723, Rawie, Locks. 6,331, Adam, Oil or Vapour Burners, principally Adapted for Cooking Purposes. 7,124, Conrad, Incandescent Gas Burners. 7,652-3, Eissler & Strache, Valves for Water-Gas Generating Apparatus. 7,699, Krause, Filters. 7,759, Topp, Decorating Polished Wood Surfaces. 7,849, Merrill, Hospital Sink and Wash Tub. 8,640, Cassal, Tool Holders or Cutter Bars for Lathes. 9,118, Dunn & Harrison, Computing Weighing Apparatus. 9,198, Wilmot, Metal Tubes. 9,566, Gray, Electrical Safety Fuses. 9,594, Mayer, Removal of Dust from Grinding and other Machines. 9,639, Lang, Lathe Beds. 9,691, Clarke & Dunmore, Water-Waste Preventers. 9,719, Littlefield, Valve Apparatus. 9,771, Rosenbaum & Murphy, Faced Bricks. 9,814, Shutterly, Dials for Watches and other Instruments. 9,910, Howson, Siphon Water Closets.

### ABSTRACTS OF PATENTED INVENTIONS.

3,905.—SUSPENDING LAMPS: *P. G. Pasquet.*—Three projections from a yoke fastened to the ceiling or wall support a hollow ball carrying a tube in which slides another tube by which the lamp or burner is suspended; the former tube may be extended above the ball in order to carry either a counterweight, or the upper portion of the ball made solid to act as a counterweight; and gas or electricity may be supplied by means of flexible tubing or conductors respectively.

3,914.—PURIFICATION OF ACETYLENE: *L. Etaix.*—In order to separate the sulphuretted hydrogen and phosphides of hydrogen, the acetylene is passed through chloride of lime or any alkaline or alkaline earth hypochlorite, or through a solution thereof; by passing the gas over or through a solution of caustic soda or potash, the chlorine vapours it has taken up are then removed.

3,916.—WINCHES: *J. B. Furneaux.*—For winding, the barrel engages, in one direction, by means of ratchet teeth, with the driving spur-wheels; for unwinding, the barrel is disengaged, and a band-brake controls its rotation, whilst a hand-wheel and nut upon the shaft, engaging with a flange upon the boss of the barrel, effect the barrel's endwise motion; the spur-wheel and barrel will be separated farther apart by the driving of the nut by frictional contact during the paying-out.

3,943.—SASH FASTENINGS: *A. W. Borlase.*—On the lower sash is pivotted a socket-piece which engages automatically with a spring-hook upon the upper sash when the sashes are closed—the hook's head being bevelled that it may enter into the socket; the socket-piece is turned out of the way when the sashes are open.

3,977.—APPLIANCE FOR CLOSING WINDOWS: *E. B. Kubasch.*—A fan, mounted upon a shaft outside the window, is adapted to close the sashes when it is struck by a strong current of air; to the drum of the shaft is attached a cord which after passing over guide-pulleys is fastened to a swinging sash, which is thereupon closed by the fan's rotation in either direction; an adjustable brake is provided to prevent the operation of the contrivance when exposed to only light winds.

4,017.—VICES: *G. B. Jones.*—The recessed jaws rotate upon a horizontal axis, the stem of one jaw turns in a fixed part, and the stem of the other (and adjustable) jaw slides, without turning, in the stem of the former, upon a nut that passes through slots to engage with tapering grooves in the one jaw are wings which prevent the adjustable jaw from turning, the nut becomes jammed in the grooves when the vice is tightly screwed-up, and it may be removed and renewed by taking off the end cap and entrely unscrewing the spindle screw.

4,026.—SAFETY-HOLDING APPARATUS FOR HOISTS, LIFTS, &C.: *G. Bauer.*—The lifting rope is secured to a loop, which is connected by means of links to a frame, having springs upon its sides, that travels between guides, and other links sustain a board from which a cage is suspended. If, then, the rope breaks the sides of the frame open asunder and become jammed by the action of the cage upon the links, which serve the purpose of toggle-levers.

4,051.—PREVENTION OF FIRE: *R. Buggé.*—The inventor seeks to prevent fire from spreading from one building to another. His method is to hang a screen of coarse woollen cloth, which is saturated with water by a perforated hose pipe laid along its top, over the side of the building that is to be protected, and he makes rows of pockets on the screen's front for holding and distributing the water. In a varied form the screen is formed of an endless band turning upon top and bottom rollers, the bottom roller being put into a trough filled with water.

4,066.—JOINTS FOR SEWER, GAS, WATER, AND OTHER PIPES, AND FOR TUBES FOR ELECTRICAL CABLES: *J. W. Brown.*—As an improvement of No. 8,526 of 1897 the shoulder and end of the spigot are formed with recesses for rings of compressible materials, such as rubber, hemp, or felt, to be forced home by end-pressure, and cement or molten lead run in through a channel; by another method the rings are cemented to the socket's shoulder, or angle-rings may be attached to the spigot-end and shoulder.

4,119. — SURFACE DRAINAGE: *J. Walker.* — The appliance is devised in respect of surface drainage gulleys for water-closet and wash-bowls, sinks, urinals, and so on, discharging into pipes and sewers; when the grid is in its place the bottom of a transverse plate attached to the grid rests below the water level, and so serves to trap foul gases, any excess of water flowing through a removeable side grating to the discharge pipe, a non-return valve obstructs the passage of tidal and other water from the sewer to the trap.

4,133.—GRAPHICAL DEMONSTRATION OF TRIGONOMETRY: *G. W. Ugill & F. J. Browne.*—Geometrical figures, mounted on a card or in a book, rotate about centres over other figures or diagrams marked upon the card; for example, to demonstrate the variations of the the trigometrical functions of an angle as it varies through 90 deg., two equal wheels are geared at the back of a board by a rack, so that they can be turned together by another wheel. A right-angled piece is connected to two cranks upon the axes of the two equal wheels, one of which has a radial arm. As the wheels are turned round, the radial arm and the right-angled piece, which moves parallel-wise with itself, show, in conjunction with co-ordinates marked upon the board, the variations of the functions. Similarly, a radial arm moves over a quadrant marked upon the board, and having tangents drawn at its limiting radii; and a celluloid right-angled triangle, turning about its right-angle, shows the relations between the functions of an angle and its complement.

4,147.—WATER-CLOSET BASINS: *J. J. Inglis.*—The thickness of the wall behind the basin is reduced in order that the outlet may be directly attached to the junction length in the soil-pipe, which is fitted with an inspection opening: the basin has two flushing horns.

4,190.—TRAPS FOR DRAINS: *H. T. Bush.*—The outlet passes from the side of a cylinder, at the bottom of which is the inlet arranged tandem-wise, to prevent breakage of the seal the top and bottom spaces of the cylinder are made equal in amount.

4,234.—VENTILATION OF DRAINS AND SEWERS: *F. G. S. Ham.*—A dirt-box, with a central pipe whereof a balanced aluminium flap covers the lower end, is hung below the ordinary man-hole cover, the pipe is horizontally divided, side openings being provided for the admission of air.

4,241.—SIPHON DISCHARGE FOR WATER WASTE-PREVENTERS: *H. Sutcliffe.*—In the tank is mounted a large-bored siphon, whose action is started by means of a plunger that operates within a spherical chamber beneath the siphon's short arm, the discharge pipe is connected directly with the horn of the closet basin, to which it is secured by a packing-ring and a gland.

4,246.—DECORATION OF TILES, POTTERY, &C., BEFORE FIRING: *W. Maguire.*—In an aperature of the lid of a box made in compartments is a stencil plate on which the pottery or tiles are placed, each of the compartments being provided with a tray for glaze or liquid colour, a rotary brush upon a spindle that passes through all of the compartments, and a roller that passes the colour on to the brush; when the brush is revolved by a handle outside, it turns the roller round and splashes the colour upwards through the stencil plate on to the tile; paper transfers for ornamenting tiles and pottery ware may be similarly prepared.

4,274.—BREAKING-UP ROADS: *H. Morrison.*—The carriers of the cutters are lowered and raised by a rack and worm gear, turned by a spindle, either cutter being lifted up when the other is at work, the carriers can be arranged so as to rotate in their cylinders and thus to act either in front of or behind the scarifier.

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## PRICES CURRENT OF MATERIALS:

### WOOD.*

Per Petersburg standard hundred.

| | £ | s. | d. | £ | s. | d. |
|---|---|---|---|---|---|---|
| White Sea: first yellow deals | 17 | 5 | 0 | 18 | 5 | 0 |
| Second do. | 13 | 10 | 0 | 15 | 0 | 0 |
| Third do. | 11 | 0 | 0 | 11 | 10 | 0 |
| Battens, 40s., 30s., and 15s. less respectively. | | | | | | |
| Petersburg: first yellow deals | 12 | 0 | 0 | 14 | 10 | 0 |
| Second do. | 11 | 0 | 0 | 12 | 10 | 0 |
| Battens, 30s. and 20s. less respectively. | | | | | | |
| Petersburg, white deals | 10 | 0 | 0 | 12 | 0 | 0 |
| Do. white battens | 8 | 0 | 0 | 9 | 10 | 0 |
| Riga, white deals | 8 | 10 | 0 | 9 | 10 | 0 |
| Swedish mixed yellow deals | 13 | 10 | 0 | 17 | 0 | 0 |
| Third do. | 12 | 10 | 0 | 14 | 10 | 0 |
| Fourth do. | 11 | 0 | 0 | 12 | 0 | 0 |
| Fifth do. | 10 | 0 | 0 | 11 | 0 | 0 |
| Battens, 30s., 20s., and 10s. less respectively. | | | | | | |
| Whitewood, 10 to 20 per cent. less. | | | | | | |
| Finnish unsorted yellow deals | 10 | 0 | 0 | 10 | 10 | 0 |
| Battens, 10s. and 5s. less respectively. | | | | | | |
| Whitewood, 5 to 10 per cent. less. | | | | | | |
| Norwegian second yellow battens | 8 | 0 | 0 | 9 | 0 | 0 |
| Third do. | 7 | 10 | 0 | 8 | 10 | 0 |
| Fourth do. | 7 | 0 | 0 | 8 | 0 | 0 |
| Whitewood, 10s. less. | | | | | | |
| Danzig, Crown Deck deals, per 40 ft. 3 in. | 0 | 15 | 0 | 1 | 5 | 0 |
| Brack | 0 | 12 | 0 | 1 | 0 | 0 |
| St. Lawrence Pine deals, &c., per P.S.H.:— | | | | | | |
| 1st, Bright and Dry, regular sizes | 19 | 0 | 0 | 25 | 10 | 0 |
| " " oddments | 12 | 0 | 0 | 18 | 15 | 0 |
| 2nd " regular sizes | 14 | 0 | 0 | 17 | 5 | 0 |
| " " oddments | 9 | 10 | 0 | 13 | 0 | 0 |
| 3rd " regular sizes | 9 | 5 | 0 | 10 | 5 | 0 |
| " " oddments | 7 | 0 | 0 | 8 | 10 | 0 |
| 4th " regular sizes | 6 | 5 | 0 | 7 | 5 | 0 |
| " " oddments | 5 | 15 | 0 | 6 | 15 | 0 |
| St. Lawrence Spruce deals, &c. | | | | | | |
| First, regular sizes | 8 | 5 | 0 | 10 | 5 | 0 |
| Second " | 7 | 5 | 0 | 8 | 5 | 0 |
| Third " | 7 | 0 | 0 | 7 | 15 | 0 |
| Fourth " | 5 | 15 | 0 | 6 | 15 | 0 |
| Oddments and battens at 20s., 10s., 7s. 6d., and 5s. less respectively. | | | | | | |
| New Brunswick Spruce deals, &c. | 7 | 0 | 0 | 7 | 15 | 0 |
| Oddments, battens, and fourths | 6 | 5 | 0 | 7 | 5 | 0 |
| United States pitch pine planks and boards | 8 | 0 | 0 | 12 | 0 | 0 |
| Prepared Boards, per square | | | | | | |
| 1¼ by 6½ and 7 in. 1st yellow | | 11 | 6 | | 14 | 9 |
| " " 2nd " | | 10 | 0 | | 11 | 9 |
| 1 by 6½ and 7 in. 1st " | | 8 | 6 | | 10 | 9 |
| " " " white | | 8 | 0 | | 8 | 9 |
| " " 2nd yellow | | 8 | 0 | | 9 | 0 |
| " " " white | | 6 | 6 | | 7 | 3 |
| ⅞ by 6½ & 7 in. 1st & 2nd yellow | | 7 | 3 | | 8 | 0 |
| " " " white | | 6 | 9 | | 7 | 6 |
| ¾ by 6½ and 7 in. 1st yellow and white (grooved, tongued, and beaded) | | 6 | 3 | | 8 | 9 |
| ¾ by 6½ and 7 in. 2nd yellow and white (ditto) | | 5 | 3 | | 7 | 6 |
| ⅝ by 6½ and 7 in. 1st yellow and white (ditto) | | 5 | 3 | | 6 | 0 |
| ⅝ by 6½ and 7 in. 2nd yellow and white (ditto) | | 4 | 9 | | 5 | 6 |
| Narrower widths at 10 per cent. less. | | | | | | |
| 3rd quality at 15 per cent. less than 2nd. | | | | | | |
| Danzig and Memel Fir Timber— per load | | | | | | |
| Best middling | 2 | 10 | 0 | 3 | 10 | 0 |
| Good middling and Second | 2 | 0 | 0 | 3 | 5 | 0 |
| Common middling | 1 | 10 | 0 | 2 | 10 | 0 |
| Undersized | 1 | 10 | 0 | 1 | 15 | 0 |
| Swedish and Norwegian Balks | 1 | 5 | 0 | 1 | 15 | 0 |
| Baltic Oak Timber— | | | | | | |
| Danzig and Stettin—Large | 3 | 10 | 0 | 4 | 0 | 0 |
| Small | 2 | 0 | 0 | 2 | 5 | 0 |
| Quebec Timber per load | | | | | | |
| Yellow Pine | 4 | 12 | 6 | 6 | 5 | 0 |
| Oak | 4 | 7 | 6 | 6 | 10 | 0 |
| Elm | 3 | 17 | 6 | 4 | 17 | 6 |
| Ash | 3 | 2 | 6 | 4 | 7 | 6 |
| Birch | 3 | 10 | 0 | 5 | 10 | 0 |
| New Brunswick, &c., Birch | 2 | 5 | 0 | 3 | 0 | 0 |
| American Pitch Pine Timber | 2 | 17 | 6 | 3 | 10 | 0 |
| Wainscot, per log, 18 cubic ft.— | | | | | | |
| Crown (Eng. & Dutch) nominal | 6 | 0 | 0 | 7 | 15 | 0 |
| Brack nominal | 5 | 5 | 0 | 6 | 5 | 0 |
| Lathwood, per cubic fathom— | | | | | | |
| Petersburg | 4 | 0 | 0 | 6 | 10 | 0 |
| Riga and Danzig | 4 | 10 | 0 | 5 | 10 | 0 |
| Norway Poles, per ft. run | 0 | 0 | 1 | 0 | 0 | 1½ |
| Oak Staves, per mille full size pipe | | | | | | |
| Memel, Crown | 210 | 0 | 0 | 220 | 0 | 0 |
| Brack | 180 | 0 | 0 | 190 | 0 | 0 |
| Danzig | 165 | 0 | 0 | 175 | 0 | 0 |
| Bosnia, single Barrel (nominal) | 28 | 0 | 0 | 30 | 0 | 0 |
| United States, Pipe | 35 | 0 | 0 | 42 | 10 | 0 |
| Hogshead, extra heavy and double extra | 27 | 10 | 0 | 32 | 10 | 0 |
| Indian Teake per load | 11 | 5 | 0 | 16 | 5 | 0 |
| British Guiana Greenheart | 0 | 0 | 0 | 8 | 0 | 0 |
| Mahogany, per foot superficial— | | | | | | |
| Honduras, cargo average | 0 | 0 | 4½ | 0 | 0 | 6 |
| Nicaragua, do. | 0 | 0 | 4¾ | 0 | 0 | 5½ |
| Tabasco, do. | 0 | 0 | 4 | 0 | 0 | 6½ |
| Mexican, do. | 0 | 0 | 3½ | 0 | 0 | 4 |
| Panama, do. | 0 | 0 | 3 | 0 | 0 | 4 |

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* The prices named are for the wood as imported and landed in the docks. Ten per cent., approximately, should be added in order to arrive at the current trade prices.

| | £ | s. | d. | £ | s. | d. |
|---|---|---|---|---|---|---|
| African, do. | 0 | 0 | 3½ | 0 | 0 | 5 |
| Cuba, do. | 0 | 0 | 5½ | 0 | 0 | 7½ |
| St. Domingo, do. | 0 | 0 | 5 | 0 | 0 | 7 |
| Do. Curls (good to prime) | 0 | 0 | 9 | 0 | 1 | 3 |
| Walnut, American (logs) | 0 | 2 | 3 | 0 | 4 | 6 |
| Do. do. (planks and boards) | 0 | 2 | 0 | 0 | 7 | 6 |
| Italian, per foot superficial | 0 | 0 | 3 | 0 | 0 | 7½ |
| Black Sea, per ton | 6 | 0 | 0 | 12 | 0 | 0 |
| Satin Walnut (logs) per foot cube | 0 | 1 | 0 | 0 | 1 | 3 |
| ,, (planks and boards) | 0 | 2 | 0 | 0 | 2 | 9 |
| Sequoia (Californian redwood), per foot cube | 0 | 1 | 9 | 0 | 2 | 0 |
| Whitewood, American (logs) | 0 | 1 | 3 | 0 | 1 | 6 |
| ,, ,, (planks and boards) | 0 | 1 | 6 | 0 | 2 | 9 |
| Quartered oak ,, ,, ,, | 0 | 2 | 3 | 0 | 4 | 0 |
| Kauri pine (logs) | 0 | 1 | 9 | 0 | 2 | 0 |
| ,, ,, (planks) | 0 | 2 | 3 | 0 | 2 | 9 |
| Jarrah (planks) | 0 | 2 | 3 | 0 | 2 | 6 |
| Lancewood spars each, fresh and large | 0 | 6 | 0 | 0 | 10 | 0 |
| Lancewood spars, ordinary to fair | 0 | 4 | 0 | 0 | 6 | 0 |
| Degame spars | 0 | 8 | 0 | 0 | 12 | 6 |

## METALS.

| | £ | s. | d. | £ | s. | d. |
|---|---|---|---|---|---|---|
| IRON—Pig, in Scotland ...... ton | 3 | 6 | 10½ | 0 | 0 | 0 |
| Bar, Welsh, in London | 6 | 0 | 0 | 6 | 5 | 0 |
| Do. do. at works in Wales | 5 | 15 | 0 | 5 | 17 | 6 |
| Do. Staffordshire, in London | 6 | 5 | 0 | 7 | 10 | 0 |
| COPPER—British cake and ingot | 79 | 10 | 0 | 80 | 0 | 0 |
| Best selected | 80 | 0 | 0 | 80 | 10 | 0 |
| Sheets, strong | 82 | 0 | 0 | 85 | 0 | 0 |
| Chili bars | 75 | 10 | 0 | 0 | 0 | 0 |
| YELLOW METAL ...... lb. | 7d. | | | 7½d. | | |
| LEAD—Pig | | | | | | |
| Spanish ...... ton | 14 | 5 | 0 | 0 | 0 | 0 |
| English Com. Brands | 14 | 10 | 0 | 0 | 0 | 0 |
| Sheet, English, 6 lbs. per sq. ft. and upwards | 15 | 10 | 0 | 0 | 0 | 0 |
| Pipe | 16 | 0 | 0 | 0 | 0 | 0 |
| ZINC—English sheet ...... ton | 31 | 0 | 0 | 0 | 0 | 0 |
| Vieille Montagne | 31 | 10 | 0 | 0 | 0 | 0 |
| Spelter | 26 | 0 | 0 | 26 | 5 | 0 |
| TIN—Straits | 116 | 15 | 0 | 0 | 0 | 0 |
| Australian | 116 | 17 | 6 | 117 | 5 | 0 |
| English Ingots | 119 | 10 | 0 | 120 | 10 | 0 |
| Banca | 114 | 0 | 0 | 0 | 0 | 0 |
| Billiton | 113 | 0 | 0 | 0 | 0 | 0 |

## OILS.

| | £ | s. | d. | £ | s. | d. |
|---|---|---|---|---|---|---|
| Linseed ...... ton | 20 | 17 | 6 | 0 | 0 | 0 |
| Cocoanut, Cochin | 29 | 5 | 0 | 0 | 0 | 0 |
| Do. Ceylon | 25 | 15 | 0 | 0 | 0 | 0 |
| Palm, Lagos | 24 | 0 | 0 | 0 | 0 | 0 |
| Rapeseed, English, pale | 23 | 5 | 0 | 0 | 0 | 0 |
| Do. Brown | 21 | 15 | 0 | 22 | 0 | 0 |
| Cottonseed ref. | 16 | 5 | 0 | 17 | 0 | 0 |
| Oleine | 17 | 0 | 0 | 19 | 0 | 0 |
| Lubricating U.S. | 0 | 5 | 6 | 0 | 7 | 6 |
| Do. Black | 0 | 5 | 0 | 0 | 6 | 0 |
| TAR—Stockholm ...... barrel | 1 | 6 | 6 | 0 | 0 | 0 |
| Archangel | 1 | 0 | 0 | 0 | 0 | 0 |
| Turpentine | 34 | 10 | 0 | 34 | 15 | 0 |

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## SOME RECENT SALES OF PROPERTY:

### ESTATE EXCHANGE REPORT.

| | |
|---|---|
| June 7.—By DOUGLAS YOUNG & Co. | |
| Streatham.—36, Leigham-vale, u.t. 84 yrs., g.r. 6*l*. 10s., r. 32*l*. | £330 |
| Wandsworth.—1, 3, 5, and 29, Lebanon-gdns., u.t. 78 yrs., g.r. 25*l*. 10s., r. 126*l*. | 1,260 |
| By ROBERTS, SON, & TORY (at Bridport). | |
| Whitchurch, Dorset.—Berehay's Farm, 115 a. 1 r. 25 p., f. | 1,950 |
| By GEORGE HONE (at Tewkesbury). | |
| Bredon, Worcester.—Kinsham Farm, 103 a. 1 r. 24 p., f. | 5,000 |
| True Blue Farm, 33 a. 0 r. 19 p., f. | 1,850 |
| Enclosure of land, 12 a. 3 r. 12 p., f. | 700 |
| Seven freehold cottages and 1 a. 0 r. 17 p. | 655 |
| By A. DOWELL (at Edinburgh). | |
| Rosemarkie, Ross-shire.—The Estate of Raddery, 1,181 a. | 16,200 |
| By EDWARD POUNDER (at Durham). | |
| Hett, &c., Durham.—Several freehold fields, 95 a. 3 r. 4 p. | 1,905 |
| Hett Mill Farm, 25 a. 2 r. 23 p., f. | 715 |
| "Coach and Horses Inn," and 8 a. 2 r. 6 p., f. | 1,550 |
| By JOSEPH STOWER (at High Barnet). | |
| High Barnet, Herts.—Hadley Green, Albert Cottage, f. | 700 |
| By G. E. SWORDER & SONS (at Stanstead Abbotts). | |
| Hunsdon, Herts.—"The Turkey Cock Inn," and 1 a. 2 r. 22 p., f. | 2,400 |
| Rose Villa, and two messuages, f. | 430 |
| A freehold steam laundry | 395 |
| Thirteen freehold messuages, f. | 1,755 |
| The Hunsdon Bakery and 1 r. 3 p., f., r. 25*l*. | 400 |
| "The Fox and Hounds Inn" and 2 a. 1 r. 22 p., f., r. 63*l*. | 2,000 |
| Enclosures of land, 4 a. 2 r. 5 p., f. | 295 |
| Ten cottages and two shops, f. | 1,185 |
| A freehold house and builder's premises and 1 a. 2 r. 0 p. | 315 |
| Stanstead Abbotts, Herts.—Enclosures of land, 47 a. 0 r. 22 p., f. | 1,180 |
| By W. BROWN & Co. (at Chesham). | |
| Aston Clinton, &c., Bucks.—The Hawridge Court Estate, 1,588 a. (in lots) | 39,103 |
| By HEPPER & SONS (at Leeds). | |
| Leeds.—York-rd., the Ivy Lodge Estate, 3 a. 0 r. 16 p., f. | 2,225 |
| By SWAN WOODCOCK (at Stratford). | |
| Stratford.—16, 18, 20, and 62, Buxton-rd., f. | 1,695 |
| Forest Gate.—17 and 19, Odessa-rd., f., r. 60*l*. | 610 |
| Leyton.—1 to 6, 8, 9, and 10, Maldon-ter., f. | 3,050 |
| By G. NICHOLS, SMITH, & ALDER (at Frome). | |
| Bruton, Som.—Whaddon Farm, 127 a. 2 r. 24 p., f. | 2,825 |
| An enclosure of land, 6 a. 2 r. 4 p., f. | 300 |
| By G. TINKER & SON (at Shepley). | |
| Cumberworth, Yorks.—Dearne Grange Farm, 49 a. 2 r. 12 p., f. | 1,780 |
| Birkhouse Farm, 36 a. 0 r. 33 p., f. | 1,650 |
| By C. RAWLEY CROSS & Co. (at Ealing). | |
| Acton.—83, Mill Hill-rd., f., e.r. 50*l*. | 900 |
| By DRAWBRIDGE & ANSELL (at Hurstpierpoint.) | |
| Hurstpierpoint, Sussex.—High-st., The Stores, f. and c. | £1,500 |
| Chinese-rd., &c., two cottages and a piece of garden ground, f. | 680 |
| Cuckfield-rd., &c., enclosure of land, 19 a. 0 r. 18 p., f. | 685 |
| June 8.—By JOHN DAVIES. | |
| Hackney.—42, Southborough-rd., u.t. 43 yrs., g.r. 5*l*., r. 30*l*. | 375 |
| Bethnal Green.—42, Teesdale-st., f., r. 28*l*. | 490 |
| Stepney.—1 to 6, Lomas-buildings, u.t. 98 yrs., g.r. 20*l*. | 500 |
| By GLASIER & SONS. | |
| Parkstone, Dorset.—Ardmore, and 5 a., f. | 4,800 |
| By HUNTER & HUNTER. | |
| Beckenham.—2 to 56 (even), Eden-rd., f., r. 175*l*. | 3,505 |
| By C. C. & T. MOORE. | |
| Plaistow.—105, 107, and 109, Grange-rd., area 3,600 ft., f., r. 30*l*. | 535 |
| Hackney.—34, Holcroft-rd., f., r. 52*l*. | 500 |
| Stepney.—4, Heath-st., f., r. 30*l*. | 365 |
| Whitechapel.—35, 35A, and 37, Old Montague-st., u.t. 41 yrs., g.r. 36*l*. | 2,155 |
| 16 to 22 (even), Finch-st., u.t. 49 yrs., g.r. 46*l*., r. 316*l*. | 2,750 |
| By MUSKETT & SONS. | |
| Palmer's Green.—2 to 7, Palmerston-cres., f., r. 222*l*. | 3,345 |
| Hornsey.—18, Frobisher-rd., u.t. 96½ yrs., g.r. 7*l*., r. 35*l*. | 360 |
| Holloway.—47, Elthorne-rd., u.t. 68 yrs., g.r. 5*l*. | 200 |
| Wood Green.—61, 63, and 65, Western-rd., u.t. 82 yrs., g.r. 15*l*. 15s. | 455 |
| 75, 77, 79, and 81, Western-rd., u.t. 82 yrs., g.r. 21*l*. | 590 |
| Trinity-rd., Dunrobin House, f., e.r. 50*l*. | 685 |
| By NEWBON, EDWARDS, & SHEPHARD. | |
| Forest Gate.—62 to 72 (even), Godwin-rd., f. | 2,130 |
| Islington.—20, 21, and 22, Waterloo-ter., u.t. 32 yrs., g.r. 15*l*. 15s., r. 114*l*. | 955 |
| Hornsey.—100, Hillfield-av., u.t. 96 yrs., g.r. 8*l*., e.r. 52*l*. | 535 |
| St. John's Wood.—5, Belgrave-rd., u.t. 51 yrs., g.r. 10*l*., r. 55*l*. | 505 |
| By J. C. PLATT. | |
| Walworth.—3 and 4, Thornton-st., u.t. 11 yrs., g.r. 5*l*. 2s. 8d. | 120 |
| Acton.—Ramsay-rd., f.g.r. 10*l*., reversion in 98 yrs. | 250 |
| By STIMSON & SONS. | |
| Catford.—29 and 31, Faversham-rd., f., r. 56*l*. | 800 |
| Forest Hill.—205, Stanstead-rd., f., e.r. 60*l*. | 560 |
| Brixton.—63, Brailsford-rd., u.t. 75 yrs., g.r. 8*l*. 10s., e.r. 45*l*. | 375 |
| 2, Barrington-rd., u.t. 23½ yrs., g.r. 6*l*., r. 45*l*. | 270 |
| Tulse Hill.—No. 28, u.t. 19½ yrs., g.r. 10*l*., r. 42*l*. | 335 |
| Camberwell.—55 to 61 (odd), St. George's-rd., u.t. 39 yrs., g.r. 21*l*. | 980 |
| By G. TROLLOPE & SONS. | |
| South Kensington.—2, Rosary-gdns., u.t. 75 yrs., g.r. &c. 38*l*. 3s. | 2,350 |
| By FAREBROTHER, ELLIS, & Co. | |
| City of London.—A building lease at 26, Austin-friars, 4,000 ft., let at per annum | 3,300 |
| By WORSFOLD & HAYWARD (at Dover). | |
| Martin Mill, Kent.—A freehold house and 25 p. | 255 |
| Dover, Kent.—36, Priory-rd., f. | 280 |
| 17, Trevanion-st., f., r. 14*l*. | 230 |
| 5, John's-pl., f. | 150 |
| 44, Odo-rd., f. | 325 |
| By DOUGLAS YOUNG & Co. (on the Estate). | |
| Clapham Park.—Rodenhurst-rd., &c., 89 plots of building land (Lincoln House Estate), f. (in lots) | 18,965 |
| By A. G. & A. NOTLEY (at Lowestoft). | |
| Kessingland, Suffolk.—The Manor Farm, 296 a. 0 r. 28 p., f. | 4,100 |
| By ELLIOTT & SONS (at Brighton). | |
| Wivelsfield, Sussex.—Lyoth House Estate, 14 a. 1 r. 9 p., f. | 3,000 |
| By DAVID PRICE (at Sennybridge). | |
| Llandilorfan, Brecon. — The "Shoemaker's Arms," p.-h., and 2 cottages adjoining, f. | 655 |
| By THURGOOD & MARTIN (at Caister). | |
| Caister, Norfolk.—Esplanade-rd., 3 plots of building land, f. | 110 |
| By ELLIOTT, ELLIS, & Co. (at Plymouth). | |
| Ermington, Devon.—Clickland estate, 54 a. 3 r. 10 p., f. | 3,500 |
| By T. W. GAZE (at Stowmarket). | |
| Wickham Skeith, Suffolk.—Oak Farm, 129 a. 0 r. 28 p., f. and c. | 1,325 |
| Wetheringsett, Suffolk.—A freehold house, shop, and cottage | 125 |
| Stoke Ash, Suffolk.—A freehold house and shop | 225 |
| June 9.—By CHARLES CANEY. | |
| Camberwell.—26 and 28, Lyndhurst-rd., u.t. 28 yrs., g.r. 16*l*., e.r. 110*l*. | 640 |
| By MONTAGUE & ROBINSON. | |
| Pimlico.—42, Elizabeth-st., u.t. 24 yrs., g.r. 2*l*., r. 200*l*. | 1,775 |
| 5, Warwick-sq., u.t. 34½ yrs., g.r. 1*l*., r. 155*l*. | 1,400 |
| 239, Vauxhall Bride-rd. (Alexandra Private Hotel), u.t. 25 yrs., g.r. 17*l*., r. 120*l*. | 900 |
| Covent Garden.—3, 4, and 6, New-st., f., r. 355*l*. | 8,250 |
| Soho.—181, Wardour-st., f., r. 152*l*. 2s. 9d. | 3,900 |
| Theydon Garnon, Essex.—A perpetual rent charge of 35*l*. 16s. | 950 |
| Islington.—192, St. John-street-rd., f., r. 85*l*. | 1,900 |
| By W. R. NICHOLAS & Co. | |
| Great Missenden, Bucks.—A freehold site, 15 a. 1 r. 5 p. | 280 |
| By E. & A. SWAIN. | |
| Stamford Hill.—96 to 108 (even), Templeton-rd., u.t. 77 yrs., g.r. 24*l*. 10s. | 910 |
| Paddington.—Harrow-rd., Grape Vine Cottage, f. | 335 |
| By ROBERT REID. | |
| City of London.—1, Upper Thames-st. (City Mill-building), area 12,670 ft., u.t. 29¼ yrs., g.r. 252*l*. 10s., r. 3,555*l*. | 25,100 |
| Hyde Pk.—30, Gloucester-ter. and 4, Lower Conduit-mews, u.t. 38 yrs., g.r. 18*l*. 0s. 4d., r. 155*l*. | 1,500 |
| 75, Gloucester-ter., u.t. 38½ yrs., g.r. 20*l*., r. 135*l*. | 1,300 |
| 19, Sussex-sq., u.t. 37¾ yrs., g.r. 52*l*., r. 475*l*. | 3,000 |
| 29, Norfolk-cres., u.t. 36½ yrs., g.r. 25*l*., r. 240*l*. | 1,310 |
| 2 and 3, Bathurst-st., and 2, Bathurst-mews, u.t. 37¾ yrs., g.r. 4*l*., r. 310*l*. | 3,260 |
| Paddington.—25 and 27, Upper Brook-mews, u.t. 38½ yrs., g.r. 14*l*., r. 57*l*. 10s. | 320 |
| 11 and 12, Cambridge-pl., u.t. 33¼ yrs., g.r. 13*l*., r. 130*l*. | £990 |
| St. John's Wood.—10, Abercorn-mews, u.t. 40 yrs., g.r. 2*l*., r. 25*l*. | 285 |
| By D. J. CHATTELL. | |
| Charlton, Kent.—North-st., f.g.r.'s 22*l*. 14s. 6d., reversion in 44¼ yrs. | 595 |
| North-st., &c., f.g.r.'s 24*l*. 18s. 7d., reversion in 63 yrs. | 585 |
| West-st., f.g.r. 22*l*., reversion in 45¾ yrs. | 565 |
| York-st., f.g.r.'s 30*l*., reversion in 31½ yrs. | 970 |
| East-st., f.g.r.'s 79*l*. 5s., reversions varying from 30 to 48 yrs. | 2,300 |
| East-st., f.g.r. 13*l*. 16s. (the "Crown" b.-h.), reversion in 44 yrs. | 560 |
| East-st., f.g.r.'s 32*l*. 8s., reversion in 62¾ yrs. | 725 |
| Harden's Manor Way, f.g.r. 9*l*. 10s. (the "Lads of the Village" tavern), reversion in 19½ yrs. | 2,600 |
| Harden's Manor Way, f.g.r.'s 16*l*. 1s., reversion in 19½ yrs. | 720 |
| Harden's Manor Way, f.g.r. 10*l*. ("Manor Arms" b.-h.), &c., reversion in 20 yrs. | 1,100 |
| Anchor and Hope-lane, a piece of land, 5 a. 3 r. 12 p., f. | 1,100 |
| By THURGOOD & MARTIN (at Sheringham). | |
| Sheringham, Norfolk.—Union-rd., 9 plots of land, f. | 315 |
| Holt-rd., &c., 6 plots of land, f. | 675 |
| By DAVID PRICE (at Brecon). | |
| St. Michael Cwmddu, Brecon.—Craig-Llwyd-Fach farm, 16 a. 2 r. 39 p., f. | 850 |
| Llangorse, Brecon.—St. Mark's Cottage, 1 r. 26 p., f. | 310 |
| Cae Cotterel and Blaenau Farm, 94 a. 0 r. 5 p., f. | 2,000 |
| Llanvillo, Brecon.—Berrien Fields, 4 a. 2 r. 16 p., f. | 320 |
| Talgarth, Brecon.—3 freehold fields, 4 a. 1 r. 5 p. | 265 |
| Llanerch and Trewalkin Farm, 70 a. 0 r. 2 p., f. | 1,000 |
| Llanfihangel, Tal-y-Llyn, Brecon.—Tycenol Farm, 101 a. 0 r. 8 p., f. | 2,250 |
| Gwenddwr, Brecon.—Hendu and Llethyr-Teili Farm, 77 a. 2 r. 31 p., f. | 1,210 |
| Merthyr Cynog, Brecon.—Ffynnon-Oer, Pwllserth, and Cerrig Ithon Farms, 180 a. 3 r. 14 p., f. | 2,460 |
| Llandefailog-Fach, Brecon.—The Coed Farm, 158 a. 3 r. 24 p., f. | 2,400 |
| Brecon.—Pendre, St. John's Cottage, f., r. 16*l*. | 425 |
| Llanfigan, Brecon.—Manascin Villa, and 3 a. 1 r. 8 p., f. | 1,000 |
| By D. SMITH, SON, & OAKLEY (at Baldock). | |
| Baldock, Herts.—5, High-st., f. | 1,000 |
| 6, High-st., f., r. 20*l*. | 400 |
| By T. W. GAZE (at Diss). | |
| Blo' Norton, Norfolk.—An occupation farm, 39 a. 3 r. 19 p., f. and c. | 230 |
| June 10.—By FRANKLIN & JONES (at Oxford). | |
| Fencot, Oxon.—Manor Farm, 196 a. 3 r. 28 p., f. | 2,300 |
| Bridge House Farm, 32 a. 1 r. 20 p., f. | 1,010 |
| Two freehold cottages and 1 a. 0 r. 14 p. | 120 |
| By BRUTON, KNOWLES, & Co. (at Gloucester). | |
| Leigh, Glos.—Beckett's Farm, 77 a. 1 r. 28 p., f. | 4,300 |
| Two cottages and 4 a. 1 r. 22 p., f. | 380 |
| Four pieces of arable, 5 a. 1 r. 2 p., f. | 140 |
| June 12.—By JOHN BOTT & SONS. | |
| Norwood.—6 and 8, Rommany-rd., u.t. 71 yrs., g.r. 10*l*. | 300 |
| By EDWIN EVANS. | |
| Old Kent-rd.—Nos. 270, 272, and 274, also 2, Smyrks-rd., u.t. 69 yrs., g.r. 44*l*., r. 47*l*. 4s. | 2,900 |
| Smyrks-rd., i.g.r. 83*l*. 10s., u.t. 60 yrs., g.r. 56*l*. | 590 |
| Acton.—19 and 21, Park-rd., u.t. 69½ yrs., g.r. 6*l*. | 420 |
| 32, Birkbeck-av., u.t. 82 yrs., g.r. 6*l*. 6s., r. 30*l*. | 300 |
| 20 and 22, Grafton-rd., u.t. 94 yrs., g.r. 12*l*., r. 74*l*. | 660 |
| Notting Hill.—7 and 9, Lancaster-rd., u.t. 64½ yrs., g.r. 20*l*., r. 102*l*. | 900 |
| Brixton.—8, Effra-parade, f., r. 40*l*. | 630 |
| By P. & G. GEEN. | |
| Notting Hill.—96, 98, and 100, Portland-rd., u.t. 41 yrs., g.r. 30*l*., r. 160*l*. | 1,520 |
| By MIDDLETON & CRACKNELL. | |
| Hampstead.—10, Upper Park-rd., u.t. 51 yrs., g.r. 15*l*., e.r. 80*l*. | 700 |
| By EDWARD MILLARD. | |
| Barking, Essex.—15 to 25 (odd), James-st., f. | 1,170 |
| 100 to 114 (even), East-st., u.t. 72 yrs., g.r. 12*l*. | 2,750 |
| 11 to 16, Arthur-cottages, u.t. 72 yrs., g.r. 8*l*. | 985 |
| By T. G. ROGERS. | |
| Highgate.—1 and 2, Holly-cottages, f., r. 52*l*. | 1,020 |
| Dalston.—72, Malvern-rd., u.t. 71¾ yrs., g.r. 5*l*., r. 36*l*. | 350 |
| By S. WALKER & SON. | |
| City of London.—Monument-yard, a plot of building land, area 1,285 ft., f. | 4,100 |
| St. Luke's.—Old-st., the "Bull and Ram" p.-h., i.g.r. 120*l*., u.t. 35 yrs., g.r. 80*l*. | 550 |
| Hampstead-rd.—37, Eversholt-st., u.t. 44 yrs., g.r. 8*l*., r. 65*l*. | 650 |
| By WRIFORD & DIXONS. | |
| Regent-st.—Carnaby-st., the "Coach and Horses" p.-h., i.g.r. 100*l*., reversion in 19¼ yrs. | 3,500 |
| June 13.—By JAMES MAY. | |
| Ilford, Essex.—40, Elgin-rd., u.t. 997 yrs., g.r. 7*l*. 14s., e.r. 38*l*. | 385 |
| 9, 11, 13, and 15, Wellesley-rd., u.t. 97 yrs., g.r. 10*l*. 10s., r. 129*l*. | 1,580 |
| By SALES & CLARKE. | |
| Bethnal Green.—67 and 71, Bacon-st., u.t. 37 yrs., g.r. 24*l*. | 465 |
| 52, Kerbela-st., u.t. 37 yrs., g.r. 10*l*. | 305 |
| By BEARD & SON. | |
| Dover, Kent.—Snargate-st., the Theatre Royal, u.t. 47 yrs., g.r. 160*l*. | 6,300 |
| Fulham.—651 and 653, Fulham-rd., u.t. 23 yrs., g.r. 8*l*., r. 56*l*. | 385 |
| By DEBENHAM, TEWSON, & Co. | |
| City of London.—90, 91, and 92, Fleet-st., and 2 and 3, St. Bride's-av., area 2,290 ft.; a building lease for 80 yrs., let at per annum | 1,700 |
| Frensham, Surrey.—A piece of heath land, 5 a. 0 r. 15 p., f. | 360 |
| By DRIVER & Co. | |
| Paddington.—Hormead-rd., f.g.r. 28*l*., reversion in 90 yrs. | 780 |
| Hormead-rd., a building site, area 3,000 ft., f. | 650 |
| By HARDS & BRADLY. | |
| Lewisham.—1 and 2, Woodhouse-grove cottages, f., r. 53*l*. | 855 |
| 11 and 13, Albion-rd., u.t. 58 yrs., g.r. 10*l*., r. 64*l*. | 570 |
| Greenwich.—90, Calvert rd., f., r. 26*l*. | 360 |

# COMPETITIONS, CONTRACTS, AND PUBLIC APPOINTMENTS.

## COMPETITIONS.

| Nature of Work. | By whom Advertised. | Premiums. | Designs to be delivered. |
|---|---|---|---|
| *Designs for Electric Lamp Standards and Brackets | St. Martin's-in-the Fields Vestry | 10l. and 5l. | July 8 |

## CONTRACTS.

| Nature of Work or Materials. | By whom Required. | Forms of Tender, &c. Supplied by | Tenders to be delivered. |
|---|---|---|---|
| Waterworks | Waterford R.D.C. | J. Mackey, Workhouse, Waterford | June 26 |
| Office, Harracott School, Tavistock | Managers | G. C. Smyth-Richards, Surv. Barnstaple | do. |
| Stables, Oldham-road, Manchester | L. & Y. Ry. Co. | C.W. Bayley, Hunt's Bank Manchester | June 27 |
| Station Buildings, Clifton Junction | do. | do. | do. |
| Two Houses, Grafton-street, Barnsley | ........ | Wade & Turner, Archt. 10, Pitt-st. Barnsley | do. |
| Offices, Bow-street | Keighley Corp. | W. & J. B. Bailey, Archt. Scott-st Keighley | do. |
| Village Hall, Knighton, Staffs. | ——— | G. A. Craig, Archt. Market Drayton | do. |
| Repairs to Schools | Brighton & Preston School Board | T. Simpson & Son, Surv. 16 Ship st. Brighton | do. |
| Additions to Black Bull Hotel, Sedbergh | L. Chorley | S. Shaw, Archt. Kendal | do. |
| Street Works, Bitterne Park Estate | Southampton Corp. | W. B. G. Bennett, Boro Engr. Municipal Offices | do. |
| Twelve Houses, Varley-rd. Slaithwaite | ........ | J. Berry, Archt. 9, Queen-st. Huddersfield | do. |
| Additions to School, Abergavenny | ........ | E. A. Johnson, Archt. Abergavenny | June 28 |
| Bridge, Great Victoria-street | Belfast Corp. | Sir S. Black, Town Hall | do. |
| Granite | Winton (Hants.) U.D.C. | W. T. Streather, Surv. Council Offices, Winton, Bournemouth | do. |
| Road Works, Public Park, Portobello | Edinburgh Corp. | R. Morham, City-chmbrs. Edinburgh | do. |
| Waterworks, Loxley, &c. | Wortley R.D.C. | G. E. Beaumont, Surv. Grenoside, nr. Sheffield | do. |
| Factory, Witney, Oxon | ——— | J. Kirk & Sons, Archt. Dewsbury | do. |
| Station, Subway, House, &c. West Jesmond, near Newcastle | N. E. Ry. Co. | W. Bell, Archt. Central Station, Newcastle-on-Tyne | do. |
| Dispensary, Gurraneboy | Cork Union | D. J. Coakley, Archt. Bd. Room, Workhouse, Cork | June 29 |
| Eight Houses, Buttershaw, Yorks | ........ | Brayshaw & Dixon, Archt. Buttershaw | do. |
| Fire Station, Wellington-road North | Stockport Corp. | J. Atkinson, C.E. St. Peter's Gate, Stockport | do. |
| Bridge, Dolwen | Llanfyllin R.D.C. | W. A. Pughe, Council Offices | do. |
| Waterworks | Glastonbury Corp. | Mr. Newton, C.E. 17, Cooper-st. Manchester | do. |
| *Granite Spalls | Brighton Council | F. J. C. May, Town Hall, Brighton | June 30 |
| Macadam (590 tons) | Little Woolton U.D.C. | R. Simmons, Surv. Grange-lane, Gateacre, Liverpool | do. |
| Two Cottages, Leixlip, Ireland | Celbridge Union | L. A. McDonnell, Archt. 33, Kildare-st. Dublin | do. |
| Banking Premises, &c. Queen-street, Cardiff | C. E. Dovey | James & Morgan, Archt. Charles-st. Cardiff | do. |
| Levelling, &c. Bogle-lane | Beverley Corp. | J. W. Mills, Guildhall, Beverley | do. |
| Offices, Strawberry-road, Pendleton | Salford Corp. | J. Holt, C.E 6, St. Mary's-gate, Manchester | do. |
| School, Morley-street | Sheffield Sch. Bd. | Hemsoll & Paterson, Archt. 18, Norfolk-row, Sheffield | do. |
| Three Pairs Villas, Cranhurst-road Willesden Green | ——— | Allen & Hoar, Surv. Inglewood House, West Hampstead | do. |
| Shops, &c. George-street, Leeds | ——— | P. Robinson, Archt. 72, Albion-st. Leeds | do. |
| Stables and House, Square-road, Halifax | ........ | J. F. Walsh, Archt. L. & Y. Bank-chambers, Halifax | do. |
| Alterations to Schools, Stacey-road | Cardiff Sch. Bd. | E. Bruton, Archt. 15, Queen-st. Cardiff | do. |
| Sewers, Castle-road | Hythe (Kent) Corp. | E. S. Wilks, Surv. 2, Douglas-avenue, Hythe | July 1 |
| Additions to Hospital, Monsall | Manchester Corp. | City Surv. Town Hall | do. |
| Engine and Boiler House, Reservoir, &c. | Rainham (Kent) Water Co. | W. L. Grant, Archt. Sittingbourne | do. |
| Alterations to House and Shop, Queen-street, Morecambe | W. J. Dance | A. L. Lang, Archt. 12a, Pedder-st. Morecambe | do. |
| *Steel Work | Canterbury Corp. | A. H. Campbell, Tudor-chmbrs. Canterbury | July 3 |
| Sewer, Rumby Hill | Bishop Auckland R.D.C. | C. Johnston, Surv. 1, Cradock-street, Bishop Auckland | do. |
| *Work in Erection of Hospital, also Heating, &c. Apparatus | Sheffield Corp. | Flockton, Gibbs, & Flockton, 15, St. James-row, Sheffield | do. |
| Cottage, Sewage Farm | Farnborough U.D.C. | R. W. Knapp, Surv. Town Hall, Farnborough | July 4 |
| *Sewer | Southgate U.D.C. | C. G. Lawson, Council Offices, Palmer's Green, N. | do. |
| Paving Works, Halesowen | Worcs C.C. | J. H. Garrett, Surv. Shire Hall, Worcester | July 5 |
| Road Works | Balby (Yorks.) U.D.C. | G. Gledhill, Surv. High-road, Balby | do. |
| *Sewer and Wood Paving Works | Westminster Vestry | Surveyor to Vestry | do. |

## CONTRACTS—*Continued.*

| Nature of Work or Materials. | By whom Required. | Forms of Tender, &c. Supplied by | Tenders to be delivered. |
|---|---|---|---|
| *Cast-iron Columns, Iron Roofs, Iron Tank and Cover | Battersea Vestry | Municipal Buildings, Lavender Hill, S.W. | July 5 |
| *New Depot—Substructure | Derby Corp. | Boro. Engr. Babington-lane, Derby | July 6 |
| Bridges, Lindfield | East Sussex C.C. | F. J. Wood, County Surv. Lewes | do. |
| Lighthouse, Blackhead, co. Antrim | Commissioners of Irish Lights | C. Armstrong, Irish Lights Offices, Dublin | do. |
| Surveyor's Materials | Hetton-le-Hole U.D.C. | G. G. Forster, Surv. Hetton-le-Hole | July 7 |
| Villa, Middlewich-rd. Sandbach | | A. Price, Archt. Sandbach | July 8 |
| Post Office, Curragh Camp | Board of Public Works | H. Williams, Public Works Office, Dublin | July 10 |
| Sessions Hall, Preston | Lancs C.C. | H. Littler, Archt. County Offices, Preston | do. |
| *Construction of Reservoir at Moorhouses, Tynemouth | Tynemouth Corp. | James Mansergh, 5, Victoria-st. Westminster, S.W. | do. |
| *Sewerage Works, Potter's Bar | South Mimms R.D.C. | W. H. Mansbridge, 40, High-st. Barnet | July 11 |
| *Removal of Boilers, &c. New Boiler Seatings, &c. Plumbing | L.C.C. | Engineer, Spring-gardens, S.W. | do. |
| *Workshops, Stores, &c. at Flemming-st. Depot | Borough of Shoreditch | Surveyor, Town Hall, Old-st. E.C. | July 12 |
| Alterations to Police Station, Fareham | Hants C.C. | W. J. Taylor, Cnty. Surv. The Castle, Winchester | do. |
| Hospital, Cymmer | Glyncorrwg U.D.C. | G. F. Lambert, Archt. Bridgend, Glam. | do. |
| *Works of Cliff Protection | Borough of Southwold | F. Ball, Town Hall, Southwold | July 13 |
| *Gas or Oil Engines, &c. | Plymouth Corp. | J. Mansergh, 5, Victoria-st. Westminster | do. |
| *Concrete Groynes and Sea Walling | Brighton Council | F. J. C. May, Town Hall, Brighton | July 14 |
| Workhouse | Stamford Union | R. M. English, Old Workhouse, Stamford | July 17 |
| *Electric Light Station | Borough of Lowestoft | A. E. Pridmore, 2, Broad-st. Bldgs. E.C. | July 18 |
| Broken Granite (1,000 tons) | Melford R.D.C. | W. Carver, Surv. Long Melford, Suffolk | July 25 |
| Rebuilding Bell Inn, Abertillery | Phillips & Sons, Ltd. | Swalwell & Creighton, Archt. Newport, Mon. | No date |
| Alterations to Crown and Sceptre, Mardy | C. Edwards | B. J. Francis, Archt. Abergavenny | do. |
| Two Shops, London-rd. Kingston | ——— | Mr. Spratt, Archt. 90, Queen-st. Cheapside, E.C. | do. |
| Presbytery, Ballygran, co. Limerick | Rev. P. Hurley | J. Carroll, Archt. Ballygran | do. |
| Clothing Factory, Leeds | ........ | J. M. Fawcett & Son, Archt. Basinghall-chmbrs. Leeds | do. |
| Alterations to Blue Boar Inn | Loughborough Corp. | A. H. Walker, C.E. Loughborough | do. |
| Shops, Cheapside, Middleton | ........ | F. W. Dixon, Archt. Trevelyan-bldgs. Manchester | do. |
| House, Sherwood-rise, Nottingham | ——— | A. Marshall, Archt. King-st. Nottingham | do. |
| Alterations to No. 13, Market-street, Ulverston | J. Briggs | Settle & Farmer, Archt. Ulverston, Lancs. | do. |
| Villa, Ashton-under-Lyne | ——— | T. D. Lindley, Archt. Market-avenue, Ashton-under-Lyne | do. |
| Retort House | Bakewell U.D.C. | V. R. Cockerton, Council Offices | do. |
| Two Houses, &c. Tadcaster | ——— | A. D. Kaye, Archt. 71, Albion-st. Leeds | do. |
| Wesleyan Chapel and School, Kettleshulme | ——— | C. W. Johnson, Archt. Whaley Bridge, Yorks. | do. |
| Additions to Vulcan Works, Keighley | ——— | Judson & Moore, Archt. York-chmbrs. Keighley | do. |
| Shops and Houses, High-st. Kinghorn, N.B. | ——— | Swanston & Leggie, Archt. Kirkcaldy | do. |
| Business Premises, Hereford | Greenlands, Ltd. | W. W. Robinson, Archt. 10, King-st. Hereford | do. |
| Alterations to Vicarage, Sledmere | ........ | Brodrick & Co. Archt. Hull | do. |
| Twenty Houses | Waunllwyd (Ebbw Vale) Building Club | Swalwell & Creighton, Archt. Newport, Mon. | do. |

## PUBLIC APPOINTMENTS.

| Nature of Appointment. | By whom Advertised. | Salary. | Application to be in. |
|---|---|---|---|
| *Builder's Foreman | London County Asylum Bexley, Kent | 58s. per week | June 28 |
| *Clerk of Works | Poplar B. of W. | 3l. 3s. per week | do. |
| *General Foreman | Vestry, St. Matthew, Bethnal Green | 2l. 10s. per week | June 29 |
| *Clerks of Works (2) | Essex C.C. | Three Guineas per week | July 1 |
| *Surveying Assistant | Sheffield Council | 110l. | July 3 |
| *District Surveyor | Sheffield Corp. | 200l. | do. |
| *Analytical Assistant (Sewage Works) | do. | 150l. | do. |
| *Building Inspectors (4) | do. | 120l. each | do. |
| *Clerk of Works | Cnty. Boro. of West Ham | 4l. 4s. per week | July 4 |
| *Assistant Architect | L.C.C. | 800l. a year | July 10 |
| *Building Inspector | Plymouth Corp. | 100l. | July 12 |
| *Surveyor of Highways | Lymington R.D.C. | 90l. | July 29 |
| *Instructor in Manual Training and Carpentry and Joinery | Battersea Polytechnic | 130l. | No date |

*Those marked with an asterisk (*) are advertised in this Number. Competitions, p.* iv. *Contracts, pp.* iv. vi. viii. x. & xxiv. *Public Appointments, pp.* xx. & xxiv.

| | |
|---|---|
| By ROGERS, CHAPMAN, & THOMAS. | |
| South Kensington.—5, Thurloe-pl., u.t. 7 yrs., g.r. 8l., r. 120l. | £350 |
| Chelsea.—Fernshaw-rd., i.g.r.'s 24l., u.t. 62½ yrs., g.r. 6l. | 322 |
| By OSBORN & MERCER. | |
| Hyde Pk.—Kensington-gdns.-ter., i.g.r. 100l., u.t. 34½ yrs., g.r. 50l. | 885 |
| St. John's Wood.—Holtham-rd., &c., i.g.r. 78l., u.t. 58½ yrs., g.r. 2l. | 1,625 |
| By C. & H. WHITE. | |
| Bromley, Kent.—Cowper-rd., 5 plots of building land, f. | 880 |
| By S. & G. KINGSTON (at Spalding). | |
| Spalding, Lincs.—A freehold holding, 20 a. 2 r. 37 p. | 1,560 |
| Gosberton, Lincs.—Congreves Farm, 57 a. 2 r. 37 p., f. | 2,800 |
| By HEPPER & SONS (at Leeds). | |
| Holbeck, Yorks.—The Globe Corn Mill Estate, area 1,200 yds., f., with motive power and gearing | 3,000 |
| By W. BUSH & SONS (at Sheffield). | |
| Thurlstone, Yorks.—The Hazlehead Hall Estate, 187 a. 1 r. 16 p., f. | 5,000 |
| Coppera's House and 10 a. 0 r. 2 p., f. | 250 |

| | |
|---|---|
| By Messrs. SPELMAN (at Norwich). | |
| Norwich.—74, Thorpe-rd., and 0 a. 1 r. 38 p., f. | £1,600 |
| Thorpe-rd., The Beeches, f., r. 35l. | 750 |
| Hainford, Norfolk.—Thorpe-rd., Sabberton Lodge and Denver House, f., r. 65l. | 1,125 |
| Thorpe-rd., The Gables, f. | 1,300 |
| Thorpe-rd., four freehold cottages | 435 |
| 11 and 12, Harbour-rd., f. | 300 |
| High-rd., a shop, house, and cottage, f. | 345 |
| 3, Prince of Wales'-rd., f., r. 45l. | 1,100 |
| Little Orford-st., a suite of offices, f., r. 50l. | 1,875 |
| A freehold house and shop, r. 12l. | 185 |
| By A. BURTENSHAW & SON (at Tonbridge). | |
| Curtisden Green, Kent.—Eight freehold cottages | 640 |
| By RD. SMITH & Co. (at Masons' Hall Tavern). | |
| Strand.—Clare-st., "The Sun" p.-h., f., with goodwill | 4,450 |
| By CHESSHIRE, GIBSON, & FOWLER (at Leamington). | |
| Bubbenhall, Warwick.—Four enclosures of land, 24 acres, f. | 425 |
| By G. TINKER & SON (at Huddersfield). | |
| Honley, &c., Yorks.—Four farmhouses, 33 a. 2 r. 21 p., f. | 1,830 |

| | |
|---|---|
| By N. W. ROBINSON (at Watford). | |
| Watford, Herts.—Vicarage-rd., Lady's Close and 2 a. 3 r. 19 p., f. | £4,025 |
| 5, Vicarage-rd., f., r. 24l. | 275 |
| King-st., The Red House, f. | 430 |
| Wiggenhall-rd., a plot of ground, 1 a. 0 r. 23 p., f. | 1,125 |
| June 14.—By HAROLD GRIFFIN. | |
| Battersea.—10, 12, 14, and 16, Barmore-st., u.t. 58 yrs., g.r. 20l. | 760 |
| 123 and 125, Winstanley-rd., u.t. 67 yrs., g.r. 10l. | 330 |
| 22 to 28 (even) Benham-st., u.t. 67 yrs., g.r. 14l. | 605 |
| By TOWERS, ELLIS & Co. | |
| Bayswater.—25, St. Stephen's-rd., u.t. 57 yrs., g.r. 12l., r. 80l. | 635 |
| Enfield Lock.—1 and 2, Alice Cottages, f. | 275 |
| By HERRING, SON, & DAW. | |
| Rotherhithe.—156 and 158, Rotherhithe-st., area 21,350 ft. f. | 3,00 |
| By DAVID BURNETT & Co. | |
| Lewisham.—1, 2, and 7, The Pavement, u.t. 996 yrs., g.r. 37l., r. 180l. | 2,250 |
| By TABERNACLE & SON (at the Horse Shoe Hotel). | |
| Hoxton.—70 and 72, East-rd., also the Prince of Wales p.-h., u.t. 40 yrs., r. 206l., with goodwill | 9,650 |

| | |
|---|---|
| By Escritt & Barrell (at Corley). | |
| Swayfield, &c., Lincs.—Enclosures of land, 96 a. 0 r. 30 p., f. | £860 |
| By Hollis & Webbs (at Leeds). | |
| Far Headingley, Yorks.—The Iveson House Estate, 45 a., f. | 7,450 |
| By A. Dowell (at Edinburgh). | |
| Logie Coldstone, Aberdeenshire.—The farms of Blackmill, Tullick, and Watererne, 715 a. | 7,250 |
| By Dyer, Son, & Hilton (at New Cross). | |
| New Cross.—60 and 62, Tyrwhitt-rd., u.t. 73 yrs., g.r. 15*l.* 10s., r. 100*l.* | 1,030 |
| By Worsfold & Hayward (at Sandwich). | |
| Sandwich, Kent.—Stonor House, and 35 a. 1 r. 36 p., f. | 3,700 |
| An enclosure of land, 4 a. 0 r. 2 p., f. | 510 |
| June 15.—By Bisley & Sons. | |
| Bermondsey.—57, Yalding-rd., u.t. 67 yrs., g.r. 5*l.* 10s. | 335 |
| Camberwell.—14 to 48 (even), Rignold-rd., u.t. 67½ yrs., g.r. 90*l.* | 4,350 |
| Old Kent-rd.—6 and 7, Trafalgar-sq., u.t. 76 yrs., g.r. 12*l.* | 480 |
| Bermondsey.—6 and 8, Storks-rd., u.t. 41 yrs., g.r. 10*l.* | 800 |
| Rotherhithe.—91, Clarence-st., f. | 300 |
| Bermondsey.—79 to 85 (odd), Catlin-st., u.t. 48 yrs., g.r. 20*l.* | 1,080 |
| Dulwich.—Goodrich-rd., four plots of building land, f. | 400 |
| By Chesterton & Sons. | |
| Kensington.—27 to 35 (odd), Fenelon-rd., u.t. 49 yrs., g.r. 17*l.* 10s. | 1,490 |
| Barnes.—The Crescent, a plot of building land, f. | 625 |
| South Kensington.—10, Pelham-cres., u.t. 14 yrs., g.r. 12*l.* | 650 |
| By C. C. & T. Moore. | |
| Hackney.—Duncan-sq., f.g.r. 24*l.*, reversion in 13½ yrs. | 800 |
| Duncan-sq., The Pickle Factory, area 5,164 ft., f., r. 55*l.* | 930 |
| 2 to 22 (even), Sheep-lane, f. | 3,355 |
| 1 to 11 (odd), Mead-place, f. | 1,130 |
| 56, Lauriston-rd., with dyeing and cleaning works in rear, f., r. 65*l.* | 1,155 |
| Bow.—28 to 32, Ruston-st., and 1 to 11 (odd), Locton-st., u.t. 70 yrs., g.r. 23*l.* 2s. | 1,450 |
| 18 to 52 (even) Locton-st., u.t. 70 yrs., g.r. 30*l.* 12s. | 2,155 |
| Mile End.—57 to 60, St. Peter's-rd., u.t. 31 yrs., g.r. 15*l.* 17s. | 1,585 |
| 45, Bancroft-rd., u.t. 50 yrs., g.r. 4*l.*, e.r. 40*l.* | 450 |
| By Newbon, Edwards, & Shephard. | |
| Crouch End.—117 and 119, Park-rd., and the "Bird-in-Hand" b.-h., c., r. 98*l.* | 2,140 |
| Bow.—553, 555, and 557, Old Ford-rd., and the "Plough" b.-h., f., r. 99*l.* | 1,400 |
| Bromley-by-Bow.—64 to 70, 86 to 90 (even), High-st., f. | 930 |
| 6 to 10, 13 and 14, Oliver's-court, c. | 715 |
| Fulham.—52, 54, and 56, Bramber-rd., f., r. 120*l.* | 1,630 |
| Shepherd's Bush.—42, St. Stephen's-av., u.t. 54 yrs., g.r. 10*l.*, r. 35*l.* | 290 |
| Bethnal Green.—244, Bethnal Green-rd., f., r. 110*l.* | 2,800 |
| Limehouse.—125, Eastfield-st., and the "Barley Mow" b.-h., f., r. 40*l.* | 1,020 |
| 140, White Horse-st., f., r. 30*l.* | 510 |
| Mile End.—107 and 109, Canal-rd., u.t. 23 yrs., g.r. 6*l.* | 325 |
| Stratford.—Major-rd., i.g.r. 10*l.* 10s., u.t. 63 yrs., g.r. 4*l.* | 120 |
| By Stimson & Sons. | |
| Herne Hill.—1 to 13 (odd), Milton-rd., u.t. 69 yrs., g.r. 38*l.* 18s., r. 262*l.* | 2,400 |
| Camberwell.—264, Southampton-st., f., e.r. 50*l.*, with goodwill | 700 |
| Bermondsey.—Bermondsey-st., &c., a building site, area 3,850 ft., f. | 1,875 |
| Wandsworth.—70, Warple Way and 2, Warple-rd., u.t. 69 yrs., g.r. 6*l.* | 250 |
| Regent's-pk.—57, Gloucester-rd., u.t. 47 yrs., g.r. 9*l.*, r. 65*l.* | 500 |
| Upton-pk.—20, 22, 24, 52, and 54, Marlborough-rd., u.t. 81 yrs., g.r. 20*l.* | 675 |
| Bethnal Green.—Artillery-st., &c., i.g.r. 80*l.*, u.t. 19¾ yrs., g.r. 33*l.* | 470 |
| Chelsea.—Royal-av., &c., i.g.r. 21*l.* 18s. 6d., u.t. 42 yrs., g.r. nil | 370 |
| Tottenham.—122, Northumberland-pk., f. | 495 |
| Wimbledon.—27, Caxton-rd., u.t. 81 yrs., g.r. 4*l.* 12s. 6d. | 200 |
| By J. A. & W. Tharp. | |
| Brixton.—49, Effra-rd. and 1 a., f. | 4,000 |
| Woodford.—1 to 8, Holly-villas, f., r. 301*l.* 10s. | 4,000 |
| Limehouse.—134, 136, and 138, Rhodeswell-rd., u.t. 12 yrs., g.r. 6*l.* 15s. | 310 |
| June 16.—By J. H. Bethell. | |
| East Ham.—48 to 60 (even), St. Bernard's-rd., f. | 1,500 |
| Upton Park.—236, 240, 241, and 242, Gipsy-lane, f., r. 150*l.* | 2,830 |
| 7 and 8, Stanley-ter., f., r. 72*l.* | 1,170 |
| East Ham.—19 and 20, Forsyth-ter., f., r. 85*l.* | 1,550 |
| Canning Town.—122 and 124, Rathbone-st., f., r. 72*l.* | 1,030 |
| Upton-pk.—7, Percy-rd., u.t. 89 yrs., g.r. 4*l.* 4s., e.r. 30*l.* | 340 |
| By W. H. Brown & Co. | |
| Finsbury-Pk.—20, Brownswood-pk., u.t. 60 yrs., g.r. 11*l.*, e.r. 65*l.* | 485 |
| By Furber, Price, & Furber. | |
| St. John's Wood.—22, 24, 28, 30, and 32, Winchester-rd., u.t. 65 yrs., g.r. 25*l.* (in lots). | 2,985 |
| Marylebone.—Cleveland-st., i.g.r. 36*l.*, u.t. 25 yrs., g.r. 21*l.* | 175 |
| Kensington.—77, Earl's Court-rd., u.t. 52 yrs., g.r. 8*l.*, r. 75*l.* | 700 |
| St. Pancras.—39 and 41, Charrington-st., u.t. 24 yrs., g.r. 15*l.* 10s., r. 100*l.* | 750 |
| Tottenham.—12, West Green-rd., u.t. 77 yrs., g.r. 7*l.* 7s., r. 58*l.* | 720 |
| By Martin, Clarke, & Co. | |
| Knockholt, Kent.—The Lodge, and 4 a. 2 r. 14 p., f. | 1,350 |

*Contractions used in these lists.*—F.g.r. for freehold ground-rent; l.g.r. for leasehold ground-rent; i.g.r. for improved ground-rent; g.r. for ground-rent; r. for rent; f. for freehold; c. for copyhold; l. for leasehold; e.r. for estimated rental; u.t. for unexpired term; p.a. for per annum; yrs. for years; st. for street; rd. for road; sq. for square; pl. for place; ter. for terrace; cres. for crescent; yd. for yard, &c.

## TO CORRESPONDENTS.

W. J. J. (We cannot print your letter).—J. W. B., M. & F. (Amount should have been stated).—B. D. (Below our limit).

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## TENDERS.

[Communications for insertion under this heading should be addressed to "The Editor," and must reach us *not later than* 10 *a.m. on Thursdays.* N.B.—We cannot publish Tenders unless authenticated by the name and address of the sender; and we cannot publish announcements of Tenders accepted unless the amount of the Tender is given, nor any list in which the lowest Tender is under £100, unless in some exceptional cases and for special reasons.]

* Denotes *accepted.* † Denotes *provisionally accepted.*

ABERDARE.—For the erection of thirty or more houses at Cwmaman, for the Waun Tawr Building Club. Mr. J. Llewellin Smith, architect, Aberdare:—

| | |
|---|---|
| James Morgan | £204 (per house) |
| W. E. Willis* | 160 ,, ,, |

ABERDARE.—For the erection of nine houses on the Powell Duffryn Estate, Aberaman, for the Victoria Building Club. Mr. J. Llewellin Smith, architect, Aberdare:—

| | | | |
|---|---|---|---|
| W. E. Willis | £1,980 | Hopkins & Prosser | £1,620 |
| Williams & Williams* | 1,638 | | |

ARGOED (Mon.).—For the erection of eighteen houses, for the Argoed Building Association. Mr. N. T. Price, architect, 32, High-street, Argoed:—

| | | | |
|---|---|---|---|
| Morgan & Son | £173 0 | W. Morgan, Church-street, Tredegar, Mon.* | £154 10 [per house]. |
| Williams & Sons | 158 0 | | |
| James Bros. | 156 0 | | |
| D. Morgan, Queen-street | 156 0 | | |

BARRY (Wales).—Accepted for the execution of public improvement works, for the Urban District Council. Mr. J. C. Pardoe, C.E., Holton-road, Barry:—

| | |
|---|---|
| Clive-road, Rendell & Motton | £1,390 11 3 |
| Lane rear do., No. 1, Mackay & Davies | 86 16 6 |
| Lane rear do., No. 2 do. | 129 8 0 |
| Do. No. 3 do. | 102 4 9 |
| Phyllis-street, Rendell & Motton | 1,047 19 0 |
| Lane rear of do., Hill & Co. | 106 8 4 |
| Amherst-crescent, Rendell & Motton | 396 8 6 |
| Lane rear of do., Mackay & Davies | 137 16 8 |
| Plymouth-road, Rendell & Motton | 1,557 5 6 |
| Lane rear of do., Mackay & Davies | 72 15 10 |
| Do. do. | 120 10 5 |
| Archer-road, Rendell & Motton | 595 14 9 |
| Bromfield-road (portion) Rendell & Motton | 160 8 6 |
| Ivor-street, Rendell & Motton | 413 17 4 |
| Pyke-street (continuation), J. Froome | 556 11 11 |
| Dock View-road do. | 856 17 2 |
| Jewel-street do. | 426 3 1 |
| Guthrie-street, Rendell & Motton | 106 19 0 |
| Morel-street, J. W. Froome | 185 7 3 |
| Cyril-street, J. W. Froome | 236 2 1 |
| Digby-street, Hill & Co. | 261 12 6 |
| Lane rear Pyke-street and Court-road, J. Woodward | 100 9 0 |
| Surface water drainage, G. Rutter | 1,549 9 7 |
| Brock-street, Rendell & Motton | 195 9 10 |
| Roads round Romilly Park, G. Rutter | 3,790 1 6 |
| Roads round Common, north side, Rendell & Motton | 667 8 3 |
| Roads round Common, south-east side, Rendell & Motton | 340 18 8 |
| Roads round Common (Main-street to Church-road) | 286 8 11 |
| Roads round Common (Vere-street to Church-road) | 473 17 10 |

BASINGSTOKE.—For sewering, &c., Deep-lane, for the Corporation. Mr. Geo. Fitton, Borough Surveyor, Town Hall, Basingstoke:—

| | | | |
|---|---|---|---|
| Free & Sons | £1,325 | Collier & Catley, Reading* | £1,142 |

BLABY.—For the execution of sewerage works, &c., at Kirby Muxloe, for the Rural District Council. Mr. J. B. Everard, C.E., 6, Millstone-lane, Leicester:—

| | | | |
|---|---|---|---|
| Bentley & Loch | £4,786 0 0 | Siddons & Freeman, Oundle* | £4,020 0 0 |
| Ballard, Ltd. | 4,734 12 8 | | |
| J. C. Trueman | 4,646 0 0 | | |
| J. Holme | 4,374 13 0 | W. Doleman | 3,699 0 0 |
| Walker & Co. | 4,324 12 6 | A. Jewell | 3,200 0 0 |
| E. Orton | 4,136 0 0 | | |

BRADFORD.—For the erection of shop and house, Dracup-road, Great Horton. Mr. S. Spencer, architect, 344, Great Horton-road, Bradford. Quantities by the architect:—

*Masonry.*—O. Booth, Gt. Horton.
*Joinery.*—Smith & Foster, Gt. Horton.
*Slating.*—J. Smithies, Gt. Horton.
*Plastering.*—Berry & Crabtree, Clayton.
*Plumbing.*—O. Smith, Gt. Horton.
*Painting.*—R. F. Fowle, Clayton.
[Scheduled prices.]

BRISTOL.—For alterations and additions to Kingswood Church, Bristol. Mr. E. H. Lingen Barker, architect:—

| | | | |
|---|---|---|---|
| Cornock | £3,806 | Davis | £1,960 |
| Bindon | 2,273 | Hayes | 1,932 |
| Bowers & Co. | 2,250 | Cowlin & Sons, Bristol* | 1,896 |
| Stephens, Bastow, & Co. | 2,208 | Adams & Jefferies | 1,731 |
| Lewis & Co. | 1,974 | Barnes‡ | 1,605 |

‡ Withdrawn.

CLAY CROSS.—For the erection of new offices, High-street, for Mr. Ernest Oxley, architect. Quantities by the architect:—

| | |
|---|---|
| John Madin* | £400 |

COVENTRY.—For paving Foleshill-road and Stoney Stanton-road, for the Corporation. Mr. J. E. Swindlehurst, City Engineer, St. Mary's Hall, Coventry:—

*Foleshill-road.*

| | |
|---|---|
| W. Boon & Sons, Nuneaton | £482 7 6 |

*Stoney Stanton-road.*

| | |
|---|---|
| W. Boon & Sons, Nuneaton | £632 15 3 |

DORKING.—For making-up Rothes-road, for the Urban District Council. Mr. G. S. Mathews, C.E., 35, High-street, Dorking:—

| | | | |
|---|---|---|---|
| A. C. Shepherd | £835 | W. Swaker, Chiswick* | £463 |

[Surveyor's estimate, £452.]

ELGIN.—For additions to Westfield House, for Mr. George A. MacLean, of Westfield. Mr. C. C. Doig, architect, Elgin:—

| | |
|---|---|
| *Building.*—T. Miller, Coltfield* | £164 15 0 |
| *Carpentry.*—A. & R. Dunbar, Elgin* | 234 8 0 |
| *Slating.*—J. Wilson, Elgin* | 56 11 0 |
| *Plastering.*—G. Gray, Elgin* | 98 18 0 |
| *Plumbing.*—Gordon & Son, Elgin* | 124 15 6 |
| *Electrical Engineers (Bellhanging).*—Middleton & Co., Elgin* | 9 18 6 |
| *Painting.*—A. Forsyth, Elgin* | 94 0 0 |

ELGIN.—For the erection of a warehouse, Glendronach Distillery, Huntly, for the Glendronach Distillery Company, Huntly. Mr. C. C. Doig, architect, Elgin:—

| | |
|---|---|
| *Building.*—R. Mitchell, Huntly | £559 10 0 |
| *Carpentry.*—T. G. Archibald, Huntly. | 579 16 5 |
| *Slating.*—A. Barclay, Huntly | 231 10 0 |
| *Plumbing.*—J. Wilson, Huntly | 61 14 0 |
| *Painting.*—A. Robertson, Huntly | 6 15 0 |
| *Engineering.*—Sellar & Son | 220 17 3 |

KEITH (N.B.).—For additions to Strathmill Distillery, for Messrs. W. & A. Gilbey, Limited, distillers. Mr. C. Doig, architect, Elgin:—

| | |
|---|---|
| *Masons.*—Thomas Stewart, Keith | £258 10 0 |
| *Carpenters.*—G. & R. Cameron, Keith | 109 0 0 |
| *Slaters.*—John Taylor, Keith | 33 0 0 |
| *Plasterer.*—George Mackay, Keith | 39 19 0 |
| *Plumber.*—James Annand, Keith | 27 15 0 |
| *Mason* (for chimney stack).—Thomas Stewart | 300 0 0 |
| *Millwright.*—A. Dey, Huntly | 638 15 0 |
| *Founders.*—Rose-street Foundry Company, Inverness | 304 8 8 |

KETTERING.—For the completion of twenty-two private streets (total 4,000 yards), for the Urban District Council. Mr. T. R. Smith, surveyor, Market-hill, Kettering:—

| | | | |
|---|---|---|---|
| W. G. Wilmott | £16,650 0 0 | McCarthy & Co. | £13,557 0 0 |
| Ballard, Ltd. | 15,917 19 11 | F. Barlow, Rothwell* | 13,393 0 0 |
| A. Jewell | 14,929 17 3 | | |
| J. Woolston | 14,700 0 0 | | |
| Bentham & Co. | 14,659 0 0 | | |

LITTLEHAMPTON.—For the execution of water-supply works, for the Urban District Council. Mr. H. Howard, Surveyor, Town Offices, Littlehampton:—

| | |
|---|---|
| Duke & Ockenden, Littlehampton* | £359 |

LONDON.—For new factory, Minories, London, E.C., for Messrs. Jas. Taddy & Co. Mr. E. J. Sadgrove, architect, Surrey-street, W.C.:—

| | | | |
|---|---|---|---|
| Colls & Sons | £36,350 | Dove Bros. | £34,985 |
| W. Downs | 35,990 | Stephens, Bastow, & Co., Limited, Bristol* | 34,888 |
| Ashby & Horner | 35,000 | | |
| Edwards & Medway | 35,000 | | |

LONDON.—For rebuilding "Waggon and Horses," Wandsworth, for New London Brewery:—

| | | | |
|---|---|---|---|
| Stevens | £3,135 | Whitehead | £2,972 |
| Wm. Smith | 2,998 | Goodall | 2,873 |
| G. Barker | 2,998 | Maxwell | 2,564 |

LONDON.—For sinking new well, with engine and pumps, for the Greenwich Board of Guardians. Mr. Thos. Dinwiddy, architect:—

| | |
|---|---|
| Messrs. Tilley & Son* | £3,250 |

LONDON.—For building new workshop, and alterations, Cambridge-road, E.:—

| | | | |
|---|---|---|---|
| Chessum & Sons | £743 | G. Barker | £690 |
| Hawkey & Oldman | 719 | Weston | 600 |

LONDON.—For rebuilding "The Crown," Blackwall, for the New London Brewery Company:—

| | | | |
|---|---|---|---|
| Maxwell | £2,950 | G. Barker | £2,725 |
| Snewin | 2,927 | Jarvis | 2,669 |
| Stevens | 2,840 | Jackson | 2,643 |
| Goodall | 2,751 | | |

LONDON.—For reinstating seven houses and shops, Cable-street, E.:—

| | | | |
|---|---|---|---|
| Steadman | £432 | Heard & Co., Mile End | £372 |

[See also next page.

LONDON.—For the reconstruction and diversion of a portion of the Victoria-street sewer, for the London County Council :—

| | | | |
|---|---|---|---|
| Killingback & Co. | £7,573 | 0 | 0 |
| J. Dickson | 6,368 | 17 | 1 |
| E. Iles | 6,163 | 0 | 0 |
| Pedrette & Co. | £5,816 | 10 | 11 |
| J. Jackson | 4,975 | 8 | 9 |
| Mowlem & Co. | 4,837 | 0 | 0 |
| J. H. Neave | 4,813 | 1 | 10 |

LONDON.—For the construction of landing-stages, &c., at the Fire Brigade river stations at Deptford and Blackfriars, for the London County Council :—

| | | | |
|---|---|---|---|
| A. Woodhouse | £1,598 | 6 | 3 |

LONDON.—For alterations to "The White Horse" public-house, Mile End, E. Mr. Herbert Riches, architect, 3, Crooked-lane, King William-street, E.C. Quantities supplied :—

| | | |
|---|---|---|
| S. Salt | £1,797 | 0 |
| A. Webb | 1,782 | 0 |
| Osborn & Sons | 1,723 | 0 |
| Thompson & Son | £1,710 | 0 |
| P. Hart | 1,683 | 10 |
| Sheffield Bros.* | 1,645 | 0 |

LONDON.—For repairs to "The Railway Hotel," Hornsey, N. Messrs. Foulsham & Herbert Riches, architects, 3, Crooked-lane, E.C., and Bromley-by-Bow, E. :—

| | |
|---|---|
| Locker & Sons | £470 |
| G. Ballentyne | 345 |
| Sheffield Bros. | 340 |
| H. & F. Fearman | £311 |
| Sprossen & Babb* | 260 |

LONDON.—For structural and decorative improvements at 60, Great Cumberland-place, W. Mr. W. Macie Seaman, architect :—

| | |
|---|---|
| Nakowski & Co. | £1,489 |
| Kelland | 1,389 |
| Buckeridge | 1,310 |
| Spiers & Son | £1,288 |
| Bush | 1,237 |

LONDON.—For the erection and completion of No. 2 block Victoria Mansions, Sumatra-road, Hampstead, N.W., for Mr. C. G. Crowden. Messrs. Palgrave & Co., architects, Victoria-street, S.W. Quantities by Mr. George Stephenson :—

| | | |
|---|---|---|
| Dolman & Co. | £7,943 | 0 |
| George Brown | 7,050 | 0 |
| R. Hockley | 6,336 | 10 |
| G. Wilkinson | £6,025 | 0 |
| The General Builders, Limited | 5 800 | 0 |

LONDON.—For alterations at 4 and 5, Duncannon-street, Charing Cross, for Messrs. Wippell & Co. Mr. John More Kennard, architect :—

| | |
|---|---|
| Rider & Sons | £1,993 |
| Lawrence & Sons | 1,870 |
| Williams & Sons | 1,859 |
| Howell J. Williams | £1,632 |
| Norton | 1,550 |

LONDON.—For decorations, &c., at No. 50, Grosvenor-square, W. :—

| | |
|---|---|
| W. H. Kelland | £2,070 |
| Edwards & Medway | 1,965 |
| Spiers & Son | £1,834 |
| R. S. Buckeridge | 1,810 |

MARKET HARBOROUGH.—For the execution of sewerage works (pipe sewers, tanks, &c.), for the Rural District Council. Mr. J. B. Everard, C.E., 6, Millstone-lane, Leicester :—

| | | | |
|---|---|---|---|
| Batchelor & Snowdon | £2 136 | 16 | 3 |
| Walker & Co | 1,659 | 0 | 0 |
| Siddons & Freeman | 1,620 | 0 | 0 |
| J. Holme | £1,598 | 3 | 0 |
| A. Jewell | 1,549 | 16 | 3 |
| Tate & Eastwood, Market Harborough. | 1,450 | 18 | 2 |

MERTHYR TYDFIL.—For alterations, &c., to Baptist Chapel, High-street. Messrs. Geo. Morgan & Son, architects, Carmarthen :—

| | | |
|---|---|---|
| Jno. Jenkins, Canal Wharf, Merthyr* | £1,592 | 10 |

RUGBY.—For laying one and a quarter miles c.i. water mains, &c., Newbold-upon-Avon, for the Rural District Council. Mr. T. W. Willard, surveyor, Rugby :—

| | | | |
|---|---|---|---|
| Rowland | £792 | 18 | 3 |
| H. Law | 666 | 0 | 0 |
| J. Young | 647 | 0 | 0 |
| Jenkins & Son | £615 | 0 | 0 |
| A. Jewell, Market Harboro* | 555 | 17 | 10 |

SUTTON.—For the construction of roads and sewers at Sutton, Surrey, for the Sutton and Cheam Building Estate. Mr. E. Godfrey Page, architect, 4 and 5, Warwick-court, Gray's Inn :—

| | | | |
|---|---|---|---|
| C. W. Killingback | £7,547 | 8 | 0 |
| W. Langridge | 6,400 | 0 | 0 |
| Parry & Co. | £5,775 | 0 | 0 |
| W. Jenner* | 5,203 | 18 | 1 |

WALTHAMSTOW.—For the erection of sixteen houses, Brook-road, for Messrs. J. Nicholson & Son, 105, Cheapside E.C. :—

| | |
|---|---|
| G. E. Palmont, Forest Gate* | £3,680 |

WOODFORD (Essex).—For the erection of new mixed schools for 488 children, at Cowslip-road, Woodford, for the Woodford School Board. Mr. Edward Tidman, C.E., architect, Westminster. Quantities supplied :—

| | | | | Extra for Red Suffolk Facings throughout. | | |
|---|---|---|---|---|---|---|
| Shelbourne & Co. | £10,990 | 0 | 0 | £59 | 0 | 0 |
| General Builders, Ltd. | 8,300 | 0 | 0 | 99 | 0 | 0 |
| A. E. Symes | 8,300 | 0 | 0 | 75 | 0 | 0 |
| Lawrence & Son | 7,999 | 0 | 0 | 44 | 0 | 0 |
| W. Blackburn | 7,641 | 0 | 0 | 49 | 11 | 6 |
| W. H. Critcher | 7,524 | 0 | 0 | 50 | 0 | 0 |
| W. H. T. Kelland | 7,480 | 0 | 0 | 27 | 10 | 0 |
| Beach & Co., Cambridge-road, New Wanstead* | 7,309 | 9 | 10 | 80 | 0 | 0 |

WOODMANSTERNE (Surrey).—For stabling and additions to "The Woodman" public-house, for Messrs. Page & Overton, Limited. Mr. A Broad, architect, 22, George-street, Croydon. Quantities by the architect :—

| | |
|---|---|
| Smith & Sons | £1,624 |
| A. Bullock | 1,600 |
| G. Cheeseman | 1,585 |
| Akers & Co. | £1,523 |
| D. W. Barker | 1,475 |
| Burnand, Wallington* | 1,455 |

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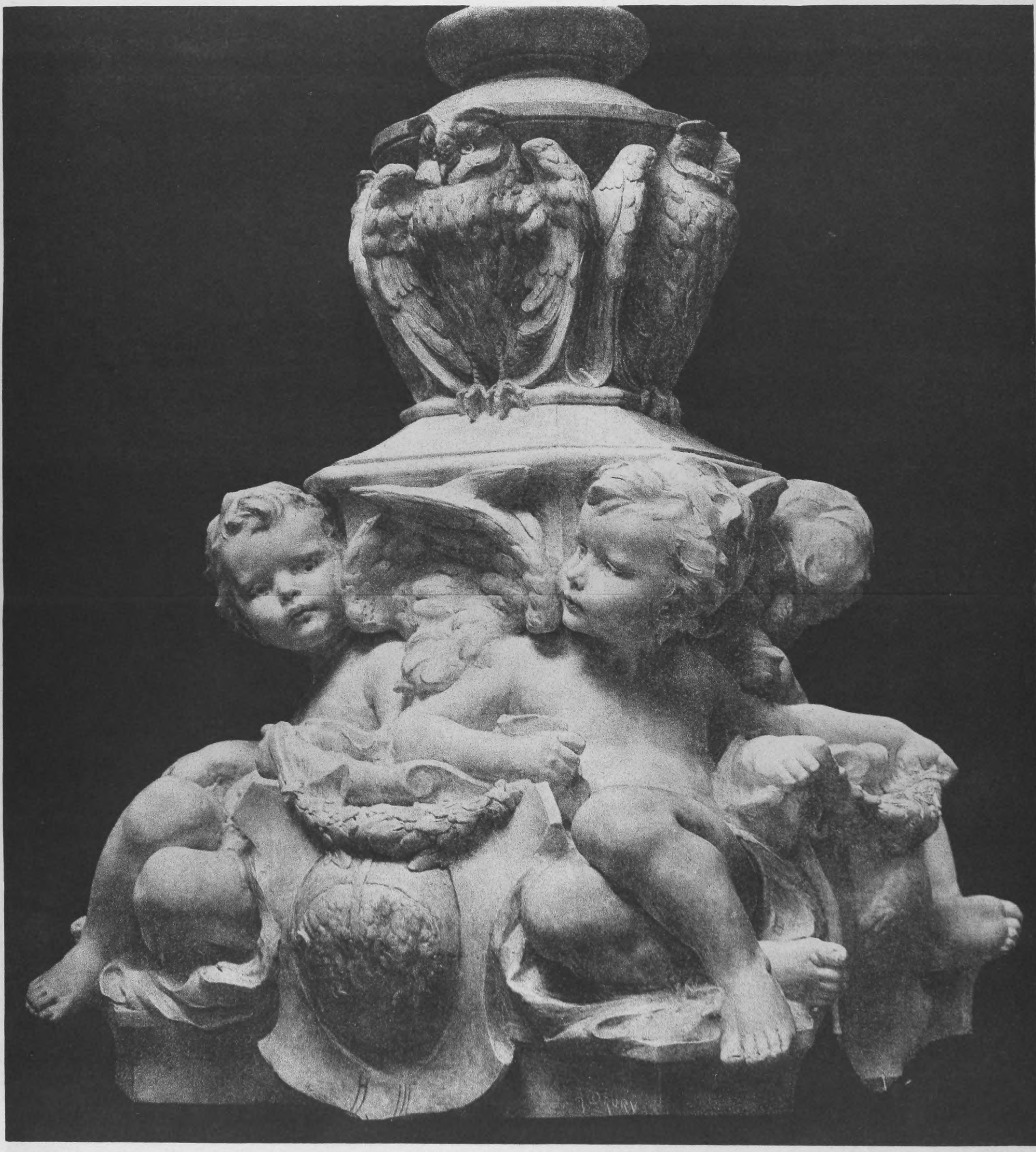

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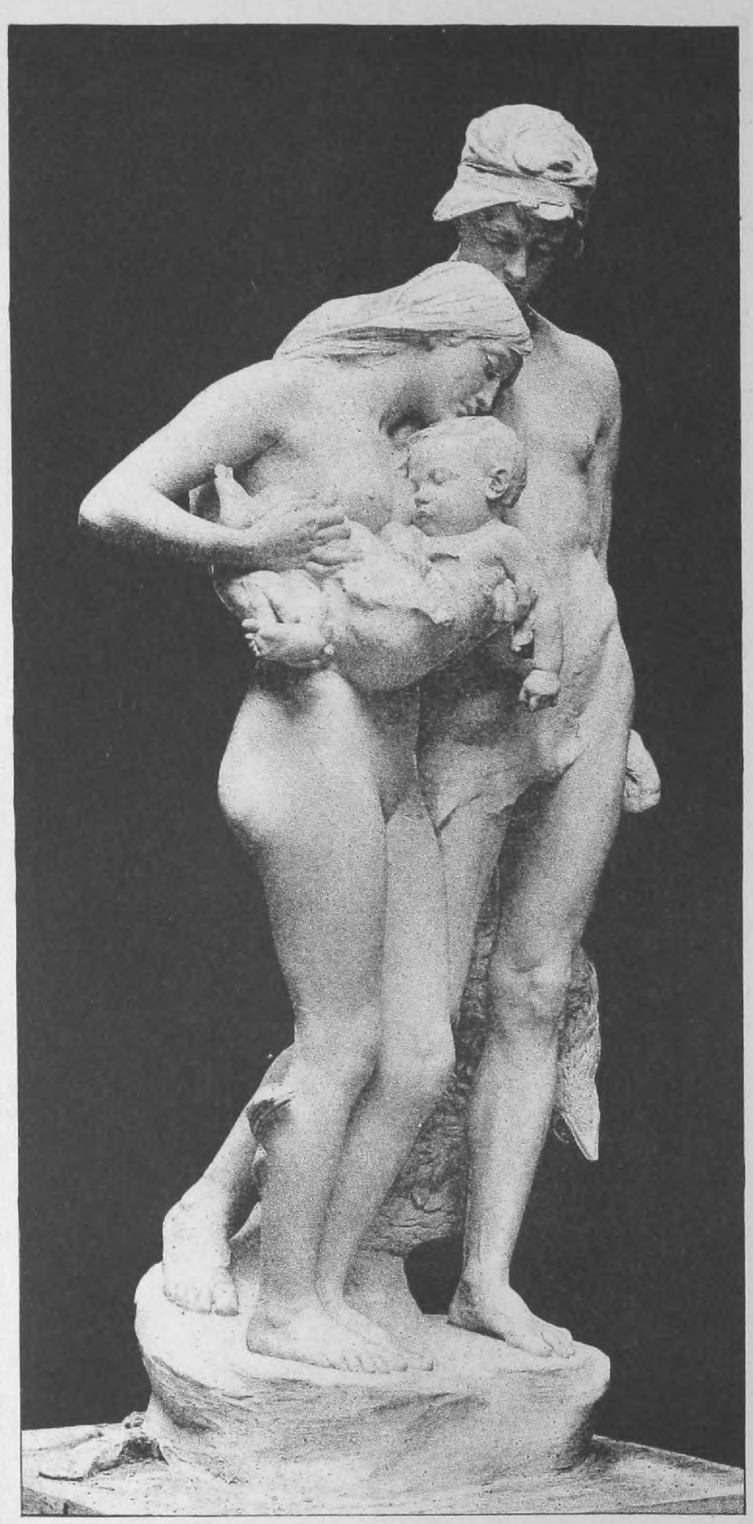

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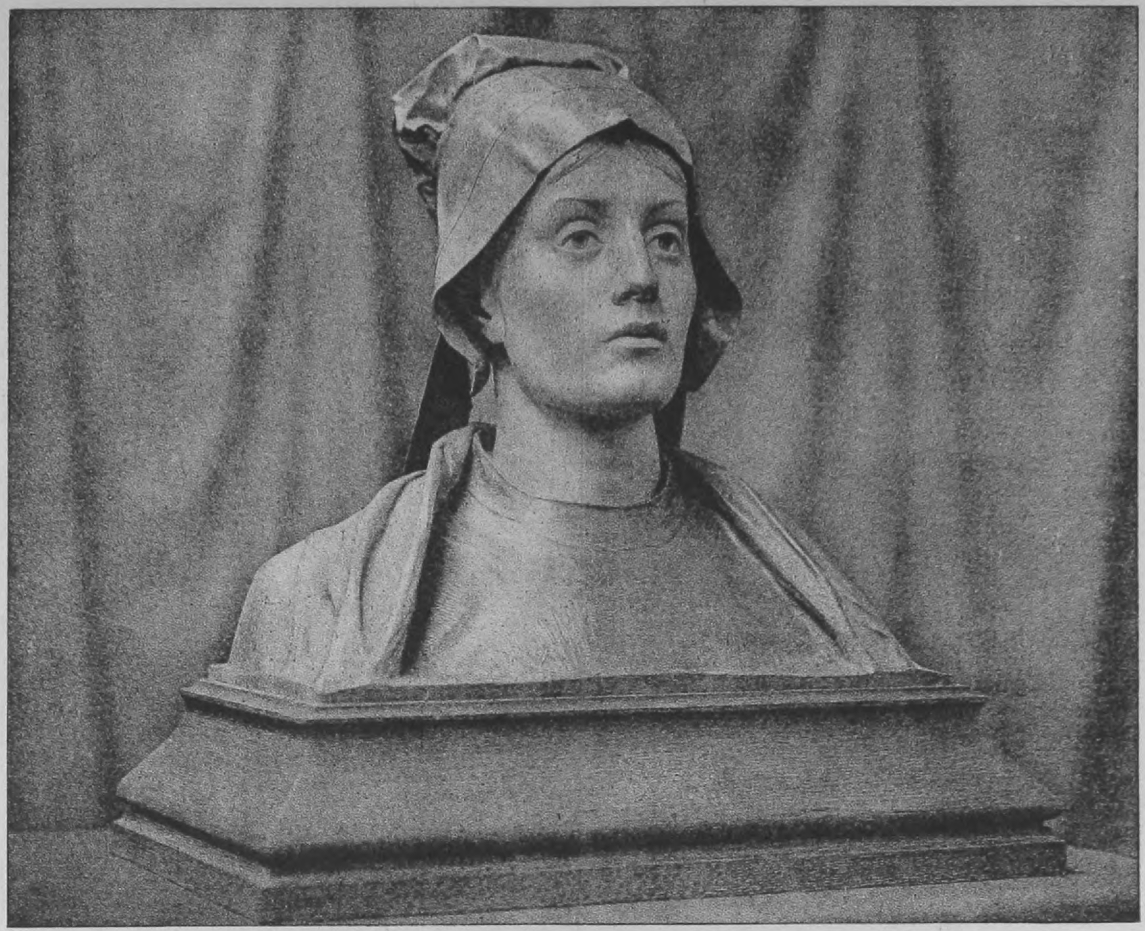

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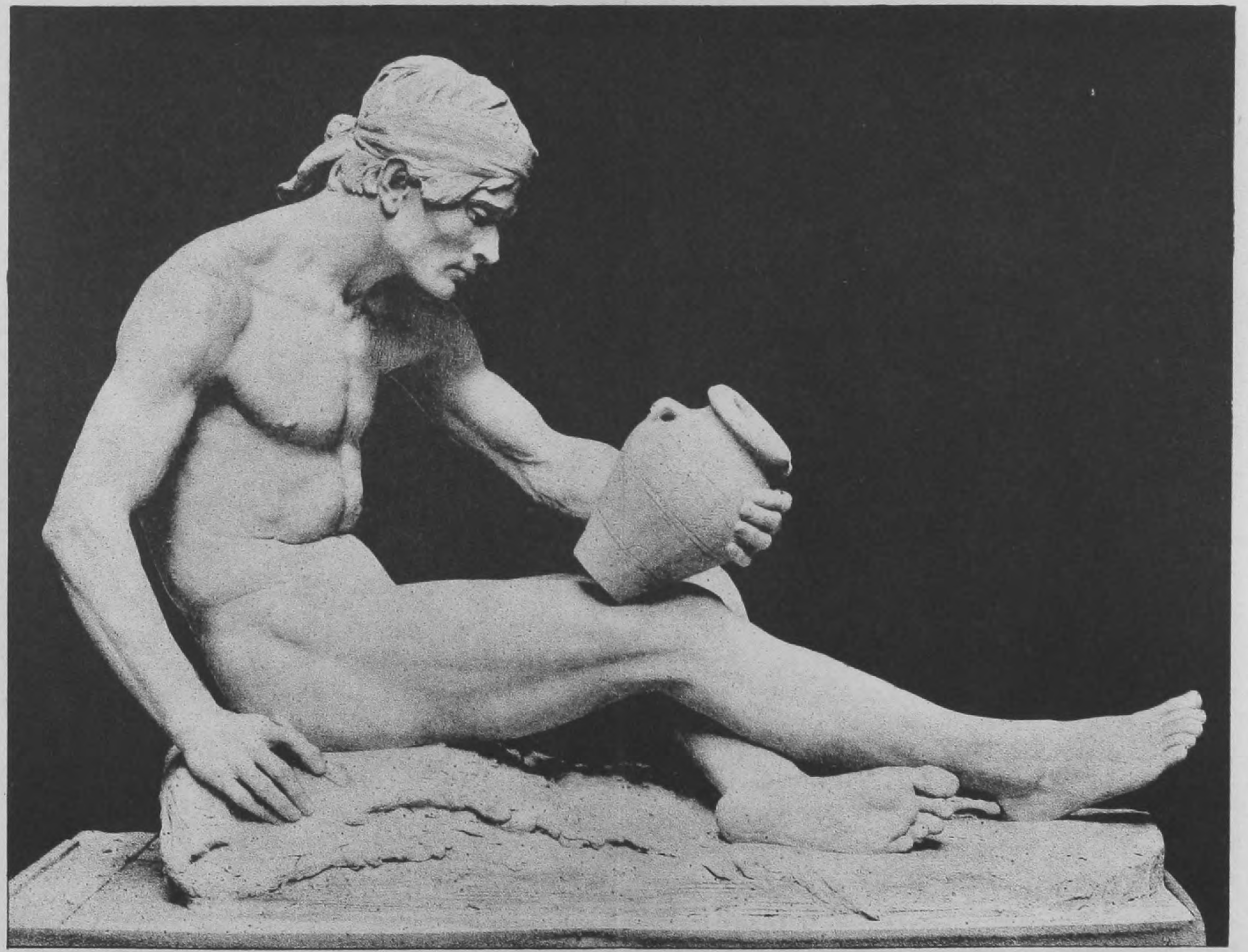

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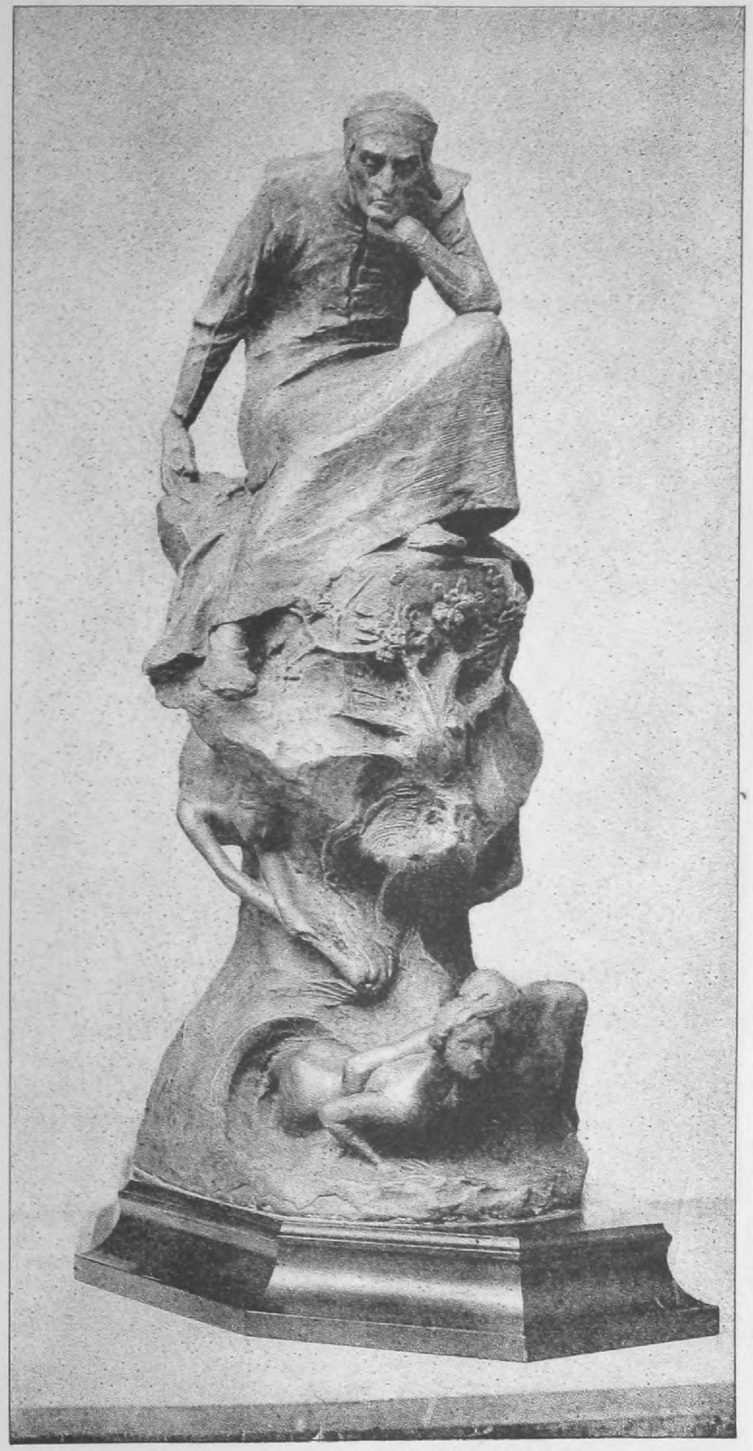

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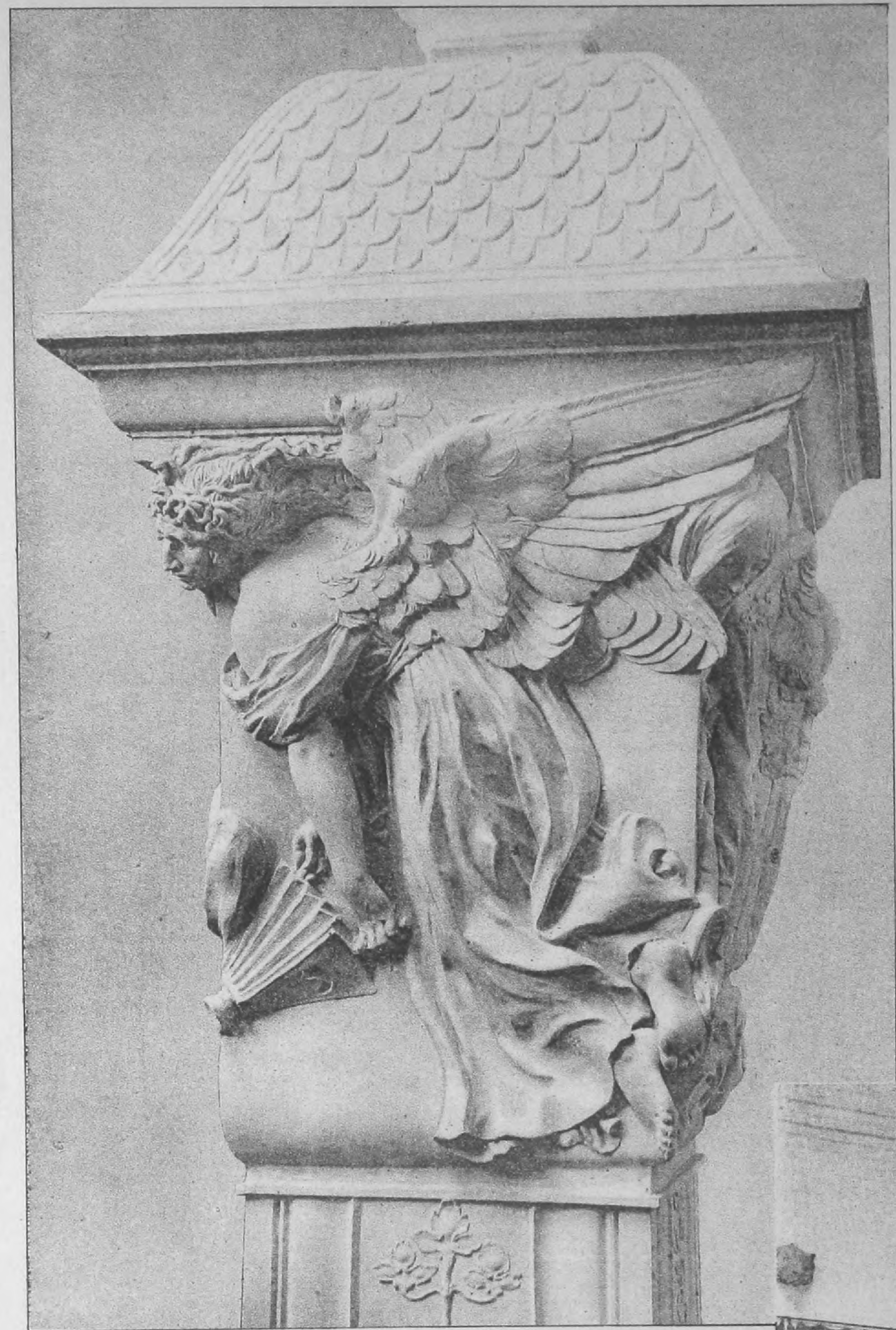

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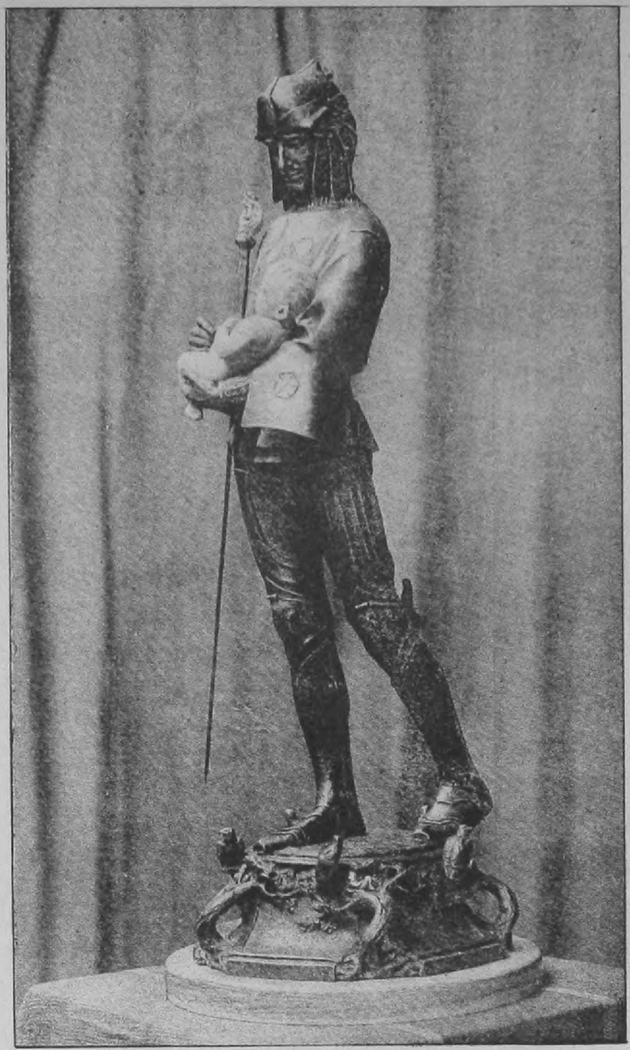

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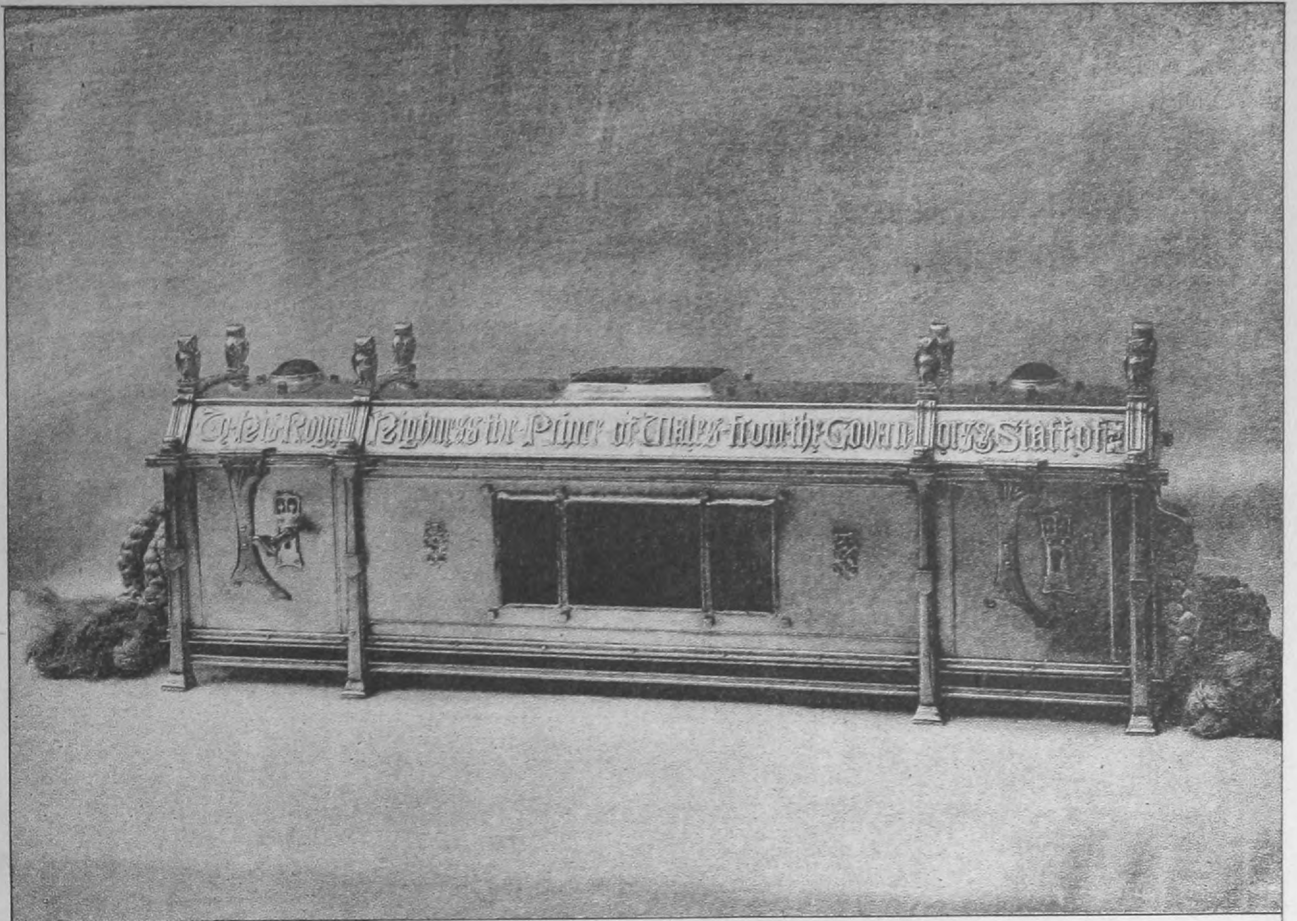

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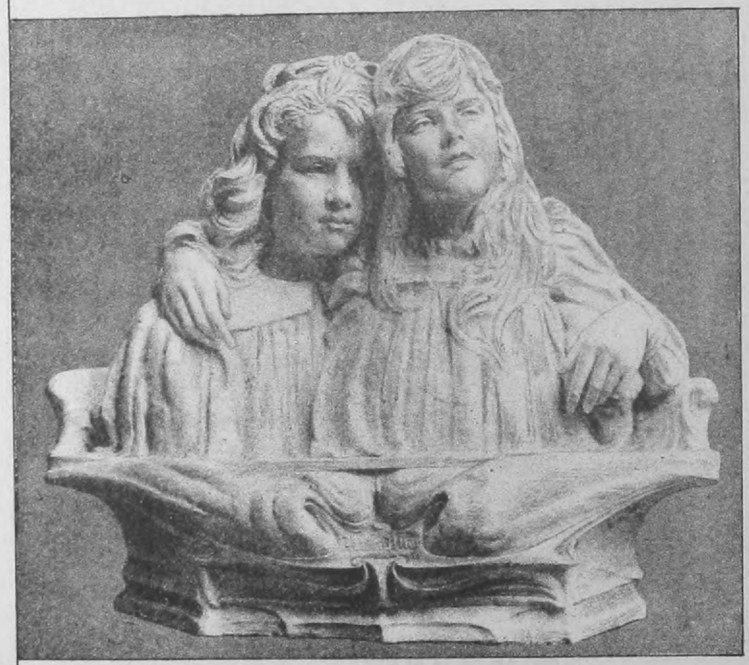

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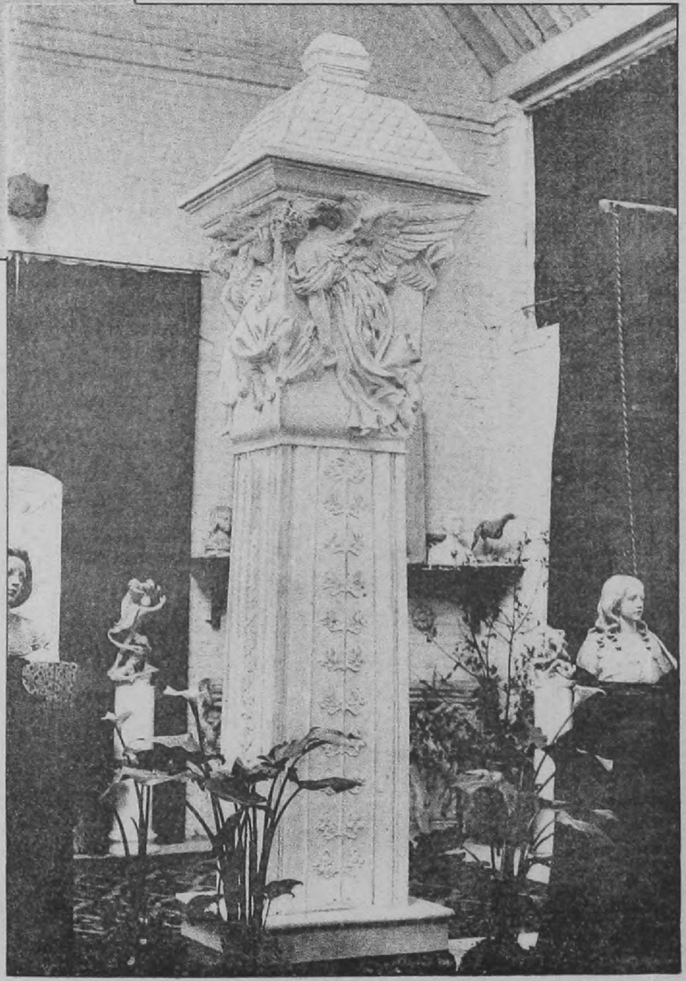

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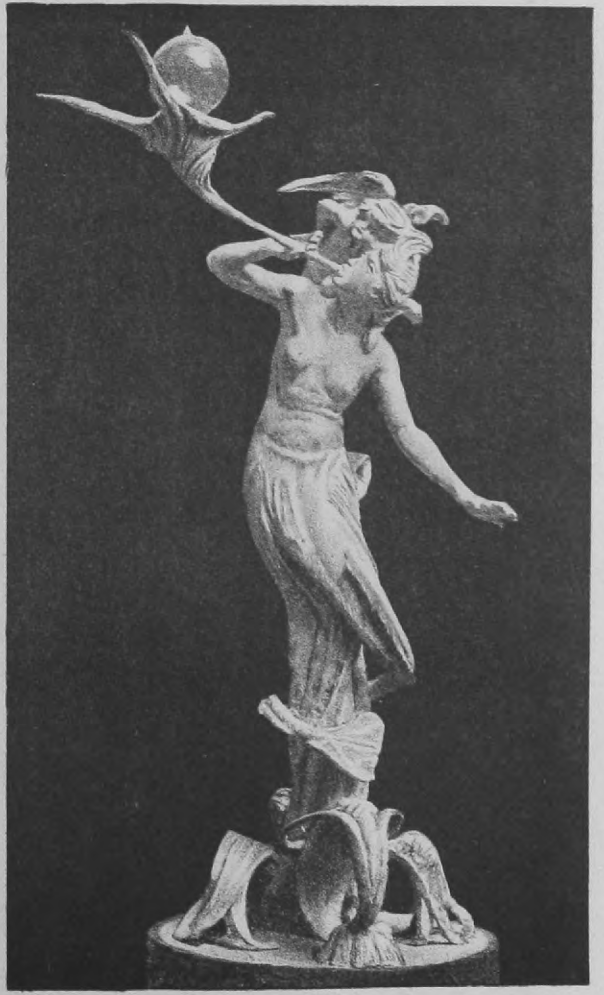

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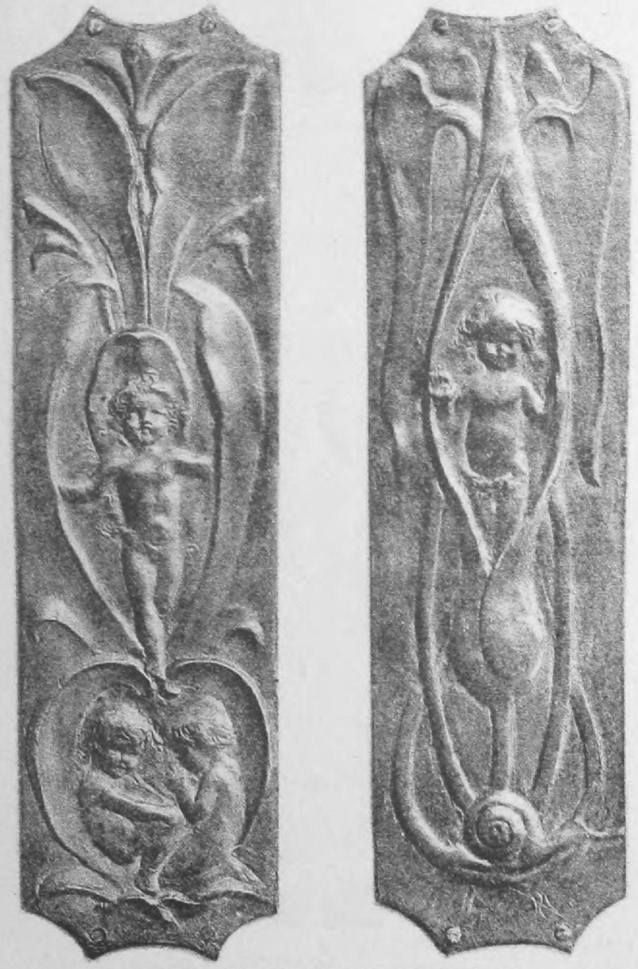

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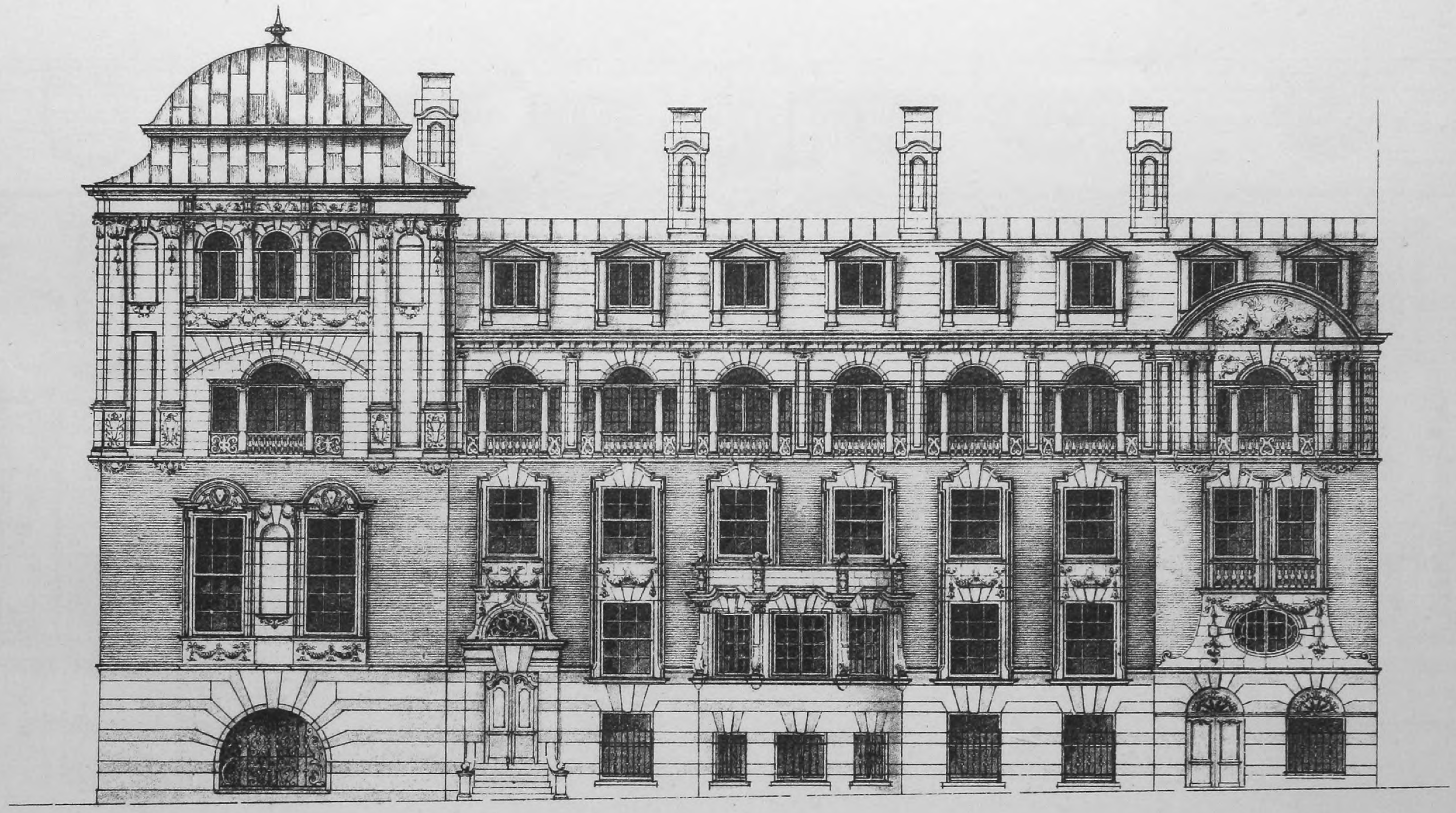

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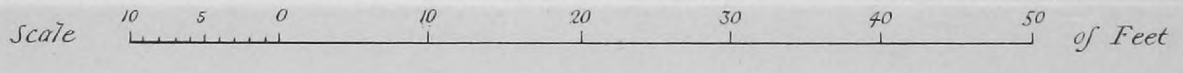
Scale
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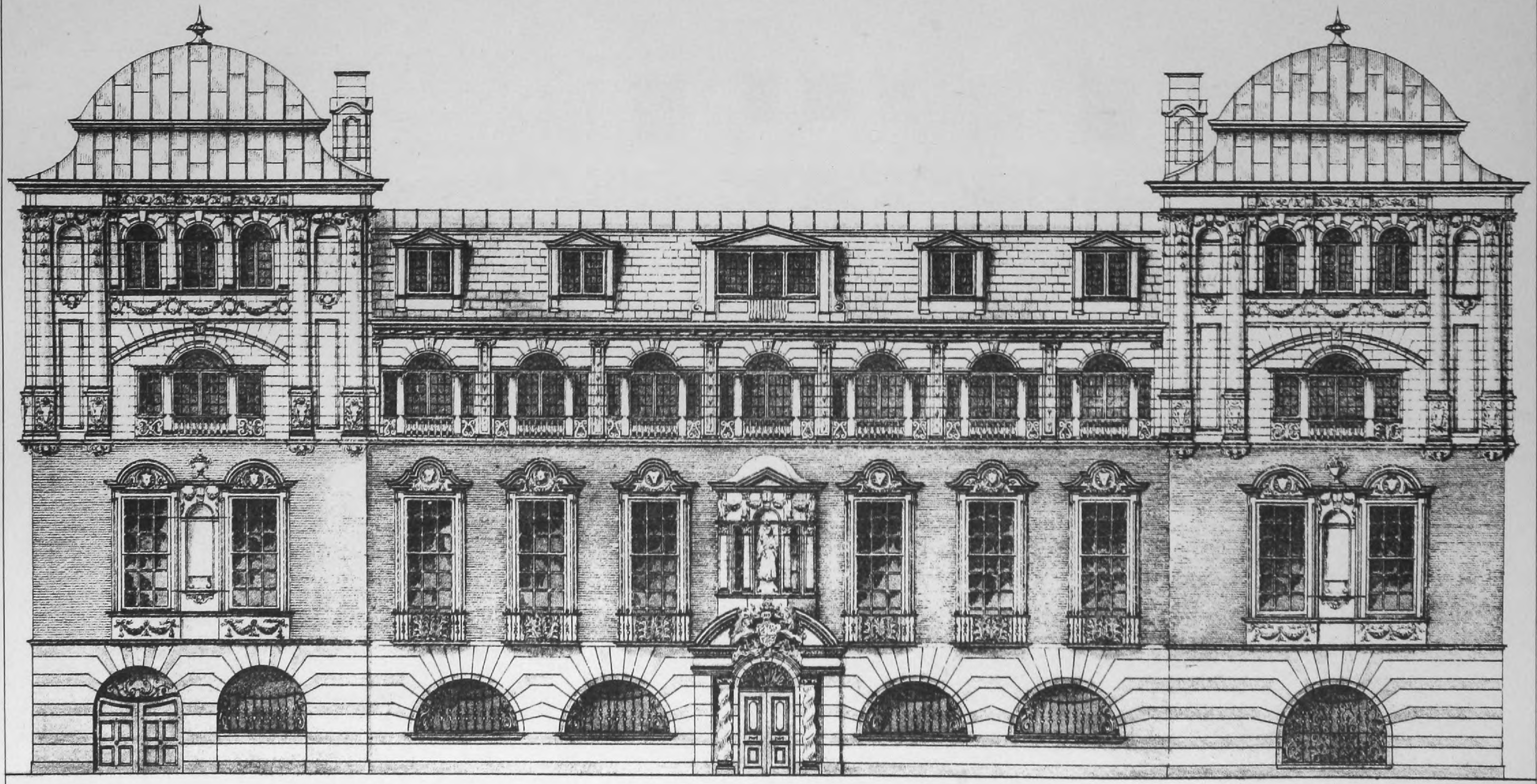

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VOL. LXXVI. No. 2942.
*Fifty-seventh Year.*

JUNE 24, 1899.

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**BUILDERS' ACCIDENT INSURANCE,** [LIMITED.
SECRETARY,
MR. RICHARD S. HENSHAW.
31 and 32, BEDFORD STREET, LONDON, W.C.

# Analysis of Advertisements.

(For Alphabetical List of Firms appearing in this List and reference to current Advertisements see opposite Page.)

**Artificial Stone:—**
- ImperialStoneCo. Ltd.

**Art Metal Work:—**
- Oluse, Ltd.
- Hart, Son, Peard, & Co.
- Hill & Smith
- White & Sons

**Asbestos:—**
- United Asbestos Co. Ltd.

**Asphalte:—**
- Brunswick Rock AsphalteCo.
- Claridge's Asphalte Co. Ltd.
- French Asphalte Co.
- Lawford & Co.
- Pilkington & Co.
- Seyssel & Metallic Lava Asp. Co.
- Val de Travers Asphalte Co.

**Barrows (of all kinds):—**
- Rowland Bros.

**Bells &c.:—**
- Carr, C.

**Blinds (Window, &c.):—**
- Francis & Co.
- Haskins, S. & Bros.
- Shingleton, A. J.
- Williams, G. A. & Son

**Blind Laths:—**
- Bell, R. & Co.

**Boilers:—**
- Burney & Co.
- Hartley & Sugden, Ltd.

**Bricks:—**
- Aylesford PotteryCo.
- Brockham Brick Co.
- Bundy, W. N.
- Burham Brick and Cement Co.
- Candy & Co. Ltd.
- Chambers, H.
- Cliff, J. & Sons
- Collier, S. & E.
- Coles, Shadbolt, & Co.
- Dennis, Henry
- Doulton & Co. Ltd.
- Dunton Green Brick & Tile Co.
- Farnley Iron Co. Ltd.
- Hamblets, Ltd.
- Harrison, T. H. & Co.
- Hartshill Brick and Tile Co.
- Hill, J. Max
- Hooper & Ashby
- Itter, A. W.
- Knowles, J. & Co.
- Lawrence, T. & Sons
- Newton, J. & Sons
- Plowman, T. & M.
- Richardson, A. & W. T.
- Rufford & Co.
- Shaw's Glazed Brick Co. Ltd.
- Smeed, Dean, & Co. Ltd.
- Stanley Bros. Ltd.
- Zunz, C.

**Bridges (Iron and Steel) :—**
- Drew Bear, Perks, & Co.
- Homan & Rodgers
- Main, A. & J. & Co.
- Morton, F. & Co.
- St. Pancras Ironwork Co. Ltd.
- Shaw, M. T. & Co

**Brushes:—**
- Nicholls & Clarke

**Builders' Ironmongery:—**
- Buck & Hickman
- Oluse, Ltd.
- Colledge & Bridgen
- Hart, Son, Peard, & Co.
- Nicholls & Clarke
- White & Sons

**Builders' Brasswork:—**
- Francis & Co.
- Haskins, S. & Bros.
- Hart, Son, Peard, & Co.

**Builders' Plant & Materials**
- Builders'Material SupplyStores
- Mitchell, L. & Co.

**Carts and Wagons:—**
- Barrows & Co. Ltd.
- Rowland Bros

**Carving (Wood):—**
- Wood Carving Co. Ltd.

**Castings :—**
- Clark, Bunnett, & Co. Ltd.
- Coalbrookdale Co Ltd.
- General Iron Foundry Co. Ltd.
- Hayward Bros. & Eckstein
- Jones, J. G. & Co.
- Morton, F. & Co.
- St. Pancras Ironworks Co. Ltd

**Cement :—**
- Burham Brick and Cement Co
- Cliff, J. & Sons
- Coles, Shadbolt, & Co.
- Ellis, J. & Sons, Ltd.
- Francis & Co. Ltd.
- Greaves, Bull, & Lakin
- Harrison, T. H. & Co.
- Hill, J. Max
- Hooper & Ashby
- Jacobs Bros. & Co.
- Nelson, C. & Co. Ltd.
- Richardson, A. & W. T.
- Robins & Co. Ltd.
- Rugby Portland CementCo.
- Sommerfield, L.
- Zunz, C.

**Chimney Cowls :—**
- Croggon & Co. Ltd.

**Chimney Pieces (Marble) &c.**
- Benham & Sons, Ltd.
- Mathews, E. & Co.
- Sessions & Sons, Ltd.

**Chimney Pieces (Wood):—**
- Parkers' Joinery and Cabinet Co. Ltd.
- Walker, W. & Sons.
- White, J. P.

**Concrete:—**
- Lascelles, W. H. & Co.

**Cords and Ropes:—**
- Dixon & Corbitt and R. S. Newall & Co. Ltd.

**Cradles:—**
- Palmer, E.

**Damp Proof Courses:—**
- Doulton & Co. Ltd.
- Stanley Bros. Ltd.

**Decoration:—**
- Cordelova Co. Ltd
- United Asbestos Co. Ltd.

**Doors (Iron &c.):—**
- Bunnett, M. A. & Co.
- Crittall Manufacturing Co.
- Dowson, Taylor, & Co. Ltd.
- Hayward Bros, & Eckstein.
- Hobbs, Hart, & Co. Ltd.
- Lift and Hoist Co.
- Price, George, Ltd.
- St. Pancras Ironwork Co.
- Waygood, R. & Co. Ltd.
- Whitfield, F. & Co.

**Door Springs and Hinges:—**
- Hodges, Rowland
- Smith & Turner.

**Drain Tests:—**
- Pain, J. & Sons.

**Electricity:—**
- Benham & Sons, Ltd.
- Croggon & Co. Ltd.
- Kite, C. & Co.
- Russell & Co.
- Strode & Co.

**Electric Light Fittings :—**
- Perry & Co.
- White & Sons

**Embrocation for Horses :—**
- Elliman, Sons, & Co.

**Engines, Mortar Mills. &c.:—**
- Barrows & Co. Ltd.
- Brown, E. Houghton
- Clark, Bunnett, & Co. Ltd
- Lewis & Lewis
- Reynolds, F. W. & Co.
- Sykes, H. Ltd.

**Facias (Glass and Wood) :—**
- Jones, S. & Co.
- Waters, S. & Sons

**Felt:—**
- Lewis, L. & Co.
- McNeill, F. & Co.

**Fencing and Gates (Wood):—**
- Rowland Bros.

**Fencing (Iron):—**
- Bayliss, Jones, & Bayliss

**Fenders and Fire Brasses:—**
- Clark, John

**Fire Escapes Staircases:—**
- Hayward Bros.& Eckstein
- St. Pancras Ironwork Co. Ltd.

**Fireproof Flooring, Partitions, &c. :—**
- Banks' Fireproof Construction Syndicate, Ltd.
- Dawnay A. D.
- Dennett & Ingle
- Doulton & Co. Ltd.
- Expanded Metal Co. Ltd.
- Fawcett, M. & Co.
- Fireproof Partition Syn. Ltd.
- Homan & Rodgers
- Lindsay, Neal, & Co. Ltd.
- Lindsay, Wm. & Co.
- United Asbestos Co. Ltd.

**Fireproof Metal Lathing:—**
- Expanded Metal Co. Ltd.
- Hayward Bros. & Eckstein

**Flint Paper :—**
- Oakey, J. & Sons, Ltd.

**Gas Burners :—**
- New Sunlight Incandescent Co. Ltd.
- Peebles, D. Bruce, & Co.

**Gas Fittings:—**
- Evered & Co. Ltd.
- Hart, Son, Peard, & Co.
- White & Sons

**Gates Railings (Iron), &c.:—**
- Bayliss, Jones, & Bayliss
- Brownlie & Murray
- Coalbrookdale Co. Ltd.
- Hill & Smith
- Jones, J. G. & Co.
- Main, A. & J. & Co
- Morton, F. & Co.
- St. Pancras Ironwork Co. Ltd.
- Young & Marten

**Glass Paper Emery Wheels:**
- Oakey, J. & Sons, Ltd.

**Glass (Plate and Window):—**
- British Plate Glass Co. Ltd.
- Crittall Manufacturing Co.
- Farmiloe, G. & Sons, Ltd.
- Farmiloe, T. & W.
- Nicholls & Clarke
- Red Star Glass Co.
- Francq, L. & J.

**Glass (Stained, Painted, &c.):**
- Farmiloe, G. & Sons, Ltd.
- Farmiloe, T. & W
- Lavers, Westlake, & Barraud
- Nicholls & Clarke

**Glazing:—**
- Braby, F. & Co.
- Crittall Manufacturing Co.
- Grover & Co. Ltd.
- Halliwell & Co. Ltd.
- Hope, H. & Sons, Ltd.
- Mellowes & Co.

**Granite:—**
- Freeman, J. Sons, & Co. Ltd.
- Freeman, W. & J. R.
- Garstin, W. & Sons
- Macdonald, A. & Co. Ltd.
- Nowell, B. & Co.
- Whitehead, J. & Sons, Ltd.

**Hat and Coat Hooks:—**
- Colledge & Bridgen.

**Heating:—**
- Berry Campbell & Co.
- Blackman Ventilating Co. Ltd.
- Climax Ventilating & Heating Co. Ltd.
- Constantine, J. & Son
- Hartley & Sugden, Ltd.
- Hayward, Bros. & Eckstein
- Jones & Attwood
- Kite, C. & Co.
- Messenger & Co.
- Royle, J. J
- Russell & Co.
- Shorland, E. H. & Bro.
- Thames Bank Iron Co.
- Weeks, J. & Co. Ltd.
- White & Sons

**Horticultural Buildings :—**
- Hope, H. & Sons, Ltd.
- Jones, J. G. & Co.
- Lascelles, W. H. & Co.
- Messenger & Co.
- Weeks J. & Co. Ltd.

**Hurdles (Iron and Steel) :—**
- Bayliss, Jones, & Bayliss
- Hill & Smith

**Incandescent Gas Burner :—**
- New Sunlight Incandescent Co. Ltd.

**Insurance:—**
- Builders' Accident Ins'nce, Ld.
- Imperial Fire Insurance Co.
- Phœnix Fire Office
- Sun Fire Office
- Vulcan Boiler and General Insurance Co.

**Iron Buildings :—**
- Harbrow, W.

**Joinery, Mouldings, &c:—**
- Burman, H.
- Clapton Steam Joinery Works
- Harbrow, W.
- Lascelles, W. H. & Co.
- McKenzie & Co.
- Nightingale, B. E.
- Parkers' Joinery and Cabinet Co. Ltd.
- Pryor, W. A.
- Sessions & Sons, Ltd.
- Southampton Steam Joinery Co
- Sumner, W. & Co. Ltd.
- Turpin's Parquet Floor Co.
- White, J. P.
- Wood Carving Co. Ltd.

**Ladders :—**
- Heathman & Co.

**Laundry Appliances:—**
- Benham & Sons, Ltd.
- Bradford, T. & Co.
- Tullis, D. & J.

**Lead, Oil Colours, Size &c.:**
- Farmiloe, G. & Sons, Ltd.
- Farmiloe, T. & W.
- Nicholls & Clarke

**Letters (Wood and Metal):—**
- Waters, S. & Son

**Lifts, Elevators, Hoists, &c.**
- "B. & S." Folding Gate Co.
- Benham & Sons, Ltd.
- Brooke, J. W. & Co. Ltd.
- Bunnett, M. A. & Co.
- Clark, Bunnett, & Co. Ltd.
- Easton, Anderson, & Goolden, Ld
- Haskins, S. & Bros.
- Lewis & Lewis
- Lift and Hoist Co.
- Moffatt & Eastmead
- Otis Elevator Co. Ltd
- Pickerings, Ltd.
- Piggott Bros. & Co.
- Richmond, J. & Co.
- Russell & Co.
- Smith & Stevens
- Stannah, J.
- Waygood, R. & Co. Ltd.

**Lightning Conductors:—**
- Blackburn, Starling, & Co. Ltd.
- Croggon & Co. Ltd.
- Dixon & Corbitt and R. S. Newall & Co. Ltd.

**Lime, Sand, &c.:—**
- Burham Brick, Lime, &c. Co.
- Cliff, J. & Sons
- Coles, Shadbolt, & Co.
- Davies, J. & Co.
- Ellis, J. & Sons, Ltd.
- Greaves, Bull, & Lakin
- Harrison, T. H. & Co.

**Lime, Sand, &c. (continued):—**
- Hooper & Ashby
- Itter, A. W.
- Knowles, J. & Co.
- Nelson, C. & Co. Ltd.
- Richardson, A. & W. T.
- Rugby Portland Cement Co.
- Stone Court Chalk, Sand, &c. Co.

**Lithography:—**
- Allday, Ltd.
- Cook, R. J. & Hammond
- Hardaker, W.
- Metchim & Son
- Sprague & Co.

**Locks, Latches, and Furniture**
- Colledge & Bridgen
- Hart, Son, Peard, & Co.
- Hobbs, Hart, & Co. Ltd.
- White & Sons

**Luxfer Prisms :—**
- British Luxfer Prism Syn. Ltd,

**Manholes:—**
- Young & Marten

**Marble:—**
- Fabbricotti, B.
- Farmer & Brindley
- Garstin, W. & Sons
- Moreau Marble Co. Ltd.
- Patteson, J. & H.
- Whitehead, J. & Sons, Ltd.

**Mosaic Work:—**
- Mainzer & Co.
- Maw & Co. Ltd.
- Minton & Co.
- Minton Hollins, & Co
- Patteson, J. & H.
- Turpin's Parquet Floor Co.

**Non-Inflammable Wood :—**
- Non-Inflammable Wood Co. Ld

**Old Building Materials:—**
- Blount, W.
- Sheriff, W. J.

**Paints Stains, Varnish, &c.**
- Davis, J. W. & Son
- Farmiloe, T. & W.
- Farmiloe, G. & Sons, Ltd.
- Indestructible Paint Co.
- Nicholls & Clarke
- Solignum
- Sissons, Bros. & Co. Ltd.
- Stephens, H. C.

**Parquet Flooring:—**
- Bassant, H. W. & C.
- Damman & Washer & Co.
- McKenzie & Co.
- Turpin's Parquet Floor Co.

**Pavement, &c. Lights :—**
- British Luxfer Prism Syn. Ltd.
- Hayward Bros. & Eckstein
- St. Pancras Ironworks Co. Ltd.

**Plastering (Ornamental), &c**
- Jackson, G. & Sons
- Jones, F. & Co
- Plastic Decoration Co.
- Wright, Samuel, & Co.

**Plumbing Contractors :—**
- Greening Bros.

**Pumps Pumping Engines, &c:**
- Pulsometer Engineering Co.
- Stannah, J.
- Waygood, R. & Co. Ltd.
- Willcox, W. H. & Co. Ltd.

**Roof Signs:—**
- Hill & Smith

**Roofs (Zinc and Copper):—**
- Braby, F. & Co.
- Ewart & Son
- Treggon & Co.

**Roofs and Buildings (Iron):—**
- Clark, Bunnett, & Co. Ltd.
- Crittall Manufacturing Co.
- Croggon & Co. Ltd.
- Deane, Ransome, & Co.
- Harbrow, W.
- Hill & Smith
- Homan & Rodgers
- Horseley Co. Ltd.
- Main, A. & J. & Co.
- Morton, F. & Co. Ltd.
- St. Pancras Ironwork Co., Ltd.
- Shaw, M. T. & Co.
- Treggon & Co.

**Rope, Scaffold Cord &c. :—**
- Piggott Bros. & Co.

**Safes :—**
- Hobbs, Hart, & Co. Ltd.
- Price, George, Ltd.
- Whitfield, F. & Co.

**Sanitary Appliances :—**
- Andrew & Nanson
- Bowes, Scott, & Western, Ltd.
- Bradford, T. & Co.
- Claughton Bros. Ltd
- Crapper, T. & Co.
- Dent & Hellyer
- Doulton & Co. Ltd.
- Farmiloe, G. & Sons, Ltd.
- Hayward Bros. & Eckstein
- Nicholls & Clarke

**Sanitary Appliances (cont.):**
- Reid, A. W. & Co.
- Sessions & Sons, Ltd.
- Shanks & Co. Ltd.
- Stiff, J. & Sons
- Twyfords, Ltd.
- Winn, C. & Co.
- Young & Marten

**Sanitary Ware:—**
- Candy & Co. Ltd.
- Cliff, J. & Sons
- Collier, S. & E.
- Crapper, T. & Co.
- Dennis Henry
- Doulton & Co. Ltd.
- Farnley Iron Co. Ltd.
- Hartshill Brick & Tile Co.
- Knowles, J. & Co.
- Mathews, E. & Co.
- Richardson, A. & W. T.
- Rufford & Co.
- Sessions & Sons,
- Shanks & Co. Ltd.
- Stanley Bros. Ltd.
- Stiff, J. & Sons
- Twyfords, Ltd.

**Sash Lines, &c.:—**
- Austin
- Peck, W. E. & Co.
- Piggott Bros. & Co.

**Scagliola :—**
- Bellman, Ivey, & Carter

**Shutters :—**
- Bunnett, M. A. & Co.
- Francis & Co.
- Haskins, S. & Bros.

**Silicate Cotton :—**
- Jones, F. & Co.
- McNeill, F. & Co.

**Slates :—**
- Cliff, J. & Sons
- Coles, Shadbolt, & Co.
- Etridge, J. J. Jnr.
- Hooper & Ashby
- Mathews, E. & Co.
- Richardson, A. & W. T.
- Roberts, Adlard, & Co
- Sessions & Sons, Ltd.

**Stable, &c., Fittings :—**
- General Iron Foundry Co. Ltd.
- Hayward, Bros. & Eckstein
- Musgrave & Co. Ltd.
- St. Pancras Ironwork Co. Ltd

**Staircases, Verandahs, &c.:—**
- Clark Bunnett, & Co. Ltd.
- Hayward Bros. & Eckstein
- Jones, J. G. & Co.
- Main, A. & J. & Co.
- St. Pancras Ironwork Co. Ltd.

**Stair Treads :—**
- Eiffel Patent Stair Tread Co. Ld
- Ohlson, L. G.
- Safety Tread Syndicate, Ltd.

**Stone :—**
- Bath Stone Firms, Ltd.
- Freeman, W. & J. R.
- Ham Hill & Doulting Stone Co.
- Lilly, T. P.
- Lindley Quarries
- Morrison, J. & Son
- Nowell B. & Co
- Told, L.
- Weston Quarries

**Stone Breakers:—**
- Mason Bros.

**Stone Preservative :—**
- Bath Stone Firms, Ltd.
- Indestructible Paint Co.
- Szerelmey, N. C. & Co.

**Stone &c. Working Machinery**
- Coulter & Co.

**Stone Moulding & Sawing:—**
- Nightingale, B. E.

**Stoves, Ranges, Mantles, &c**
- Barnard, Bishop, & Barnard, Ltd
- Benham & Sons, Ltd.
- Carron Co.
- Coalbrookdale Co. Ltd.
- Constantine, J. & Son
- Doulton & Co. Ltd.
- Musgrave & Co. Ltd.
- Sessions, J. & Sons
- Shorland, E. H. & Bro.
- Walker, W. & Sons
- Young & Marten

**Structural Ironwork :—**
- Brownlie & Murray
- Buck & Hickman
- Crittall Manufacturing Co.
- Dawnay, A. D.
- Deane, Ransome, & Co.
- Dennett & Ingle
- Dorman Long & Co. Ltd.
- Drew Bear, Perks, & Co.
- Dunkerley, C. C. & Co.
- Homan & Rodgers
- Horseley Co. Ltd.
- Lindsay, Neal, & Co. Ltd.
- Lindsay, Wm. & Co.
- Measures Bros. Ltd.
- Moreland, R. & Sons, Ltd.
- Nicholls & Clarke
- St. Pancras Ironwork Co. Ltd.
- Shaw, M. T. & Co.

**Tanks, Cisterns, &c. —**
- Bellamy, J.
- Braby, F. & Co.
- Croggon & Co. Ltd.
- Lindsay, Neal, & Co.
- London Galvanised Iron Co.
- Shaw, M. T. & Co.
- Treggon & Co.

**Tarpaulins:—**
- Piggott Bros. & Co.

**Terra Cotta:—**
- Candy & Co. Ltd.
- Cliff, J. & Sons,
- Dennis, Henry
- Doulton & Co. Ltd.
- Stanley Bros. Ltd.
- Stiff, J. & Sons

**Tiles:—**
- Aylesford Pottery Co.
- Benham & Sons, Ltd.
- Boote, T. & R. Ltd.
- Collier, S. & E.
- Dennis, Henry
- Doulton & Co. Ltd.
- Dunton Green Brick & Tile Co.
- Hamblets, Ltd.
- Hartshill Brick & Tile Co.
- Madeley Wood Co.
- Maw & Co. Ltd.
- Minton, Hollins, & Co.
- Newton, J. & Sons
- Richardson, A. & W. T.
- Stanley, Bros. Ltd.
- Wedgwood, Josiah & Sons Ltd.
- Woolliscroft, G. & Son, Ltd.

**Timber:—**
- Churchill & Sim
- Forman, T.
- Hichisson, J. G. & Sons
- Hudson, B. J. & Sons
- Latchford, W. J.
- Non-Inflammable Wood Co. Ld
- Roper, Jno. L. Timber Co.
- Rowland Bros.
- Sandell, H. & Son
- Sessions & Sons, Ltd.
- Snewin, C. B. N.

**Traps (Cast Lead) :—**
- Dent & Hellyer

**Typewriters :—**
- Taylors' Typewriter Co.

**Underlining &c.:—**
- McNeill, F. & Co.
- Willesden Paper & Canvas Wk.

**Underslating :—**
- Willesden Paper & Canvas Wks

**Ventilating:—**
- Berry Campbell & Co.
- Blackman Ventilating Co. Ltd.
- Climax Ventilating & Heating Co. Ltd.
- Constantine, J. & Son
- Hart, Son, Peard, & Co.
- Hayward, Bros. & Eckstein
- Kite, C. & Co.
- Russell & Co
- Shorland, E. H. & Bro.

**Wall and Ceiling Coverings:**
- Anaglypta Co.
- Cordelova Co. Ltd.
- Jeffrey & Co.
- Nicholls & Clarke
- Walton, F. & Co. Ltd.
- Woollams, W. & Co.
- United Asbestos Co. Ltd.

**Wall Ties:—**
- Noyes & Co.
- Warrington Bond-Iron Syn. Ld

**Water Bars:—**
- Hill, J. & Co

**Waterproof Sheets:—**
- Piggott Bros. & Co.

**Window Frames and Sashes:**
- Brownlie & Murray
- Burt & Potts
- Crittall Manufacturing Co. Ltd
- Drew, Bear, Perks, & Co.
- General Iron Foundry Co. Ltd.
- Hayward Bros. & Eckstein
- Hodges, Rowland
- Hope, H. & Sons, Ltd.
- Horseley Co. Ltd.
- Lindsay, Neal, & Co. Ltd.
- St. Pancras IronworksCo.
- Wenham & Waters, Ltd.
- White & Sons

**Wine Bins (Iron):—**
- Farrow & Jackson.

**Wirework:—**
- Clark, John

**Wood Flooring and Paving:—**
- Acme Wood Flooring Co. Ltd.
- Bourke, T. J. & Co.
- Improved Wood Pavement Co.
- Lawford & Co.
- McKenzie & Co.
- D. Witt & Palmer

**Wood & Metal Preservative**
- Peters, Bartsch, & Co.

**Wood Working Machinery:—**
- Buck & Hickman
- Butler, Sydney
- Carron Co.
- Kirchner & Co.
- Reynolds, F. W. & Co.

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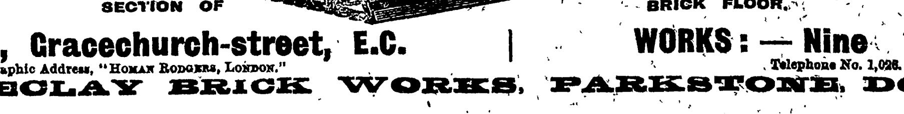
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FIRECLAY BRICK WORKS, PARKSTONE, DORSET.

# The "Builder" Advertisers.

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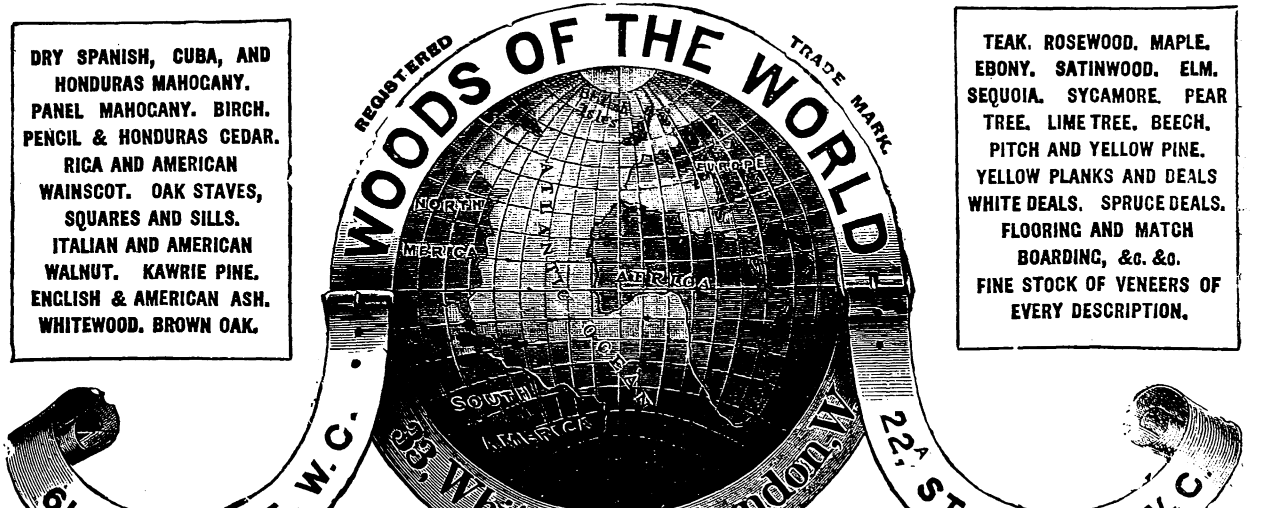

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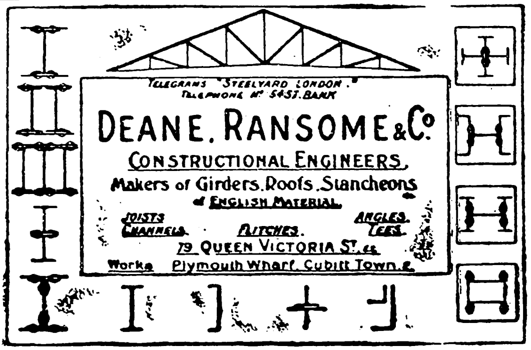
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## COMPETITION.

### THE VESTRY OF ST. MARTIN-IN-THE-FIELDS GIVE NOTICE

That they are desirous of obtaining DESIGNS for ELECTRIC LAMP STANDARDS and BRACKETS.

A premium of 10*l*. will be given for the design which the Vestry may consider the most suitable for the purpose, and a premium of 5*l*. for the second, the accepted designs to remain the property of the Vestry.

Full particulars may be obtained by applying to the Surveyor to the Vestry (Mr. GEORGE GREEN, C.E.), at the Town Hall.

The designs must be forwarded to the undersigned not later than the 8th day of JULY next.

By order,
G. W. MURNANE,
Clerk to the Vestry.

St. Martin's Town Hall,
Charing Cross-road, W.C.
June 20th, 1899.

## CONTRACTS.

### TO BUILDERS, CONTRACTORS, and OTHERS.

The London County Council is prepared to receive TENDERS for Works to be executed in connexion with the REMOVAL of the eight existing BOILERS, and the Breaking-up and Clearing away of their Seatings; also the CONSTRUCTION of FOUR new BOILER SEATINGS and an ECONOMISER CHAMBER, together with certain Flues, &c. at the Western Pumping Station, Grosvenor-road, Pimlico.

Persons desiring to submit Tenders may obtain uncoloured drawings and the specifications, bills of quantities, form of Tender, and other particulars at the Engineer's Department, County Hall, Spring-gardens, S.W. upon payment of the sum of 3*l*.

This amount will, after the Council or its Committee has come to a decision upon the Tenders received, but not before, be returned to the Tenderer, provided he shall have sent in a bonâ-fide Tender and not have withdrawn the same.

Tenders must be upon the official forms, and the printed instructions contained therein must be strictly complied with.

The contractors will be bound by the contract to pay to all workmen (except a reasonable number of legally bound apprentices) employed by them wages at rates not less, and to observe hours of labour not greater, than the rates and hours set out in the Council's list, and such rates of wages and hours of labour will be inserted in and form part of the contract by way of schedule.

Tenders are to be delivered at the County Hall in a sealed cover addressed to the Clerk of the London County Council, and marked "Tender for Boiler Seatings, Western Pumping Station."

No Tender will be received after TEN a.m. on TUESDAY, 11th JULY, 1899.

Any tender which does not comply with the printed instructions for Tender may be rejected.

The Council does not bind itself to accept the lowest or any Tender, and it will not accept the Tender of any person or firm who shall on any previous occasion have withdrawn a Tender after the same has been opened, unless the reasons for the withdrawal were satisfactory to the Council.

C. J. STEWART,
Clerk of the Council.

Spring Gardens, S.W.
June 20th, 1899.

### CONTRACTORS and Others.—The Stone

Court Chalk Land and Pier Company, Limited, are prepared to QUOTE for SUPPLYING, at their pier head or elsewhere. CHALK, SAND, GRAVEL, FLINTS, &c. in large or small quantities. —Apply to Mr. J. HEWITT, Manager, Stone-court, Greenhithe, Kent.

### CITY of SHEFFIELD.

The City Hospitals Committee of the Corporation invite TENDERS for the whole, or any portion, of the work required in the ERECTION of INFECTIOUS DISEASES HOSPITAL, at Lodge Moor, Sheffield, comprising Six Pavilions for Scarlet Fever Patients, Two Isolation Pavilions, One Receiving Pavilion, Administrative Buildings, Nurses and Maids' Homes, Water Tower, &c.

Also Tenders for HEATING APPARATUS and for COOKING APPARATUS, &c.

Drawings and specifications may be seen, and bills of quantities obtained, on application to the Architects, Messrs. FLOCKTON, GIBBS, & FLOCKTON, 15, St. James's-row, Sheffield, on and after WEDNESDAY, JUNE 7th.

Tenders, endorsed "Lodge Moor Hospital," to be sent in not later than JULY 3rd, 1899, addressed the Chairman and Committee, &c. Hospitals Committee, Town Hall, Sheffield.

The Committee do not bind themselves to accept the lowest or any Tender.

By order,
HENRY SAYER,
Town Clerk.

Town Clerk's Office,
Town Hall, Sheffield,
May 25th, 1899.

N.B.—The contract will comprise the fair wages and conditions of labour clause which has been adopted by the Sheffield Corporation, particulars of which will appear in the general conditions.

### BOROUGH of SOUTHWOLD.

NOTICE.

The Corporation invite TENDERS for CONSTRUCTING WORKS OF CLIFF PROTECTION and supplying the necessary plant, utensils, materials, labour, and other articles requisite for carrying out the work in accordance with the plans and specification, which can be inspected at the Office of the Borough Surveyor (Mr. F. BALL), Town Hall, Southwold.

The person whose Tender is accepted will be required to commence the works immediately upon the signing of the contract, and to complete the same to the entire satisfaction of the Borough Surveyor, under whose supervision the work will be carried out, within two months as to one section, and within four calendar months for the remainder of the work, from the date of the signing of the contract.

The contractor will be required to enter into a contract and bond for the due performance of the work, a copy of which contract can be inspected at my Office.

The Corporation do not bind themselves to accept the lowest or any Tender.

Tenders, endorsed "Tender *re* Cliff Protection," are to be addressed to me and delivered at my Office not later than FOUR o'clock in the afternoon on THURSDAY, the 13th day of JULY, 1899.

Dated this 20th day of June, 1899.

ERNEST R. COOPER,
Town Clerk.

Town Clerk's Office,
Southwold.

### BOROUGH of SHOREDITCH.

FLEMMING STREET DEPOT.

The Shoreditch Vestry invite TENDERS for the ERECTION and COMPLETION of WORKSHOPS, STORES, and OFFICES, at their Flemming-street Depot, and the BUILDING of an ADDITION at rear of No. 15, Little Essex-street, adjoining.

The plans, specification, and conditions of contract may be seen at the Office of the Surveyor to the Vestry, Town Hall, Old-street, E.C. and a bill of quantities, with form of Tender, obtained on payment of a deposit of 2*l*. which will be returned to those who send in a bonâ-fide Tender. Two approved securities in the sum of 250*l*. each must be provided, and Trade Union wages and hours observed, &c. and no sub-letting will be allowed.

Sealed Tenders, endorsed "Flemming-street Depot," to be delivered at my Office not later than NOON on WEDNESDAY, the 12th JULY, 1899.

The Vestry do not bind themselves to accept the lowest or any Tender.

By order,
(Signed) H. MANSFIELD ROBINSON,
Solicitor and Vestry Clerk.

Town Hall, Old-street, E.C.
June 19th, 1899.

### TO BUILDERS and CONTRACTORS.

The Erith School Board are prepared to receive TENDERS for the ERECTION of FOUR ADDITIONAL CLASS-ROOMS to the Picardy Schools, at Belvedere, Kent, to accommodate 240 additional children.

Drawings and specifications and conditions of contract may be inspected at the Offices of Messrs. FORD, SON, & BURROWS, Architects, 21, Aldermanbury, E.C. where copies of the bills of quantities can be obtained on payment of Two Guineas, which amount will be returned upon receipt of a bonâ-fide Tender.

The Board expressly stipulate, by the conditions of contract that the contractor shall not sublet any portion of the work under a penalty of 25*l*. in each case, and that the standard rates of wages shall be paid to all workmen, and the recognised hours of labour in the district observed, also under a penalty of 10*l*. in each case.

The Board do not bind themselves to accept the lowest or any Tender unless approved.

Tenders to be delivered at the Architect's Offices on the 10th JULY, 1899, at TWELVE o'clock noon.

### SOUTH MIMS RURAL DISTRICT COUNCIL.

POTTERS BAR SEWERAGE AND OUTFALL WORKS.
TO SEWER CONTRACTORS AND OTHERS.

Notice is hereby given that the Council are prepared to receive TENDERS for the CONSTRUCTION of PIPE SEWERS, together with Manholes, Ventilating Shafts, Screening Chambers, and Outfall and other Works in connexion therewith.

The drawings, specification, and conditions of contract, may be seen on application to Mr. W. H. MANSBRIDGE, the Surveyor to the Council, at his Office, 40, High-street, Barnet, on and after MONDAY, JUNE 19th.

Tenders, sealed and endorsed, "Potters Bar Sewerage," to be addressed and delivered to me not later than TUESDAY, JULY 11th, 1899.

G. D. BYFIELD,
Clerk to the Council.

No. 16, High-street, Barnet,
June 16th, 1899.

[*See also page* vi.

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CORRUGATED IRON. ROOFING. IRON DOORS, &c.

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From 3in. to 20in. deep.

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EVERY DESCRIPTION OF BUILDERS' IRONWORK.

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*Books of Sections, Prices, &c. on application.*

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JOISTS
STEEL & IRON
ANGLES
TEES
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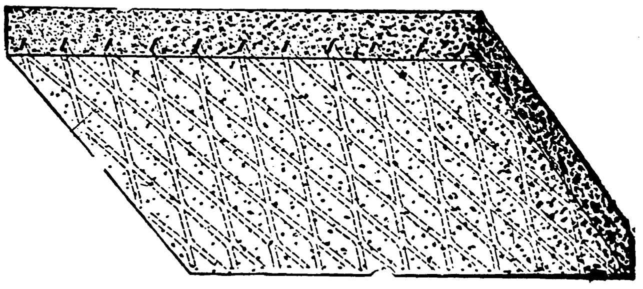
CURVED FLOOR PLATES
RIVETTED GIRDERS & ROOFS
MADE PROMPTLY FROM LONDON STOCK
BLACK & GALVANIZED
IRON DOORS & SASHES.
TELEPHONE No 1576.
TELEGRAMS "BEARBIND"
71A QUEEN VICTORIA ST. LONDON. E.C.

# THE NEW EXPANDED METAL.

**TENSION BOND FOR CONCRETE.**



**Increase of strength from 6 to 11 times.**

*Send for Catalogue and Price List, also copy of Special Report by an eminent firm of Engineers on the use of Expanded Metal in Concrete.*

FOR

FIREPROOF FLOORS
AND ROOFS.
(Large or Small Spans.)
SOLID AND HOLLOW
PARTITIONS.
2 inches THICK.
SUSPENDED
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And in place of Wirework generally.

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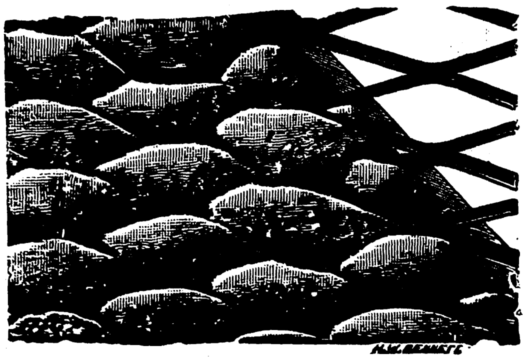

**In Stock Sizes or to order.**

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WORKS—WEST HARTLEPOOL.

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# IRON AND STEEL

**BARS, ANGLES, TEES, PLATES, SHEETS, &c.**

**LONDON STOCK, 3,000 TONS.**

BEST QUALITY. LOWEST PRICES. FREE DELIVERY. *Write for Section List.*

**BUCK and HICKMAN, 281, Whitechapel Road, E.**

Telephone Nos. 844 and 845 Avenue. Telegrams, "Roebuck, London."

---

**CONTRACTS** (*continued from p.* iv.)

## TYNEMOUTH CORPORATION

WATER.
FONT SUPPLY, 1899. MOORHOUSES RESERVOIR.
CONTRACT No. 1.

The Tynemouth Corporation are prepared to receive TENDERS from competent persons willing to enter into a contract for the CONSTRUCTION of a COVERED SERVICE RESERVOIR to hold 3,000,000 gallons at Moorhouses, in the Borough of Tynemouth.

The drawings may be seen at the Office of the Engineer, Mr. JAMES MANSERGH, 5, Victoria-street, Westminster, or at the Office of the Borough Surveyor, Howard-street, North Shields, on and after MONDAY, the 19th inst.

Specifications and bills of quantities, &c. may be obtained at the same time and places on the deposit of cheque or bank note for 5*l.* which will be returned after the receipt of a boná-fide Tender with the bills, &c. fully priced out.

Early application for particulars is desirable, as only a limited number will be given out.

Sealed Tenders are to be delivered at my Office, at or before NOON of MONDAY, the 10th day of JULY next, addressed to me and endorsed "Tender for Moorhouses Reservoir. Contract No. 1."

The Corporation do not bind themselves to accept the lowest or any Tender.

HORATIO A. ADAMSON,
Town Clerk.

Town Clerk's Office,
Tynemouth,
June 12th, 1899.

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## WESTMINSTER.

SEWER WORKS.
WOOD-PAVING WORKS.

The Westminster Vestry are prepared to receive TENDERS for the EXECUTION of SEWER WORKS and WOOD-PAVING WORKS within their jurisdiction.

The specification and form of Tender in each case may be obtained at the Office of the Surveyor to the Vestry, Mr. G. R. W. WHEELER, between the hours of TEN a.m. and FIVE p.m. (Saturdays, TEN till TWO), upon the deposit of Five Pounds and Two Pounds respectively, which will be returned to those who submit boná-fide Tenders.

Tenders must be made upon the printed forms only, and in strict accordance with the instructions therein contained, and must be delivered to me here, sealed in the envelope supplied, not later than TWO o'clock on WEDNESDAY, JULY 5th, on which day, at FOUR o'clock, parties Tendering may be in attendance.

The contract-deeds will be prepared at the expense of the Vestry, and the respective contractors will be required, together with two approved sureties, to enter into a bond, respectively in the sum of 1,000*l.* and 500*l.* for the due performance of the contracts.

The Vestry do not bind themselves to accept the lowest or any Tender.

By order,
J. E. SMITH,
Vestry Clerk.

The Town Hall,
Caxton-street, Westminster,
June 14th, 1899.

---

## CITY and COUNTY of CANTERBURY.

TO BRIDGE BUILDERS.
STEEL-WORK CONTRACT.

The Canterbury Corporation invite TENDERS for the SUPPLY of the STEEL-WORK—consisting of two Steel Girders 56 feet span (lattice construction) and Steel Trough decking—required for the construction of a new bridge over the River Stour at Canterbury.

Copy plan, sections, specification, and conditions may be obtained on application to the City Surveyor (Mr. A. H. CAMPBELL, A.M.I.C.E.), Tudor Chambers, Canterbury, on deposit of Two Guineas, returnable on receipt of a boná-fide Tender.

Tenders, on prepared forms, to be lodged with me, the undersigned, not later than MONDAY, the 3rd JULY next, at TEN a.m.

The Corporation do not bind themselves to accept the lowest or any Tender.

HENRY FIELDING,
Town Clerk.

Town Clerk's Office,
No. 15, Burgate-street, Canterbury,
June 19th, 1899.

---

## CONTRACT for the ERECTION of

VILLAS at WILLESDEN GREEN.

Messrs. ALLEN & HOAR invite TENDERS for the ERECTION of three pairs of SEMI-DETACHED VILLAS, Cranhurst-road, Willesden Green. Plans and specifications can be obtained at the Offices of the Surveyors. Tenders to be sent in not later than FRIDAY MORNING, JUNE 30th.—ALLEN & HOAR, Surveyors, Inglewood House, West Hampstead.

[*See also page* viii.

---

**LAUNDRY, BATH, and COOKING**
Engineering for Asylums, Workhouses, Hospitals, and other Establishments.

**THOMAS BRADFORD & CO**
MANCHESTER, LONDON, LIVERPOOL.
New Illustrated Catalogues, and Plans, Specifications and Estimates on application.

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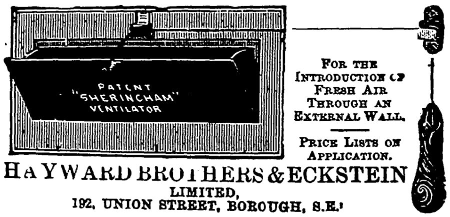

FOR THE INTRODUCTION OF FRESH AIR THROUGH AN EXTERNAL WALL.

PRICE LISTS ON APPLICATION.

HAYWARD BROTHERS & ECKSTEIN
LIMITED,
192, UNION STREET, BOROUGH, S.E.

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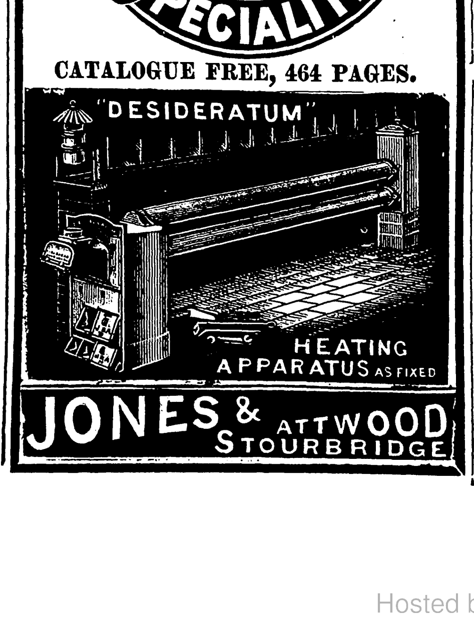

CATALOGUE FREE, 464 PAGES.

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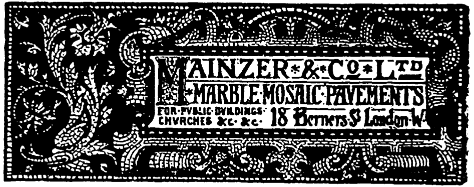
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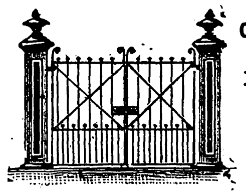
**ENTRANCE, CARRIAGE, AND PARK GATES.**

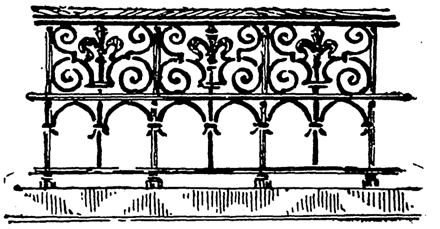
Of Elegant Designs and Superior Construction.



Ornamental Wrought-Iron Work and Art Metal Work.

**FIELD GATES. CONTINUOUS IRON FENCES.**

ART METAL WORK.



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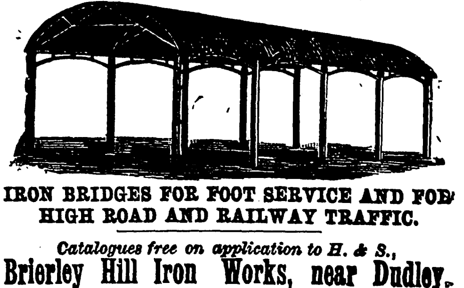
*SPECIAL DESIGNS and ESTIMATES on receipt of requirements.*

**GALVANISED IRON SHEDS, STORES, ROOFS.**



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*Catalogues free on application to H. & S.,*
**Brierley Hill Iron Works, near Dudley.**
118, QUEEN VICTORIA ST., LONDON, E.C.
47, DAWSON STREET, DUBLIN.
*REPLIES: REFER TO THIS ADVERTISEMENT.*

**BENHAM & SONS Limited.**

CHIMNEY-PIECES. STOVES. TILES.
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LAUNDRIES. LIFTS. ENGINEERING.
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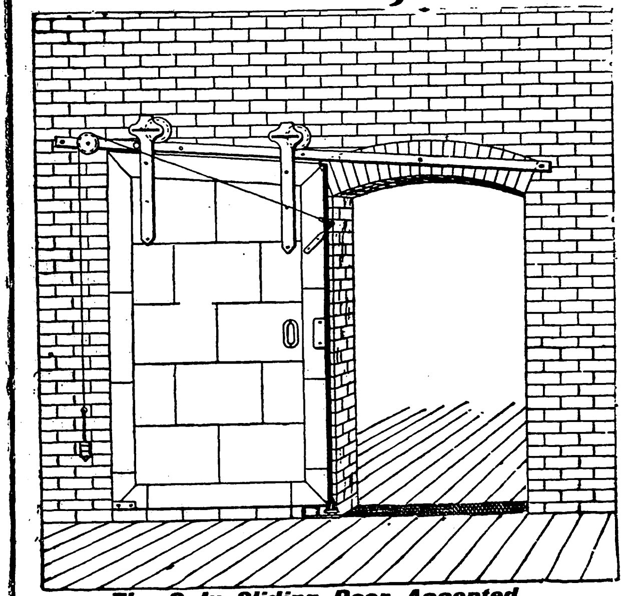


*The Only Sliding Door Accepted.*

**14, VICTORIA STREET, LONDON, and at MANCHESTER, &c., &c.**

*Sole Manufacturers of the Patent Self-Closing*

**ARMOURED FIREPROOF DOORS.**

*Officially endorsed by the Fire Offices Committee.*

LIGHTER AND CHEAPER THAN IRON DOORS.
WILL NOT WARP OR TWIST OUT OF SHAPE.
PROVED IN MANY ACTUAL FIRES.

**FIRE AT THE WORKS OF THE ANACLYPTA CO., DARWEN, LANCASHIRE.**

The door we fitted in these works, although subjected to a heat intense enough to melt brass taps and fittings near it, withstood the heat perfectly, and can now be inspected at our works in Manchester, fit for duty. The metal sheets have expanded without becoming detached, whilst the wood is simply charred to a depth of about ⅛ of an inch.

Full Particulars and Estimates Free.

**MINERAL RED,** A PURE METALLIC AND SILICA PAINT.

Ground stiff in oil, or mixed ready for use, **28s. cwt.**

Very strong body.
Large covering power.
Perfect preservative of iron.
Equally effective on wood, stone, cement, or brick.
Will stand tropical climates.
Used by H.M. Government at Home and in India.

**HOUSE PAINT,** A VERY SUPERIOR PAINT, made on a basis of the very finest white lead, with special materials and by a SPECIAL PROCESS.

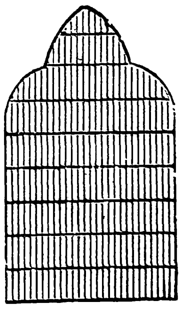
Mixed ready for use, **30s. cwt.**

None to equal it.
Impossible to equal it by usual process of manufacture.
White, or tinted to any colour, for inside or outside use.

MANUFACTURED ONLY BY

**T. & W. FARMILOE, Ltd.,**

HEAD OFFICES:
ROCHESTER ROW, WESTMINSTER, LONDON, S.W.
Manufacturers of
WHITE LEAD, COLOURS, VARNISHES, STAINS, PUTTY, CONCENTRATED SIZE.



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BLOOMSBURY BRASS AND WIRE WORKS
46 & 47, HIGH STREET,
NEW OXFORD STREET, W.C.
Manufacturer of every description useful and ornamental
**WIREWORK**
SIEVES, LIME SCREENS, DESK RAILS, LIFT ENCLOSURES, BRASS FENDERS, &c.

Special Low Quotations for Wirework for the Protection of Windows and Skylights. Price Lists and Illustrations post-free on application. Estab. 1855.
Tele. Address: "Pheasantry, London."

BEST
**PORTLAND CEMENT.**
For Delivery during 1899.
Messrs. FAIJA'S Test, over 400 lb. per square inch for seven days.
For prices, delivered anywhere in the U. K. apply to
**L. SOMMERFELD,**
2, Fowkes-buildings, Great Tower-street,
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**WALL TIES.**

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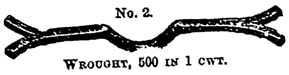

WROUGHT, 500 IN 1 CWT.

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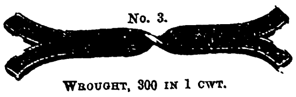
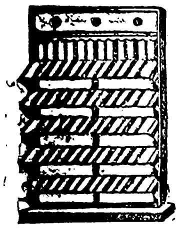


WROUGHT, 300 IN 1 CWT.

Illustrations, Prices, & Number to the Cwt. of eleven different patterns on application to
**NOYES & CO**
76, Old St.
LONDON.



The "HELIOSCENE" Blind.

**SPECIALLY SUITABLE FOR HOTELS,**

And is the only Outside Blind combining free view with perfect ventilation.

MESSRS.

**LOWTHER & CO.,**

The original Patentees, Now incorporated with the above.

THE

**KENSINGTON BLIND WORKS, LONDON, W.**

**Manufacturers of Inside and Outside**

**WINDOW BLINDS**

**OF EVERY DESCRIPTION**

**At the Lowest Possible Prices for Best Quality Work.**

Estimates and Designs Free on Application.

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A J S WINDOW BLINDS

*Telegrams*: "BLINDS, LONDON."

**Factory, BRIDGE ROAD, and BLACK'S ROAD, Hammersmith, W.**

**SPECIALITY, Blinds for Offices and Banks.**

Largest exclusive Manufacturers in the United Kingdom.

**CONTRACTS** (*continued from p. vi.*)

## COUNTY BOROUGH of BRIGHTON.

TO CONTRACTORS AND OTHERS.

Notice is hereby given that the Council of the said County Borough will receive TENDERS from such persons as may be willing to enter into a contract for the SUPPLY of 4,000 Tons of GRANITE SPALLS or other Hard Stone suitable for breaking up for Road Macadam.

The specifications and forms of Tender may be obtained on application at the Office of the Borough Engineer and Surveyor, Mr. FRANCIS J. C. MAY, Memb.Inst.C.E. at the Town Hall, Brighton.

Sealed Tenders, addressed to me, and endorsed "Tender for Granite Spalls," must be left at my Office, at the Town Hall, before TEN o'clock in the forenoon on FRIDAY, the 30th day of JUNE, 1899.

Power is reserved to reject the lowest or any Tender.

FRANCIS J. TILLSTONE,
Town Clerk.

Town Hall, Brighton,
June 15th, 1899.

## COUNTY BOROUGH of BRIGHTON.

TO CONTRACTORS AND OTHERS.

Notice is hereby given that the Council of the said County Borough will receive TENDERS from such persons as may be willing to enter into a contract for the CONSTRUCTION of CONCRETE GROYNES and SEA-WALLING on the Madeira-road and Foreshore, Brighton.

The plans may be seen, and the specifications and forms of Tender may be obtained on application, at the Office of the Borough Engineer and Surveyor, Mr. FRANCIS J. C. MAY, M.Inst.C.E. F.S.I. at the Town Hall, Brighton.

Sealed Tenders, addressed to me, and endorsed "Tender for Construction of Groynes, &c." must be left at my Office, at the Town Hall, before TEN o'clock in the forenoon on FRIDAY, the FOURTEENTH day of JULY, 1899.

Power is reserved to reject the lowest or any Tender.

FRANCIS J. TILLSTONE,
Town Clerk.

Town Hall, Brighton,
June 19th, 1899.

## COUNTY BOROUGH of BRIGHTON.

MARINE PARADE FORESHORE.
CONCRETE GROYNES AND WALLING.

Contractors desirous of tendering for the above work can obtain BILLS OF QUANTITIES upon application to the undersigned.

SIMEON HUNT, 129, Queen's-road, Brighton.
E. WALLIS LONG, 54, Old Steine, Brighton.

## COUNTY BOROUGH of DERBY.

The Corporation are prepared to receive TENDERS from Builders and others for the ERECTION of the NEW DEPOT, Nottingham-road.

The contract will be divided into two parts—"Substructure" and "Superstructure"—and a separate Tender will be required for each part.

Plans can be seen, and specifications and bills of quantities obtained, on application at the office of Mr. JOHN WARD, Borough Engineer; Babington-lane, Derby.

A deposit of One Guinea must be made for each set of quantities, and same will be returned on receipt of a bonâ-fide Tender, with the quantities fully priced out.

Tenders for each part, endorsed "New Depot, Tender for Substructure" or "Superstructure," to be forwarded under cover, in envelopes provided for that purpose, to the undersigned, not later than TWELVE noon on THURSDAY, JULY 6th next.

The Corporation do not bind themselves to accept the lowest or any Tender, nor to accept the same contractor for both parts.

H. F. GADSBY,
Town Clerk.

Town Clerk's Office,
Town Hall, Derby,
June 13th, 1899.

## SOUTHGATE URBAN DISTRICT COUNCIL.

TO SEWER CONTRACTORS.

TENDERS are invited by the Council for the CONSTRUCTION of a SEWER from Blind-lane to Barrowell Green within the Council's District.

The sewer will consist of stoneware pipes, varying in size from 21 inches to 9 inches, with a cast iron syphon, manholes, flushing chamber, &c.

Plans and specifications may be seen on and after MONDAY next, the 26th inst. on application to the Council's Surveyor, Mr. C. G. LAWSON, from whom copies of the specifications, quantities, and forms of Tender may be obtained on depositing a Bank of England Note for 5*l*. which will be returned on receipt of a bonâ-fide Tender.

Tenders, endorsed "Sewer," must reach the undersigned not later than TUESDAY, the 4th day of JULY, 1899.

The Council do not undertake to accept the lowest or any Tender.

W. M. ELLENOR,
Clerk.

Council Offices, Palmer's Green, N.
June 19th, 1899.

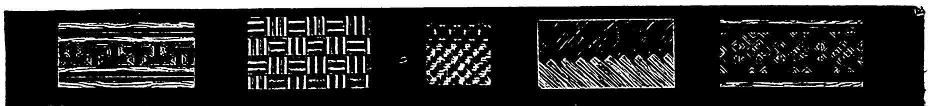
[*See also page* x.

**COPPER ROOFING**

**As Economical as Lead.**

**For Flats, Towers, Domes, Flèches, Mansards,**
—&c.—

**EWART & SON,**
**LONDON.**



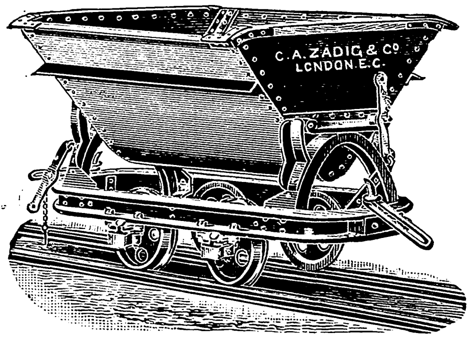
**CABINET JOINERY PARQUETRY & WOOD BLOCK FLOORING**

**McKENZIE & CO.**
5 AUGUSTUS STREET
REGENTS PARK N.W.

TELEPHONE: 5546 GERRARD:
TELEGRAPHIC ADDRESS: "FLOORINGS LONDON"

ILLUSTRATED SHEET & PRICE LIST SENT FREE ON APPLICATION

**CONTRACTORS**


C. A. ZADIG & Co LONDON. E.C.

and others are requested to note that we keep **hundreds of tons** of Railway Material in our **London** Stock. Any quantity of Portable Railway, Points and Crossings, Turntables, Tipping Wagons, can be **despatched on receipt of letter or telegram**, while Locos. and Contractors' Wagons at short notice. Best material and workmanship. Trial solicited.

**SALE OR HIRE. CASH OR EASY TERMS.**

**Visit our Stand at the Greater Britain Exhibition, Earl's Court, S.W.**

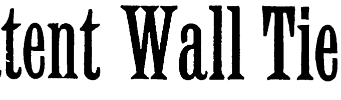
Estimates and Illustrated Catalogues post free application to

**C. A. ZADIG & CO.**

**11, Queen Victoria St., London, E.C.**

Telegrams: "Zadig, London."

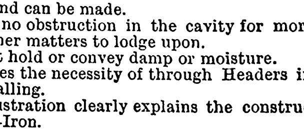
**Patent Wall Ties.**



No. 1. CAVITY TIE.

1. The greatest possible strength with the least possible material.
2. Cheapness. Its construction shows that no cheaper Bond can be made.
3. Forms no obstruction in the cavity for mortar and other matters to lodge upon.
4. Cannot hold or convey damp or moisture.
5. Obviates the necessity of through Headers in Faced Walling.

The illustration clearly explains the construction of the Bond-Iron.



No. 2. SOLID TIE.

Greater Economy and Stability in Faced Walling.
Two straight and plumb faces to brick-length work.
In 12's wire for stock or other fine jointed facing.
In 10's wire for common work and outside Walling.
Coated with special protective against oxidation.
ANY LENGTH OR STRENGTH REQUIRED.

**THE "WARRINGTON" BOND-IRON SYNDICATE, LTD.,**

*Works and Registered Office*:—
**Dorset Street, Clowes Street, West Gorton, Manchester.**

PATENT

**"PERFECTION"**

NO PUTTY, NO PAINT, IMPERISHABLE

**ROOF GLAZING**

GUARANTEED WATERTIGHT.

**HELLIWELL**

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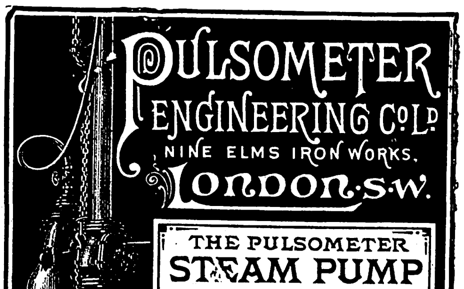
LONDON: 9, VICTORIA STREET, S.W.



PULSOMETER ENGINEERING Co. LD
NINE ELMS IRON WORKS.
LONDON. S.W.

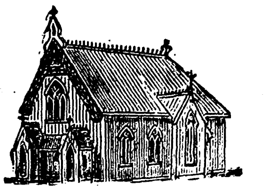
THE PULSOMETER
STEAM PUMP
IS SPECIALLY SUITABLE, AMONGST OTHER PURPOSES, FOR RAISING MUDDY & GRITTY WATER, & FOR USE IN DIFFICULT OPERATIONS OF ALL KINDS.

A LARGE STOCK KEPT OF PULSOMETERS, DIRECT ACTING PUMPS, SINKING PUMPS, BOILERS, STEAM HOSE, ETC.

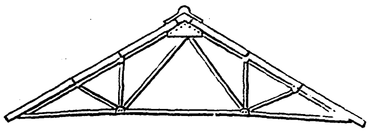
PUMPING MACHINERY
FOR EVERY POSSIBLE SERVICE.

# HARBROW'S IRON BUILDINGS

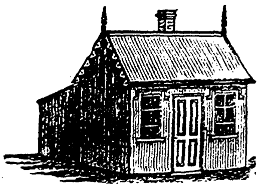
**And ROOFING of IRON and WOOD CONSTRUCTION. All classes of JOINERY WORK.**



*Telegraphic Address:*
"ECONOMICAL,
LONDON."



*Telephone No.:*
"17, HOP."



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WANTED for cash, 10 or 12 h.p. Portable ENGINE; 7 ft. 6 in. or 8 ft. MORTAR MILL; STONE CRUSHER, and STEAM BARROW HOIST.—Send full particulars, price, condition, where to be seen, &c. ENGINE, care of Knight & Co. 12, Abchurch-lane, E.C.

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## WOOD WORKING MACHINERY

Of all kinds, and with

EVERY RECENT IMPROVEMENT,

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A LARGE STOCK FINISHED and READY FOR IMMEDIATE DELIVERY.

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MORTAR MILLS, 5 ft. to 9 ft. pans.

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PUMPS, LOCO, STEAM CRANES.

PORTABLE, HORIZONTAL, and VERTICAL ENGINES and BOILERS, 2 to 30 h.p.

EVERY DESCRIPTION OF BUILDERS', CONTRACTORS', and SAW MILL MACHINERY, New and Secondhand.

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HIGH CLASS ENGINES, MORTAR MILLS, HOISTS, BRICK CRUSHERS, &c.

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REPAIRS AND CASTINGS.

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FOR DISPOSAL.--One Planing, Tonguing, and Grooving Machine, to take 12 in. by 5 in. by Powis & Co.; One Double Deal Frame, capable of taking deals 16 in. by 4 in. by Powis & Co.; One Trying-up and Planing Machine by Robinson's, to take from ⅛-in. to 12 in. thick by 12 ft. long by 2 ft. wide; one each Right and Left Hand Modern Saw Benches, with Table 6 ft. by 3 ft. by Marshall's; One Self-Acting Modern Saw-Bench, nearly new, 8 ft. by 3 ft. with rope gear. All in excellent condition. Can be seen by appointment. — Address, MARSHALL, SONS, & CO. Ltd. Britannia Ironworks, Gainsborough.

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FOR SALE, 2 TRYING-UP MACHINES by Furness. Must be cleared. What offers?—To be seen at No. 39, Hartham-road, West Holloway, N.

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MORTAR MILLS.—All Sizes in stock, of latest improved types, FOR SALE OR HIRE.

HENRY SYKES, Ltd. { 66, Bankside, London, S.E.
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ENGINES (portable), 4 to 25-horse, ready, SALE or HIRE. Mortar Mills, 6 to 8 feet, either fixtures or on wheels. Three-ton Scotchman, Builder Hoists, Saw Benches, Planing Machine, Deal Frame, &c.—Address, WILLSHER, Forest Hill, S.E

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FOR SALE, cheap, TWO PORTE COCHERES (Veraudalis), in wrought-iron and glass to special designs (made for Hotel Metropole Co. Ltd. Blackpool, in liquidation), suitable for an hotel, theatre, public hall, or large private residence. One 14 ft. 2½ in. high to top of column supporting girder which carries the top, by 15 ft. 10 in. wide from centre to centre of column, and 21 ft. wide between gutters, with 8 ft. projection, supported on cast-iron columns; one ditto, 8 ft. high to top side of brackets, by 7 ft. 5½ in. wide, with 6 ft. 3½ in. projection, on overhanging brackets. —Prices, with illustrations, on application to GEORGE WRAGGE, Wardry Works, Salford, Manchester.

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## THE BUILDERS' MATERIAL SUPPLY STORES,

92, BERWICK-STREET, OXFORD-STREET, W.
12, HOPKINS-STREET, BROAD-STREET, GOLDEN-SQ. W. and

**PHŒNIX WHARF, REDHILL-ST., REGENT'S PARK, N.W.**

SUPPLY every description of MATERIALS for Bricklayers, Plasterers, Slaters, Plumbers, and Sanitary Engineers. Contractors for cartage of all kinds. Scaffolding and Miscellaneous Plant on hire or for sale. Special quotations per return of post. Enquiries and all orders large or small, will receive immediate attention.

R. SHOULER, Manager.

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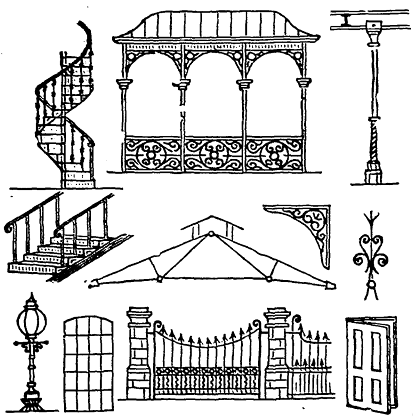
**ST. PANCRAS IRONWORK COY. LTD.**



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ST PANCRAS ROAD, LONDON, N.W

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THREE-TON LOCO' CRANE, by Smith Rodley, FOR SALE. 22 feet jib, 14 feet radius. Can be seen at work 16, Cheapside.—W. BRASS, 13, Abchurch-lane, E.C.

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IRON DOORS and CRANE.—FOR SALE, several IRON Party Wall and Lift Enclosure DOORS; and also HYDRAULIC CRANE, by Waygood & Co.; almost new.—Apply, FOREMAN of WORKS, 17, Rupert-street, W. where the doors and crane may be seen; or MARCHANT & HIRST, 136, Highgate-rd. N.W.

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GLAZED BRICKS (large quantity), irregular in colour and slightly chipped, suitable for underground work and sewers.—Box 132, Office of "The Builder."

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THAMES BALLAST for CONCRETE.

SCREENED THAMES SAND.

SCREENED THAMES HOGGING. THAMES SHINGLE.

In barge or truck.

S. WILLIAMS & SONS, Ltd. { 130, Belvedere-road, Lambeth.

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*Refer also to* "TOO LATE" *column, page* xxiv.

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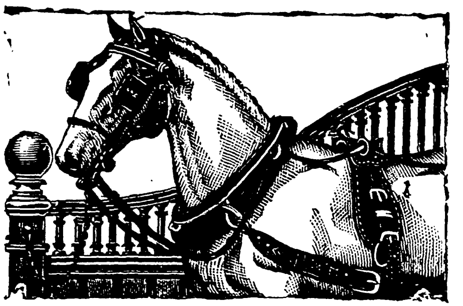
## MUSGRAVE'S PATENT STABLE FITTINGS



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MUSGRAVE & CO. LTD. have recently completed the ENTIRE FITTING UP OF THE STABLES at the Palace of Miramar, San Sebastian, for H.M. THE QUEEN REGENT OF SPAIN. Also the ENTIRE FITTING UP OF THE NEW STABLES at Friedrichshof Castle, Cronberg, for H.I.M. EMPRESS FREDERICK OF GERMANY.

**MUSGRAVE & CO., Ltd.**

Showrooms: 97, New Bond-street, London, W.; 40, Deansgate, Manchester; 240, Rue de Rivoli, Paris.

Manufactories: St. Ann's Ironworks, and Cromac Foundry, Belfast

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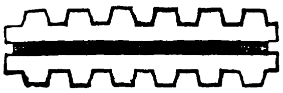
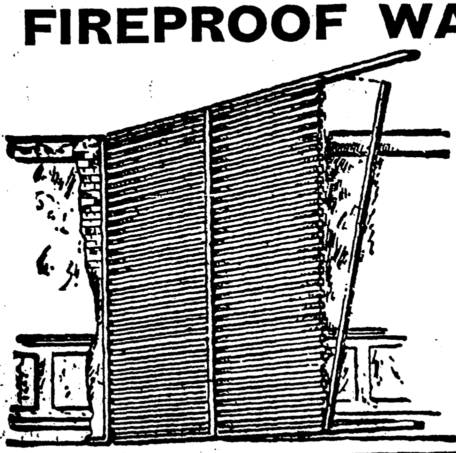
"CUNNAH-WRIGHT" SYSTEM OF

## FIREPROOF WALLS AND FLOORS.



SECTION OF DOVETAILED LATH.



FIRE, SOUND, DAMP, AND VERMIN PROOF.

**Used by H.M. Government, Admiralty, War Office, India Office, H.M. Office of Works, L.C.C., &c., &c.**

ECONOMY in SPACE, COST, TIME, &c.

* THE FIREPROOF PARTITION SYNDICATE, Ltd.
25, Billiter Buildings, Billiter Street, London, E.C.

***Specified for by the Leading Architects.***

APPLY CATALOGUE AND QUOTATIONS AS ABOVE.

SECTION OF SHEET.

**PARKER'S JOINERY & CABINET Co. Ltd.**

HAVE NOW THE FINEST PLANT IN THE UNITED KINGDOM FOR THE PRODUCTION OF HIGH-CLASS JOINERY, ALL FIRST CLASS WORKMANSHIP.

**ESTIMATES GIVEN for SPECIAL JOINERY in HARD and SOFT WOODS.**

**London Offices—292, HIGH HOLBORN, E.C.** **Works—CONYBERE STREET, BIRMINGHAM.**
*Telegraphic Address—"Joinery, Birmingham."* *National Telephone*, 478, *Birmingham.*

**SPECIAL PRICE LIST of Plain, Cheap, ENGLISH-MADE JOINERY, prices of which will favourably compare with Goods of Foreign make.**

Prices for DOORS in not less than 200 lots.

| | | | |
|---|---|---|---|
| 1¼ | 6 ft. 4 in. by 2 ft. 4 in. Doors square | ...4/- | If Moulded 9d. per side extra. |
| 1¼ | 6 ft. 6 in. by 2 ft. 6 in. " | ...4/2 | |
| 1½ | 6 ft. 4 in. by 2 ft. 4 in. " | ...4/4 | |
| 1½ | 6 ft. 6 in. by 2 ft. 6 in. " | ...4/6 | |
| 1½ | 6 ft. 8 in. by 2 ft. 8 in. " | ...4/10 | |

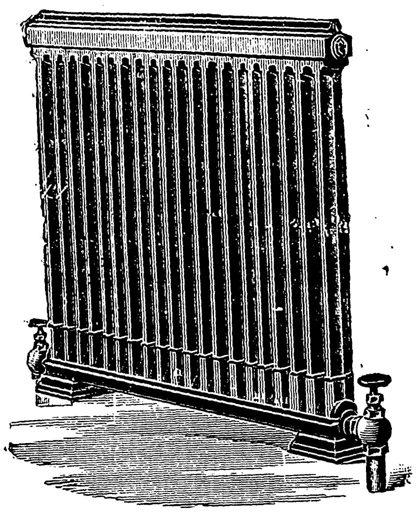
DOORS O. G. MOULDED ON THE SOLID BOTH SIDES in above quantities and sizes, **2d.** per door extra.

Prices for 1¾ in. SASHES and FRAMES.
**5d.** per ft. super. extreme measure.

| | | |
|---|---|---|
| 5 ft. 11 in. by 3 ft. 10 in. | 5 ft. 5 in. by 3 ft. 4 in. | Sizes given are under head to under sill, and between pulley stiles. Fitted with deal sills and iron axle pulleys. |
| 5 ft. 11 in. by 3 ft. 7 in. | 5 ft. 5 in. by 2 ft. 10 in. | |
| 5 ft. 11 in. by 3 ft. 4 in. | 5 ft. 2 in. by 3 ft. 1 in. | |
| 5 ft. 8 in. by 3 ft. 7 in. | 4 ft. 11 in. by 2 ft. 10 in. | |
| 5 ft. 8 in. by 3 ft. 4 in. | | |

**NET PRICES AT WORKS, BIRMINGHAM.**

**THE LARGEST MANUFACTURERS OF WOOD CHIMNEY-PIECES IN THE KINGDOM.**
**Established over 20 years.**



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**RADIATOR**

**IN THE MARKET,**

**For Hot-Water or Steam.**

PERFECT JOINT, viz., RIGHT AND LEFT SCREWED NIPPLE.

**THE THAMES BANK IRON CO., UPPER GROUND ST., S.E.,**
*Manufacturers of HEATING APPARATUS of every description.*
**THE OLDEST HOUSE IN THE TRADE.** **Illustrated Catalogue, 1s.**
PRICE LISTS FREE.

## CONTRACTS (*continued from p.* viii.).

### LEYTON URBAN DISTRICT COUNCIL.

TO CONTRACTORS AND OTHERS.
PRIVATE STREET WORKS.

The Leyton Urban District Council invite TENDERS for MAKING-UP, PAVING, and KERBING certain PRIVATE STREETS within their District. The paths are to be paved with Patent Indurated Stone and Patent Adamant Stone respectively.

Specifications, quantities, and form of Tender may be obtained, on and after MONDAY, the 26th inst. of Mr. WILLIAM DAWSON, M.Inst.C.E. the Council's Surveyor, at his Office, Town Hall, Leyton, between the hours of TEN and FOUR (Saturdays, TEN and TWELVE) upon payment of One Guinea, to be returned on receipt of bonâ-fide Tender.

Sealed Tenders, in special endorsed envelopes supplied with the forms, accompanied by a 10*l.* Bank of England note, to be enclosed with the Tender and to be forfeited if the Tender is withdrawn before the contract is signed, must be delivered at the Meeting of the Council to be held on TUESDAY, the 4th JULY, at the Town Hall, Leyton, at SEVEN o'clock p.m.

The Council does not bind itself to accept the lowest or any Tender.

Sureties will be required for the due performance of the Contract.

R. VINCENT,
Clerk to the Council.

Town Hall, Leyton,
June 17th, 1899.

---

### CHIPPING NORTON CORPORATION.

WATER WORKS EXTENSION.

The Town Council of the Borough of Chipping Norton, are prepared to receive TENDERS for the EXECUTION of certain works, partly within and partly without the said Borough, comprising the SUPPLY and LAYING of about 2,700 yards of CAST-IRON PIPES, principally 4-inch, and 600 yards of small WROUGHT-IRON PIPES, with Valves and special Castings, Stoneware Pipe Drains, the Erection of a small Pumping House, with Wheel Race, Culvert Tanks, &c.

Plans may be seen, and other information obtained, at the Town Clerk's Offices, Chipping Norton, where also copies of the specification, approximate quantities, and form of Tender will be supplied on payment of Two Guineas, which sum will be returned on receipt of a bonâ-fide Tender.

Sealed Tenders, endorsed "Water Works Extension," must be delivered to my Offices on or before the 17th day of JULY, 1899.

Contractors Tendering must do so at their own expense, and all Tenders will be subject to the approval of the Local Government Board being obtained for the intended works.

The lowest or any Tender will not in any case necessarily be accepted.

THOS. MACE,
Town Clerk.

Town Clerk's Office, Chipping Norton.
June 17th, 1899.

---

### BOROUGH of LOWESTOFT.

ELECTRIC LIGHTING.
ELECTRIC LIGHT STATION.

The Mayor and Corporation of the Borough of Lowestoft are prepared to receive TENDERS for the ERECTION of an ELECTRIC LIGHT STATION.

Specification, with general conditions, bills of quantities, and form of Tender may be obtained at the Offices of the Architect, Mr. ALBERT E. PRIDMORE, 2, Broad-street-buildings, London, E.C. on and after JUNE 28th, on payment of Five Guineas, which sum will be returned on receipt of a bonâ-fide Tender.

Detail drawings can be seen at the Offices of the Architect, or at the Borough Surveyor's Office, Lowestoft.

Tenders, sealed and marked "Tender for Electric Light Station," to be delivered to the Town Clerk, at the Town Clerk's Offices, 115, High-street, Lowestoft, on or before TWELVE o'clock noon, on the 18th JULY, 1899

The Corporation do not bind themselves to accept the lowest or any Tender.

(Signed) R. BEATTIE NICHOLSON,
Town Clerk.

No. 115 High-street,
Lowestoft.

---

### PLYMOUTH CORPORATION.

SEWERAGE WORKS, 1899.
CONTRACT NO. 2.
TO ENGINE AND PUMP MAKERS.

The Corporation of Plymouth are prepared to receive TENDERS from competent persons willing to enter into a contract for the MAKING, ERECTING, and SETTING TO WORK of TWO HORIZONTAL GAS or OIL ENGINES, Two Sets of Vertical Two-Throw Ram Pumps, connected to same with Gearing and Friction Clutches, Two Dry Gas-meters, all Gas, Water-circulating, and Exhaust Pipes, Two Circulating-water Tanks, Silencers, Hand-railing, and Floor-plates.

Each Engine, with its set of pumps, is to be capable of raising 1,200 cubic feet of sewage per hour to a height of 28 ft. (exclusive of friction) through 450 ft. of 6-in. diameter rising main.

The drawing may be seen, and copies of the specification and form of Tender obtained, at the Office of the Engineer, Mr. JAMES MANSERGH, 5, Victoria-street, Westminster, on and after MONDAY, the 26th inst. on the deposit of cheque for 2*l.* which will be returned after the receipt of a bonâ-fide Tender, with the bill of particulars fully priced out.

Early application is desirable, as only a limited number will be given out.

Sealed Tenders, endorsed "Pumping Machinery," are to be delivered at my Office at or before NOON on THURSDAY, the 13th day of JULY, 1899.

The Corporation do not bind themselves to accept the lowest or any Tender.

By order,
J. H. ELLIS,
Town Clerk.

Municipal Offices,
Plymouth,
June 22nd, 1899.

---

### THE VESTRY of the PARISH of ST. MARY, BATTERSEA.

NEW PUBLIC BATHS AND WASHHOUSES.
CAST-IRON COLUMNS AND IRON ROOFS, &c.
IRON TANK AND COVER.

The Vestry are prepared to receive TENDERS for the SUPPLY and FIXING OF

CAST-IRON COLUMNS and IRON ROOFS, &c. and IRON TANK and COVER, required in connexion with the provision of their new Baths and Washhouses in Battersea Park-road.

Specification and forms of Tender and contract can be obtained, and the drawings inspected, upon application at the Municipal Buildings, Lavender-hill, S.W. between the hours of TEN a.m. and FOUR p.m. (Saturdays TEN a.m. to TWELVE noon).

Tenders, sealed, and marked on the outside "New Baths and Washhouses—Tender for ——," must be addressed to the undersigned, and delivered at the Municipal Buildings not later than TWELVE o'clock noon on WEDNESDAY, the 5th JULY, 1899.

The contract will be prepared by, and at the expense of, the Vestry.

Persons tendering will be required to declare in their Tender that they pay the Trade Union rate of wages, &c. and must append to the Tender a schedule of the wages paid to the various classes of workmen employed by them at the time of tendering.

The Vestry do not bind themselves to accept the lowest or any Tender.

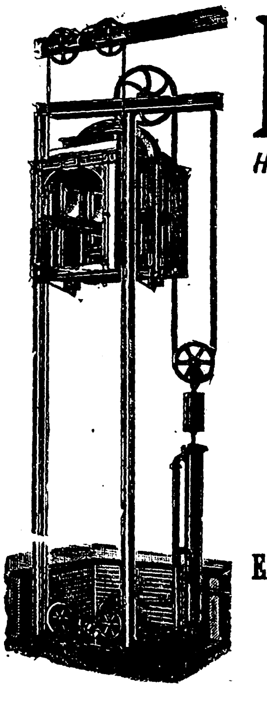
By order of the Vestry,
W. MARCUS WILKINS,
Vestry Clerk.

Municipal Buildings,
Lavender Hill,
June 22nd, 1899.

*Refer also to* "TOO LATE" *column, page* xxiv.

**SAND (Best Sharp Sifted),**
BALLAST, SHINGLE, &c.
SPECIAL SCREENED SAND.
Apply, THE MANAGER,
THE CRAYFORD SAND BANKS, CRAYFORD.
Siding S.E.R. Station adjoining.

**ARCHD. SMITH & STEVENS'**



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PASSENGER.
GOODS.
HYDRAULIC.
ELECTRIC.
POWER.
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SAFETY.
SILENCE.
EASE of CONTROL.
SMOOTHEST RUNNING.

**ESTIMATES ON APPLICATION.**

**JANUS WORKS, QUEEN'S ROAD, BATTERSEA.**

LIVERPOOL and MANCHESTER.—W. SPROWSON, Norton-street, Greengate, Manchester.
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GLASGOW.—J. MONKHOUSE CARTMELL, 70, Great Clyde-street.
NEWCASTLE-ON-TYNE.—HIND BROS., 48, Pilgrim-st.

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PRISMATIC
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FOR:—
OFFICE WINDOWS
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SKYLIGHTS
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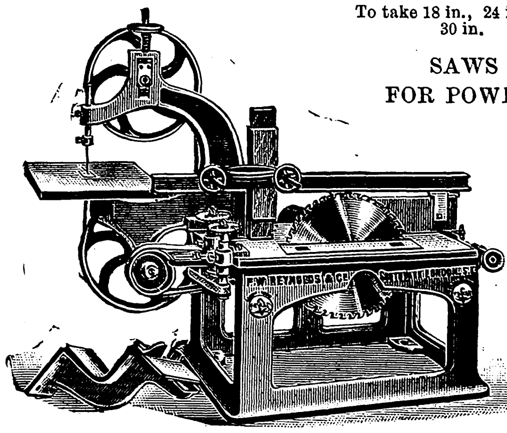
*Telephone:* 90, LONDON WALL. *Telegraphic Address:* "LUXFER, LONDON."

# WOOD-WORKING MACHINERY.

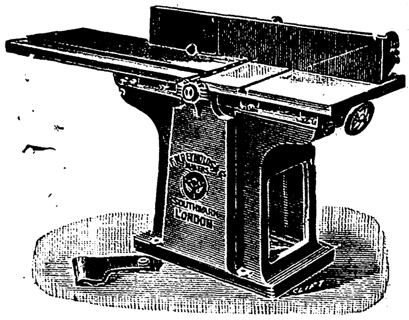
**COMBINATION CIRCULAR AND BAND SAW MACHINE,**
**With Tenoning Apparatus and Boring.**
To take 18 in., 24 in., and 30 in.
SAWS FOR POWER.



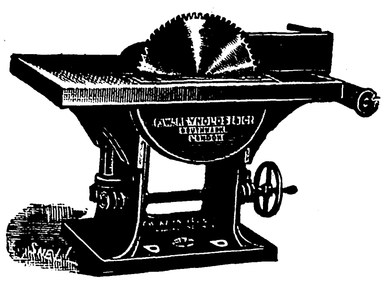
# F. W. REYNOLDS & CO.,

**Saw Mill and General Engineers.**

**PLANING AND TRYING-UP MACHINES.**



**RISING AND FALLING TABLE BENCHES.**



**Machinery can be seen at Work, and full Particulars of Prices and Terms at**

**ACORN WORKS, EDWARD STREET, BLACKFRIARS ROAD.**

(Three Minutes' Walk from Blackfriars Bridge.)

**ONE MONTH'S FREE TRIAL ALLOWED of all WOOD-WORKING MACHINERY.**

*Machinery Supplied upon Hire-Purchase. Catalogues and particulars on Application.*

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**FRANCIS & CO.** 64 to 70 (late 174), Gray's Inn-road, London.

MANUFACTURERS OF EVERY KIND OF

IMPROVED REVOLVING SHUTTERS, in WOOD, IRON, and STEEL.

SUITABLE FOR BANKS, MANSIONS, SHOPS, AND PUBLIC BUILDINGS.

*BRASS SHOP-FRONTS and SPRING SUN-BLINDS at REDUCED PRICES.* ESTIMATES AND PRICE LIST FREE.

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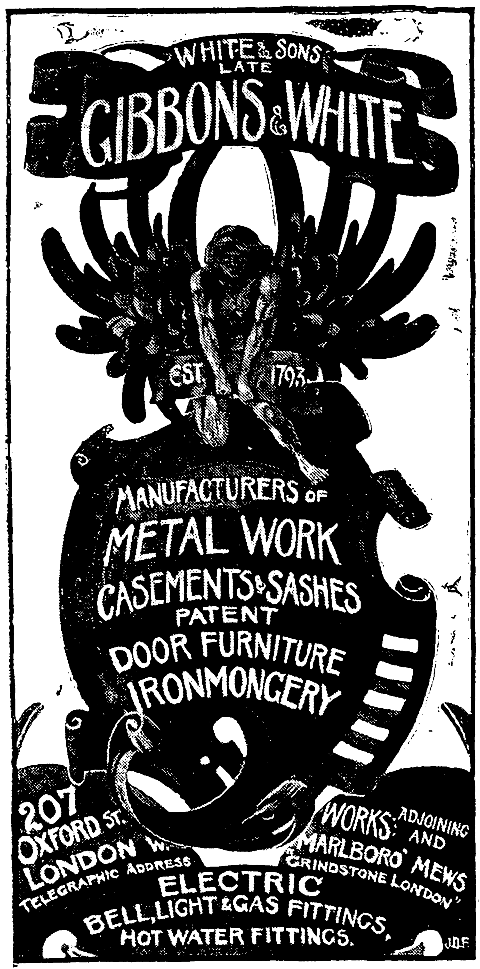
**S. HASKINS & BROS.** 20, 22, & 24, Old Street, E.C.

ESTIMATES AND CATALOGUES FREE ON APPLICATION.

Manufacturers of Revolving Shutters in Wood, Iron, and Steel, Brass Shop Fronts, Spring Shop Blinds, &c.



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MANUFACTURERS OF
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IRONMONGERY
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WORKS: ADJOINING AND MARLBORO' MEWS
TELEGRAPHIC ADDRESS GRINDSTONE LONDON
ELECTRIC
BELL, LIGHT & GAS FITTINGS,
HOT WATER FITTINGS.

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# WROUGHT STEEL SASHES.

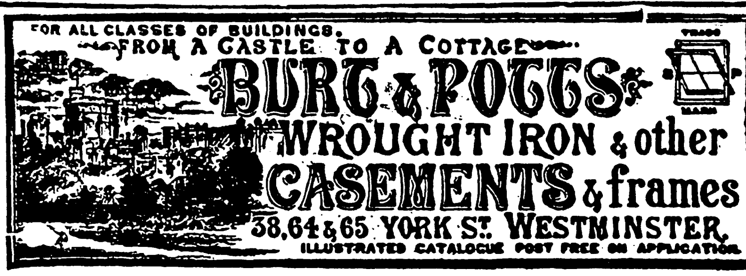
MOLINE'S PATENT & MITRED JOINTS.

WROUGHT IRON CASEMENTS. CAST IRON WINDOWS.

**The GENERAL IRON FOUNDRY COMPANY, Limited,**

*Offices: Broken Wharf. Show Rooms: 43, Upper Thames Street, London, E.C.*

Also Manufacturers of Rain Water and Sanitary Castings, Hot-water Apparatus, Stoves, Ranges, Mantels, Baths, Lavatories, Closets, Stable Fittings, &c.



FOR ALL CLASSES OF BUILDINGS.
FROM A CASTLE TO A COTTAGE
BURT & POTTS
WROUGHT IRON & other
CASEMENTS & frames
38, 64 & 65 YORK ST. WESTMINSTER.
ILLUSTRATED CATALOGUE POST FREE ON APPLICATION.

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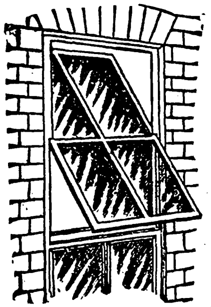
# Patent Welded Wrought-iron Casements, Sashes



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WENHAM & WATERS

TELEPHONE No. 9,811.

*These Casements are absolutely AIR-TIGHT and WATERTIGHT.*

Made for Wood, Stone, or Concrete Frames.

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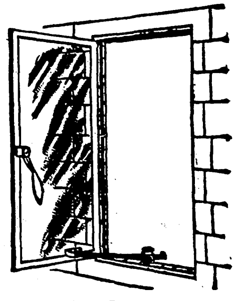
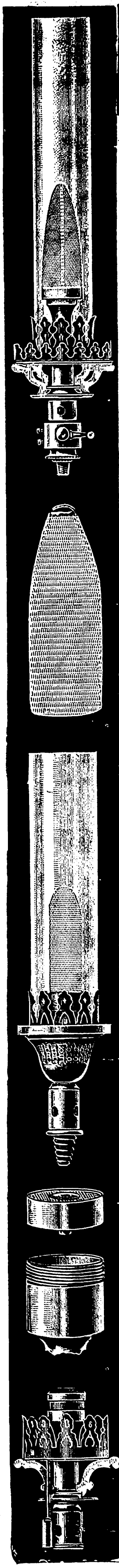
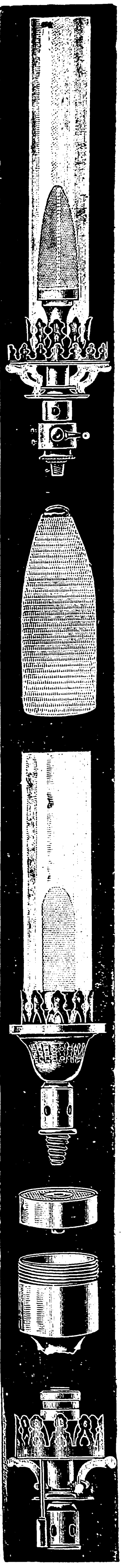


PARAGON WORKS, CROYDON.





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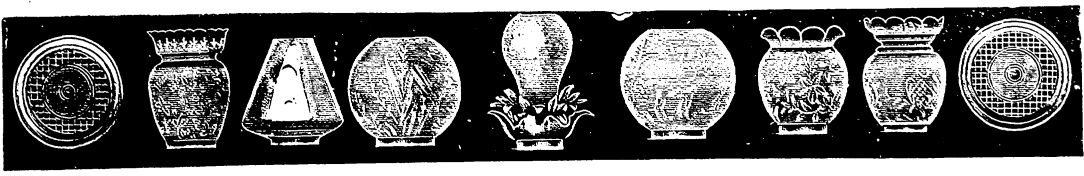

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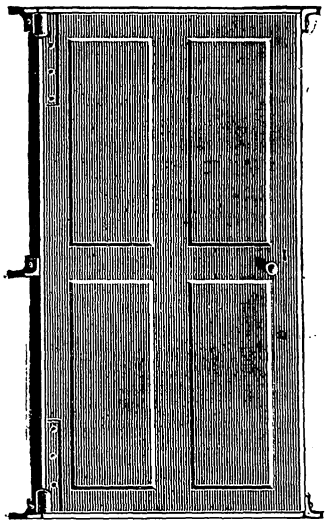

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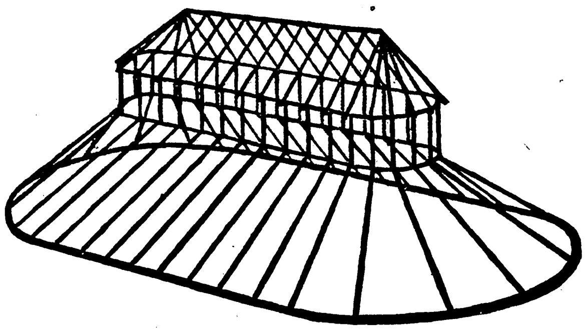

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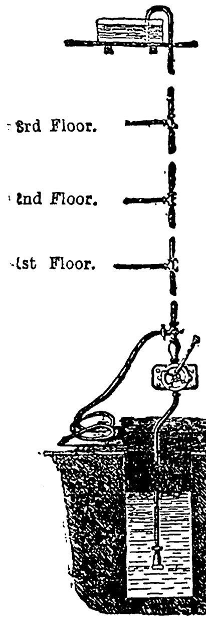

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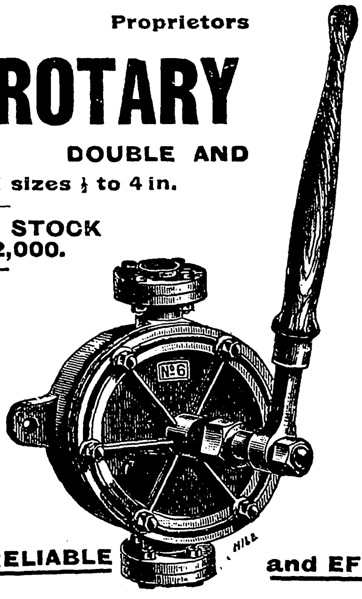

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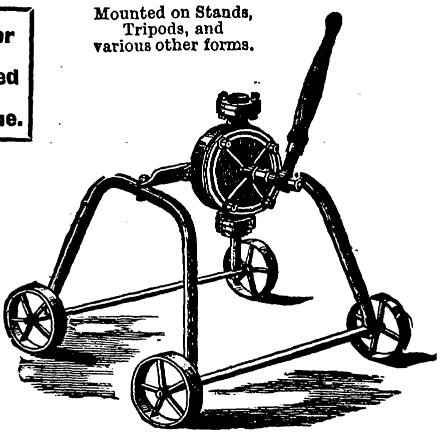

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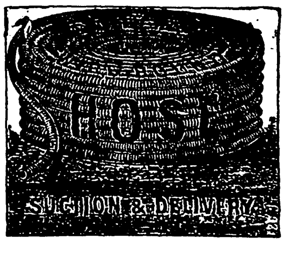

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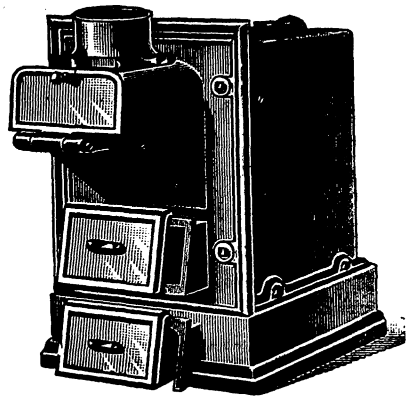

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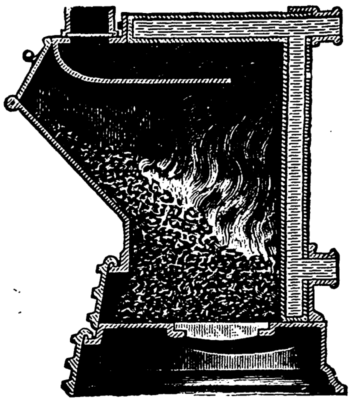

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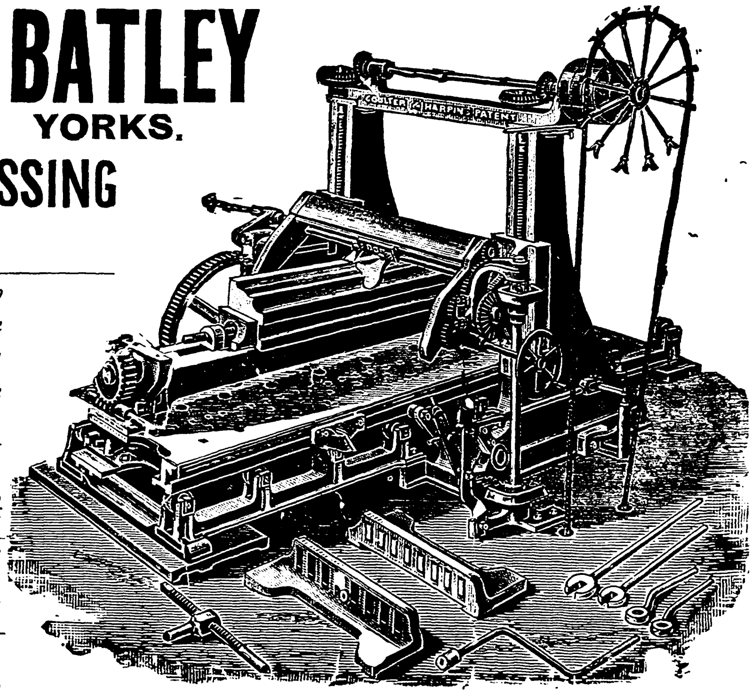

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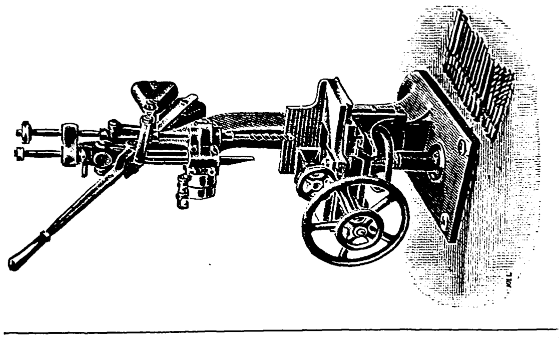

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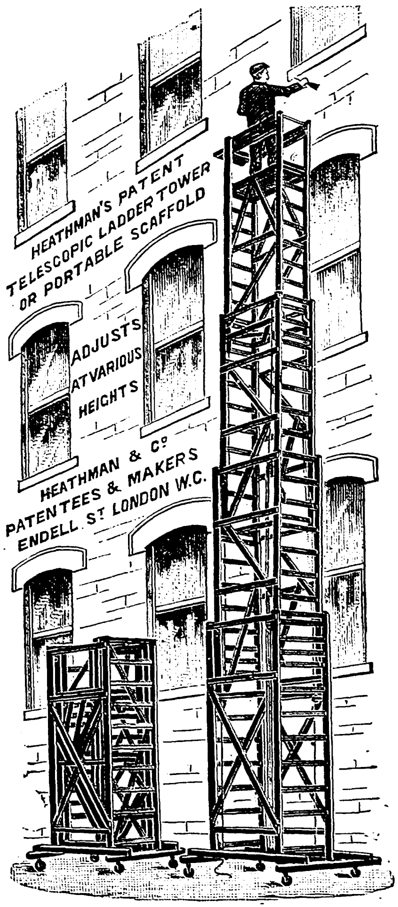

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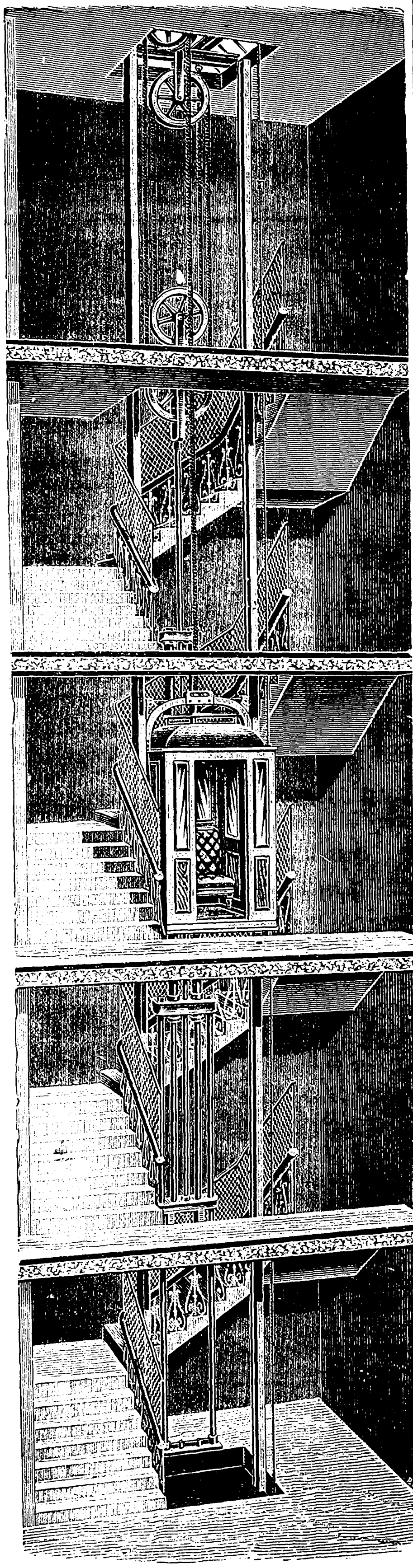

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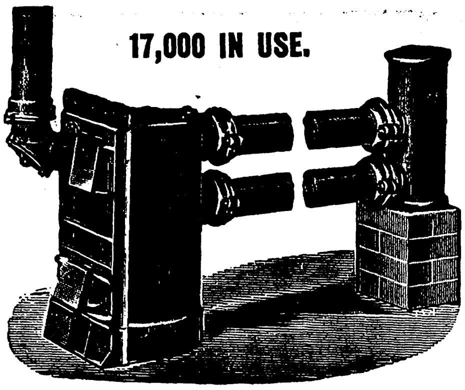
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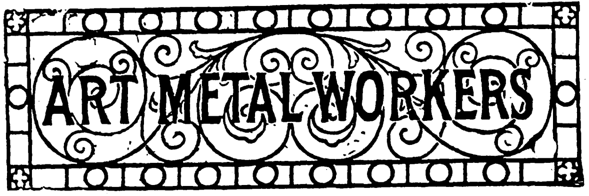

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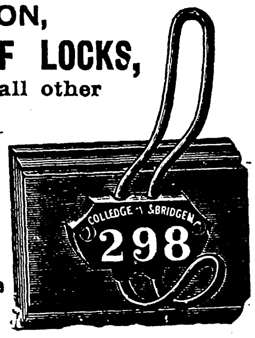

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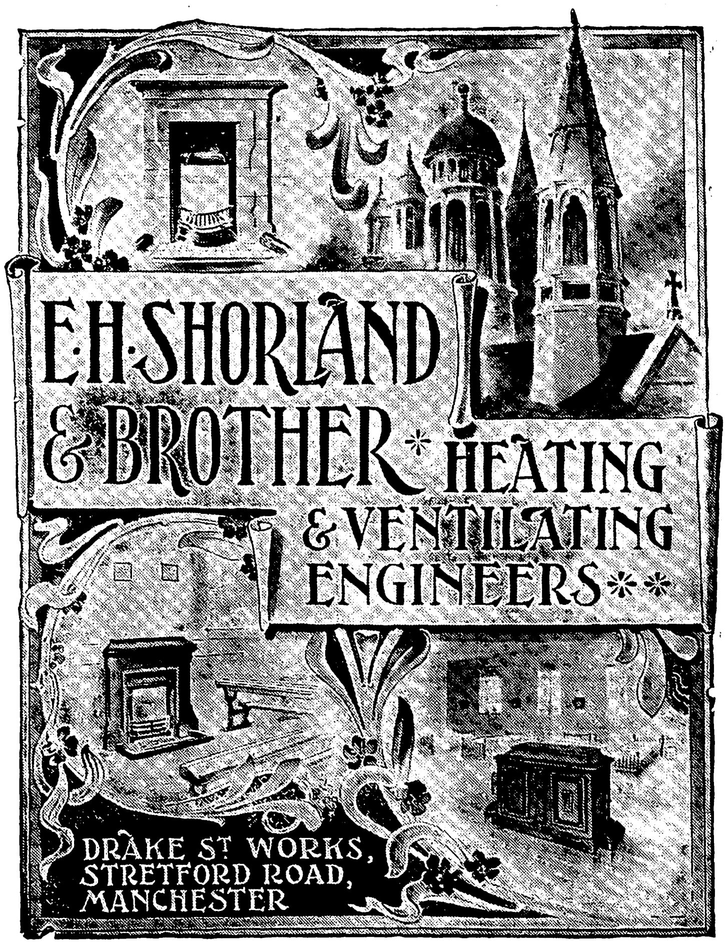

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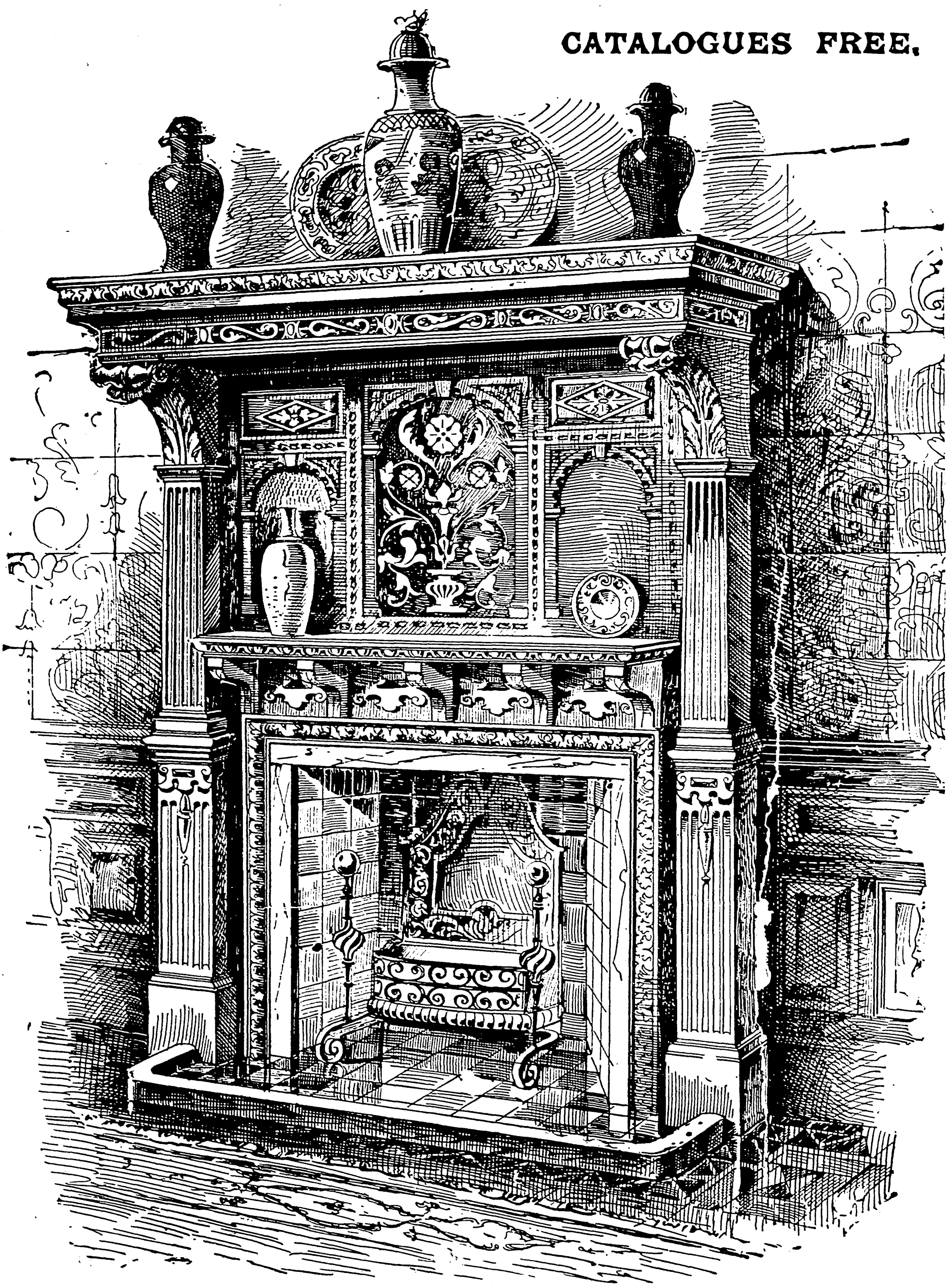

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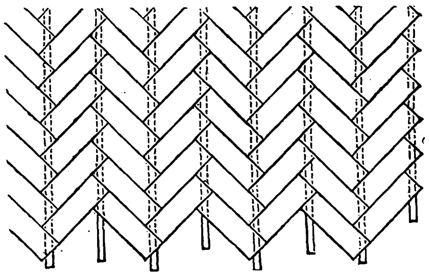

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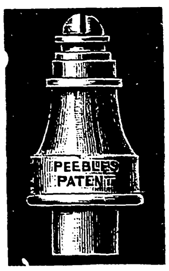

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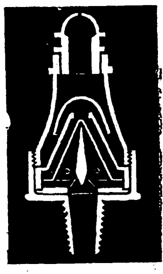

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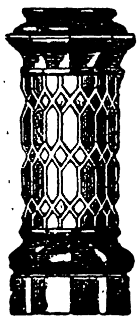

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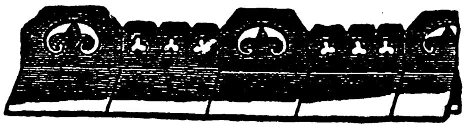

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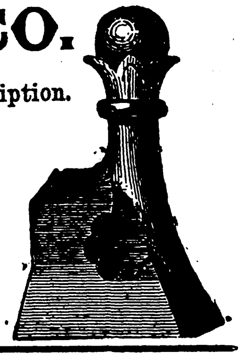

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Particulars of the proposed amendments were set forth in the "Illustrated Official Journal (Patents)," issued on the 14th June, 1899.

Any person or persons may give Notice of Opposition to the Amendment (on Form G), at the Patent Office, 25, Southampton-buildings, London, W.C. within one calendar month from the date of the said "Journal."

C. N. DALTON,
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For particulars send stamped addressed envelope, to the Secretary at once.

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**ARCHITECTURAL ASSISTANT.**

WANTED, in the Engineer's Office of a District Council adjoining the Metropolis, an ARCHITECTURAL ASSISTANT who is competent to prepare finished drawings from rough sketches.

Salary, Three Guineas per week.

Applications, and copies of three testimonials, are to be addressed to Box **196**, Office of "The Builder."

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**THE London County Council invites** APPLICATIONS for TWO TEMPORARY JUNIOR SURVEYORSHIPS at 30s. a week each.

Good draughtmanship indispensable.

Applications, accompanied by copies of testimonials and sample of workmanship, must be sent in by TEN a.m. on MONDAY, 3rd JULY, addressed to the Clerk of the London County Council, Spring-gardens, S.W. and endorsed "Junior Draughtsman."

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**VESTRY of ST. MATTHEW, BETHNAL GREEN.**

The Vestry require the SERVICES of a competent GENERAL FOREMEN to have charge of the various workmen employed in repairing the highways and sewers in the parish.

Wages, 2*l.* 10s. per week, rising by annual increments of 5s. per week to a maximum of 3*l.* 5s. per week, such increases to be subject to a report from the Works Committee that the duties have been satisfactorily performed.

The person appointed will be required to live in the parish.

Age of applicants not to exceed 40 years.

Applications accompanied by not more than three recent testimonials (copies only), to be forwarded to the undersigned (from whom a general list of duties may be obtained), marked outside "General Foreman," at or before FOUR o'clock, on THURSDAY, JUNE 29th, inst.

Canvassing members of the Vestry will disqualify.

F. W. BARRATT,
Surveyor to the Vestry.

Vestry Hall,
Church-row,
Bethnal Green.

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**BOROUGH of PLYMOUTH.**

The Corporation is prepared to receive APPLICATIONS from suitable persons for the position of BUILDING INSPECTOR.

Applicants must have a thorough knowledge of the model bye-laws of the Local Government Board, and have had experience in the oversight of buildings and the construction of sewers and drains.

They must also be competent to test drains either by the water or smoke test.

Applicants must state age, which must not exceeed 40, and full particulars of past and present employment.

Applications, accompanied by copies of not more than three recent testimonials (original testimonials will not be returned if forwarded), to be sent to me not later than JULY 12th.

Canvassing members of the Council, either directly or indirectly, will be deemed a disqualification.

The salary will be 100*l.* per annum rising by yearly increments of 5*l.* to 120*l.*

Printed form of application may be obtained on applying to the undersigned.

JAMES PATON,
Borough Engineer and Surveyor.

Municipal Offices,
June 15th, 1899.

---

**CITY of SHEFFIELD.**

BUILDING INSPECTOR.

The Highway and Sewerage Committee are prepared to receive APPLICATIONS for FOUR BUILDING INSPECTORSHIPS in the City Surveyor's Department.

Candidates must be thoroughly qualified persons and should hold the certificate of the Sanitary Institute, or of the Incorporated Association of Municipal and County Engineers.

They should have practical experience of the duties of such a position, and will be required to undertake the inspection of new buildings and drains and other duties.

The salary is 120*l.* per annum.

A list of duties and form of application, which must be returned by the 3rd of JULY, may be obtained on application to the undersigned.

Envelopes to be endorsed "Building Inspector."

CHARLES F. WIKE, M.Inst.C.E.
City Surveyor,
Sheffield.

City Surveyor's Office,
Sheffield.
June 16th, 1899.

---

**WANTED in the City Surveyor's Office,** Sheffield, a DISTRICT SURVEYOR, who will have charge of the making and maintenance of the roads in one district of the City (which are chiefly paved roads), also of Tramways, Sewerage, and Drainage Work.

Applicants must have had good practical experience, be used to the management of large bodies of men, and have a thorough knowledge of materials.

Salary 200*l.* per annum, rising by annual increments of 10*l.* to 250*l.* per annum, the first increase to take effect from the 1st of January, 1901.

Also a SURVEYING ASSISTANT, who should be competent to make surveys, take levels, prepare plans for sewer works, &c. and set out the work. Applicants should have had similar previous experience, and the salary will be at the rate of 110*l.* per annum.

Apply, not later than MONDAY, 3rd JULY, on official forms, to Mr. C. F. WIKE, M.Inst.C.E. City Surveyor, Sheffield.

Envelopes to be endorsed "District Surveyor" and "Surveying Assistant" respectively.

Sheffield,
June 19th, 1899.

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**CITY of SHEFFIELD.**

CITY SURVEYOR'S OFFICE.

APPLICATIONS are invited from Chemists for the POST of ANALYTICAL ASSISTANT at the Sewage Works.

The duties will be to make analyses of the sewage and effluents and to carry out experiments in connexion with the purification of sewage.

Salary, 150*l.* per annum.

Applications, stating age, experience, and references, should be addressed to Mr. C. F. WIKE, M.Inst.C.E. City Surveyor, Town Hall, not later than 3rd proximo.

Envelopes to be marked "Chemist."

City Surveyor's Office.
Sheffield.
June 17th, 1899.

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**LYMINGTON RURAL DISTRICT COUNCIL.**

SURVEYOR OF HIGHWAYS WANTED.

Notice is hereby given that the Lymington Rural District Council will, at their meeting fixed to be held at the Board Room, in the Lymington Union Workhouse on TUESDAY, the 8th day of AUGUST next, at THREE o'clock in the afternoon, proceed to the APPOINTMENT of a SURVEYOR of HIGHWAYS for the district at a salary of 90*l.* per annum.

The area of the District is 37,894 acres, and the estimated extent of the District roads is 125 miles, and that of the main roads seven miles.

Applications, in the handwriting of the candidate, stating age, present and previous occupations, and accompanied by three testimonials of recent date as to character and competency to perform the duties appertaining to the office, must be sent or delivered at my office not later than SATURDAY, the 29th day of JULY next.

Such of the candidates as may be selected will have notice by letter to attend the meeting at which the appointment is to take place, and the person appointed will have to give security in the sum of 100*l.*

By order,
J. DAVIS RAWLINS,
Clerk.

Dated, 38, High-street, Lymington,
June 19th, 1899.

---

**THE ESSEX COUNTY COUNCIL require** the SERVICES of TWO CLERKS of WORKS, one to superintend the Fixing of Granite Kerb, Laying of Patent Stone, Pitched Crossings, &c. at Ilford, the other to superintend the Building of a New Iron Bridge, with piled foundations and brick abutments, at Dagenham.

Salary, Three Guineas per week.

Applications to be sent not later than the 1st JULY next, enclosing three testimonials (copies only) to Mr. PERCY J. SHELDON, Chief Surveyor, County Offices, Chelmsford.

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**COUNTY BOROUGH of WEST HAM.**

CLERK OF WORKS.

The Council of the County Borough of West Ham hereby invite APPLICATIONS for the APPOINTMENT of a CLERK of the WORKS, on the contract for erection of Public Baths at Plaistow, now being carried out under the direction of Mr. SAXON SNELL, F.R.I.B.A.

The salary will be at the rate of 4*l.* 4s. per week.

Applications on forms, which may be obtained on application at my Office, Town Hall, West Ham, must reach me not later than FOUR o'clock on the 3rd day of JULY, 1899.

Canvassing Members of the Council is prohibited.

By order,
FRED. E. HILLEARY,
Town Clerk.

Town Hall,
West Ham, E.
June 23rd, 1899.

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**LONDON COUNTY ASYLUM,** Bexley Kent.

REQUIRED, a BUILDER'S FOREMAN. Wages 58s. per week, rising by 2s. per week annually to 62s.

Candidates, who must be between 30 and 40 years of age and in good health, must possess a thorough knowledge of building operations and sanitary arrangements and be capable of controlling the staff of workmen at the Asylum.

Persons desirous of applying must write, enclosing a stamped, addressed foolscap envelope, to the undersigned for a form of application, upon which the conditions of service and other particulars will be stated.

All applications to be delivered here by or before NINE o'clock a.m. on WEDNESDAY, the 28th JUNE, 1899.

R. W. PARTRIDGE,
Clerk of the Asylums Committee.

London Asylums Committee Office,
No. 6, Waterloo-place, S.W.
June 21st, 1899.

---

**THE London County Council being about** to appoint an ASSISTANT ARCHITECT at a salary of 800*l.* a year invites APPLICATIONS for the appointment.

The gentleman appointed will be required to give his whole time to the service of the Council.

Forms, on which application is to be made, can be obtained from the Clerk of the Council, Spring-gardens, S.W.

The latest time for receiving applications is TEN o'clock on MONDAY, 10th JULY, 1899.

Personal canvassing of members of the Council is strictly prohibited.

C. J. STEWART,
Clerk of the Council.

County Hall, Spring-gardens,
June 21st, 1899.

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**DRAUGHTSMAN Wanted immediately,** for a few months. One accustomed to the work of a municipal office.—Apply by letter only, giving experience, references, and salary required, to Mr. R. COLLINS, Surveyor, Court House, Enfield, Middlesex.

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**ESTIMATOR, &c. WANTED by London** Jobbing builder. Man used to small contracts or one who could introduce work and superintend preferred.—Address, with full particulars of experience, age, and salary required, to Box **270**, Office of "The Builder."

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**ESTIMATING & MEASURING CLERK.**—WANTED, a competent Man in a large builder's office, at once, not under 30 years old.—State age, experience, and salary required.—Box **226**, Office of "The Builder."

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**ARCHITECTURAL ASSISTANT** (fully qualified) WANTED. Perspectives included.—State terms and experience, BRIGGS & WOLSTENHOLME, Liverpool and Blackburn—address, Blackburn.

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**ARCHITECT'S ASSISTANT WANTED** in Builder's office, Western suburb, for a permanency. Must be trustworthy. Well up in taking levels and surveying, &c. Good and energetic men only need address. Salary 45s. rising to 63s. and rent free.—Box **277**, Office of "The Builder."

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**ASSISTANT,** experienced, energetic, and competent, REQUIRED, in busy Architect's office near Law Courts. Must be thoroughly capable at design, construction, specifications and general routine. Salary, Three Guineas, with advancement to suitable man.—State experience and full particulars to Box **262**, Office of "The Builder."

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**ARCHITECTURAL ASSISTANT** REQUIRED in the office of a Land Agent and Surveyor. Write giving particulars of experience and salary required, which will be treated confidentially if required.—Address, A. C. care of Messrs. May & Williams, 160, Piccadilly, W.

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**ARCHITECT'S GENERAL ASSISTANT** WANTED at once in a provincial town near London. Must be competent to prepare working and detail drawings, levels and perspective, &c.—State age, experience, and terms required, Box **273**, Office of "The Builder."

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**ARCHITECT'S ASSISTANT** (competent) WANTED who can draw plans, elevations, sections, and details, also write specifications.—Address, with references and lowest salary required, to Box **228**, Office of "The Builder."

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**ARCHITECT'S ASSISTANT WANTED.** One preferred with a knowledge of dilapidations. State qualifications and references. Salary not exceeding 50s.—Box **218**, Office of "The Builder."

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[*See also next page.*

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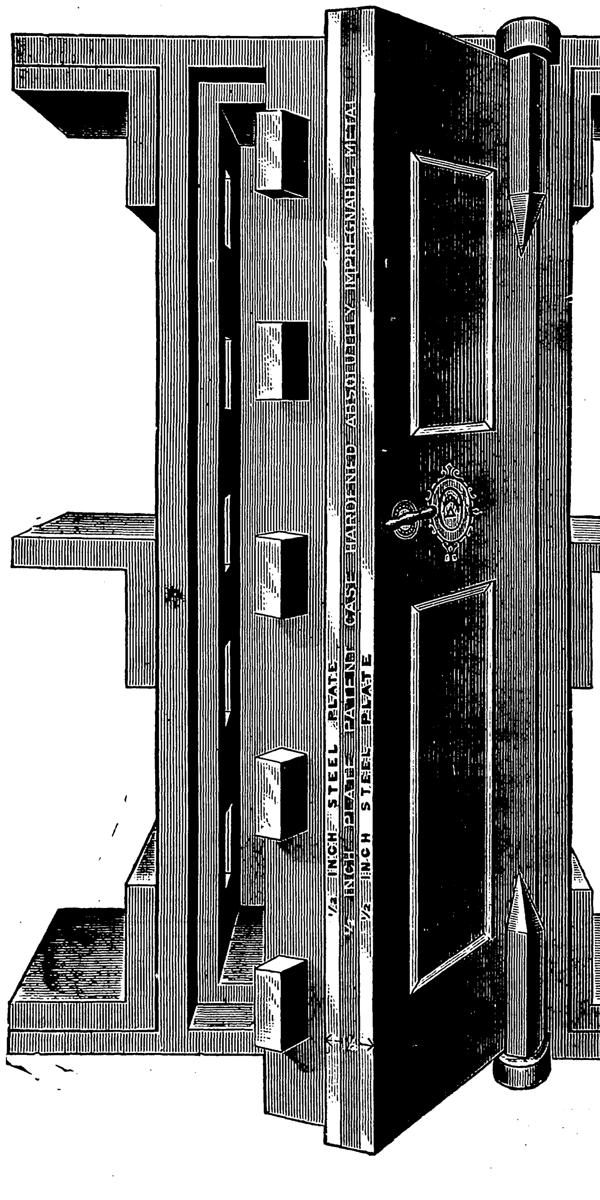
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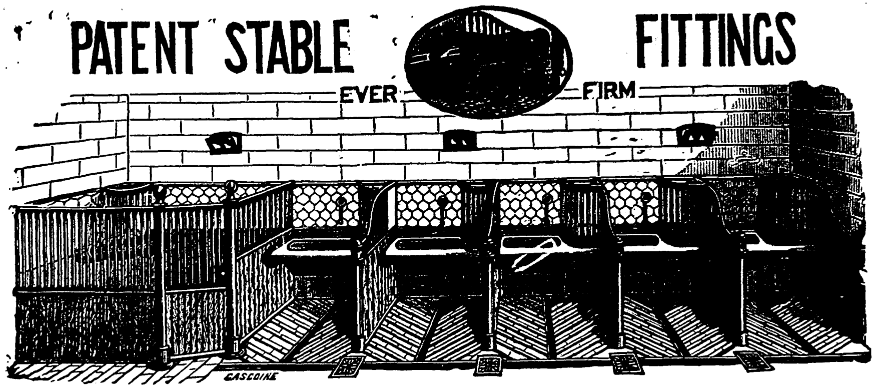

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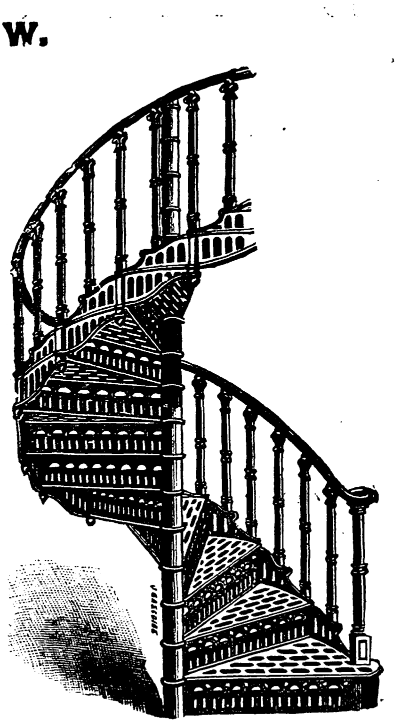

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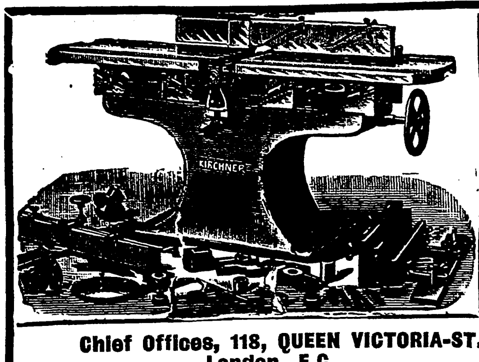

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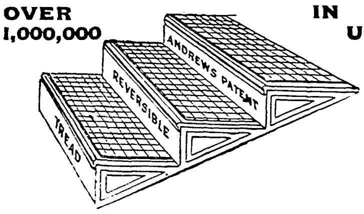

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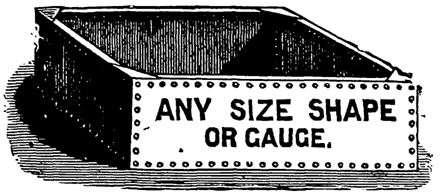

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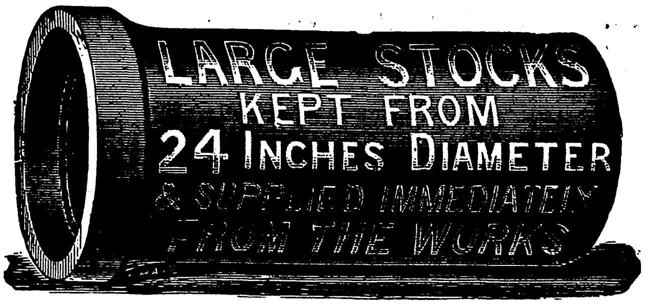
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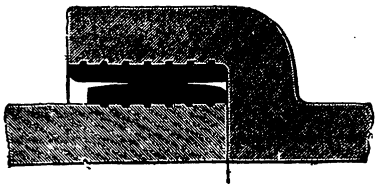

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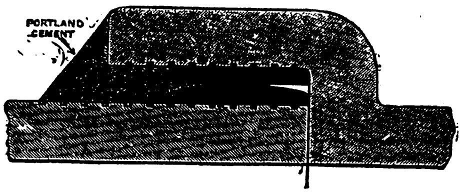
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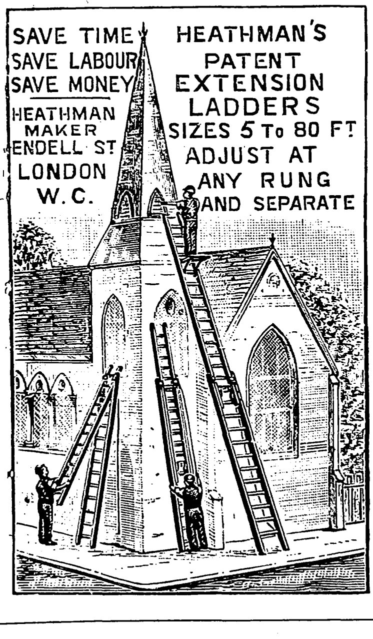
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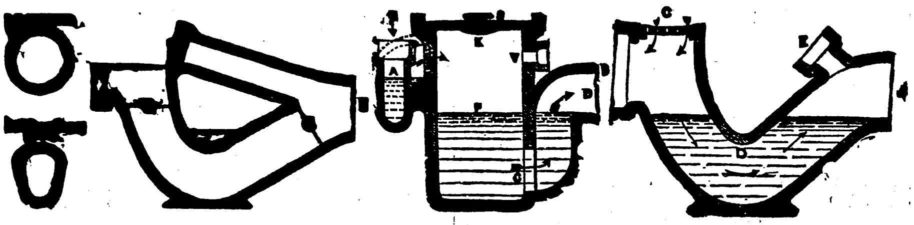

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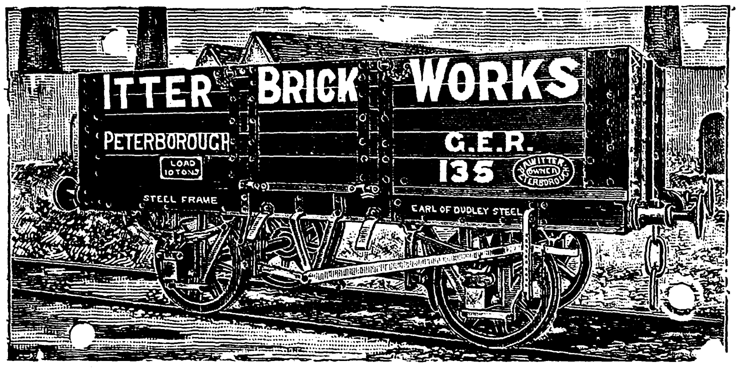

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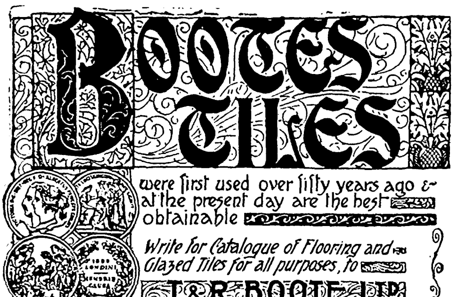

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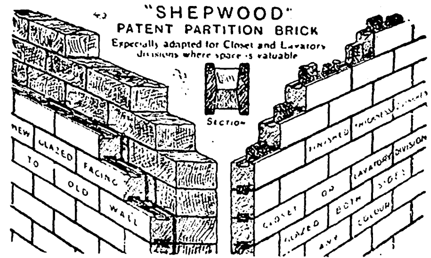
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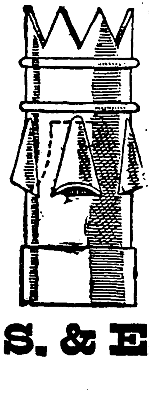

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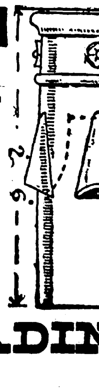

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**NON-FLAMMABLE WOOD**

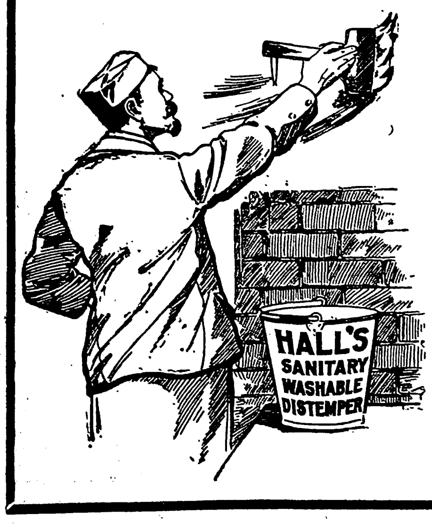
The whole of the carpentry and joinery in the following notable buildings in New York, amongst others, consists of "**NON-FLAMMABLE WOOD**":—
**THE COMMERCIAL CABLE BUILDING, THE QUEEN'S INSURANCE BUILDING, and the R. G. DUNN BUILDING.**

"**NON-FLAMMABLE WOOD**" has been tested by H.M. Admiralty, and large orders have been given by **H.M. Government.**

*Quotations on receipt of requirements, Address—*

**THE LONDON NON-FLAMMABLE WOOD CO., LTD.,**

**2, Army and Navy Mansions, Victoria Street, London, S.W.**



**HALL'S SANITARY WASHABLE DISTEMPER** *(Patented).*

*A NEW SANITARY WATER PAINT.*

HAS great advantages, some of which are as follows:

**It Sets Hard, Kills Vermin, and Disinfects.**
**It is Washable in 3 Weeks, Does not Scale, can be Painted or Varnished, and will Stand Inside or Outside.**
**It is made in Dark Rich Shades as well as in Light Tints, contains no Lead, and Does Not Turn Black.**
**It only requires the addition of Water to make it ready for use, so that anybody can apply it.**
**It is Cheaper, Cleaner, Healthier, and more Artistic than Wall Paper.**

*It is sold by leading Chemists, Drysalters, and Ironmongers, and manufactured by* **SISSONS, Bros. & Co., Ltd., HULL,** *from whom samples, shade card, and other particulars can be obtained.*

Foreign Agents Wanted.

The Farnley Iron Company, Limited, Leeds.

**Porcelain Baths,**

The Company work their own Mines of Fire-clay, Coal, and Iron, and manufacture also
Glazed bricks, Closets, Sinks, Wash-tubs.

London *Show Rooms*, 77, *Queen Victoria St. E.C.*

**RED STAR GLASS**
W I N D O W
EVEN IN QUALITY
FINE IN COLOUR

PLATE and WINDOW GLASS WAREHOUSES,
*STAINED GLASS & EMBOSSING WORKS*
**T. & W. FARMILOE,**
LIMITED.
Manufacturers of Sheet Lead, White Lead, Colours, Varnishes, and Plumbers' Brass Work.

*CATALOGUES and ESTIMATES forwarded on Application.*
ROCHESTER ROW, WESTMINSTER,
LONDON, S.W.

GLASS PAINTING,
DECORATION AND MONUMENTAL BRASS.
**LAVERS, WESTLAKE, & BARRAUD,**
ENDELL-STREET, LONDON, W.C.

**Stephens'**
FOR
**Stains Wood**
OAK, MAHOGANY, ROSEWOOD, EBONY, WALNUT, WAINSCOT, & SATINWOOD.
*Specimens and Prospectus free by post on application to*
H. C. STEPHENS,
191, Aldersgate-street, London, E.C.

**RUFFORD & CO.**
LIMITED,
CLAY WORKS, STOURBRIDGE,
Manufacturers and Original Patentees of
THE ROYAL
**PORCELAIN BATH,**
*MOULDED AND GLAZED IN ONE PIECE.*
For which the GOLD ISIS MEDAL of the SOCIETY OF ARTS was awarded.
HOUSEHOLD AND OTHER GLAZED SINKS
ALSO,
GLAZED BRICKS, White and Coloured, &c.
LONDON ADDRESS, *331, FARRINGDON ST.*
(NEAR THE HOLBORN VIADUCT),
Where specimens of their Manufactures may be seen.
HENRY OWEN, Agent.

THE NEW BRAND OF WINDOW GLASS.
MARINE
**CADUCEUS.**
MARINE
Unequalled for Substance,
Quality, and Whiteness.
BUY NOTHING BUT CADUCEUS.
EXCLUSIVE RIGHTS: **L. & J. FRANCQ, JUMET,** BELGIUM.
Direct Correspondence Solicited.

**BRITISH PLATE GLASS COMPANY, Ltd.** ESTABLISHED 1773.
MANUFACTURERS OF
POLISHED, SILVERED, BEVELLED, CHEQUERED, and ROUGH PLATE GLASS.
Also of a durable highly-polished material called "MARBLETTE," suitable for Advertising Tablets, Signs, Facias, Direction Plates, Clock Faces, Mural Tablets, Tombstones, &c. This is supplied plain, embossed, or with incised gilt letters.
BENDERS, EMBOSSERS, BRILLIANT CUTTERS, &c., &c.,
*ESTIMATES AND DESIGNS ON APPLICATION.*
Works—RAVENHEAD, ST. HELENS, LANCS.
AGENCIES—107, Cannon-street, LONDON, E.C.; 128, Hope-street, GLASGOW; 12, East-parade, LEEDS, and 36, Paradise-street, BIRMINGHAM.
Telegraphic Address:—"GLASS, ST. HELENS." Telephone No. 68, ST. HELENS.

THE INDESTRUCTIBLE PAINT COMPANY, Lim.
27, CANNON STREET, E.C.
THREE HIGHEST AWARDS OBTAINED
**DAMP WALLS and DECAY in STONE, BRICK, etc.**
PERMANENTLY CURED.
BY BROWNING'S COLOURLESS PRESERVATIVE SOLUTION
As used on CLEOPATRA'S NEEDLE, and by
H.M. the QUEEN, BRITISH and FOREIGN GOVERNMENTS, etc.

**TEMERARE**
A FAST WHITE, FOR CEILINGS AND WALLS.
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***TEMERARE,*** a new discovery in a very fine dry powder, which is revolutionising the old method of whitewashing ceilings and walls, being adhesive in itself.

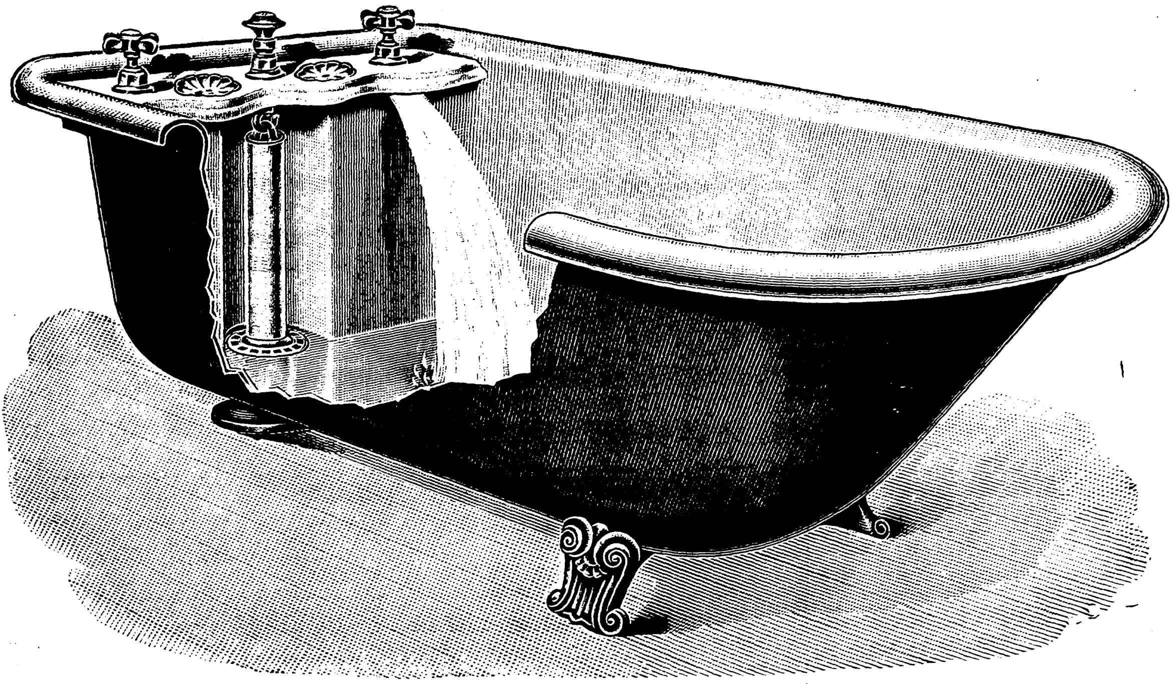
***TEMERARE*** comes as a great boon to painters and decorators; it saves him the time used in mixing glue and size, **is cheaper than whiting,** and a superior white which works far cooler.

A FREE 7 lb. SAMPLE will be sent, on application, to any part of the Country. Sold in bulk.

MANUFACTURED BY
**J. W. DAVIS & SON, Temerare Works, HULL.**
National Telephone, 158. Telegraphic Address, "Davis, Wilmington, Hull." AGENTS WANTED.

**FIRE BRICKS! FIRE LUMPS! FIRE TILES! FIRE CLAY!**
**JAMES NEWTON & SONS,** FIRE BRICK MERCHANTS, FALCON DOCK, 78 & 79, BANKSIDE, SOUTHWARK, S.E.
(ESTABLISHED 1820.)
Depot for Stourbridge, Newcastle, and Welsh Fire Goods, White Glazed Fire Bricks, Red Yorkshire Pan, Plan, and Paving Tiles, Red Chimney Pots, Grooved Stable Bricks, Garden Edgings, &c.

# Improved Vitreous Enamel rolled edge Cast-Iron Baths with Patent Exposed Removable Waste.



**This Enamel has a hard, smooth, lustrous surface, will not chip, and by the process becomes an integral part of the iron casting.**

## DOULTON & CO., LIMITED.

**Albert Embankment, London, S.E., Glasgow, Paisley, and Paris.**

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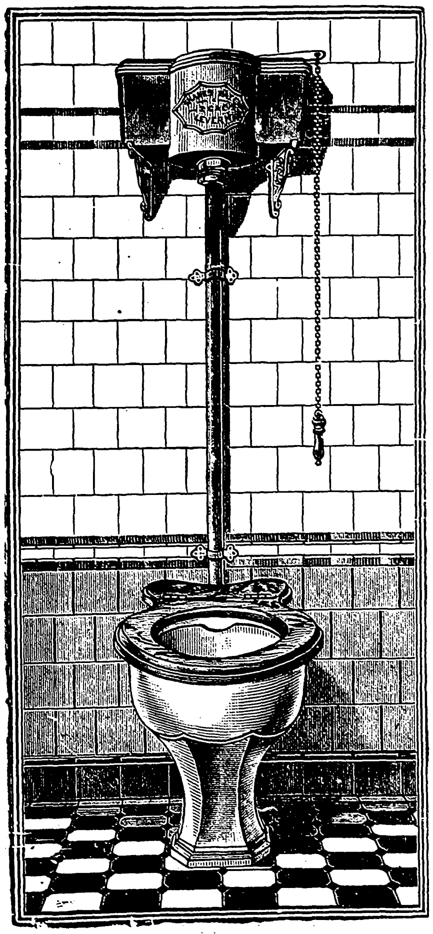
# SHANKS & Co. LTD.

**SANITARY ENGINEERS, TUBAL WORKS, BARRHEAD, NEAR GLASGOW.**



## *The Siphonic Closet Problem Solved.*

**SHANKS' PATENT**

## 'Barrhead' Siphonic CLOSET.

**RESULTS OBTAINED TRULY MARVELLOUS.**

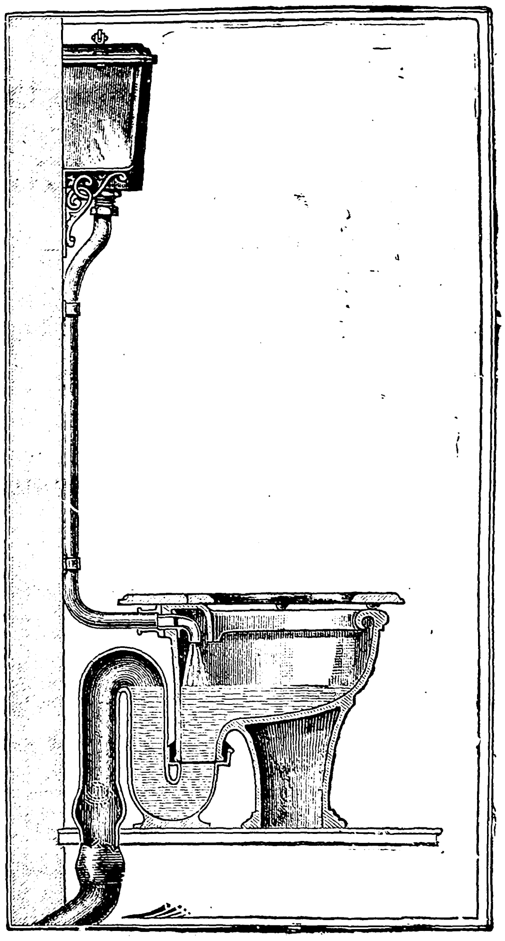
*Supersedes anything yet brought out.*

**IT POSSESSES THE FOLLOWING ADVANTAGES:**

It is the Simplest in Construction.
It has the Deepest Seal (8 inches).
It has the Largest Surface of Water of any Closet (13½ × 11¼).
It is the most Perfectly Flushed.
It has the most Powerful Discharge of any Closet.
It requires only a 2-GALLON Cistern.
It cannot be unsealed by throwing in Slops.
It cannot go out of order.
It has no Second Trap.
It has no Joints on Drain Side of Trap.
It is fitted with PERFECTO Seat for greater cleanliness—no connection with wall.

**Most undoubtedly the BEST, CHEAPEST, & SIMPLEST SIPHONIC CLOSET EXTANT.**

*Write for Prices and full particulars.*



## SALES BY AUCTION.

By order of the Trustees of the St. Clement Danes Holborn Estate Charity, High Holborn.—Letting on Building Leases of Valuable Sites for Shops, Trade Premises and Dwellings.

**THURGOOD & MARTIN have received** instructions to LET by AUCTION, on Building Leases, on WEDNESDAY, 28th JUNE, 1899, at TWO o'clock precisely, in Three Lots, Nos. 101 to 104, High Holborn, and neighbouring PLOTS of LAND on the east and west sides of Dean-street, well situate in and near the main thoroughfare from the City to the West End, in one of the busiest and widest parts, having areas varying from 7,374 ft. to 3,121 ft. respectively. Very valuable sites for important shops, warehouses and dwellings.—Particulars and conditions of letting, with plans, may be had of Messrs. J. C. & W. W. ISAACSON, Solicitors, 11, New-inn, Strand, W.C.; H. C. BOYES, Esq. Ormond House, Great Trinity-lane, E.C. Architect and Surveyor to the Trustees; at the place of sale; and of the Auctioneers, 27, Chancery-lane, W.C.

---

**MESSRS. CHURCHILL & SIM'S next** PUBLIC SALE will take place at the GREAT HALL, WINCHESTER HOUSE, Old Broad-street, E.C.

On WEDNESDAY, JUNE 28th, 1899,

at TWELVE o'clock precisely, with an assortment of DEALS, BATTENS, BOARDS, TIMBER, &c.

Catalogues of

**CHURCHILL & SIM,** { Wood Brokers, 29, Clement's-lane, E.C.

---

HARINGEY PARK, CROUCH HILL (outside the jurisdiction of the L.C.C.).—FREEHOLD BUILDING ESTATE of five acres, three minutes from the Broadway and five minutes from the station. Ripe for immediate development for the erection of houses that readily let and sell.

**WEATHERALL & GREEN will SELL** by AUCTION, at the MART, E.C. on MONDAY, JULY 3rd, at TWO o'clock, in One Lot, the FREEHOLD BUILDING ESTATE of over five acres in extent, upon which at present stand Nos. 13 to 28, Haringey Park, now let, and producing 1,070*l.* 10s. per annum. This area of five acres is all matured land, surrounded by good roads, and ripe for the immediate creation of freehold ground-rents, as about 2,000 ft. of building frontage can easily be dealt with, and there also is the advantage to the purchaser of the income from the existing rents, which will be receivable until the scheme of development has been matured and the sites cleared. The district is high and healthy, and modern houses are in great demand. A. P. RODYK, Esq. Solicitor, No. 70A, Aldermanbury, E.C.—Particulars at the Mart, and of the Auctioneers, 22, Chancery-lane.

---

LINDFIELD, Sussex.—1¼ miles from Hayward's Heath Station, whence there is a capital 'bus service.

**MESSRS. DRAWBRIDGE & ANSELL** have received instructions to SELL by AUCTION, at the "BENT HOTEL," LINDFIELD, on WEDNESDAY, JULY 5th, 1899, at SIX o'clock in the evening, 13 valuable FREEHOLD BUILDING PLOTS (immediately adjoining this quaint and picturesque town, with its unrivalled common and pretty pond, and which is well known for its healthy situation and beautiful surroundings), ripe for the immediate erection of detached or semi-detached villas, which are greatly in demand in this locality.—Particulars, with plans and conditions of sale, may be had of Messrs. DRAWBRIDGE & ANSELL, Auctioneers, Estate Agents, and Timber Valuers, Hayward's Heath, Sussex.

---

CITY OF LONDON.

City Improvements.—By order of the Corporation.

To Brewers, Licensed Victuallers, Restaurateurs, and others. Offering an opportunity of securing one of the finest sites for licensed premises.

In the heart of the shipping, wine, Colonial, and corn trade centres.

The valuable Free LEASE of the important corner Building Site, together with the License thereto attached, now occupied by fully-licensed premises, the Mercantile, and the adjoining property known as 126, Fenchurch-street, E.C.

Having a frontage of about 36 ft. 5 in. to Fenchurch-street, and about 43 ft. 2 in. to Fen-court, which is now being widened, and will form an important thorougfare, with an enormous pedestrian traffic, the whole covering an area of about 1,374 square feet. A free lease for 65 years will be granted at the moderate ground rent of 300*l.* per annum.

**MESSRS. DOUGLAS YOUNG & CO.** will SELL the above by AUCTION, at the MART, E.C. on WEDNESDAY, JULY 19th, 1899, at ONE o'clock precisely.—Plans, particulars, and conditions of sale may be obtained of the Comptroller or the City Engineer, Guildhall, E.C.; or of the Auctioneers, No. 51, Coleman-street, E.C.; 213, Clapham-road, S.W.; and Ilford, E.

---

MONDAY, JULY 10, 1899.—TELSCOMBE CLIFFS LAND SALE, between Brighton and Newhaven.—160 Choice Seaside BUILDING SITES WILL BE SOLD in a MARQUEE on the Estate, at HALF-PAST TWO p.m. Payments by instalments. A special train of first-class carriages will leave Victoria at 10 5 and London Bridge at 10, calling at Clapham Junction and East Croydon; Return Tickets, including Luncheon, 5s. may be had of the Auctioneers.

**MESSRS. HARMAN BROS. have been** favoured with instructions from the CAVENDISH LAND CO. Ltd. to SELL by AUCTION the Third Portion of the above Estate, on MONDAY, JULY 10, at HALF-PAST TWO.—Particulars and plans may be had of Messrs. WARD, BOWIE, & CO. Solicitors, No. 7, King-street, E.C.; of Messrs. HOOKER & WEBB, 4, High-street, Croydon; of Messrs. FAIRBROTHER & CO. 26, Queen's-road, Brighton; of the CAVENDISH LAND CO. Ltd. 68, Victoria-street, Westminster; and at the AUCTIONEERS' Offices, 75, Aldermanbury, Guildhall, E.C.

---

TOTTENHAM (close to Bruce-grove Station).—A small Freehold Building Estate, undoubtedly ripe for immediate development, and a Detached Residence, with stabling and large gardens.

**MR. ALFRED RICHARDS will SELL** by AUCTION, at the MART, E.C. on TUESDAY, JULY 4th, at ONE, in Two Lots, the valuable DETACHED FREEHOLD RESIDENCE, known as "The Woodlands," Lordship-lane, Tottenham, with capital stabling and outbuildings; tennis, croquet lawns, large and productive garden. With possession. Also the ripe FREEHOLD BUILDING ESTATE adjoining, and comprising a little over five acres, with the important frontage of 523 ft. to Lordship-lane. It is within a few yards of the Bruce Castle Park, in a neighbourhood where extensive public improvements are being carried out, and where the demand for a good-class villa is unlimited.—May be viewed, and particulars obtained of Messrs. GUSH & CO. Solicitors, 3, Finsbury-circus, E.C.; and of the Auctioneer, 18, Finsbury-circus, and Tottenham.

---

GREEN-LANES, WOOD GREEN, N.—166 Lots of exceedingly valuable FREEHOLD BUILDING LAND, free from tithe and land tax, in a rapidly increasing, convenient, and accessible district, near Green-lanes Station on the G.E.R. and Hornsey Station on the G.N.R. the cars of the N.M. Tramway Company passing the estate, comprising a commanding corner site, having an important frontage to the Green-lanes, suitable for the erection of business premises; and 165 Plots, with frontages to Westberry-avenue and the new roads leading therefrom, affording choice sites for the erection of villa residences, which are greatly in demand, and the property being fully ripe for building operations offers an excellent opportunity for the creation of ground-rents. Also One Lot with a paddock in the rear. FOR SALE by AUCTION, on behalf of

**THE BRITISH LAND COMPANY,** Limited, at the MANOR HOUSE TAVERN, Green-lanes, Finsbury Park, on THURSDAY EVENING next, JUNE 29th, at SIX for SEVEN o'clock. Free conveyances. Possession on payment of 10 per cent. deposit, balance payable by easy instalments extending over nine years.—Particulars, plan, and conditions of sale may be obtained of the SECRETARY, 25, Moorgate-street, E.C.; and at the Place of Sale.

---

Apsley End, Hemel Hempstead, HERTS.—Important SALE of FREEHOLD BUILDING LAND with frontage to the main road, and other plots fronting new roads, where sewers will be put in by the vendor; also many plots adjoining the river which is a carrier to the canal.—This property is near the Paper Mills and within about one mile of Boxmoor Station, suitable for artisans' houses and factories, FOR SALE by AUCTION, by

**MR. N. W. ROBINSON, in JULY, 1899,** by order of the Proprietor.—Particulars, plans, and conditions of sale can be obtained, when ready, of the Auctioneer, 66, Marlowes, Hemel Hempstead.

---

Completion of the Works, Aberdare-gardens, South Hampstead.—Important SALE of the excellent, nearly new BUILDING PLANT and MACHINERY, consisting of a 14-h.p. double cylinder portable engine and a 12-h.p. portable engine by Ruston, Proctor, & Co. 12-in. three-cutter planing machine by Reynolds, a new 30-in. circular saw bench by Butler, hand and power mortising machines by Reynolds, general jointer by Worssam, 9-ft. mortar mill by Sykes, a circular saw bench, belts, pulleys, and shafting, 600 scaffold-poles, 150 dozen putlogs, ladders, 200 dozen scaffold boards, 150 dozen scaffold cords, falls, benches, barrows, truck, flooring, joinery and other timber, poling boards, two offices, large workshop and engine shed, bottle-jacks, floor dogs, pulley wheels, five nearly new spring tip carts, nearly new builder's van, spring timber lorrey, three very fine powerful cart horses, five sets of cart and chain harness, quantity of firewood and useful effects.—

**MR. ERNEST OWERS will SELL by** AUCTION, upon the LAND in the rear of the new buildings, as above, on THURSDAY, JULY 13th, at ONE o'clock.—Catalogues (when ready) of the Auctioneer, Finchley-road (L. and N.W.) Station and West Hampstead (Metropolitan) Station.

---

**MR. ERNEST OWERS begs to draw** special attention to the excellent Machinery and Engines included in the above SALE; also the three very fine powerful CART HORSES, 16 to 17 hands.

---

TO BUILDERS AND SPECULATORS.—By order of the Mortgagee.—HANWELL, TWELVE well-built CARCASES (eight roofed on), known as Nos. 26 to 48 (even), Shirley-gardens, just off the main Uxbridge-road, containing three bed, bath, and two sitting-rooms, kitchen, scullery, forecourts, and gardens, estimated to readily let at 26*l.* per annum each when completed, tenants paying taxes, this class of property being in great demand. Leases 99 years. Ground rent 5*l.* 10s. each.

**MR. ERNEST OWERS will SELL by** AUCTION at YE OLDE HATTE HOTEL, Uxbridge-road, Ealing Dean (close to the property), on WEDNESDAY EVENING, JUNE 28th, at SEVEN o'clock precisely.—Particulars and conditions of Sale of Messrs. FLADGATE & CO. Solicitors, Craig's-court, Charing Cross, and of the Auctioneer, Finchley-road (L. & N.W.) Station, and West Hampstead (Met.) Station, N.W.

---

WESTCOTT, near DORKING.—Land in Small Plots or Cottage Property. Free conveyances.

**MESSRS. WHITE & SONS are favoured** with instructions to SELL by AUCTION, on THURSDAY, JULY 6th, 1899, at the RED LION HOTEL, Dorking, the FIRST PORTION of the COAST HILL FIELD, Westcott, in numerous Plots, with frontages of from 20 ft. and depths of 100 ft. or thereabouts, for the erection of cottage property. The soil is light, the situation high and healthy, and the Dorking Water Company are able to serve the Estate.—Particulars, with plans and conditions of sale, may now be obtained of F. DOUGLAS ALLOWAY, Esq. Solicitor to the Vendor, Lincoln's Inn Fields, London, W.C. and Dorking; or of Messrs. WHITE & SON, Auctioneers and Land Agents, Dorking and Leatherhead.

---

WHITSTABLE-ON-SEA, Kent.—SALE of valuable BUILDING LAND close to the sea in the centre of the Town. Dwelling-houses, shares of ships and gas shares, part of the estate of the late James Reeves, deceased.

**MR. J. T. REEVES will SELL the above** by AUCTION, at the AUCTION MART, Whitstable, on THURSDAY, JUNE 29th, at TWO p.m.—Particulars and conditions of J. F. WHICHCORD, Esq. Solicitor, or the Auctioneer, Whitstable.

*Refer also to* "TOO LATE" *column, page* xxiv.

---

**LAND WANTED, not less than 6 acres,** for a manufacturing site. Must be on siding or adjoining goods station on main line. Low rates, good water supply, and plenty of cheap cottages are important features. Canal or river would be an attraction. Must be within about one hour from London, less preferred.—Full particulars to Box 194, Office of "The Builder."

---

**FREEHOLD BUILDING LAND TO BE** LET or SOLD near to Muswell Hill Station.—For particulars apply to Mr. HAYTER, 84, Temple-chambers, Temple-avenue, E.C. or to Mr. W. H. RUSSELL, Alexandra Park-road, Muswell Hill, N.

---

**TO BUILDERS.—FREEHOLD LAND** at Clacton-on-Sea, ripe for building immediately; seven 50 ft. plots in Pier-avenue, close to pier; three 75 ft. plots Skelmersdale-road, close to railway station; also plots in Walton-road, Connaught-gardens, &c.; TO BE LET on building lease, with option to purchase; or the FREEHOLD TO BE SOLD.—Apply to

BISLEY & SONS,
No. 63, King William-street, City.

---

**TO FREEHOLDERS, BUILDERS, and** OTHERS.—FUNDS available for the development of building estates and financing builders during progress of works. Ground rents purchased at an early stage.—Apply, E. CORBETT BYRNE, Clement's Inn-chambers, 263, Strand, W.C.

---

**FREEHOLD BUILDING LAND, suit**able for Cottages, TO BE LET or SOLD, with advances to a respectable and responsible Builder. Roads and sewers constructed. Gravel soil.—Apply to Messrs. F. S. BRERETON & SON, Architects and Surveyors, 292, High Holborn, London, W.C.

---

**SITE for FACTORY or WAREHOUSES,** about 5,200 feet super in Newcomen-street, Borough High-street.—TO BE LET on rebuilding leases.—Particulars of Messrs. F. S. BRERETON & SON, Architects and Surveyors, 292, High Holborn.

---

**RIVERSIDE LAND at BRISTOL TO** BE LET or SOLD for Business Purposes.—10 ACRES (freehold, tithe free, and land tax redeemed), near rail and docks. Also 30 ACRES UPLAND adjoining, suitable for the erection of Workmen's Dwellings.—Apply JAMES SINNOTT & SON, Solicitors, Bristol.

---

**FREEHOLD LAND TO BE LET on** Building Lease, with or without frontages to the River Lee, near Barking-road Bridge, Poplar, E.; suitable for wharves, warehouses, and factories; also for small dwelling-houses, for which there is a great demand. Advances by the freeholder can be arranged.—For terms and particulars, apply to Mr. CHARLES DUNCH, Architect and Surveyor, 27, Clement's-lane, E.C.

---

**GRANGEWOOD ESTATE, Norwood and** Thornton Heath.—Sound BUILDERS REQUIRED to ERECT small PROPERTY. Advances if required. Builder can make 45*l.* per plot from the land.—Apply, ALLEN & HOAR, Surveyors, Inglewood House, West Hampstead, N.W.

---

**WANDSWORTH COMMON.—FREE**HOLD BUILDING SITES, on high ground, with frontages to the Common and existing roads, TO BE LET on Lease.—Apply, Messrs. V. BUCKLAND & GARRARD, Surveyors, 8, Frederick's-place, Old Jewry.

---

**LONDON HOSPITAL ESTATE.**

Plot of BUILDING LAND, consisting of the houses and premises, 10, 12, 14, 16, 18, 20, 22, 24, 26, 28, and 30, Settles-street, Whitechapel, E. having a frontage of about 158 ft. 7 in. and an area of about 7,482 square feet, TO BE LET, by TENDER, on a Building Lease for a term of 60 years.

Tenders to be delivered at NOON on the 4th day of JULY, 1899, in accordance with the printed forms which can be obtained from

G. Q. ROBERTS, Esq. M.A.
House Governor's Office,
London Hospital, Whitechapel, E.

---

**TO STONE MASONS.—TO BE LET, the** MASONRY SHEDS connected with the Cefn Freestone Quarries, Ruabon. Will accommodate 30 to 40 masons.—Address to Mr. HENRY DENNIS, Engineer's Office, Ruabon.

---

**BUILDING LAND TO BE LET or SOLD** in plots, blocks, or streets. Quite ripe for medium-sized houses, which are much wanted. Also nice estates, situate Muswell Hill, Sutton, &c.—Apply, stating wants, HALL, Valkyrie, Muswell Hill.

---

**SUTTON, SURREY. — FREEHOLD** BUILDING PLOTS, with frontages of 20 feet and depths of 110 feet, in most eligible situation on high ground. Price 100*l.* per plot or 5*l.* per plot on building leases. Liberal advances and improvement to respectable builder.—Full particulars of BOYTON, PEGRAM, & BUCKMASTER, Broadway, Walham Green, S.W.

---

**WIMBLEDON HOUSE ESTATE**

COMPANY, LIMITED.

The Directors are prepared to receive PROPOSALS for the SALE or LETTING of SITES for Private Houses on this property, which is being developed by the Company as a high-class Residential Estate.

The land lies high with a deep gravel subsoil, and has a frontage of over half a mile to Wimbledon Common and is well timbered.

The Estate which until lately was the residence of the late Sir Henry Peek, is situated in the best part of this much sought after suburb, and commands extensive views over the Common to the Surrey Hills, and the excellent service of trains makes it peculiarly convenient to gentlemen whose pursuits command their presence in London.

Plans and further particulars may be had by applying to the Secretary, at the Estate Office, Parkside, Wimbledon, or to the Surveyor, GEORGE HUBBARD, F.R.I.B.A. 85, Gresham-street, E.C.

---

**FOR SALE, BRICK WORKS and Three** COTTAGES; an unlimited supply of clay, no expense raising, burning capital bricks; works supplied with necessary machinery for brick, tile, and pipe, in full working order, ready sale for all articles made. Intending buyers invited to visit the works, Stow, Kimbolton.—Apply, MANAGER, Brick Works, Stow, Kimbolton.

---

**VINEYARD BRICK WORKS, Musley**-lane, Ware, Herts, TO BE SOLD, by order of the Executrix of the late Mr. T. B. Lyne, comprising 6a. 2r. 24p. together with the goodwill, machinery, plant, and utensils. The whole in good order and ready for immediate use. The property is freehold, and the output can be made to 2,000,000 a year.—Particulars of STIMSON & SONS, Auctioneers, 8, Moorgate-street, E.C. and 2, New Kent-road, S.E.

---

**SURREY HILLS.—FREEHOLD SITE** for a Country Residence, 9½ acres, FOR SALE, 15 miles from City, 1½ miles from railway station. Beautiful situation on high ground, with lovely timbered surroundings. Water laid on. Gravel and chalk subsoil. Most healthy position. Lodge built. Grounds partly laid out and planted. Price 1,600*l.* or a residence would be built to suit requirements and let on long lease.—Apply to C. & F. RUTLEY, Architects, 11, Dowgate-hill, E.C.

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**BRICK WORKS, about 35 acres freehold,** close to London. Clay inexhaustible, now making excellent sand facings and wire cuts. An exceptional opportunity of acquiring a genuine going concern which offers unlimited means of extension.—Apply to the Messrs. LUMLEYS, of St. James's House, 22, St. James's-street, London, S.W.

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*Refer also to* "TOO LATE" *column, page* xxiv.

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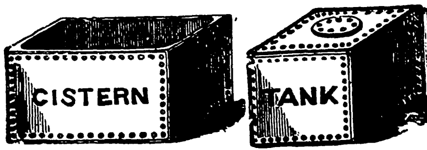

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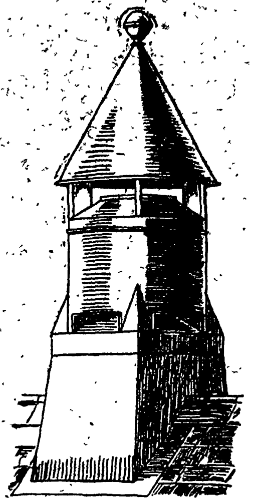

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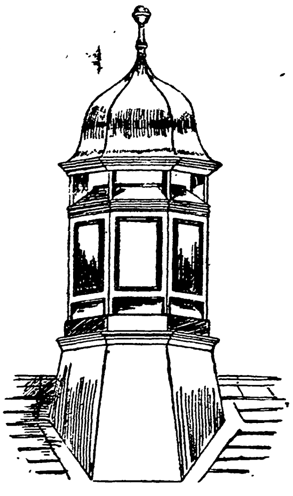

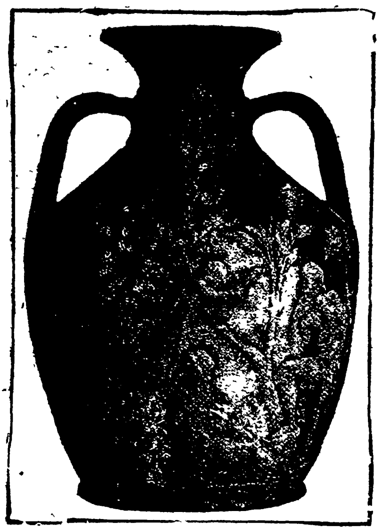

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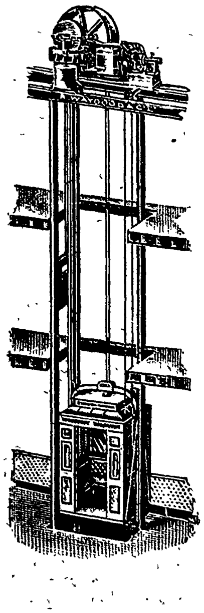

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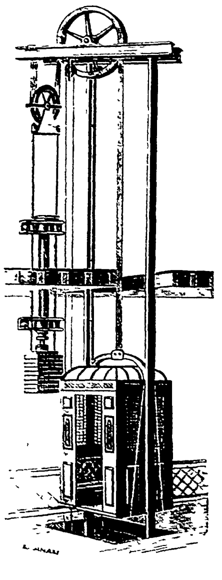

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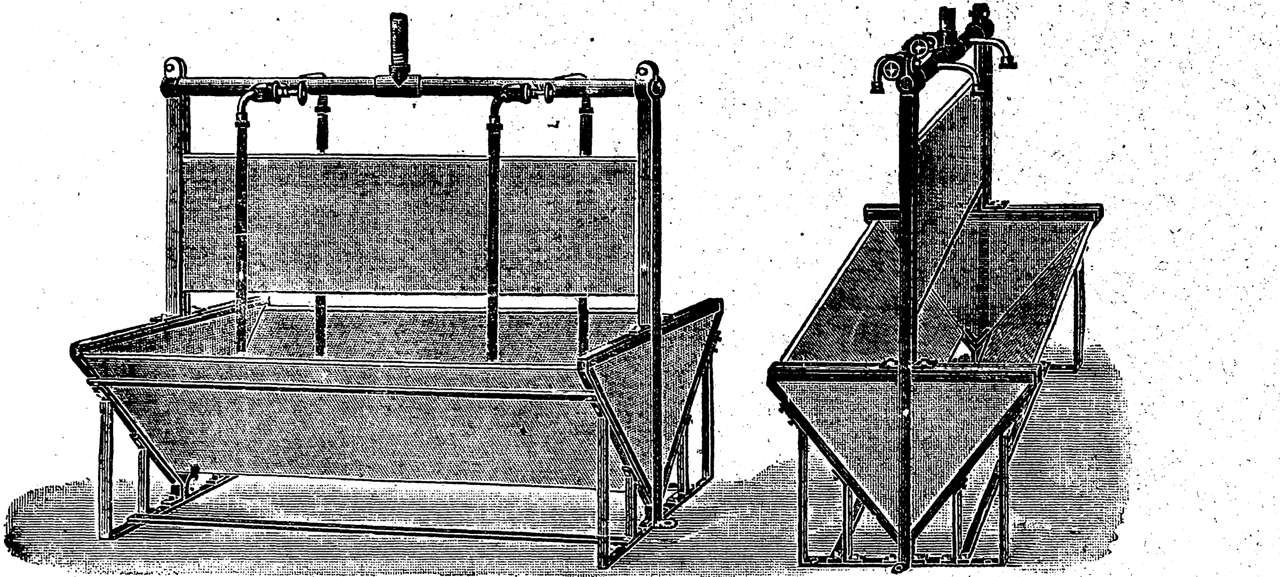

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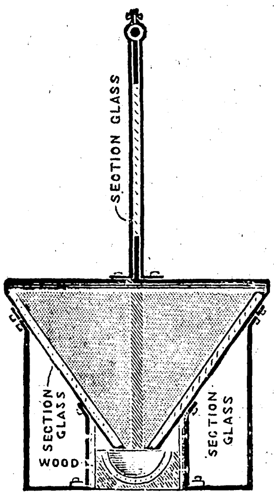

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The channel should be fitted into a bed of concrete; provision is made at each side of bottom for screwing a board; the space between the boards should be filled with concrete and the channel bedded into same. After the concrete sets, the boards may be removed and the concrete sides faced.

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